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# Sport Psychology: Linking theory to practice

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## **Proceedings of the XIV ISSP World Congress of Sport Psychology**

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# KEYNOTES

## Keynotes

Monday July 10<sup>th</sup>

### Fighting for an educational youth sport

***Jaume Cruz, Universitat Autònoma de Barcelona.***

According to sport psychologists, the effects of sport participation on children's psychosocial development are controversial issues for sport scientists. Some authors have outlined the importance of sport practice in order to improve physical fitness, self-confidence or sportspersonship. However, there is also some evidence of negative effects of athletic participation such as burnout or attrition due to parents' overemphasis on the outcome of the game or the punitive communication style of some youth coaches. In short, adult leaders -coaches, parents, officials, sport organizers- who interact with young players determine the quality of children's athletic experience.

Although coaches are considered a key figure in youth sport –because coaches' behaviors, attitudes, and values are imitated by their players, not only in sport settings but also in other contexts of players' lives– most children receive coaching from untrained amateur coaches. Due to this reality, coach training programs as the Mastery Approach to Coaching (MAC; Smith, Smoll, & Cumming, 2007), have been implemented to produce salutary effects on a wide range of outcome variables. Taking into account that most coach programs usually had not provided individualized behavioral feedback, because occur in the form of a group-administered workshop, Sousa, Smith, and Cruz (2008) took a step forward and encouraged sport psychologists to adapt the coach behavioral guidelines to the individual evaluations assessed in the baseline stage and developed the Programa de Asesoramiento Personalizado a Entrenadores (PAPE Individualized Program for Counseling Coaches).

The intervention with parents of our research group started in 1998, when the Barcelona Sport Council requested our group to design a campaign on the psychological aspects of parents' positive participation in sport. As the campaign was conceived to be as widespread as possible, multiple resources were produced in order to reach diverse sport participants. Six different products were designed in order to disseminate the principles of Barcelona's Campaign: a booklet, leaflets, posters, a video, a web page, and workshops. (Cruz, Ramis & Torregrossa, 2016). The results of Barcelona's Campaign to promote parents' sportspersonship in youth sport were promising in terms of the level of positive communication messages given to the players. However, in a field study for the campaign, referees of football and basketball games of children of 9-10 years old received only 4% of encouragement and 68% of criticism, reflecting that some parents place too much emphasis on winning. In this sense, we have to assume that the elements of the campaign were insufficient by themselves to change the spectators' behaviors towards referees.

In general, campaigns attempted to influence spectators' behaviors, but the ones that behave in an appropriate way did not receive any kind of social approval. If we want to modify parents/spectators behaviors in youth sport, maybe we need to reward them on the outcome of the competition for the positive and supportive behaviors they exhibited towards players, coaches, and referees. In this sense, it is interesting to follow new developments on parents' positive participation in sport, such as the "Juga verd" ("Play green campaign;" Alastrué & González, 2013), that proposed giving extra scores based on parents and spectators behaviors which are taken into account in the outcome of the matches. My final reflection, from a cognitive-behavioral perspective, is that if we want to change the values in youth sport and avoid gamesmanship, discrimination and violence, the sport psychologists have to work not only with coaches and parents but also

with sport organizers, officials, referees and peers ... in order to empower them as Agents of Change, as the European Project Psytool tries to do.

## Tuesday July 11th

### José Maria Cagigal: Work and legacy of a pioneer of sport psychology

**Alberto Cei, University of San Raffaele, Ceiconsulting**

José Maria Cagigal (Bilbao, 1928 – Madrid, 1983) played a fundamental role to establish for the first time in the world an international network in the field of sport psychology, culminated in the foundation of the International Society of Sport Psychology. In fact, it was during the 4th Congress of the Groupement Latin de Medecine Physique et des Sports, Barcelona, 1963, that Ferruccio Antonelli, Michel Bouet and José Maria Cagigal discussed about their interest in the sport psychological aspect and speculated upon the organization of a worldwide congress. Thanks to his vision, not only in 1965 in the first ISSP-MC Ferrer Hombravella was elected as General Secretary, but José Cagigal in 1973 organized the 3th ISSP Congress in Madrid. This key role was clearly recognized by Antonelli during this Congress: "I want to remember that, it's not wrong, to say that the scientific Sport psychology was born in Spain." Furthermore, under his direction this Congress was very important because was attended by members from Eastern countries as well as North America. To appreciate this result, we have to remember that at time the world was divided in two blocks and the Cold war did not favoured this kind of relationships. In the same time, in Spain, the current Faculties of Sports Science owe their foundation to his work and few scholars have added value to the history of sports and education like he did. Cagigal was the first director of the Institutos Nacionales de Educacion Fisica (INEF), the first founded in Madrid in 1967, where it was included the field of psychology, establishing a strict connection between the pedagogy and the sport psychology. He became totally involved in this new organization, since his personal, professional and institutional goals was sustained by his dual status as professor and director. José Maria Cagigal was married with Isabel de Gregorio Hidalgo and they had five children. He was a humanist but an action man too. I believe his legacy can be described through his words: "we can talk of a sport-show, i.e., a sport developed towards this spectacular slope, programmed and exploited; suitable for dissemination, propaganda; subject to champions requirements; discovered and used by finance, industry and trade; frequently associated with professionalization. The sport of the success of the broadcasts, advertising, politics ... By another way, in another direction, it's running another sport - the first in term of numbers - alien to propaganda, to marketing, to the political involvement ... Actually it is not a second-class sport. It's anthropological and vividly the first" (Cagigal, 1975, p. 59-60).

### Did you ever let your lover see the stranger in yourself? Professional development in sport and exercise psychology

**David Tod, Liverpool John Moores University**

Applied sport and exercise psychology can be traced back to the late 19th century. Since the field's inception, researchers have focused largely on the specific factors involved in service delivery, such as the efficacy of interventions (e.g., goal setting) and the identification of athlete attributes (e.g., mental toughness) which might enhance performance if developed. Only within the last 25 years have researchers have paid substantial attention to the applied sport and exercise psychologist, with early studies focused on stakeholders' perceptions of effective practitioners' characteristics. It is even more recent that researchers have examined practitioner development issues, such as developmental journeys, supervision, and processes involved in

gaining expertise (e.g., reflective practice). Consequently, much less is known about the people delivering applied sport psychology services, and how best to train them, compared with knowledge about the interventions they employ. The imbalance in knowledge may lead to an overemphasis in practitioner education on the tools consultants have, at the expense of a focus on their development as service providers. Potentially, this imbalance compromises formal training effectiveness. This hypothesis may help explain recent research that documents ways in which graduates believe their training has not prepared them for situations they have encountered. The recognition that professional development research has considerable room for growth also comes at a time when several countries have developed or reviewed training routes and accreditation schemes designed to ensure quality in the profession. In response to the clear need for research, several investigators around the globe are pursuing lines of inquiry that may underpin high quality professional development and training, including practitioner development trends, the acquisition of decision making skills, and optimal training environments. In this keynote, I will overview current insights emerging from this research and suggest implications. More specifically, I will answer three questions. First, what are the characteristics of effective, safe, and ethical applied sport psychologists? Second, what are consultants' journeys towards expertise? Third, what are the implications for individual practitioners and professional organisations? Answers to these questions provide the keys to this keynote. First, the phrase "be, know, do" summarises expert practitioners. Expertise involves having a wellspring of knowledge, a toolbox of interventions, and the personal characteristics needed to establish and maintain working alliances with clients. Second, practitioners often stutter along their journeys, experiencing joys, doubts, pride, and disappointments, as they learn about themselves and their clients ever more deeply and make choices about how they wish to work with athletes so they are effective and authentic in their professional roles. Third, developing trainees' psychological knowledge, competence at using interventions, and ability to form working alliances with clients are necessary but insufficient goals in their education. Based on emerging research trends, effective applied sport psychologist training also involves helping individuals create a suitable professional identity or a cognitive structure that helps them understand their identity capital; that is their mental, physical, and social resources that allow them to negotiate successfully the environmental demands they encounter throughout their careers.

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## Facilitating careers in sport

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***Dorothee Alfermann, University of Leipzig***

While pursuing a career in sport can be an exhausting and time-consuming task, at the same time, it may be regarded as an exciting and enjoyable experience. In the literature there exist a number of stage models showing that careers in sport often follow foreseeable pathways from childhood to adulthood, similar to educational careers. But, as only a minority of youngsters who start in competitive sport will become elite athletes the main research question in sport and performance psychology is about the facilitating or/and hindering conditions of sport career development, or talent development, as some authors call it. In the history of sport career research we can find several periods. At first, the focus was directed toward the athlete, mainly her or his physical and psychological capacities. The athlete with all her/his individual talents was regarded as the main engineer of her/his career. A second approach considered career development mainly as the result of a successful interaction within the athletic triangle, namely athlete, coach and parents. This means that the athlete was now regarded as a social being developing within his/her immediate social environment. Besides athletes' dispositions for a career, research now focused on coaches' behaviours and on parental support. Even though in that approach the interaction and relationship of athlete and social environment was an important extension to former views, the possible influence of peers or other socialization agents was somehow neglected with the result that till today we are in urgent need of good empirical studies on the influence of peers on elite sport careers. In the last ten to fifteen years we can realize important extensions to the athletic

triangle approach. These are concentrated on the macro-environments of athletes, the so-called talent development environment (TDE). On the one hand, research is considering how optimal sport environments should look like (e.g., the sport system, the club, availability of sport facilities, emphasis on dual careers and its support, sport psychology support), and on the other hand, the optimal TDE may differ according to type of sport and the cultural background where athletes are growing up. Culture seems to play an important role in career development and has come into the focus of research only recently. To summarize, sport career development is not only the result of athletes' talent and the cooperation within the athletic triangle, but also of an optimal sport environment on the one hand and of cultural ideology and preconditions on the other hand. In the lecture I will present research supporting this comprehensive view of facilitating conditions of sport careers. Special emphasis will be put on cultural viewpoints and on the role of talent development environments. Finally, suggestions will be given for future research and for sport psychology interventions.

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## **Are psychological theories used to predict physical activity and guide physical activity behavior change interventions any good?**

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***Martin S. Hagger, Curtin University, University of Jyväskylä***

Investigators in the field of exercise and health psychology have frequently cited the importance of a theoretical basis when conducting research on the psychological predictors of physical activity participation for health. A theoretical approach has also been advocated in the development of effective interventions to promote increased uptake and maintenance of physical activity behaviour in public health (e.g., general population) and clinical (e.g., cardiac rehabilitation) contexts. In this talk I will critically evaluate the contribution that psychological theory has made to predicting and changing physical activity behaviour. My approach will be from a standpoint of current status of theory use in exercise psychology – what positive outcomes has psychological theory brought to providing an evidence base for physical activity prediction and to informing interventions to change physical activity behaviour, and what are the shortcomings and limitations of the theories used? Based on this analysis I will outline how researchers and practitioners are leveraging the advantages, and addressing the limitations of, theories applied in physical activity behaviour, and offer suggestions for future research and practice.

My analysis will begin by outlining some of the successful outcomes of physical activity research applying theories from social psychology to understand and change physical activity behaviour. Notable successes include the identification of key theoretical constructs that account for unique variance in physical activity behaviour across multiple contexts and populations, and the identification of viable constructs for behavioural interventions to target in order to bring about concomitant behaviour change. Theory has also unveiled the potential mechanisms by which psychological constructs impact physical activity behaviour, and identified the factors that magnify and diminish the effects (i.e., moderators).

However, several critiques and limitations have been levelled at theories applied to physical activity. These criticisms include: the relatively static nature of the theories; the vast number of theories and the associated problems with definition, redundancy, and conceptualization of constructs; problems in prediction including relatively modest or weak effects particularly in the face of past behaviour; failure of many theories to account for important basic processes including non-conscious, automatic processes and emotional factors; and problems associated with identifying appropriate means to change theoretical constructs and processes in interventions based on theory. I will outline the inherent problems associated with these issues and outline how researchers have attempted to deal with them. These include the importance of adopting longitudinal, panel, experimental, and multiple repeated measures designs (e.g., momentary ecological evaluation) to test theory predictions and, in particular, the nomological validity; categorizing the essential constructs from theories and using theoretical integration to arrive at a core set of constructs and processes that account for variance in physical activity behaviour; including measures of past behaviour in theories and adopting dual

process or dual phase models to provide a comprehensive account for the multiple processes that relate to health behaviour; and systematically mapping key behaviour change methods to the core constructs that account for variance in health behaviors; and the importance of factorial designs to evaluate the effectiveness of individual behavior change methods. I will outline examples of each of these lines of research and how they are contributing to moving the science of behavioural prediction and change in physical activity forward.

## Wednesday July 12th

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### Moral action in sport: Why does it matter?

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***Maria Kavussanu, University of Birmingham***

Questions about morality are highly relevant to any context that involves social interaction. Sport is such a context, where participants interact with each other; thus, moral issues unavoidably arise in this context. It is widely accepted that ultimately morality is reflected in one's actions. Moreover, morality is not only about refraining from doing the wrong thing, for example, not cheating, abusing, or deceiving others, also called inhibitive morality. It is also about being proactive in one's interactions with others, and engaging in behaviors that are beneficial to others, also termed proactive morality. In the context of sport, the terms prosocial and antisocial behavior have been used to refer to proactive and inhibitive morality, respectively. Examples of these behaviors are helping an opponent off the floor, encouraging a teammate after a mistake, and intentionally injuring or verbally abusing another player. In this presentation, I will discuss research pertaining to prosocial and antisocial behaviors in sport, with particular emphasis on their antecedents and consequences. I will also present my recent work on doping, which I have investigated as a moral issue.

Several personal and social environmental variables could influence prosocial and antisocial sport behavior. Evidence from several of our studies shows that athletes who report more frequent antisocial behavior toward their teammates and opponents, tend to be: high in ego orientation, which is the tendency to feel successful when one shows superiority over others; high in moral disengagement, which refers to the justifications people use for their transgressive behavior; low in empathy, which is the ability to take someone else's perspective; and low in moral identity, which is the centrality of being a moral person in one's self-concept. These individuals also tend to not experience guilt when acting antisocially toward others, and perceive a performance motivational climate in their team. In contrast, athletes who report more frequent prosocial behavior tend to be high in task orientation and perceive a mastery motivational climate in their team.

Prosocial and antisocial behaviors can have important consequences for the recipient. Team sport players, who perceived their teammates as acting prosocially toward them during a match, also enjoyed the match, tried harder, and reported more commitment to play with their team. Prosocial teammate behavior has also been linked to positive affect, task cohesion, more focused attention, and greater happiness. In contrast, antisocial teammate behavior has been associated with lower effort, anger, anxiety, negative affect, and burnout.

Morality in sport is exemplified by adhering to the rules of sport, thus honoring a fair competition. A behavior that clearly breaks these rules is the use of banned performance enhancing substances, also known as doping. That doping is a moral issue is clearly seen by the consistent relationships between doping and variables that have been associated with antisocial behavior, such as moral identity, moral disengagement, and guilt. Athletes, who have a strong moral identity have lower tendency to morally disengage, experience more guilt, and are less likely to use banned substances to enhance their performance.

Morality matters at every level of sport. It has important consequences for others, particularly those athletes, who dedicate a large part of their life to sport; it is a prerequisite for preserving the integrity of sport; and can contribute to the quality of the sport experience.

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## **Addressing weight pressures and body image concerns among athletes around the globe: Assessment, treatment, and prevention**

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***Justine J. Reel, University of North Carolina Wilmington***

Athletes strive to be peak performers; they are viewed to be incredibly tough mentally and physically fit. Facing intense physical and psychological demands to be the best is a normalized part of competitive sport participation. Competitive strategies may involve changing one's weight, shape, or size to meet perceived body ideals for one's sport. To this end, certain athletes have become "at risk" for developing unhealthy eating and exercise practices as they attempt to lose, gain, or maintain weight to achieve a perceived performance advantage and "look the part" in the process. A well-known case involved an Olympic gymnast, Christy Henrich, who was purportedly told by a judge and her coach that she should lose weight to increase her chances of competing on the world stage. This competitive desire fueled a dangerous battle with anorexia nervosa, extreme weight loss, and eventually death due to complications of the eating disorder. Another example was Bahne Rabe, a competitive Olympic rower from Germany, who died from extreme malnutrition associated with his anorexia nervosa. Weight management strategies for athletes can include a range of behaviors such as severe dietary restriction or fasting, the use of laxatives, diuretics, or diet pills, vomiting, and overexercise. Symptoms like these can reach the designated frequency, duration, and severity to warrant a clinical diagnosis. Pressures from the sport environment, such as pressures to change one's body to become more competitive, have been associated with the onset and maintenance of these unhealthy eating and exercise behaviors in athletes. Other identified weight pressures in sport include weight requirements, weigh-ins, team uniforms, comments from coaches, judges, and teammates, an emphasis on size associated with position or weight class, or an emphasis on appearance associated with the presentational component of some sports. These weight pressures can contribute to negative body image and feelings about the need to change a physical aspect of one's physique. Research has indicated that athletes in so-called "aesthetic" sports, such as figure skating, gymnastics, or diving, may be especially likely to experience body image concerns and disordered eating due to the intensity of the appearance-related pressures that are associated with the judged, artistic component of these sports. This keynote presentation will provide an overview of studies linking weight pressures, body image concerns, and disordered eating in sport that have been conducted over the past two decades. Further, recommendations will be provided regarding the assessment of weight pressures in athlete populations to detect problematic attitudes and behaviors early. The Weight Pressures in Sport scale will be introduced for use with both male (i.e., WPS-M) and female athletes (WPS-F). The presentation will also cover how to proactively address weight pressures in the sport context and the need for education. These and other strategies for the prevention of body image concerns and disordered eating in sport will be forwarded in order to further mobilize sport psychology researchers and practitioners, globally, to promote healthy sport environments.

**Thursday July 13th**

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## **Understanding complex human behavior from a dynamical systems perspective**

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***Yuji Yamamoto, Nagoya University***



Interpersonal competition and coordination in sports can manifest complex behaviors. The recent dramatic improvements in measurement technology have enabled the collection of massive amounts of precise data in real sporting fields with high spatiotemporal resolution. Using these data, we present examples showing that common principles underlie these behaviors, as they do physical and natural phenomena, from a dynamical systems perspective.

First, in one-on-one sports, such as Japanese martial arts and kendo, practitioners exhibit abrupt phase transitions from in-phase to anti-phase and vice versa, corresponding to 0.1-m differences in the interpersonal distance, which was used as a control parameter. These phenomena can be understood as synchronization or oscillatory dynamics, that is, “coupled oscillators”, like the famous finger experiment by Dr. Kelso. Synchronization can be found everywhere, such as in hanging clocks, candles, fireflies, and flocking birds.

Second, coordination patterns involving more than two people were modeled as coupled oscillators using symmetric Hopf bifurcation theory, which is based on group theory. Expert soccer players maintain high symmetry, such as using rotation mode during a three-on-one ball possession task, compared with intermediate and novice players, who show partial anti-phase mode.

Third, based on discrete dynamics like a Lorenz map, we classified competitive movements in kendo matches into six coordination patterns, using a return map analysis. Second-order state transition diagrams with the conditional probabilities consisting of the “farthest apart” high-velocity state and the “nearest together” low-velocity state revealed the skill differences between expert and intermediate competitors.

Furthermore, the ‘pass’ behavior in football games exhibits network dynamics that are both common characteristics shared with other huge networks and unique. The common feature of two competitive networks involves “hubs” in the pass network. However, one hub switched to another hub over time, which constitutes unique network dynamics, as compared with other large-scale networks, because both error tolerance and self-organizing properties are required in a football game.

Finally, the real-time dynamics of football games possess self-similarity characteristics in the movement of the ball and the team-turf boundary, similar to those found in the physical laws of fractional Brownian motion, regardless of the players’ psychological status or their level of training. The persistence time below which self-similarity holds was found to be several tens of seconds.

In summary, we can identify principles that underlie complex behaviors in sporting activities that are shared with physical and natural phenomena based on oscillatory, discrete, network, and fractal dynamics. This suggests that common principles underlie complex human behavior, just as they do physical and natural phenomena. We plan to explore the nature of complex sporting behaviors, including interpersonal and team competitions, which involve cooperation and competition. This will increase our understanding of complex human behavior.

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## **Exercise and cognition: Advancing understanding through dose-response, moderators, and mechanisms**

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***Jennifer L. Etnier, University of North Carolina at Greensboro***

Researchers have been interested in understanding the effects of physical activity on cognitive performance for decades. Since the end of the 20th century, our understanding has been that both single sessions of exercise (acute exercise) and long-term programs of exercise (chronic exercise) have small-to-moderate benefits for cognitive performance (Etnier et al., 1997). Given the reliable benefits that have been observed, the challenge for us going into the 21st century is to advance our understanding of mechanisms and moderators of these effects. This is important because by understanding mechanisms and moderators, we can better understand how to consistently obtain small effects, how to elicit larger effects, and for whom the effects are most likely to be beneficial. With current and former students and colleagues, I have conducted a



program of research designed to further our understanding of these nuances of the exercise/cognition relationship. In one line of inquiry, we have conducted a series of studies using an acute exercise paradigm to explore dose-response relationships between exercise intensity, exercise duration, and cognitive performance. Our research has demonstrated that the nature of the relationship between exercise intensity and cognitive performance is task specific. In particular, a linear relationship is evident for more “simple” tasks while a curvilinear relationship is observed with more complex tasks. At moderate levels of intensity, we have also demonstrated that 20-min of aerobic exercise results in the largest cognitive benefits. In addition, we have conducted a series of studies focused on how the timing of acute exercise moderates the influence of exercise on short- and long-term memory. Thus far, results suggest that exercise is most effective at benefiting memory when administered prior to exposure to the target material and that the durability of the effects may be intensity-dependent. In another line of research coming from a cognitive reserves perspective, we have considered how exercise might differentially benefit individuals based upon factors expected to negatively impact cognitive reserves. As examples, we have looked at health conditions such as chronic obstructive pulmonary disease (COPD) and attention deficit hyperactivity disorder (ADHD). Our most recent research is focused on exploring the potential benefits of exercise for cognitively normal adults at genetic risk for Alzheimer’s disease (AD). Our findings support the potential benefits of exercise even for those with a familial and genetic risk of AD and suggest that exercise adopted as a lifestyle behavior might be able to delay the onset of AD. With respect to mechanisms, our lab has begun to explore the potential role of brain-derived neurotrophic factor (BDNF) and of resting-state connectivity (RSC) as potential mediators of the effects. Our findings support a potential role of RSC as a mechanism, but are less clear with BDNF. I look forward to reviewing this body of evidence with attendees at the International Society of Sport Psychology World Congress and to entertaining questions and discussion on the topic. Evidence of the cognitive benefits of exercise is provocative particularly given that people are increasingly sedentary; that the population of older adults is on the rise resulting in dramatic increases in the number of persons expected to experience cognitive impairment; and that pressures for cognitive performance in the schools is mounting at the same time that dedicated time for physical activity is at record lows.

## Friday July 14<sup>th</sup>

### Psychological interventions in sport, exercise and other contexts

**Adrian H. Taylor, University of Plymouth**

Policy makers, commissioners of services and end users want to know the optimum dose of physical activity, sport or exercise for improving health and well-being. But it is sometimes difficult to translate research from acute studies to efficacy (with a known controlled intervention) and effectiveness (in which intervention engagement may be less optimum) studies. The talk will begin with a presentation of a framework for understanding evidence from acute and efficacy studies before turning to the challenges in effectiveness studies. The literature is full of studies in which convenient samples engage well with an intervention (and testing procedures) and provide strong efficacy evidence. Offering interventions to people who are less willing to engage creates special challenges and studies often provide no evidence of effectiveness, relative to a comparison group.

The presentation will focus on a series of studies in which we have targeted people with low levels of physical and mental well-being and, with input from the target population, psychology theory and evidence on behaviour change techniques, we have co-produced interventions to hopefully maximize uptake and sustainable engagement in physical activity. The physical activity and sedentary target behaviours we have sought to change have been identified from acute studies and chronic efficacy studies.

Two studies, TREAD and BAcPAC, have involved the design and evaluation of complex interventions to promote physical activity to people with clinical depression. Three studies, EARS, STRENGTHEN and TARS have involved the design and evaluation of complex interventions to promote physical activity to people from disadvantaged backgrounds. Finally, one study (e-coachER) is examining whether a bespoke web-based intervention for 450 primary care patients with chronic physical (obesity, diabetes, hypertension and osteoarthritis) and mental health (history of depression) conditions who have been referred to a GP exercise referral scheme (ERS), can increase physical activity after 1 year (assessed by accelerometer) compared with those who are only referred to an ERS.

In each case we have tried to balance the facilitation of a sufficient dose of physical activity to have health benefits with the challenge to ensure the intervention facilitates the need for a sense of Competence, Control (autonomy) and Companionship (relatedness), nicknamed the 3 Cs. Drawing on principles of motivational interviewing and self-determination theory, practitioners are trained to reflect after each session on how they have acutely and chronically facilitated improvements in the 3 Cs (eg, though self-monitoring and setting personalized goals to achieve success in change; allowing patient autonomy in deciding where, when and through which mode support sessions are held; and encouraging the seeking and use of support from others). In all studies we have tried or are trying to assess intervention fidelity, ie, whether or not the practitioners deliver what they have been trained to do, and some examples will be provided.

In conclusion, we are seeking to develop and evaluate physical activity (broadly and inclusive of sport and exercise) interventions that could be implemented in health services should they prove to be effective and cost-effective. At every step we work with public and patient representatives to develop the intervention and study methods, and this is helping us to ensure that the findings can be implemented in health services should they prove to be effective.

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## Periodization of psychological skills in sport

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***Gloria Balague, University of Illinois at Chicago***

Periodization is considered a key strategy in optimal training and sport performance. The balance of volume and intensity is a major variable in periodization, while the sequence of areas trained (physical conditioning, technical skills, tactical skills) is another. Periodization has not reached sport psychology in any consistent way. The major stumbling block in the lack of periodized work of psychological skills in sport is the lack of agreement in the field regarding what are the basic sport psychology skills. There is also some confusion between what are skills, tools or outcomes. There are several labels that make it into most everyone's list, but that consensus approach may just reflect similarity of training.

The second issue, assuming we could agree on the first one, would be to clarify if skills build onto each other, thus requiring some to be taught before others. There is no clear evidence for this issue either, and only some common sense or experiential evidence.

Finally, there is the issue of adequately balancing Intensity and Volume. How many skills should be taught in one phase?, For how long should they be practiced?, what is the difficulty level of the skills? All of these are variables without evidence based answers.

If we take a holistic approach to periodization, coordinating psychological skills training with training, recovery and nutrition the picture gets even more obscure.

Nevertheless, the fact that an issue is complicated or confusing is not reason enough to avoid it, on the contrary, we should start working on it and build on what has been learned. This presentation will summarize what we know about it and offer some suggestions for next steps.

# SYMPOSIA

## Tuesday July 11th

### Symposia Session 1. (10.30-12)

#### Enhancing adherence to physical activity through customized training to motivated leaders

**Chair: Carme Viladrich (Universitat Autònoma de Barcelona)**

There is a profusion of intervention programs aimed at helping physical education teachers and physical activity trainers to arrange motivational climates appropriate for participants' satisfaction, motivation, well-being and adherence. The aim of this symposium is to show the benefits of customizing such programs taking into account the expectations, experience, motivation and needs of both leaders and participants in physical education and leisure physical activities. This aim is accomplished sharing a case of design of an intervention customized to attend three groups at health risk in Spain (adolescents, elderly and sedentary former elite athletes). Firstly, we present the literature review; secondly, the adaptation of main tools to measure work motivation of physical education teachers and the teachers' interpersonal style perceived by their pupils; thirdly, the results of the focus groups on motivation, necessary conditions, expectations and objectives of each subpopulation; and lastly, the customization of an intervention to help physical education teachers, physical activity trainers and former elite athletes in their effort to gain adherence to physical activity as a component of a healthy life style. One of the goals of this symposium is dissemination of the research funded from the Spanish Ministerio de Economía y Competitividad [grant identifier: DEP2014-52481-C3-1R]

*Keywords: physical activity, motivation, psychological intervention, qualitative methods, psychometric methods*

#### Lessons from cutting-edge Self-determination interventions to promote physical activity: A review (2011-2016)

**Saül Alcaraz, Juan Pons, Jaume Cruz (Universitat Autònoma de Barcelona)**

The purpose of the present study is to review recent interventions aimed at promoting physical activity using a self-determination theory (SDT) framework. We present ideas that researchers could find useful to develop their programs. Our review considers the journal articles published between 2011 and 2016. According to the inclusion criteria, the studies were limited to those: (a) using SDT as reference framework; (b) conducted with healthy participants with age  $\geq 12$  years old; and (c) with a main goal of promoting physical activity or related variables. Results are presented in three categories: (a) approach and general aspects of the intervention, (b) assessment of the intervention, and (c) development of the intervention. Regarding the approach, two types of interventions emerged from our data: those conducted within an existing setting, where professionals in charge receive particular training that is expected to indirectly influence their students/patients; and interventions developed from zero, where participants receive training or information directly (e.g., using an app). Results showed that the most common approach to develop interventions is autonomy support and autonomy satisfaction. Concerning the assessment of the intervention, researchers could consider (a) using mixed-methods approach, (b) evaluating objective and self-reported measures and (c) measuring participants' satisfaction with the intervention. Regarding the development of the intervention, it appears crucial to understand the needs of the target population (e.g., focus groups) and to develop skill-based tailored interventions that include SDT not only as concepts to teach but also as a way of thinking that guides

the development of the intervention. As a conclusion, we present how results could be translated into the development of future intervention programs. Funding for this communication was provided by grant EP2014-52481-C3-1R (I+D+I Project, Ministry of Economy and Competitiveness).

*Keywords: physical activity, autonomy support, psychological basic needs, motivation, exercise, intervention program*

### How Coaches' Interpersonal Style Questionnaire (CIS-Q) became Physical Education Teachers' Interpersonal Style Questionnaire (PETIS-Q)

**Ariadna Angulo-Brunet, Carme Viladrich (Universitat Autònoma de Barcelona), David Sánchez-Oliva (University of Extremadura)**

Physical education teachers' interpersonal style has been widely studied regarding Basic Psychological Needs support (i.e., autonomy, competence and relatedness support). A supportive interpersonal style contributes to enhance motivation and engagement towards physical education class. Contrarily, the contribution of controlling interpersonal style to thwart these basic psychological needs has been less studied. The CIS-Q incorporates three factors intended to measure thwarting of basic psychological needs (i.e., autonomy, competence and relatedness thwarting). The aim of this study is to adapt into Catalan and Spanish languages and gather validity evidence related to CIS-Q for high school students towards their physical education teachers. Participants were 595 students from 32 different classes. There were 283 girls and 312 boys between 11 and 18 years old. 375 students answered the questionnaire in Catalan and 219 in Spanish. Confirmatory factor analysis with six factors showed acceptable fit to the data in Catalan ( $\chi^2 = 350.33$ ,  $df = 237$ ,  $p < .001$ , CFI = .93, TLI = .92, RMSEA = .04) and all factors exhibited acceptable discriminant validity (maximum correlation of 0.82). Instead, in Spanish, despite the good fit to the data ( $\chi^2 = 273.97$ ,  $df = 237$ ,  $p = 0.05$ , CFI = .97, TLI = .97, RMSEA = .03) the six factors model was unacceptable due to the lack of discriminant validity between support factors (values from 0.83 to 0.96). Simplified models obtained collapsing support items into a single factor showed good fit to the data in Spanish and unacceptable fit in Catalan providing additional support to the main conclusion. This study contributes to gather validity evidence for CIS-Q as an appropriate questionnaire to examine physical education teachers' interpersonal style. Although supportive and controlling behaviors can be studied in both languages there is lack of evidence for comparability among both factor structures.

*Keywords: physical education, motivation, adolescents, confirmatory factor analysis, factor invariance*

### Initial validation of the Spanish version of the Work Motivation Inventory

**David Sánchez-Oliva (University of Extremadura), Ricardo Cuevas (University of Castilla - La Mancha), Francisco M. Leo, Tomás García-Calvo (University of Extremadura)**

Several studies have demonstrated the importance of the motivation at work to explain and predict performance outcomes (Baard, Deci, & Ryan 2004; Ellemers, de Gilder, & Haslam, 2004; Gagné & Deci, 2005; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). Based on this premise, the aim of the current study was to adapt and validate the Spanish version of a questionnaire to assess motivation at work. 357 Physical Education teachers (231 males) aged between 25 and 61 years old ( $M = 41.29$ ) completed an adapted version of the English version (Tremblay, Blanchard, Taylor, Pelletier, & Villeneuve, 2009) of the Work Motivation Inventory (WMI; Blais, Lachance, Vallerand, Briere, & Riddle, 1993). From the original version, we added an items per factor in order to test the factorial validity of a structure composed by 24 items and the 6 types of regulations described by Self-Determination Theory. A set of measurement models using both Confirmatory Factor Analysis (CFA) and Exploratory Structural Equation Modelling (ESEM) were evaluated. The results showed that the ESEM models displayed better fit than CFA, as well as better discriminant validity in

terms of lower factor correlations. In this particular sample, identified regulation was not well captured (i.e., low main-loadings and high cross-loadings), particularly in the first-order solution. The B-ESEM solution displayed promising findings to analyze the motivation at the work context, although future studies should focus on the psychometric properties of the identified regulation.

*Keywords: work motivation, teaching, validation, ESEM*

### Focus groups results: a previous step to design motivational physical activity programs

**Salvador Miró, Andrea Perez-Rivases, Susana Pallarès, Miquel Torregrossa (Universitat Autònoma de Barcelona)**

Framed in the project "Health promotion and adherence to physical activity (PA) through the Self Determination Theory," the objective of this work is to present the previous evaluation made from focus groups (FG) of each group studied (i.e., adolescents, elderly people and former elite athletes) to design adapted intervention programs. Six FGs were conducted to collect data: three FGs with adolescents, two FGs with elderly people and one FG with former elite athletes. The guideline of the FG contemplated four themes in relation to PA: (a) motivation; (b) necessary conditions; (c) expectations and objectives; and (d) technologies. Once the thematic content analysis was made, the results focus on the differences and similarities between the different groups studied. In the adolescents group, motivation is given by the fun, effort, improvement and socialization. The amotivation towards the practice of PA is due to the small variety of activities. The elderly people comments that motivation arises from feeling active, trying new things and health. This group points to boredom and imposition as the main factors of amotivation towards the practice of PA. In the case of former elite athletes, the motivation towards the practice of PA is given by fun and health, while the amotivational factors are produced by the lack of recognition and the post career injuries. All the results are serving as a guide to design and develop programs for the promotion of regular practice of PA, adapted to the diversity of target population studied. For the adolescents group, the program will be implemented through PA teachers in two sessions. Sessions aimed at elderly people will be led by specialized monitors in this area during two sessions. In the case of former elite athletes, the program will be guided by former athletes, being monitored for 12 months.

*Keywords: health, adherence physical activity, adolescents, elderly people, former athletes, qualitative study*

### Improving physical activity levels in specific populations: The ACTIVATICS intervention program

**Juan Pons, Javier Ciruela, Anna Jordana, Yago Ramis (Universitat Autònoma de Barcelona)**

The ACTIVATICS project is aimed at improving PA levels in three vulnerable populations: adolescents, elderly and sedentary former elite athletes. Based theoretically on self-determination theory (SDT; Ryan & Deci, 2000) and on previous literature of SDT-based programs to enhance autonomy support and intrinsic motivation in PA and in PE classes (e.g., Su & Reeve, 2011) a tailored intervention program was designed for each target population. To complement the theoretical knowledge which provided information about the contents to be included in the program (i.e., providing meaningful rationales, acknowledge negative feelings, use of non-controlling language, offer choices and nurture inner motivational resources), focus groups were carried both with target populations and experts on PA promotion which oriented the best way to approach the intervention with the trainees (i.e., PE teachers, PA monitors and sedentary former elite athletes). This technique gave insight on the perceived motives, barriers and facilitators for the implementation of autonomy-supportive styles of the PE teachers and monitors, as well as perceived motives, barriers and facilitators to become physically active of the final users (i.e., adolescents, elderly and sedentary former elite athletes). For PE teachers and PA monitors, the ACTIVATICS intervention program, consisted on 3hr personalized and

interactive workshops where theoretical SDT-principles were explained, but mainly oriented on providing recommendations to fulfil autonomy-supportive styles. Virtual and face-to-face follow-up activities were programmed to assess the feasibility of the program implementation. In the case of former elite athletes, an individualized mentoring program based on Rational Emotive Behavioral Therapy adapted to sport (Turner, 2016) was carried out. This responds to experts' perceptions that, for a former athlete, it is challenging to reframe their relationship with PA once they finish their athletic career.

*Keywords: improving physical activity levels in specific populations: The ACTIVATICS intervention program*

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## **Gold in education and elite sport (GEES): 1. The competences of elite pupil- and student-athletes**

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**Chair: Paul Wylleman (Vrije Universiteit Brussel)**

One of the main challenges talented and elite athletes face is combining education and high-level sport. In order to assist 15-to-25-year-old athletes preparing for a successful dual career (DC) and to assist DC support providers to optimize the quality of their support, the 'Gold in Education and Elite Sport' (GEES) project was initiated in 2015 with the support of the Erasmus+ Sport programme. This 2-year project brought together 40 internationally renowned dual career researchers and expert practitioners from 17 research and elite sport institutions (e.g. universities, NOCs, sport governing bodies, high performance centres) from 9 EU Member States (Belgium, France, Italy, the Netherlands, Poland, Slovenia, Spain, Sweden, the UK). This symposium will disseminate the research results of the GEES project, focusing in this first part on the competences of 4196 elite pupil- and student-athletes perceived to require in order to successfully manage their DC. The first presentation will provide a general outline of the GEES project. A second presentation will focus on athletes' perceived importance and possession of different DC competences. In a third and fourth presentation, gender differences and similarities in DC competences in Slovenian and Polish athletes will be discussed. A fifth presentation will cover an Italian perspective on DC competences. The second symposium will present the competences that dual career support providers require in order to optimize their DC support to athletes.

*Keywords: GEES, Erasmus+ Sport, dual career, elite level sport, academic career*

## **Gold in Education and Elite Sport (GEES): A European perspective on the dual career of talented and elite athletes**

**Paul Wylleman, Koen De Brandt, Simon Defruyt (Vrije Universiteit Brussel), Audrey Pérusin, Véronique Leseur, Nadine Debois (Institut National du Sport, de l'Expertise et de la Performance)**

The aim of the presentation is to provide a general outline of the GEES project, focusing on its overall aims, methodologies and key figures. In order to meet the final aim of GEES to assist 15-to-25-year-old athletes preparing for achieving a successful dual career 'education and elite sport' pathway, and to assist dual career support providers (DCSPs) with a view in optimizing the quality of their support and initiating new sustainable services, four studies were conducted. In studies 1 and 2, an online self-assessment tool was developed to identify the competences required by pupil- and student-athletes as well as by DCSPs in order to optimize the dual career 'education and sport' pathway. 3247 elite pupil- and student-athletes and 336 DCSPs from 9 EU Member States completed the GEES survey on the perceived importance and possession of their competences, enabling the development of generic, specific (e.g. gender, sport specific), developmental (e.g. athletic/educational stage of development), and scenario-specific competence profiles (e.g. competences required when an exam coincides with a crucial competitive phase). In study 3 and 4, 42 DCSPs were surveyed via focus groups and face-to-face interviews in order to identify, optimize, develop and evaluate the methods and instruments (e.g. competence profiles) used by DCSPs to maximize their own competences and daily



practice with student-athletes. Bringing together the findings of the four studies, a manual for DCSPs was developed with competence profiles, methods and tools that are likely to contribute to DCSPs' daily practice with student-athletes in the field of data collection, intervention and evaluation. The results of the GEES project suggest clear contributions to elite pupil- and student-athletes' successful dual career and provide new prospects for improved dual career support providers' educational pathways.

*Keywords: GEES, Erasmus+ Sport, dual career, competences, elite athletes, dual career support provider*

### **Gold in Education and Elite Sport: Which competences do athletes require for a successful dual career?**

**Koen De Brandt, Paul Wylleman (Vrije Universiteit Brussel), Miquel Torregrossa (Universitat Autònoma de Barcelona), Simon Defruyt (Vrije Universiteit Brussel)**

The aim of this study was to explore student-athletes' perceptions of the importance, possession and need to develop different dual career (DC) competences. 3247 15-to-25-year-old student-athletes completed the GEES survey (mean age  $18.6 \pm 2.5$  yrs; 46% female; 76% pupils and 24% students) using a 5-point scale with a predefined list of 38 DC competences categorised in 4 DC competence factors: 1) DC management competences (DCM; e.g. efficient use of time), 2) Self-regulation and Resilience competences (SRR; e.g. using setbacks as a positive stimulus), 3) Social competences (SOC; e.g. asking advice to the right people), and 4) Career Planning competences (CPL; e.g. exploring career plans outside of elite sport) (De Brandt et al., 2016). Athletes perceived all competence factors as important for a successful DC (range: 4.15-4.39). However, CPL competences were perceived less important than DCM, SRR and SOC ( $p < .001$ ; Cohen  $d$  range: .40-.50). Perceived importance scores ( $4.34 \pm .42$ ) were higher than perceived possession ( $3.71 \pm .49$ ) for all competence factors ( $p < .001$ ;  $d$  range: .68-.79), with the largest difference found for SRR ( $d = .79$ ). This study revealed that elite athletes require a combination of different competences in order to have a successful DC. Student-athletes perceived the highest need to develop their SRR competences. In order to guarantee a holistic, developmental and situational perspective, future research should identify DC competences in different groups (e.g. gender, type of sport), stages of development (e.g. secondary and higher education), and specific DC scenarios (e.g. an international competition coinciding with an exam period).

*Keywords: GEES, Erasmus+ Sport, dual career, factor analysis, academic career*

### **Equilibrium between elite sport and education: Are male and female student-athletes equally competent for dual career?**

**Saša Cecic Erpic (Univerza v Ljubljani), Janja Tekavc (Vrije Universiteit Brussel)**

The study's purpose was to explore the importance and possession the athletes perceive in different dual career competences, and to investigate for possible gender differences in this area. A questionnaire Gold in Elite Sport and Education (GEES) presenting a list of 38 dual career competences (attitudes, knowledge, and skills) was administered to 198 Slovenian student athletes (97 males and 101 female) aged between 15 and 25 ( $M = 18.92$  yrs;  $SD = 3.7$  yrs). The athletes indicated the importance and possession of each competence. Gender differences occurred for the perceived importance and possession of dual competences, with female athletes showing a higher possession of dedication to succeed in both sport and study, time management, and a belief that both careers can positively complement each other. Male athletes perceived a higher possession of assertiveness, self-belief, emotional control, stress management, and ability to negotiate and stand up for one self. Future dual career support programs should promote a development of a wide range of competences among student athletes in order to foster athletes' success in both sport and school/studies. In developing these programs, gender specifics of male and female athletes should be considered.



*Keywords: GEES, Erasmus+ Sport, dual career, competences, gender differences, university students*

## **The importance of gender and life experience in the type of dual career in elite sports based on the analysis of the European project GEES on the example of Polish**

**Marek Graczyk, Anna Nawrocka, Pawel Atroszko, Waldemar Moska, Tomasz Tomiak, Hubert Krysztofiak (Gdansk University of Physical Education and Sport)**

The objective of this study is to check whether the gender is important for the development of the dual career in professional sport. This study was used a Chi-square test of independence measurement model and student's T test also applied method of analysis 7 scenarios (not experienced and experienced) presented in the audited. An extensive literature review and feedback from athletes sports science provided feedback on the scenarios, providing evidence of content validity. A final survey-list, consisting of the 38 items of competences (possession and importance) and completed by two hundred forty three young people took part in this study: 105 women (43.2%) and 138 men (56.8%) athletes. Their mean age was  $M = 18.77$  years ( $SD = 2.74$ ). Four people did not report their age. The youngest person was 15-years old and the oldest person was 25-years old. There are statistically significant differences between men and women in terms of competences and possession competences important. There were statistically significant difference between females and males in experienced scenario 3, 5 and 6 (e.g. 3,5 scenarios for the attempt to reconcile the demands of education and sports at the same time and the scenario 6: for the lack of support from the coach.). Where not statistically significant difference between female's and male's life experiences. Results in the two stages of the study confirmed the partially raised three hypotheses. It turned out that the gender can affect the course of the dual career in professional athletes. The results obtained have confirmed the research hypothesis founded.

*Keywords: GEES, Erasmus+ Sport, dual career, gender, Poland*

## **A reflection on the scenarios concerning combination of study and sport and financial matters**

**Donatella Minelli (CONI School of Sport), Flavia Guidotti (University of Foro Italico), Angelo Altieri (CONI School of Sport)**

This study aims to explore Italian student-athletes' competences and investigate the perception of sport as a factor for success in education, an entertainment or future job. Elite sport and education calls for increasing individual commitment to achieve goals of excellence. In fact, in sports for elite performance, athletes are committed to at least ten years and a total of  $\geq 10.000$  hours in sports (Ericsson, 2006), spending about 20-30 hours per week in training and competition, with considerable differences in relation to the type of sport (Williams and Hodges, 2005). These conditions determine the population of the atypical nature of the "student-athletes", making their needs unique in relation to the reconciliation of their sport with education. 140 15-to-26-year-old student-athletes completed the GEES survey in Italy. The subjects showed a significant perception of minor possession compared to importance ( $p < .001$ ) for all 38 competences. The "willingness to make sacrifices and choices to succeed in sport and study" has the highest importance ( $4.34 \pm .42$ ) and possession ( $3.9 \pm 1.0$ ). The "vision of where you want to go in life after your dual career" has a low importance ( $4.1 \pm 0.9$ ); the "ability to critically evaluate and modify your goals when needed" has a low possession. The ability to negotiate (in order to stand up for your own interests) has the lowest importance ( $3.7 \pm 1.2$ ) and possession ( $3.3 \pm 1.0$ ). Concerning the six scenarios, respondents showed significant differences ( $p < .05$ ) in relation to their experience. Their management of the scenarios has been generally positive ( $4.07 \pm 1.27$  to  $3.48 \pm .89$ ), but pupils seem to have no experience in scenario 4 and the "ability to spend and manage your own money" has low frequency. The dual career offers no negative impact on study, but does not seem to offer experiences useful to plan life after education pathway.

*Keywords: GEES, Erasmus+ Sport, dual career, Italy, competences*

## Asian sport psychology secrets of the Rio Olympics

**Chair: Liwei Zhang (Beijing Sport University)**

Asian countries showed their strong ability to win gold medals in Rio Olympic Games. Sport psychology performs an important role in helping Asian athletes' preparation for touch competitions in OG. Four papers in this symposium disclosed the unique way Asian sport psychologists did mental training for athletes in Rio OG. The paper by Liwei Zhang et al. reported a windsurfing athlete' one-year mental training program and discussed the way to combine skill training (from the western idea of mental training) and spirit nurture (from Chinese culture) in mental training that indicated the feature of Chinese athletes' mental training. Yongchul Chung et al. debriefed their 6-month psychological skills training with 2016 Rio Paralympic wheelchair archery team. In addition to common mental training practice such as goal setting, motivation, relaxation, concentration, and performance routine they also used some newly added devices (e.g., interactive metronome and rescalm) in their program. Georgia Ridle et al. chronicled the sport psychology support provided to Swimming Australia during the 2013-2016 period including onsite support at the Rio Olympics. They introduced a program of culture change based on Lencioni's (2002) model to overcome absence of trust, fear of conflict, lack of commitment, avoidance of accountability, and inattention to results. They also addressed the way they helped athletes to cope with unexpected difficulties in Rio OC. Finally, Emily Ortega shared the psychological impact of Joseph Schooling winning the first Olympic gold medal at Rio 2016 in the small country of Singapore and how it has resulted in not just a change in the sport eco-system in Singapore, but also resulted in many significant breakthroughs in psychological barriers for athletes in Singapore.

*Keywords: mental training, pressure coping, self-control, team culture, Olympics*

## You don't know when and how mental training will make a difference: A surprise from a windsurfing athlete in Rio OG

**Liwei Zhang, Meiling Li (Beijing Sport University)**

This paper is a case report on one-year mental training of a windsurfing athlete (QO) for Rio Olympic Games. Based on Zhang & Zhang's (2011) psychological construction system we made a triple goal for QO's mental training program: controlling anxiety before competition, keeping positive and stable emotion during long time competition of 12 days and cultivating positive habits in thinking and behavior for long term self-development. Nine forms of intervention were adopted in this program including detailed coping plan, psychological lectures, museum visit, analysis of competition experiences, calligraphy practice, preparation meeting and summary meeting before and during Rio OG, daily self monitoring and monthly mental tests. The effect of this mental training program were evaluated by athletes' self-evaluation, coach comment and institution assessment. Some of those evaluations were in accordance of our prediction while others were totally beyond our expectation. In the last part of this paper it was pointed out that the way to combine skill training and spirit nurture in mental training is the feature of Chinese athletes' mental training.

*Keywords: mental training, self-control, calligraphy practice, pressure coping, Olympic Games*

## Lessons learned from 2016 Rio Paralympic Games with National Wheelchair Archery Team

**Yongchul Chung (Sogang University), Seong Taek Hong (Jeonjoo University), Seo Ryung Park (Seoul National University), Kyungju Kim (International Performance Excellence Center), Homook Kim (Korea Paralympic Committee)**

The purpose of this presentation is to debrief our 6-month psychological skills training with 2016 Rio Paralympic wheelchair archery team. A total of four mental coaches (2 male and 2 female) has involved with the intervention. Historically, Korean archery team dominated the Olympic stage ever since 1984 Los Angeles Olympic Games. During 2016 Rio Olympic Games, the Korean national archery team collected all 4 gold medals. The national team implemented unique psychological skills training combining cognitive and somatic aspects since 2004 Athens Olympic Games. However, for wheelchair national archery team, this was the first time that mental team was hired exclusively. Additionally, the second author was the one who worked with the national archery team at the Athens Olympic Games. Seven athletes (4 male and 3 female) participated and the intervention lasted for 6 months prior up to the beginning of Paralympic Games. Specific interventions included goal setting, motivation, relaxation, concentration, and performance routine. Moreover, a couple of newly added devices (e.g., interactive metronome and rescalm) were supplemented. Furthermore, few unique contexts different from previous Olympic teams were identified and contrasted. This presentation concluded with the Olympic results among the wheelchair archery team and evaluations on the effectiveness of those psychological trainings.

*Keywords: Paralympic Games, archery, psychological intervention*

### **Making a splash in Rio: Psychological support for the Australian Olympic swimming team**

**Georgia Ridler (SportPsychQLD, Australia), Peter Terry (University of Southern Queensland, Australia)**

The Australian swimming team won 10 medals (3 gold, 4 silver, 3 bronze) at Rio 2016, finishing second in the medal table behind the USA. Outstanding performances by gold medallists Kyle Chalmers in the 100m freestyle, Mack Horton in the 400m freestyle, and the women's 4 x 100m freestyle relay squad, were balanced against unexpected performances by pre-race favourites who failed to make the podium. This presentation chronicles the sport psychology support provided to Swimming Australia during the 2013-2016 period including onsite support at the Rio Olympics. Following the challenges faced by the Australian swimming team, both in and out of the pool, at the London 2012 Olympics, where only one gold medal was won, an independent review recommended that Swimming Australia invest in building a culture of pride, respect and success, to replace the "toxic" culture evident in 2012, which was characterised by incidents of bullying and breaching team rules relating to alcohol, prescription drugs and curfews. A program of culture change based on Lencioni's (2002) model was implemented throughout the 2013-2016 Olympic cycle to overcome absence of trust, fear of conflict, lack of commitment, avoidance of accountability, and inattention to results (the so-called five dysfunctions of a team). A range of specific initiatives were directed towards coaches, athletes and support staff aimed at enhancing performance, culture and wellbeing, and underpinned by the principles of consultation, connection and communication. The presentation also addresses the specific challenges of life in the Olympic Village and how careful preparation, based on a mantra of "anything can happen at an Olympics," can ameliorate the impact of infrastructure limitations, such as poor sanitation, non-availability of power, water and food, non-functioning elevators, and inadequate transport and wifi arrangements.

### **Psychological impact of singapore's first Olympic gold medal**

**Emily Ortega (SIM University)**

Sporting history was created when Singapore won its very first Olympic gold medal at the Rio 2016 Olympic Games. Joseph Schooling created a huge upset in the men's 100m butterfly event, and he did so in style, setting a new world record in the process. His feat has smashed the glass ceiling of not just sporting aspirations, but also the entire sports eco-system in the tiny island nation of Singapore. The repercussions of his historical feat in swimming continue to ripple on till today, and this presentation will focus on the psychological impact of this historical win. Specifically, this feat resulted in many significant breakthroughs in



terms of psychological barriers for athletes in Singapore, a nation that once had little belief in elite sports. With some headway made in changing mindsets, this presentation discusses if Singapore can maintain its momentum and continue to achieve sporting excellence at the Tokyo 2020 Olympics.

Keywords: Olympics, first gold medal, swimming

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## The paradox of the coach-athlete relationship: The cure and the cause of interpersonal issues in sport

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**Chair: Louise Davis (Umea University)**

"I am exhausted; I just can't wait to see my coach." The first words from Ellie Simmonds after winning Paralympic gold in the 400m freestyle provide anecdotal evidence that aligns with a decade of research studying the coach-athlete relationship. Many athletes' are quick to acknowledge the supportive role of their coach in their development and accomplishments; however, poor quality relationships can also be detrimental to the developmental trajectory, and wellbeing of athletes. Building upon previous research, the aim of this symposium is to exhibit a series of studies that highlight interpersonal factors and outcomes associated with healthy and harmful relationships. The first presentation takes a person-oriented approach to examine the association between the coach-athlete relationship and burnout in competitive junior athletes. The second presentation uses a quasi-experimental design with a sample of competitive team sport athletes to investigate performance outcomes and psychosocial associations between the quality of the coach-athlete relationship and athletes' psychophysiological exhaustion. Utilising a cross-sectional research design, the third presentation offers insight into consequences of interpersonal conflict and aims to explore the links between coaches' and athletes' conflict responses, performance satisfaction, and efficacy beliefs. The next presentations shift focus from the negative consequences of the coach-athlete relationship by exploring the "fuel" of good quality relationships. Employing a cross-sectional method the fourth presentation examines communication strategies as potential mediators between relationship quality and athlete satisfaction. The final presentation discusses an intervention aiming to increase young coaches' effectiveness; specifically, aiming to increase athletes' performance and satisfaction through the development of both their interpersonal (transformational-relational) and intrapersonal (self-reflection) knowledge.

Keywords: coach-athlete relationship, burnout, communication, conflict, leadership

## Coach-athlete relationships and burnout: A person-oriented approach

**Henrik Gustafsson (Karlstad University, Sweden), Louise Davis, Andreas Stenling, Paul Davis (Umea University, Sweden), Sophia Jowett (Loughborough University, UK)**

The coach-athlete relationship is a central relationship in high performance sport. The quality of this relationship plays an influential role in determining athletes' wellbeing. Recent research indicates that poor quality relationships can be associated with increased risk of athlete burnout (Isoard-Gautheur et al, 2016). To gain greater understanding of the links between the component parts underlying the coach-athlete relationships and burnout a person-centered approach may offer new insight. The person-oriented inquiry examines the individual as the unit of analysis and his/her personal characteristics are considered simultaneously in a systemic manner. It is useful when investigating multidimensional constructs such as the coach-athlete relationship and to find profiles or groups with similar attributes. The purpose of this study was to investigate the coach-athlete relationship in highly competitive junior athletes and the association with burnout using a person-centered approach. In total 352 athletes, (227 males and 124 females) ranging from 15 to 20 years ( $M = 16.1$ ) completed the exhaustion subscale of Athlete Burnout Questionnaire (ABQ; Raedek &

Smith, 2001) and the coach-athlete relationship quality (CART-Q; Jowett, & Ntoumanis, 2004). Latent profile analysis (LPA) was used to find homogenous subgroups of athletes with similar coach-athlete relationship profiles but statistically different from other groups (e.g., Marsh, et al, 2009). In the LPA three different profiles were captured, called low coach-athlete relationship quality, medium-high and high quality coach-athlete relationship quality. Overall we found the low quality group score significantly higher ( $M = 2.41$ ,  $SE = 0.15$ ) than the high quality ( $M = 1.94$ ,  $SE = 0.06$ ) and the medium-high quality ( $M = 2.12$ ,  $SE = 0.06$ ) groups. The findings suggest that athletes that have poor relationship with their coach also display higher levels of burnout symptoms than peers that report good quality relationships.

*Keywords: exhaustion, relationships, person centered*

## Transformational-relational developmental programme for coaches: Quasi-experimental study

**Ola Krukowska, Sophia Jowett (Loughborough University, UK)**

Coaches can constitute a source of inspiration and motivation for athletes in the pursuit of their sporting dreams. The transformational leadership (TL) framework has gained interest in the sport psychology field due to its beneficial effect on athletes' psychological outcomes and performance (e.g. Stenling & Tafvelin, 2013, Bormann & Rowold, 2016). Also the coach-athlete relationship (CAR) has been shown to contribute to performance enhancement and success (e.g. Jowett & Shanmugam, 2016). Research encompassing both concepts has shown that when TL and CAR are considered together, they better predict the level of athletes' outcomes (e.g. Vella, Oades, & Crowe, 2013b). The present study aimed to increase young coaches' effectiveness, defined as an increase in athletes' levels of performance and satisfaction, through the development of their interpersonal (transformational-relational) and intrapersonal knowledge. Four young coaches took part in four workshop sessions developing their knowledge and skills on: coaching philosophy, transformational leadership, coach-athlete relationship, and basic needs satisfaction. Thirty-four athletes in the experimental group and 26 athletes in the control group evaluated their coaches prior to and after psychological workshops. The results of the 2 x 2 fully randomized MANOVA demonstrated that in the post-intervention condition, athletes of the experimental group perceived an increase in the levels of transformational leadership and satisfaction with training, whereas there was no change in the levels of coach-athlete relationship and performance. The findings underline that when applying the TL framework, the transformational leadership dimensions should be differentiated, and when planning intervention programmes aiming to increase CAR quality, the participation of both coaches and athletes should be considered in order to make a significant change.

*Keywords: transformational leadership, coach-athlete relationship, coaching effectiveness*

## Efficacy beliefs as mediator in the conflict-performance satisfaction relationship.

**Svenja Wachsmuth, Sophia Jowett, Chris Harwood (Loughborough University, UK)**

Previous research suggests that low tripartite efficacy beliefs within coach-athlete dyads may determine sport performance and relationship quality (Jackson et al., 2008). Coaches and athletes may experience higher levels of conflict when they perceive to lack confidence in their own or their respective partner's competence and skills. However, research outside sports indicates that efficacy beliefs not only predict interpersonal conflict, but also mediate its effect on conflict outcomes (O'Connor & Arnold, 2001). Therefore, this study aimed at investigating links between coaches' and athletes' conflict responses, performance satisfaction and efficacy beliefs. Variables were assessed utilizing the Interpersonal Conflict in Sports Questionnaire, the Individual Performance subscale of the Athlete Satisfaction Questionnaire, and a modified version of the self-/other efficacy scale by Jackson et al. (2011). It was hypothesized and found that performance satisfaction

decreased following uncertain ( $R^2=.18$ ;  $\beta = -.43$ ;  $p < .001$ ) and escalating ( $R^2=.17$ ;  $\beta = -.41$ ;  $p < .001$ ) conflict responses, whereas problem-oriented conflict responses promoted performance satisfaction ( $R^2=.20$ ;  $\beta = .45$ ;  $p < .001$ ). Further, preliminary results show that self- and other-efficacy beliefs fully mediated the relationship between conflict and performance satisfaction (e.g., coaches/self-efficacy:  $R^2=.41$ ;  $\beta_{\text{uncertain}} = -.01$ ,  $p > .05$ ;  $\beta_{\text{self-efficacy}} = .64$ ,  $p < .001$ ; coaches/other-efficacy:  $R^2=.21$ ;  $\beta_{\text{uncertain}} = -.20$ ,  $p > .05$ ;  $\beta_{\text{other-efficacy}} = .34$ ,  $p < .01$ ). From these findings it can be concluded that coaches and athletes who are confident in their skills may respond to conflict in a more constructive manner, thus, increasing the likelihood for positive performance outcomes. Moreover, it can be suggested that not only beliefs regarding one's own competence but also expectations regarding the competence of the other influence conflict responses and outcomes.

*Keywords: efficacy beliefs, conflict, relationships*

### The “fuel” of good quality coach-athlete relationships

**Louise Davis (Umea University, Sweden), Sophia Jowett (Loughborough University, UK), Susanne Tafvelin (Umea University, Sweden)**

Many world class athletes attribute their success and development to high quality relationships with their coach. Yet relationships can be difficult to manage and poor quality coach-athlete relationships contribute to unfavourable outcomes including dissatisfaction and interpersonal conflict. Jowett & Shanmugam, (2016) have suggested that one way to enhance the effectiveness and maintenance of the coach-athlete relationship is through the use of communication strategies. Therefore, based on the COMPASS model (Rhind & Jowett, 2011), the present study aimed to examine the role of communication strategies (specifically conflict management, motivation and support) as potential mediators between both direct and meta- perceptions of relationship quality (comprising closeness, commitment, and complementarity) and experiences of sport satisfaction (including satisfaction with training and instruction, individual performance, and personal treatment). Male and female athletes ( $N = 182$ ) representing individual and team sports completed a multisection questionnaire measuring the main variables under investigation. Structural equation modelling revealed positive relationships between perceived relationship quality and sport satisfaction. Analysis of indirect effects revealed that motivation and support communication strategies mediated the associations between direct and meta-relationship quality and satisfaction with individual performance. The use of support strategies was the only communication strategy to mediate the relationship between direct and meta-perceptions of relationship quality and satisfaction with personal treatment as well as training and instruction. Contrary to expected results, the analysis did not reveal any significant mediation for conflict management strategies. Overall, the findings provide preliminary evidence for the use of communication strategies as a tool and/or framework for supporting high quality coach-athlete relationships.

*Keywords: coach-athlete relationship, communication, sport satisfaction*

### The psychosocial impact of coach-athlete relationship quality on athletes' psychophysiological exhaustion: implications for physical and cognitive performance

**Ralph Appleby (Northumbria University, UK), Louise Davis, Paul Davis (Umea University, Sweden), Mark Wetherell (Northumbria University, UK), Henrik Gustafsson (Karlstad University, Sweden), Will Vickery (Northumbria University)**

The study aimed to examine performance outcomes and psychosocial associations between the quality psychophysiological exhaustion in team sports. In particular, the mediating role of perceptions of teammates' exhaustion between the quality of the coach-athlete relationship and athletes' psychophysiological exhaustion was investigated. of the coach-athlete relationship and athletes' Additionally, the relationship between the quality of the coach-athlete relationship and cognitive and physical aspects of sports performance was



examined. Adopting a quasi-experimental research design a sample of competitive male and female athletes (N= 88) representing seven teams across four different sports, participated in the study. Participants completed questionnaires measuring exhaustion, perceptions of teammates' exhaustion and coach-athlete relationship quality. Participants completed a 5-m multiple shuttle test and undertook a Stroop test (Bajaj et al., 2015) as measures of physical and cognitive performance; additionally, they provided saliva samples measuring cortisol (pre-performance testing, immediately following testing, and 20 minutes post-testing). Structural equation modelling revealed a positive relationship between the quality of coach-athlete relationship and Stroop performance; negative relationships between coach-athlete relationship quality and cortisol responses to high-intensity exercise, exhaustion, and perceptions of teammates' exhaustion emerged. Furthermore, the results suggest that perceived teammate exhaustion mediated the relationship between coach-athlete relationship quality and athlete exhaustion. The findings of the study lend support to previous research on socio-cognitive correlates of athlete exhaustion by highlighting associations with the quality of the coach-athlete relationship. Additionally, the study increases understanding of the mediating role of perceptions of teammate exhaustion and links with cognitive and physical performance.

*Keywords: coach-athlete relationship, performance, exhaustion*

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## Achievement motivation in sports context

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***Chair: Ihsan Sari (Sakarya University, Faculty of Sport Sciences, Sakarya, Turkey)***

Achievement motivation is an important area of motivational research to understand how the achievement related beliefs, values, and goals develop and differ (Wigfield et al., 2015). Studies have shown that achievement motivation is linked to many sport related factors such as intrinsic motivation, subjective vitality, performance and task engagement etc. (Adie & Jowett, 2010; Reinboth & Duda, 2016). There are many perspectives to examine achievement motivation however achievement goal and expectancy-value theories are both dominant in the relevant literature (Plante, O'Keefe & Theoret, 2013). Therefore, this symposium brings together four studies which employ these two perspectives. The first study investigates the relationship between perceived motivational climates and goal orientations in adolescent athletes and concludes that parents', coaches' and peers' group behaviours and messages influence athletes' goal orientations. The second study investigates the correlates of athletes' moral disengagement and highlights the role of perceived motivational climate and athletes' valued goals for moral disengagement. The third research is based on Eccles' Expectancy-Value Model within a gender stereotypes perspective and examines women soccer players' experiences with a qualitative method. This research reveals that structure of women soccer players' environment has some impossibilities, problems, difficulties and deprivations which have influence on women's expectancy of success, perceived competence, task values, and future plans. The last study investigates the role of physical self-perceptions and mental toughness to predict athletes' goal orientations and reveals that goal orientation is related to athletes' self-perceptions and mental toughness. Taken together, the four presentations will focus on the different aspects of achievement motivation and discuss the results in line with the relevant research.

*Keywords: achievement motivation, athletes, achievement goals, expectancy-value model*

## The role of perceived parent, coach and peer motivational climates in determining goal orientations in adolescent athletes

***Atahan Altintas (Baskent University, Sport Sciences Department, Ankara, Turkey), Yesim Karaç (General Directorate of Sports, Department of Sports Services, Ankara, Turkey)***

The aim of this study was to investigate goal orientation with regard to perceived parent, coach and peer created motivational climates in adolescent athletes. Sixty seven females ( $M_{age}=15.91\pm0.83$ ), 194 males ( $M_{age}=16.76\pm0.97$ ) totally 261 young athletes ( $M_{age}=16.54\pm1.01$ ) voluntarily participated in this study. Parents Initiated Motivational Climate Questionnaire, Peer Motivational Climate in Youth Sport Questionnaire, Perceived Motivational Climate in Sport Questionnaire and The Perception of Success (Child Version) were used to participants. Stepwise Multiple Regression Analysis was used to assess the relationship between perceived motivational climates and goal orientation in young athletes. Analysis results indicated that the Success without Effort and Learning and Enjoyment Climate were significant predictors of the task orientation on perceived mother climates ( $R=0.34$ ,  $R^2=0.11$ ;  $R=0.38$ ,  $R^2=0.15$ ). Mastery climate was significant predictor of both task ( $R=0.29$ ,  $R^2=0.08$ ) and ego orientation ( $R=0.17$ ,  $R^2=0.03$ ) on perceived coach climate. Intra-team competition/ability and Intra-team conflict were significant predictors of the task orientation ( $R=0.34$ ,  $R^2=0.12$ ) on perceived peer climates. On the other hand, Learning and Enjoyment Climate was significant predictor of the ego orientation for father ( $R=0.17$ ,  $R^2=0.03$ ). Finally, Intra-team competition/ability, Intra-team conflict and effort were significant predictors of the ego orientation ( $R=0.34$ ,  $R^2=0.12$ ) on perceived peer climates. In conclusion, parent's, coaches and peer group behaviors and messages influence goal orientations of young athletes.

*Keywords: Parent, Coach, Peer, Motivational Climate, Goal Orientation*

### **The relationship of athletes' moral disengagement to perceived motivational climate and valued goals**

***Ihsan Sari (Sakarya University, Faculty of Sport Sciences, Sakarya, Turkey), Gamze Deryahanoglu (Hitit University, School of Physical Education and Sport, Çorum, Turkey)***

Recent studies have investigated moral disengagement of athletes with regard to many variables (e.g. Jones et al., 2016; Hodge & Gucciardi, 2015; Tractlet et al., 2014). It is also suggested that more research is needed in this topic in different cultures to comprehensively understand the processes of moral disengagement in different environments (Gürpınar, 2015). Therefore, the first aim of this research was to investigate the relationship between athletes' moral disengagement and their perception of motivational climate. The second aim was to reveal whether athletes' moral disengagement differ according to their most valued goals in sport (winning, personal development and having fun). For this purpose three hundred and thirty-five athletes voluntarily completed Perceived Motivational Climate in Sport Questionnaire and Moral Disengagement in Sport Scale (Short). The data was analysed by SPSS version 17 using descriptive statistics, Pearson's correlation analysis, multiple regression analysis with enter method and one-way ANOVA. Correlation analysis showed that moral disengagement was significantly correlated with athletes' perception of mastery ( $r=-.11$ ) and performance climates ( $r=.37$ ). Multiple regression analysis revealed that performance climate ( $\beta=.223$ ,  $p<.001$ ) was a significant predictor of moral disengagement,  $R^2=.06$ ,  $F(2,332)=10.875$ ,  $p<.001$ . Lastly, it was found that there was a significant difference in moral disengagement of athletes with regard to their valued goals,  $F(2,332)=7.200$ ,  $p<.001$ . Athletes who indicated winning as their most valued goal had significantly higher moral disengagement scores compared to the athletes whose most valued goals were personal development and having fun. To summarize, while ego and mastery climates significantly correlated with moral disengagement, only performance climate contributed to it. Also, it was found that athletes' moral disengagement significantly differed according to their valued goals.

*Keywords: moral disengagement, mastery, performance, goal*





## A qualitative view on women's soccer experiences within the frame of Eccles' Expectancy-Value Model

**Safer Elmas, F. Hülya Asçi (Marmara University, Faculty of Sport Sciences, Istanbul, Turkey)**

The aim of this study was to investigate the women soccer players' experiences in soccer which has been accepted as male-dominated sport in society. For that purpose, our study was theoretically based on Eccles' Expectancy-Value Model within a gender stereotypes perspective. The study was carried out in Turkish Women's Football League in different league levels and women's soccer experiences were analyzed in accordance with distinctive structure of soccer. The research group of this study consisted of 6 women who have been playing soccer in three different league level (the three of them in Women's 1. League; the two of them in Women's 2. League; the one of them Women's 3. League) in Istanbul in Turkey. Data were collected by qualitative research method of in-depth interviews. The content analysis revealed four themes which are: (1) stereotype barriers to expectancy of success: difficulties of structure of soccer based on gender (2) subjective task values: positive attainment and intrinsic feelings (3) instrumental value of soccer: long-term future plans (4) loss of education, time and effort/labor. Based on these findings, structure of women soccer players' environment has some impossibilities, problems, difficulties, and deprivations which have influence on women's expectancy of success, perceived competence, task values, and future plans.

*Keywords: expectancy-value model, women, stereotype, soccer, gender*

## The role of physical self-perceptions and mental toughness in determining goal orientation of volleyball players

**Gözde Ersöz, Ilker Özmutlu, Basak Eroglu, Kaan Eroglu (Namik Kemal University, School of Physical Education and Sport, Tekirdag, Turkey)**

The purpose of the present study was to examine the role of physical self-perceptions and mental toughness in the prediction of goal orientations of volleyball players. 211 athletes (n<sub>male</sub>=134; Mage=20.88±2.46 and n<sub>female</sub>=79; Mage = 20.03±1.81) participated in this study. Physical Self-Description Questionnaire (PSDQ), Task and Ego Orientation in Sport (TEOS) and Sport Mental Toughness Questionnaire (SMTQ) were used as the measure of physical self-perceptions, goal orientation levels and mental toughness, respectively. Independent samples t tests was conducted to test differences in goal orientations, physical self-perceptions and mental toughness with regard to gender. Stepwise Multiple Regression analysis procedure was used to determine whether physical self-perceptions and mental toughness might predict goal orientation of participants. Gender differences were observed in task orientation, commitment subscale of mental toughness and self-esteem subscale of physical self-perception of participants. Results of Stepwise Regression Analyses indicated that control subscale of mental toughness ( $\beta = .16, p < 0.01$ ) and global physical self-concept ( $\beta = .10, p < 0.01$ ) were significant predictor of task orientation in volleyball players. In addition, scores on control subscale of mental toughness ( $\beta = .23, p < 0.01$ ), global physical self-concept ( $\beta = .18, p < 0.05$ ) and sport competence ( $\beta = .25, p < 0.01$ ) were positive associated with ego orientations. In the light of these findings, it is concluded that volleyball players who could control themselves under pressure and satisfied with their physical appearance in a both task and ego oriented; moreover athletes who consider themselves successful in their profession do sports in an ego oriented way.

*Keywords: task and ego orientation, mental toughness, physical self-perception*

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## The 'Clean Sport Alliance': Shaping anti-doping policy and practice through performance-enhancement conceptualization, value-system management, legitimacy perception and self-regulation

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**Chair: Andrea Petróczi (Kingston University London)**

The symposium showcases doping research by the founding members of the Clean Sport Alliance, which is built on the cumulated strength and complementary portfolios of doping researchers in the UK. The goal of this initiative is to bring contemporary thinkers together to foster high quality doping research and evidence-informed doping prevention. The Clean Sport Alliance recognises and works with the complexity of the doping problem and prioritises collaboration and co-ordination in moving anti-doping policy and practice forward. Collectively, the work presented in this symposium investigates doping and anti-doping from multiple angles. Using mixed methodology, Backhouse et al. explore the broad range of enhancement strategies used by schoolboy rugby players. The survey study by Lazuras et al. highlights the importance of reasons in understanding doping behaviour. Using survey methodology, Boardley et al. examine the explanatory pathways through which moral disengagement in doping use might operate in four different physical-activity contexts (team and individual sport athletes, exercisers and 'hard-core' gym users). The emerging themes in the qualitative investigation of anti-doping legitimacy by Petroczi et al. show signs of the classic ingroup/outgroup biases; and that the overwhelming sense of responsibility at the individual level is coupled with a uniform agreement of leaving the fight for clean sport to the authorities, despite the considerable distrust in top level anti-doping organisations. The case study by Brueckner et al. opens new avenues for doping prevention by juxtaposing the thoughts of elite and adolescent athletes, exercisers and a circus artist about performance-enhancement. The practical significance and impact of the work presented in this symposium are evidenced by the support from major stakeholders such as the World Anti-Doping Agency, the International Olympic Committee, Rugby Football Union and the European Union ERASMUS+ Programme.

*Keywords: anti-doping, legitimacy, performance mindset, moral disengagement, self-regulation, behavioural reasoning theory*

## Adolescent athletes nutritional supplement use behaviours and doping vulnerability

**Susan H. Backhouse (Leeds Beckett University)**

The essence of sport encourages athletes at all levels to optimise their performance through science, medicine and technology. Presently, little is known about the enhancement strategies used by adolescents. This research sought to examine the knowledge, beliefs and behaviours of adolescent males in relation to nutritional supplements and banned substances. A two-phased multi-methods study design was employed to secure an understanding of the individual, situational and environmental factors that might combine to influence enhancement practices within our sample. In Phase 1, semi-structured interviews were conducted with 25 adolescent males and five teachers from four English schools. Phase 2, involved an online survey ( $n = 771$  adolescent males, 16-18 years;  $n = 135$  teachers) comprising nine sections, covering nutritional supplement and banned substance use through to physical appearance, doping willingness and social norms. Non-parametric tests were used (Mann Whitney U, Kruskal-Wallis 2) to examine the data and odds ratios computed to analyse supplement use across groups. The multi-method approach highlighted that supplement use was commonplace, largely accepted, and "normative". Schoolboy rugby union appears to be a fertile ground where young players can easily progress from habitual use of legitimate approaches into prohibited substance use. The perception – and reinforcement - that size matters is central here. Nutritional supplement use goes hand-in-glove with regular gym attendance. Interviews identified 'the gym' as a doping risk environment where substance use is embedded within that social and cultural system. Based on our behavioural analysis, education, environmental restructuring and skill-based training intervention functions are needed in the school

setting. In this context, the focus should be on creating a learning culture, rather than a compliance culture driven by legalistic or procedural processes.

*Keywords: doping, enhancement, vulnerability, adolescence, supplements, behaviour change*

### **Empathic and self-regulatory processes governing doping behavior: Testing a hypothetical process model across four key physical-activity contexts**

**Ian Boardley (University of Birmingham), Alan Smith (Michigan State University), John Mills (University of Chichester), Jonathan Grix, Ceri Wynne (University of Birmingham), Luke Wilkins (Newcastle University)**

Evidence associating doping with Moral Disengagement (MD) has recently accumulated. However, research examining such links has either been qualitative, conducted with convenience samples or has not considered key theoretically-grounded influences and outcomes of MD. Thus, there is a need for research in relevant populations that purposefully examines the explanatory pathways through which MD is thought to operate. To achieve this, the current study examined a model of doping behavior incorporating empathy, doping Self-Regulatory Efficacy (SRE), doping MD, anticipated guilt and doping (self-reported/susceptibility). Participants were specifically recruited to represent four physical-activity contexts and consisted of team- ( $n = 195$ ) and individual- ( $n = 169$ ) sport and hardcore- ( $n = 125$ ) and corporate- ( $n = 121$ ) gym athletes representing both genders ( $nm = 371$ ;  $nf = 239$ ); Mean age was 26.3 years ( $SD = 10.8$ ) and self-reported lifetime prevalence of doping was 13.6%. Each participant completed questionnaires assessing the aforementioned variables. Structural equation modelling indicated strong support for the hypothesized model ( $\chi^2(244) = 407.35$ ,  $p < .05$ ;  $CFI = .970$ ;  $RMSEA = .033$ ;  $SRMR = .044$ ), and established: (a) empathy ( $\beta_{total} = -.13$ ) and doping SRE ( $\beta_{total} = -.16$ ) negatively predicted reported doping; (b) the predictive effects of empathy and doping SRE on reported doping were fully mediated by doping MD and anticipated guilt; (c) doping MD positively predicted reported doping ( $\beta_{total} = .36$ ); (d) the predictive effects of doping MD on reported doping were partially mediated by anticipated guilt ( $\beta_{indirect} = .16$ ). Substituting reported doping for doping susceptibility, multisample analyses then demonstrated these predictive effects were largely invariant between males and females and across the four physical-activity contexts. These findings aid our understanding of psychosocial processes that may govern doping behavior across key physical-activity contexts.

*Keywords: moral disengagement, performance enhancing drugs, self-regulatory efficacy, anticipated guilt, empathy*

### **Conceptualising the essential ingredients of anti-doping legitimacy perceptions through elite athletes' views in the UK**

**Andrea Petróczi (Kingston University London), Sebastian Brueckner (Kingston University London / Olympic Training Centre Rheinland-Pfalz/Saarland), Lambros Lazuras (Sheffield Hallam University)**

In recent years, the legitimacy of anti-doping has received increased attention (e.g., Efverström et al, 2016; Overbye, 2016). Anti-doping legitimacy is based on the desire to preserve the integrity and spirit of sport to which doping is seen as being fundamentally contrary. Challenges to legitimacy research and applications to anti-doping revolve around conceptualising (and ultimately quantifying) anti-doping legitimacy perceptions. The present study is part of the LEGIT project which features athletes in co-researcher roles and aims to explore how clean athletes support anti-doping. The UK study involved focus-group interviews with active ( $n=14$ ) or retired ( $n=4$ ) national/international level athletes (12 female; age range = 20 – 41 years; median = 23) representing athletics, canoeing, ice hockey, rowing, swimming volleyball and weightlifting. All athletes are/were part of the National Registered Testing Pool and have been tested at least once. Anti-doping legitimacy perceptions confirmed to Tyler's (2006) conceptualisation of legitimacy, and separated along the lines of whether anti-doping policies are doing what is right (proper) and whether they are doing it in a right

way (just and effective). Additional facets emerged as trust and trustworthiness of the organisations that are responsible for keeping the sport clean. Yet, the overwhelming sense of responsibility at the individual level was coupled with a uniform agreement of leaving the fight for clean sport to the authorities for a myriad of reasons. These included the sense of being 'outside the athlete's duty', lack of proper knowledge and deliberate self-protective distancing from the doping question in order to preserve focus and motivation for training - the latter deepened by the recent system-wide doping scandals. The results from this study feed into the development of a bespoke multi-construct anti-doping legitimacy inventory to assist targeted research and the evaluation of anti-doping campaigns.

*Keywords: anti-doping legitimacy, trust, trustworthiness, coping strategy, responsibility*

### **"I don't train to win!" – A case study of a circus performer's identity and mindset**

**Sebastian Brueckner (Kingston University London, Saarbruecken Olympic Training Center), Andrea Petróczi (Kingston University London)**

Circus performance, like performance in domains such as dance, music or the military, is being discussed as a novel area of application in sport psychology literature (Donohue et al., 2016; Galante, 2016). A common factor that competitive athletes and circus performers share is the highly specialized and intense training. Also, overcoming fatigue, getting rest and recovery (from injuries) are shared challenges. In competitive sports, the aforementioned scenarios combined with the pressure to win, improve performance, deliver results, make it to the big meets, not lose a spot on the team etc. can push athletes to start using legal or illegal performance-enhancing drugs (Woolf & Mazanov, 2017; Pappa & Kennedy, 2012). Based on these findings, the term performance-enhancement mindset (Petróczi et al., 2017) has been coined in relation to athletes' conceptualization of performance-enhancing drug use. While the training load and associated physical demands for circus performers are similar to that of competitive athletes, the psychological processes appear to be different. Circus performers do not seem to construct a performance-enhancement mindset like athletes do. The case study from the Safe You project ([www.safeyou.eu](http://www.safeyou.eu)) highlights the major differences in how a circus performer conceptualizes her training and demands of performing, compared to elite athletes. As the participant elaborated, circus is competitive in terms of jobs and contracts. However, "you don't have to be the best of best... it's whatever you can do, how you can do it, who do you work with" and "being the best you can be" including being good at various circus disciplines rather than specializing on one. Contrary to competitive sport, "performance drugs are not really common, or even talked about within circus". This striking difference in performance-enhancing practices could result from differing 'performance mindsets' and identities, which subsequently has implications for anti-doping.

*Keywords: circus, anti-doping, mindset, performance-enhancement, doping*

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## **Lessons learnt as practitioners in sport and exercise psychology: A case study approach**

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**Chair: Stewart Cotterill (University of Winchester)**

While there has been a significant expansion of continued professional development opportunities in recent years, there has often historically been a reluctance for sport and exercise psychologists to both share, and receive feedback on their professional practice (Cotterill, Weston, & Breslin, 2016). The new Case Studies in Sport and Exercise Psychology journal (CSSEP), a flagship journal of the Association for Applied Sport Psychology, supports an increasing appetite for this type of dissemination and learning. Building upon these recent developments, this symposium will explore four specific case studies, providing a structured approach to the contextualisation, evaluation, reflection, and discussion of key themes emerging from contemporary



applied practice. While there are differing views regarding the specific nature of the case study approach in the social sciences literature, there are specific points that appear to be consistent: (a) the case study comprises a 'case' that is the object of study or evaluation; (b) the case is a complex functioning unit; (c) investigation of the case takes place in the case's natural environment; and (d) the themes emerging from the case are contemporary (Cotterill et al., 2016). The meta-cognitive approach used in this symposium to communicate the case studies is designed to demonstrate an ability to critically reflect on one's professional practice and stimulate on-going learning and development while working as a practitioner in the field. The 4 presentations in the symposium will delve into the experiences and reflections of an international team of practitioners, showcasing diverse case studies addressing contemporary themes such as involuntary career transitions in ballet; sexism, racism and work-life balance in soccer; and anxiety fear, and withdrawal in elite gymnasts. The final session will consider how to conceptualise case studies and writing for publication in CSSEP.

*Keywords: applied practice, reflection, professional development, case study*

### **From bouquets to resumes: A Boston ballet dancer's retirement**

**Sharon Chirban (Harvard Medical School/Boston Children's Hospital; Amplifying Performance Consulting, USA.)**

This case documents the beginning of a Boston Ballet Company dancer's transition after dancing with the corps (the group of dancers who are not soloists) for ten years through her complete termination. Her transition began post Achilles tendon surgery, due to a Haglund's deformity. She danced through her rehabilitation of her ankle for two years post-surgery, modifying role selection, intensity of her seasons and number of performances to manage the chronic pain that ensued post-surgery. Her transition is considered somewhat involuntary as it was initiated by external factors (chronic pain due to pre- and post surgery of foot) and eventually led to voluntary retirement. Middleton (2016) explores the career transition process of performing artists and has identified three types of transition: transitioning from training to professional work; transitioning due to voluntary or involuntary factors and transitioning due to retirement. This case will be discussed within the context of the existing literature. Stambulova (2010) has identified a counselling framework for helping athletes with their career transition. Her framework includes mapping out the dancer's past experiences and integrating it with the present and perceived future. This case will demonstrate some of the stages identified by Stambulova and also how this dancer uniquely staged her own transition to a new vocation. A fully integrated self, marked by a fully transitioned identity is a bit of a moving target. This case will also be discussed within the context of self-integration from a psychodynamic standpoint. In order to fully integrate the post-dance transition, the dancer is required to make meaning of both autonomous and relational aspects of her self that can be facilitate in the context of a consulting relationship sensitive to those aspects of self-evolution.

### **On the edge of chaos: Breakups, sexism, performance and the person**

**Richard Keegan (University of Canberra, Australia.)**

This case story tells the story of one year of work with a female rugby official, as she attempted to enter the elite ranks of officiating men's international rugby. During our time together, the client experienced many challenges, including the breakup of a long-term relationship, institutional sexism (working in a "men's game"), episodes of racism, and significant challenges to work-life balance. This series of events rendered much of the initial intake and needs analysis redundant, although important trust had been accrued by generating early impacts on performance. Based on the philosophical assumptions of client-led practice and fallibilism (cf. Keegan, 2016), we agreed to adopt an approach informed by schema therapy, self-knowledge and mindfulness. Over time, the client identified: (a) her own core values, and her own definition of flourishing; as well as (b) the

unquestioned habits, beliefs and assumptions that may be preventing her from realising the experiences and achievements she sought. By the end of the year, the client was in a new relationship, was still under enormous work pressure, was performing well on the field and had passed all the relevant tests to be selected for elite officiating duties. By introducing 'intentionality' to the client's thinking and life, we created the condition for optimism, and moved from experiences of failure and victimisation towards resilience and empowerment. Reflections focus on the importance of sharing key decisions, managing transference and counter-transference, and the issues raised when working on the 'edge of chaos' in a complex world.

### **Prioritising mental health over performance: An elite gymnast's 6-month journey with a mental performance consultant to maintain her participation in sport**

***Natalie Durand-Bush, Sofia Baggio (University of Ottawa, Canada.)***

While psychological skills training to improve performance remains a large component of our work as mental performance consultants (MPC), there is an increasing need to counsel athletes to prioritise their well-being over athletic performance in certain situations to maintain their mental health and sport participation. Using Keyes' (2002) mental health and Zimmerman's (2000) self-regulation frameworks, this case study illustrates my work as a MPC with a gymnast, Sofia, to address her distress resulting from her dissatisfaction with her new training centre and relationship with her coach. Sofia initially discussed her anxiety, lack of enjoyment and motivation to train, fear to compete, and her thoughts of quitting gymnastics. In consultation with myself and her parents, Sofia chose to prioritise her deteriorating mental health and took a break from training to focus on self-care and reflect on the benefits and drawbacks of continuing to work with her coach at her current centre. After this period, she decided to gradually get back to training and competing with a renewed sense of self. She transferred back to her previous training centre to work with her preferred coach who understood her well and adapted his coaching to meet her needs. She progressively re-integrated training sessions into her schedule and opted to compete at national events after having initially planned to not compete at all during the season. During this 6-month journey, Sofia and I explored her evolving needs, beliefs, and motives to pursue gymnastics. We also strengthened her self-regulation skills (Zimmerman, 2000), emphasising effective planning and self-efficacy. This case study showcases how an autonomy-supportive climate and a strong relationship between Sofia, myself, her parents, and her preferred coach increased her well-being (Keyes, 2002). This, in turn, prevented her from abandoning the sport she loves and enabled her to immerse herself in a competitive environment she once feared.

### **Writing case studies for publication and professional development**

***Stewart Cotterill (University of Winchester / Think Performance, UK.)***

The development of effective communities of practice has been highlighted to be an important aspect of continued professional development across a broad range of professions. One way in which these communities can engage in the sharing of experience and discourse about approaches and outcomes is through the development of applied practice case studies (Cotterill, Schinke, & Thelwell, 2016). While there are differing views regarding the specific nature of the case study approach in the social science literature there are a number of specific points that appear to be consistent. Specifically, that the case study should have a 'case' that is the object of study or evaluation; that the case is a complex functioning unit; investigation of the case should take place in the case's natural environment; and should be contemporary (Yin, 2003; Stake, 1998; Miles & Huberman, 1994). While this is true there has been limited consideration within the sport and exercise psychology literature about what constitutes an appropriate case study. Indeed, from a research perspective there are many examples of the case study approach being applied, but from an applied practice perspective this is far more limited. This session will explore the nature of applied practice case studies in the sport and



exercise psychology domain. Specifically exploring the types of case studies that can be produced and the different avenues for the dissemination of this information.

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## **The premises, evidence, and application of the Trans-Contextual Model in multiple physical activity and health contexts**

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***Chair: Derwin King Chung Chan (University of Hong Kong)***

Education plays an essential role on individuals' health behaviours, including physical activity. It is therefore important that students not only perform physical activity during physical education (PE) lessons, but they also apply what they learn in-school and undertake leisure-time physical activity in out-of-school contexts. Researchers and educators seek to understand how PE teachers may promote students' development of adaptive motivation of PE in-school and facilitate the transfer into motivation of leisure-time physical activity in out-of-school context. In response to this line of inquiries, the trans-contextual model integrates concepts from the self-determination theory, theory of planned behaviour, and the hierarchical model of motivation, and provides a comprehensive framework to explain the process by which PE teachers' autonomy support affects students' autonomous motivation of PE in-school, as well as autonomous motivation, intention, and behavioural adherence to undertake leisure-time physical activity in out-of-school context. Now it has been over a decade of research since its initial test, the trans-contextual model has receiving increasing amount of support and attention from multiple countries and health contexts. This symposium will present the tenets and premises of the model, together with the cutting edge research that applies that model into physical activity promotion and other health behaviours (e.g., sport injury prevention, healthy diet). A systematic review and meta-analysis will conclude the overall effect, limitations, and future directions of the trans-contextual model.

*Keywords: self-determination theory, theory of planned behaviour, health education, exercise psychology*

### **The trans-contextual model**

***Martin S. Hagger, Nikos Chatzisarantis (Curtin University)***

The trans-contextual model is a multi-theory motivational framework that outlines the processes by which perceived autonomy support and autonomous motivation toward activities in a physical education context predict autonomous motivation toward physical activity outside of school, and social cognitive beliefs about, intentions toward, and actual engagement in, out-of-school physical activity. The theory integrates hypotheses from self-determination theory, the reasoned action framework, and the hierarchical model of intrinsic and extrinsic motivation. In this contribution, I will outline the fundamental propositions of the model and their theoretical bases. I will also identify some the outstanding conceptual issues and provide suggestions on how they have been addressed including the generalizability of the model across multiple educational and behavioural domains, criteria for its rejection or failed replication, the role of belief-based antecedents of intentions, and the causal ordering of its constructs. I will outline the current evidence supporting the model and extend this in a meta-analytic synthesis and accompanying path analysis of previous tests of the model. The path analytic meta-analysis supports model hypotheses but also identified substantial heterogeneity in the hypothesized relationships across studies unattributed to sampling and measurement error. Based on current theory and findings from our meta-analysis, I will outline priorities for future research adopting the model. In particular, I will outline the need for further replications of the model in physical education and settings and tests of the model hypotheses using intervention and experimental methods. I also outline the role of the theory in informing interventions to promote leisure-time physical activity outside of school.

*Keywords: motivational transfer, self-determination theory, theoretical integration, autonomous motivation, theory of planned behavior, meta-analysis*

## Application of the trans-contextual model in fruit intake of Chinese college students

**Chunqing Zhang (Hong Kong Baptist University)**

The integrated Trans-Contextual Model (TCM) is a social psychological framework that integrates the motivational variables from self-determination theory and social cognitive variables from the theory of planned behavior. The model has been applied to explain behaviors in physical education, physical activity, and many other health contexts. The current study preliminarily applied this model to explain fruit intake behaviors. In total, a sample of Chinese adolescent students (438 females, 212 males; Mage = 20.05, SD = 1.00) completed all three waves of tests. Participants were asked to complete measures of perceived autonomy support, self-determined motivation, theory of planned behavior variables, and fruit intake behaviors. Path analysis was conducted using Mplus 7 and it was found that college students' fruit intake at Time 3 was only predicted by their fruit intake behaviors at Time 2. And, their fruit intake behaviors at Time 2 was predicted by perceived behavioral control but not intention and other socio-social behaviors. Intention was predicted by perceived behavioral control, attitude, and subjective norms, which were predicted by autonomous motivation. Moreover, autonomous motivation was only predicted by perceived parental support and teacher support rather than perceived peers support. Intention-behavior gap was confirmed and further studies are needed. In conclusion, the TCM might be a useful framework to explain the motivational mechanism underlying how students develop motivation, beliefs, and intention of having healthy diet.

*Keywords: motivational transfer, self-determination theory, theoretical integration, autonomous motivation, theory of planned behavior, fruit intake*

## The role of school physical education in promoting healthy behaviors outside schools

**Vassilis Barkoukis, Xristodoulos Maltezos (Aristotle University of Thessaloniki)**

The purpose of the present study was to investigate the effect of perceptions of teacher-initiated autonomy supportive climate in school physical education on intentions towards adopting of healthy eating habits in adolescent students, and the mediating role of motivational regulations. The sample of the study consisted of 301 high school students attending typical coeducational schools in Thessaloniki, Greece. Students completed a survey including measures of perceptions of autonomy supportive climate, physical education motivational regulations, intentions, attitudes, perceived behavioral control and subjective norm, as well as measures of intentions for leisure-time physical activity, motivational regulations and intentions towards adopting healthy eating habits. The results of the regression analyses revealed a significant effect of autonomy supportive climate on intentions towards adopting healthy eating habits in one and five years. In addition, physical education intrinsic motivation significantly predicted intentions towards adopting healthy eating in one but not in five years. Furthermore, autonomous motivation towards adopting healthy eating significantly contributed to the prediction of intentions towards adopting healthy eating in one and five years, whereas the effect of intentions towards leisure-time physical activity was not significant. Finally, motivational regulations in physical education and towards adopting healthy eating habits mediated the effect of autonomy supportive climate on intentions towards adopting healthy eating in one and five years. These findings support the basic tenets of the Trans-Contextual Model of Motivation and provide valuable information about the role of physical education lesson on the development of beliefs towards healthy behaviors.

*Keywords: motivational transfer, self-determination theory, theoretical integration, autonomous motivation, theory of planned behavior, health behavior*

## The trans-contextual model and learning safety in sport

**Derwin King Chung Chan (University of Hong Kong), Martyn Standage (University of Bath), Chris Lonsdale (Australian Catholic University), Martin S. Hagger (Curtin University)**



Safety in sport is regarded as a critical public health concern in many countries due to the prevalence of sport injury and its related economy and public health costs. It is important that students learn about safety in sport, and be aware of the importance of preventing sport injury throughout their life. The trans-contextual model has primarily been applied to explain students' motivation in physical education (PE) and leisure-time physical activity, however, it is postulated that the model has the potential to be applied in sport injury prevention. According to the trans-contextual model, it is expected that when significant others (e.g., PE teachers) provide support (i.e., autonomy support) for students' autonomous motivation in sport injury prevention in PE lesson, students are more likely to develop autonomous motivation, positive beliefs, and intention to prevent sport injury in out-of-school sport contexts. In this presentation, a series of studies that examined various tenets of the trans-contextual model in sport injury prevention contexts will be presented. We will discuss the boundaries of existing evidence and present a coordinated program of studies that enhance the level of evidence and practicability of the trans-contextual model in promoting sport safety among students.

*Keywords: motivational transfer, self-determination theory, theoretical integration, autonomous motivation, theory of planned behavior, health education*

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## Physical activity and quality of life across cultures

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**Chair: Diane Gill (University of North Carolina at Greensboro)**

Enhanced Quality of life (QoL) is both a key outcome and motivator of physical activity (PA) for many participants. However, research and programs rarely consider the participants' perspective and cultural context. To better serve participants and potential participants, we must consider PA and QoL from the participants' perspective, and use that understanding in our programs. This symposium presents findings that extend a long-term project on physical activity and QoL across cultures. The earlier phases of the project focused on development and validation of a QoL measure designed for physical activity and health promotion, and participant views of physical activity and quality of life with university and community participants in the U.S. We have now extended that research across cultures. Specifically, we have developed a Korean measure and gathered participant views in South Korea. Most recently, we have focused on PA and QoL with Korean immigrants living in the U.S. The first presentation provides an overview of the long-term project and recent focus on participant views, and sets the framework for the remaining presentations. The next presentation summarizes participants' views of PA and QoL from open-ended survey responses and focus groups in the U.S. The third presentation moves across cultures to South Korea, with a summary of the Korean survey findings and emphasis on Korean participant views of PA and QoL. The fourth presentation presents the findings on the relationship between PA and QoL from the perspective of Korean immigrants living in the U.S. Finally, in a closing discussion, the symposium organizer will summarize the findings and discuss continuing efforts to incorporate participant perspectives in community-based physical activity and health promotion programs.

*Keywords: quality of life, physical activity, culture*

## Physical activity and quality of life across cultures: Introduction to the symposium

**Diane Gill (University of North Carolina at Greensboro)**

Physical activity professionals and participants alike recognize enhanced quality of life (QoL) as a benefit of and motivator for physical activity, but QoL measures are limited, and our research and programs rarely consider the participants' perspective or the cultural context. This symposium extends a long-term project that began with the development of a QoL measure designed to be relevant to participants and potential participants in physical activity and health promotion programs. The initial 5-year project developed a

multidimensional QoL measure with QoL sub-domains (physical, social, emotional, cognitive, spiritual) and overall integrative QoL. Initial and subsequent follow-up analyses provided good psychometric evidence for the structure, reliability and validity. Still, that survey measure was derived from existing models and measures rather than from participants. We then focused on relevance, and participants' views of PA and QoL. We asked open-ended survey questions in the U.S. with a large sample of university students and community participants, and with focus groups of community participants. All that early work was conducted in the U.S. Subsequently Korean colleagues developed a Korean survey, and also obtained participant views of PA and QoL with Korean students and community participants. Most recently, we have explored the views of PA and QoL with Korean immigrants in the U.S., with both surveys and focus groups. The next three presentations provide the details and findings from each of those research projects.

*Keywords: quality of life, physical activity, culture*

### Physical activity and quality of life across cultures: Perspectives of U.S. participants

**Erin Reifsteck (University of North Carolina at Greensboro)**

In two previous projects, we focused on U.S. participants' views of PA and QoL. In both we asked "what is QoL" and "how does PA relate to QoL." First, university students ( $n = 142$ ) and community participants ( $n = 142$ ) completed the QoL Survey (Gill et al., 2011), PA measures, and open-ended items. Both groups were predominantly women (67%; 74%) and White (57%; 77%). All open-ended responses were listed, cross-checked, and grouped under larger themes by the research team. Participants were relatively active, and number of days of weekly PA participation ( $r = .427$ ) was moderately correlated with physical QoL, and significantly correlated at lower levels with emotional, cognitive and social QoL. Both groups reported PA contributions in all QoL domains, with most responses reflecting physical health and emotion/mood. The focus group project included six focus groups of 5-7 community participants, who were predominantly women from a church group, novice running group, clogging group, an activity program for individuals with fibromyalgia, and a senior fitness class. Sessions were audio-taped, transcribed, reviewed, and coded. All groups cited social and emotional benefits as well as physical, and often emphasized social or emotional benefits over physical. For example, although the runners were in a training program, few responses reflected physical condition; instead they cited confidence, energy, stress relief, time management and feeling better as key contributions. Many responses emphasized balance or integration of different aspects of QoL in relation to PA. The focus group findings suggest that PA contributes to multiple aspects of QoL, and social and emotional benefits may be primary motivators for community participants. These findings were consistent with results from a follow-up study in which structural modeling confirmed a multidimensional model with QoL subdomains contributing to integrated QoL.

*Keywords: quality of life, physical activity, culture*

### Physical activity and quality of life across cultures: Perspectives of South Korean participants

**SeYun Park (Chungnam National University)**

We explored the relationship of physical activity (PA) to QoL in South Korea. Community participants ( $n=281$ ) and university students ( $n=304$ ) completed measures of PA (International Physical Activity Questionnaire; IPAQ) and QoL and open-ended questions "what is QoL" and "how does PA relate to QoL" (male  $n=301$ , female  $n=284$ , age  $M=32.85$ ,  $SD=13.93$ ). Researchers cross-checked and categorized 848 responses for the meaning of QoL and 752 responses for PA-QoL relation. Participants responses for meaning of QoL for both community (C) and student (S) participants were mainly in emotional ( $C=42\%$ ,  $S=35\%$ ), physical ( $C=21\%$ ,  $S=27\%$ ) and environmental ( $C=13\%$ ,  $S=17\%$ ) domains. The environmental domain included economic status, leisure

time or activity, and rest. In response to the question about PA and QoL, community participants overwhelmingly answered that PA was positively related with QoL (70%), and responses reflected an integrative QoL rather than specific sub-domains. Other positive responses included feeling vigor (6%), and physical health (6%). The university students also answered with integrative positive responses (50%), as well as physical health (10%), stress relief (7%), and feeling vigor (7%). Based on IPAQ scores, participants were divided into PA levels (high, medium, low). In the responses to how PA related to QoL, the low PA level group gave fewer responses related to physical health (low=2%, high=11%, medium=7%) and stress relief (low=0%, high=6%, medium 5%) than high and medium PA level groups. However, the low PA group answered 'negative or no relation' (11%) more than the high (1%) and medium (4%) PA level groups.

*Keywords: quality of life, physical activity, culture*

## **Physical activity and quality of life across cultures: Perspectives of Korean immigrants in the U.S.**

**Eungwang Oh (University of North Carolina at Greensboro)**

A series of studies targeting Korean immigrants in the U.S extended the previous research to a different cultural context. Korean immigrants (n = 201; male = 86, female = 115; age 18-72, M = 42.2, SD = 14.66) completed the QoL Survey and the Godin PA measure. The findings revealed that PA was positively correlated with physical QoL ( $r = .30$ ) and functional/ADL ( $r = .18$ ). Open-ended responses revealed that most participants (35%) viewed PA as positive without citing specific benefits, with others reporting emotional (18%), physical (8%), and cognitive, social and spiritual QoL benefits (2-5%), and only 2% reporting negative effects. Korean immigrants cited emotional and general positive effects more often than physical benefits. Consistent with previous research, Korean immigrants clearly see PA as contributing to their overall quality of life. Moderated mediation analyses conducted on the QoL survey responses suggested that the relationship between PA and integrative QoL was mediated by physical QoL and functional/ADL, but age moderated the relationships. In continuing research, three focus groups each for young and older adults were conducted to compare patterns and trends. All responses were audio-recorded, transcribed, categorized into main themes, and cross-checked by three coders. All groups cited contributions of PA in various aspects of QoL. Specifically, participants viewed PA as increasing self-confidence, physical and mental health, and feeling refreshed. Groups mentioned that staying in the U.S provided more opportunity to be exposed to a variety of sports, whereas lack of social support and resources, and difficulty finding an exercise buddy in the U.S were perceived as barriers. Intergenerational and gender differences were apparent across groups. The findings pointed to the importance of cultural considerations in community PA programs to facilitate PA promotion among Korean immigrants.

*Keywords: quality of life, physical activity, culture*

## **Physical activity and quality of life across cultures: Conclusions and discussion**

**Diane Gill (University of North Carolina at Greensboro)**

All findings from all groups and across cultures clearly show that participants see physical activity as contributing to quality of life. Furthermore, with minor variations, all groups see physical activity as contributing to all domains of QoL, with emotional and social benefits sometimes outweighing physical benefits. These findings suggest that programs that target multiple dimensions of QoL may foster motivation and adherence, as well as health and well-being. Furthermore, the findings suggest that the relationship of PA with quality of life may vary across cultural contexts, as well as by age and gender. We invite the audience to join in discussion about the role of PA in QoL, and approaches that professionals might take to better address multiple aspects of QoL, while considering participants' cultural context.

*Keywords: quality of life, physical activity, culture*

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## Sports psychology in South America. Experiences in high performance

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**Chair: Jesús Chalela (Sociedad Uruguaya de Psicología Deporte)**

The present Symposium shows us different psychological interventions performed with Olympic athletes from Argentina, Brazil, Chile and Uruguay, for the Rio de Janeiro Olympic Games, Brazil 2016. From the psychological works of the Olympic Cycle process, the annual preparations, to specific clinical interventions, the different exhibitors show their contributions of the Psychological Preparation, tending to the improvement of the athletic performance, the health and the life quality of the athletes, so that they can achieve their best performance in accordance with the objectives outlined, carry out the programs developed and the planning devised among the different interdisciplinary teams. The athletes, from different specialties, the rugby referees and the swimmers nourished themselves from the contributions of Sports Psychology, from Biofeedback, from the cognitive techniques of Mental Training, from the breathing techniques, relaxation and visualization, from Psychodrama, to deal with frustrations management, concentration improvement, results acceptance, positive coping of sports variables, perseverance, motivation, anxiety and with the different emotions that can be presented throughout the preparation process, classification and competition of the Olympic Games. The Olympic athletes were able to verify that the psychological work carried out, helped them to carry out their objectives, to value the Psychological Preparation, to hierarchize the different instances of High Performance, to adequately manage their emotions, to take greater account of the Mental Training techniques and to consider the inclusion of the Sports Psychologist for future sports commitments and the contributions that he or her may provide.

*Keywords: sports psychology, psychological interventions, Olympic athletes*

### A clinical intervention with Olympic athletes

**Jesús Chalela (Sociedad Uruguaya de Psicología Deporte)**

During the last year prior to the Olympic Games, a clinical work was carried out with athletes; discipline Athletics, who presented anxiety disorder, with insomnia and difficulties of interpersonal relationship, producing manifestations of inability to face the problems. The origin of these disorders was directly related to personal issues, family health situations, overload of activities in academic studies, in the realization of the financial contributions of sponsors and social life. A psychotherapeutic intervention program was developed to help Olympic athletes solve emotional disturbances, with Individual Interviews, Psychological Support, provide them with psychological tools, create social strengthening strategies, teaching of breathing and relaxation techniques, in order to be able to perform all their sports and personal activities in a good quality of life and well-being. The psychotherapeutic space helped to overcome these difficulties, in an environment of health, trust between the athlete and the Clinical Psychologist, creating a link of special importance for personal strengthening. The identification and treatment of the clinical problems that can affect competition athletes constitutes a beneficial space for the mental and physical health of those involved.

*Keywords: clinical intervention, emotional disorders, Olympic athletes*

### Psychological preparation of international arbitrators in high sports performance

**Jesús Chalela, Laura Tallano (Sociedad Uruguaya de Psicología Deporte)**

Argentina Psychodeportological work is usually performed with the athlete, but in order for him to compete within sporting legality, an arbiter is necessary, who as an actor in the sports scene, is involved in

psychological issues similar to the athlete but with his specificity. Your task is to observe, perceive and evaluate at the same moment of action. In most cases they move to the pair of players, and reach similar heart rates. This intervenes at the time of making decisions, influencing the perception, the reading of the game and the analysis that almost simultaneously the play must do having to make a decision in seconds. Here the psychological variables play a fundamental role and the work of psychic elaboration and mental training, plus the strategic implementation of coping techniques will be those who collaborate with the performance of the referee. The program will be presented with international referees of high performance Rugby sports who were trained to participate in World championships and Olympic Games. The techniques of mental training that were used were peripheral vision exercises, exercises under pressure, stress inoculation, ocular motility, concentration, management and coping of anxiety. All of them implemented from a psychodeportological diagnosis of each referee and the permanent evaluation of the performances by means of videos and their correlation with variables of heart rate and race rhythm and the statistical analysis, using specific techniques pre and post match.

*Keywords: arbitration, psychology, training, psychic*

### **The psychodramatic method and the psychology of sport: psychological work aimed at participation and performance in the Rio 2016 Olympic Games**

**Jesús Chalela (Sociedad Uruguaya de Psicología Deporte), Marcio Geller (PUC/RS; FADERGS; SOGIPA; Porto Alegre, Brazil)**

Porto Alegre, Brazil High-performance athletes suffer from high demands on requirements in order to achieve their goals. In many cases there are excellent physical, technical and nutritional preparation, but even with this structure they do not manage to become good athletes. It is observed that the psychological aspect must be better worked in the sports environment. In this way, through the training of roles, the psychodramatic theory can help athletes to increase their confidence, helping their decision making and also stimulating the capacity of believing in their own potential. The psychodramatic method was able to contribute on the achievement of the Olympic position of an athlete and work for the best performance of another athlete of different sporting modality on the achievement of a Brazilian historical result in the Olympics. It seems that the psychodramatic method is an effective tool for the psychology of sport, as it develops a more self-efficacious posture in the athlete, making possible to achieve better performance in sports competitions.

*Keywords: psychodrama, Rio 2016 Olympic Games, athletes*

### **The psychological component as a differential variable of sports performance - Olympic Games, Rio de Janeiro 2016**

**Jorge Ferrari (Sociedad Uruguaya de Psicología Deporte)**

The purpose of this paper is to present the work done with a 23-year-old female swimmer, who carries multiple national records at the junior, juvenile and senior level. Jorge Ferrari. SUPDE Despite her continuous training for more than 3 and a half years in the United States, this swimmer has not been able to make significant progress or to improve her own or others records in Uruguay. Having completed her scholarship in the US, she returned to Uruguay in December 2015 and continued her training in our country to participate in the 2016 Olympic Games in Rio de Janeiro. In order to classify for the Olympic Games, she needed to achieve certain time records and therefore, she begins her training at Club Bigua. It was in this same club where she started her career, and this time she is offered an interdisciplinary team composed of a coach, a physical trainer, a nutritionist, a physiotherapist and a sports psychologist This swimmer had never worked with a sports psychologist before and already in our first interview symptoms of extreme anxiety could be seen, as well as a lack of awareness of how to handle it. Also, during her stay in Uruguay she had to deal with several

personal issues: pending subjects of her academic career, the bond with her boyfriend residing in the US and some family matters. The psychological work consisted of a Focal Support Therapy to strengthen her from an emotional point of view, and was mainly carried out with Cognitive Techniques and Biofeedback teams. Excellent results were obtained, and 45 days before the Olympic Games the swimmer was able to lower her own national record in 100 m free style twice. She achieved that once more while competing in the Olympic Games.

*Keywords: intervention, Olympic athletes, sports psychologist*

## Working stages with Olympic athletes

**Jesús Chalela (Sociedad Uruguaya de Psicología Deporte), Alexi Ponce (APCD – Chile, National Institute of Sports (Chile, IND), High Performance Center (CAR, Chile))**

The psychological preparation that will participate in the Olympics Games, has a very remote begin, considering the Games themselves. Alexi Ponce.CAR. Chile In the following scrips, it will be announced some of the identified stages, where there are prioritized some psychological interventions: 1) REMOTE STAGE: between 4 and 8 years before the possible participation of the athletes in the games. This stage is when the Athlete “dream” on the possibility to become an Olympic Athlete. It’s important to set some objectives and plan the work schedule, working with the self-expectations of self-efficacy and self-commitment. 2) COMPETITIVE PREPARATORY STAGE: between 2 and 4 years before the Games. Building the “Dream” come true. It’s the period where the athletes must get prepared for the competitions and where they can get their chance to qualified to the games. This is one of the harder periods of competitions, where the athletes are challenged at the highest level. In this period the motivation, perseverance, routine establishment, frustration tolerance are one of the main psychological areas to develop. 3) QUALIFYNG OR OLYMPIC QUALIFYING STAGE: a period of 2 years before the Games, where the athletes compete to get in the Olympics. Chasing the “dream”. The main aspects to work are anxiety, stress, relaxation techniques, concentration, decision making, tolerance to frustration and management of the emotions. 4) CLASSIFIED STAGE: period between 12 and 2 months before the Games. The Athlete it qualified to be in the Games. The “dreams” becomes real. The Athlete must prepared his/her participation and competition. Here it’s important to keep an eye on the “character” that’s been created by the press and the media, to control the pressure and maintain the correct expectations. 5) OLIMPYC STAGE: already in the Games. Facing the “Dream”. Here it’s worked emotion self-management, anxiety, concentration, and tolerate the results.

*Keywords: working stages, psychological preparation, Olympics Games*

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## Exam-based certification: What does it mean for the international sport psychology professional?

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**Chair: Jack Watson (West Virginia University - USA)**

The Association for Applied Sport Psychology (AASP) will be launching the first exam-based sport psychology credential in October 2017 – decisively moving away from the 25 year old portfolio review system that helped to shape training programs, but one that carried little weight with athletes, coaches, parents and sport administrators. The new certification will require applicants to complete several courses related to the practice of sport psychology, complete hours of mentored experiences working directly with athletes and performers, and then pass the newly created 100-item certification exam, which will be available in over 5,000 testing centers. This new exam was developed using the findings from a Job Task Analysis conducted with full-time practitioners in the field, and is intended to cover the knowledge and competencies necessary for sport psychology practitioners to know in order to practice effectively. This new certification program is being set up



with the goal of having it accredited by the National Commission for Certifying Agencies (NCCA). Having an accredited certification program will allow AASP to identify and promote competent practitioners, increase the importance of the certification to the public, and help to grow the number of qualified practitioners in the US and beyond. This session will cover how AASP approved the development of a new certification program, the struggles of transitioning from a portfolio based system to an exam based system, the development of a certification exam, the benefits of moving to a competency-based examination, exam delivery channels/accessibility to professionals, how an accredited certification moves the profession forward, impact on developing standards within graduate programs, and the possibilities for implementation of this program internationally.

*Keywords: certification*

### **AASP certification program – from inception to a commitment to update**

***Jack Watson (West Virginia University - USA)***

The Association for Applied Sport Psychology (AASP) was formed in 1986 to promote science and ethical practice in the field of sport and exercise psychology while providing an opportunity for individuals to share information related to theory development, research, and the provision of psychological services to consumers. The organization's certification program (Certified Consultant – Association for Applied Sport Psychology or CC-AASP) was initiated in 1992 as a means of identifying the perceived criteria for advanced practice in the field of applied sport psychology. The eligibility requirements for this certification included the completion of a graduate degree from a program closely related to sport psychology, the completion of 12 specified courses and 400 hours of mentored experiences working in an applied sport psychology area. From the program's inception until very recently, AASP certification had experienced few changes while the profession had evolved substantially. In 2011, then President Jack Lesyk created the Future of Certification Ad Hoc Committee (FCAHC) to review all aspects of certification with the goal of developing a plan to update the program. In 2014, the FCAHC made several recommendations for changes to substantially overhaul the certification program. This presentation will provide an overview of the processes used for the review of CC-AASP certification as well as the specified suggestions for change with the goal of modernizing the certification program.

### **AASP Certification Program – Impact on Jobs, Marketability & Graduate Training**

***Natalie Durand-Bush (University of Ottawa - Canada)***

Within its last two strategic plans, the Association for Applied Sport Psychology (AASP) has identified a strong need to improve upon its current certification program and bring this program in line with current national standards in the United States. This focus relates to a desire to make the AASP certification more valuable to professionals as well as to the athletes, coaches, parents and performers who seek their services. It will likely result in a large step towards enhancing the marketability of applied sport psychology professionals. In addition, a stronger certification should create more employment opportunities for professionals and the students looking to enter the field. A new certification program should lead to enhancement of sport psychology training programs. AASP's current strategic plan includes a goal of "creating a framework of competency-based standards for graduate training leading to AASP Certification and distribution to membership and graduate programs" and to "develop Graduate Program Recognition". These identified goals should be seen as initial steps towards the potential development of graduate program accreditation and the formalization of graduate programming in sport psychology. The purpose of this presentation will be to highlight the impact of the new certification program on employment opportunities for professionals, outline the development of standards to guide graduate program curricula (based on the Job



Task Analysis) and how these might be best implemented. This talk will be future oriented, as this process has not yet been undertaken.

### **AASP certification program – international initiatives**

#### ***Traci Statler (Cal State Fullerton - USA)***

The overhaul of AASP's Certified Consultant program is nearly complete as it is scheduled to be rolled out in October 2017. The credential is strongly tied to the job task analysis conducted in 2015 that used only North American-based sport psychology professionals. The decision to do so was based upon recommendations from the Future of Certification Ad Hoc Committee (FCAHC), as it was determined that a regionally focused certification that did not need to be as concerned about language and cultural specific issues would be the logical first step in the creation of a new certification program. It was, however, the recommendation of the FCAHC that future versions of the certification should consider international expansion. Therefore, the purpose of this presentation will be to identify and discuss the possibilities for implementation and access to CC-AASP certification by professionals all over the world. This presentation will provide an open discussion section designed to allow audience members to discuss the perceived benefits and challenges associated with such a plan.

### **AASP certification program –implementation logistics & challenges**

#### ***Angus Mugford (Toronto Blue Jays - Canada)***

One of the Association for Applied Sport Psychology's (AASP) Future of Certification Ad Hoc Committee's (FCAHC) most important suggestions was to align the CC-AASP certification with the National Commission for Certifying Agencies (NCCA) accreditation criteria. As a result, the creation of a certification exam became necessary. In 2015, AASP made the decision to move forward with the creation of an exam and conducted a job task analysis (JTA) to outline the knowledge, skills and abilities necessary to effectively work as an applied sport psychology professional. Upon completion of the JTA, a 4 step process was taken to construct the exam: 1) Item Writers wrote individual questions based upon the JTA content, 2) Item Reviewers reviewed, modified and approved questions, 3) Subject Matter Experts reviewed a draft exam, and 4) Subject Matter Experts determined a passing score criterion. At the 2016 AASP Conference, the membership voted overwhelmingly in favor of the creation of a Certification Council and empowering it to create the policies and procedures for the certification and exam development. Since this vote, an Interim Certification Council was established to work on the selection of the permanent Certification Council, the initial creation of a Council Governance Charter, Policies and Procedures document for the Certification Council, as well as the eligibility and recertification requirements for the new certification program. The purpose of this presentation will be to focus on the political and logistic issues related to the development of a new certification program, as well the perceived benefits of making such a move.

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### **The Andalusian Center of Sport Medicine: A multidisciplinary approach to support high performance athletes**

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#### ***Chair: Leocricia Jiménez López (Centro Andaluz de Medicina del Deporte CAMD, Sevilla)***

The aim of this Symposium is to make known and disseminate the multidisciplinary approach of the Andalusian Centre of Sports Medicine (Centro Andaluz de Medicina del Deporte, CAMD) as an entity attached to the Ministry of Tourism and Sport of the Andalusian Government, whose mission is to prevent and program everything concerning the sport health of the andalusian citizens, offering their services to both the high



performance and federated athletes of very different sports, as well as to promote organization of Scientific events, research, teaching, advice and training in the field of Sports Medicine. As part of their responsibilities, professionals who work in the institution provide medical examinations for the practice of competitive sport, develop programs to monitor and control the high competition athletes. Also, the institution carry out research programs in the field of sports medicine, in collaboration with public or private entities, organize different courses and educational programs for specialists in sports medicine and edit the Andalusian Journal of Sports Medicine (Revista Andaluza de Medicina del Deporte, RAMD) as an instrument for the dissemination of knowledge in the field of Medicine and Sports Sciences. CAMD, also establish strategies to prevent and control the use of prohibited substances or methods that artificially enhances the physical or mental capacity of athletes and offers medical care in its different Units: Locomotor system, Biomechanics, Physiology, Internal Medicine and Cardiology, Cineanthropometry, Nutrition and Biochemistry, Sports Psychology and Functional Recovery.

*Keywords: medicine, sport, high-performance, multidisciplinary approach*

### **Medicine. Sport. Multidisciplinar. Performance**

***Juan de Dios Beas Jiménez (Centro Andaluz de Medicina del Deporte CAMD, Sevilla)***

In recent times in the area of Medicine and Sports Sciences there are taking place inter-professional conflicts by the dispute of various competencies related to the attention of the athletes and the prescription of exercise. In most cases, these conflicts are motivated by the lack of definition of roles and encroachment of competences, but in many the cause is the loss of perspective of professionals who put their professional interests above those of the athletes, citizens or patients so it is very important to understand how Sports specialists have to work together. The multidisciplinary work directed to achieve the best results for athletes, citizens and patients, is the solution to these conflicts and provides a high quality care to users and a professional satisfaction to the different professionals who assist them. The purpose of the Symposium is to show the benefits of the multidisciplinary approach in the care of the athletes, in the exercise prescription in Medicine and Sports Sciences. In fact, the different behaviours and situations that generate conflicts between the professionals of Medicine and Sports Sciences and the consequences of the resolution of these conflicts in an individualist or multidisciplinary way will be analyzed. In the development of this Symposium, the "Island Syndrome or Robinson Crusoe Syndrome" or the "Diabetic Diana Disease" will be defined as emerging pathological entities that affect medical and sports sciences professionals..

### **Sports injuries. Functional recovery. Psychological intervention.**

***Consuelo García Antunez (CAMD, Sevilla)***

From a holistic perspective, the human being is considered as a bio-physiological, energetic, psycho-emotional, spiritual and social unit that interacts with itself and also with its environment. From this perspective, the injury of an athlete must not be approached from a physical perspective only, since its causes, repercussions and recovery can hardly be separated from the other aspects that compose it as a person. The emotional and psychological impact of the sports injury makes it essential the participation of Psychology professionals in the multidisciplinary team, which must entirely address the functional recovery of the same. The presentation will show how the Locomotor System Unit of the Andalusian Centre of Sports Medicine (Centro Andaluz de Medicina del Deporte, CAMD) participates together with the Sports Psychology Unit in the recovery of injuries, addressing factors as urgent as the pain management, therapeutic adherence, self-confidence, symptoms of anxiety and depression or catastrophic thoughts that can impair both the evolution and the recovery time of the athlete. It will be presented several clinical cases of multidisciplinary intervention

in the functional recovery of injuries carried out in the CAMD, which illustrate the contribution of professionals in Sports Psychology in the recovery of the athlete's injury.

Keywords: sport injuries, functional recovery, psychological intervention

## Sport and exercise physiology

**Ramón Antonio Centeno Prada (Centro Andaluz de Medicina del Deporte CAMD, Sevilla)**

To the Exercise Physiology Unit come two types of athletes: those that, after a medical examination in the Internal Medicine Unit, are observed that they present good health and that only demand an evaluation of the performance level, and those that, after this examination, are observed or suspected that they suffer a disease. Healthy athletes perform different effort test with the aim of assess their fitness level and prescribe areas of exercise intensity to let their trainers to be able to schedule their workouts. The main tests performed are spirometric ergo-tests with determination of the maximum oxygen consumption, aerobic and anaerobic thresholds and level of aerobic resistance. Besides, force tests are performed to valuate the different characteristics of the explosive and maximum force, to provide to the coaches data in relation to the level of optimal force of their athletes. On the other side, athletes suspected of suffering a disease perform a type of test called cardiac or clinic tests, almost always in cycle ergometer, as it is the best way of objectify the electrocardiogram. It can be performed with or without analysis of ventilation. When a cardiac pathology is suspected, the athlete is referred to the cardiologist of the CAMD, and if it is about other pathology, the athlete is referred to the appropriate specialist. The Exercise Physiology Unit is in direct contact with the Sport Psychology Unit, and the most usual cases that requires of the mutual collaboration are: blackouts, anxiety, athletes with poor results despite the fact of performing good trainings and effort tests without pathology signs, athletes whose cardiac frequency during the effort test present very high values relation to the effort required and athletes who have a bad management of the respiratory ventilation (mainly in the control and elimination of the CO<sub>2</sub>).

## Ten years of psychological intervention in a High Performance Center

**José Carlos Jaenes Sánchez (Universidad Pablo de Olavide, Centro Andaluz de Medicina del Deporte CAMD, Sevilla)**

Psychological attention and training is a form of intervention to allow athletes to cope with different situations where athletes of different sports need some help. We present the implementation of a psychological training programme whose goal is for athletes and coaches to learn and apply techniques and strategies in order to improve his/her psychological skills (Jaenes, 2010). Our clients basically come from individual sports (track and field, rowing, canoeing, triathlon, swimming. combat sports and others who compete from local to international competitions even the Olympics. We approach the athletes from different point view as cognitive-behavioural psychology to Short Term Psychotherapy, Dual Carrier or Orientation to cope with different situations. More than just working in an office face to face with athletes, coaches, or referees, we have the opportunity to work directly with the athletes in competitions with evaluation, and intervention in the field. More than this, part of our responsibility is the organization of International Seminar of Sport Psychology, Conferences, and Educational programs for young Sport Psychologist. Publishing is other important goal. We present how the Sport Psychology Unit of the Andalusian Centre of Sports Medicine (Centro Andaluz de Medicina del Deporte, CAMD) participates together with other Units and the different aspects and characteristics of the intervention program in the last ten years. How we began offering this service to the athletes one day per year and currently we are working three days in a week and how the Unit has been very active in the organization of different Sport Psychology events. It will be presented several

clinical and Sport cases, which illustrate the contribution of professionals in Sports Psychology in the development of the athlete career.

*Keywords: anxiety, performance, rowing, short term psychotherapy, psychological intervention*

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## Current studies on personality, physical activity and sport

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**Chair: Alejo García-Naveira (Universidad Pontificia de Comillas)**

The study of personality, physical activity and sport continues to be an issue of interest among the different professionals in the area. Specifically, from a two-way perspective, researchers tend to analyze the relationship between personality characteristics, sports practice, health and sports performance. This is why the objectives of this symposium are to establish relevant and current topics of study and research in personality in the field of sport, developed by representative professionals in Sport Psychology. In the first report, Lesly Castellanos Cepeda, Félix Guillén García, Abril Cantú-Berrueto, Dahiana Salazar-González y Rosendo Berengüi-Gil, will present a study entitled "Relation between resilience and sport practice in mexican athletes". Secondly, Roberto Ruiz-Barquín, Alfredo Marchant, Ricardo de la Vega Marcos y Attila Szabo, will show the results of the research "Contributions of the model of the five personality factors for burnout prediction in competition soccer players". In the third report, Félix Guillén y Sylvain Laborde, will carry out a review entitled "Mental Toughness: a perspective based on positive personality-trait-like individual differences". In fourth place, Alejo García-Naveira y Roberto Ruiz-Barquín, will present a study called "Optimism, general self-efficacy and competitiveness in young high-performance athletes". Lastly, Francisco Batista Espinosa, Iván Pérez Carlos y Roberto Ruiz-Barquín, will show the results of their study "Differences in personality characteristics as a function of the category by age and competitive level in Canarian wrestlers".

*Keywords: personality, physical activity, sport*

## Relation between resilience and sport practice in Mexican athletes

**Lesly Castellanos Cepeda (Universidad Autónoma de Nuevo León), Félix Guillén García (Universidad de Las Palmas de Gran Canaria), Abril Cantú-Berrueto (Universidad Autónoma de Nuevo León), Dahiana Salazar-González (Universidad Autónoma de Nuevo León), Rosendo Berengüi-Gil (Universidad Católica de Murcia)**

The aim of the study was to investigate the relationship between resilience and characteristics of sport practice. The resilience is a personality characteristic that moderate negative effects of stress and promotes adaptation. The participants of this study was of 253 athletes (143 males and 110 females), of an age range of 17 to 27 years old, mean age of 20.13 years old ( $SD = 2.20$ ), practicing individual sports (athletics, tennis, aerobic gymnastics and swimming) and team sports (indoor soccer, rugby, soccer, basketball and volleyball), a mean age of start practicing in their sport of 11 years old; training mean 5 days per week and training sessions of 3 hours. The 99% of coaches are males and 1% are females. The athletes have a mean of 2 years training with their coach ( $SD = 1.38$ ). The scale used was Spanish version from Resilience Scale with 25 items designed to asses two factors (Personal Competence and Acceptance of Self and Life), all items are score on a 7-point scale from 1 (disagree) to 7 (agree), the possible score range from 25 to 175 with higher scores reflecting higher resilience, all items are worded positively. The results show statistical differences between factor 2 (Acceptance of Self and Life) and days of training on ( $t = -2.47$ ) and ( $gl = 251$ ) and significance of .014, in training hours there's no significate differences, in years competing in the sport show statistical differences with resilience (global scale) ( $p = .043$ ), factor 1 (Personal Competence) with ( $p = .011$ ) and factor 2 with ( $p = .015$ ). In conclusion the hours of training doesn't promotes resilience, instead years competing in the sport that promotes resilience, that mean with more time of practicing their sport more resilient person become.

*Keywords: resilience, sport, mexican*

## **Contributions of the model of the five personality factors for burnout prediction in competition soccer players**

**Roberto Ruiz-Barquín, Alfredo Marchant, Ricardo de la Vega Marcos (Universidad Autónoma de Madrid), Attila Szabo (Eötvös Loránd University, Budapest)**

There are a number of studies carried out in the last two decades where the Burnout is analyzed in competition sports. Descriptive and correlational studies have been performed. However, predictive studies being scarce. The present study aims to determine the predictive capacity of personality traits in each of the factors that compose "the burnout syndrome" in soccer. One of the most used evaluation systems in the study of Burnout and Sport has been the one proposed by Maslach and Jackson Maslach (1981; Garcés, 1999; 2004). In the field of personality and sport, one of the most used has been the Five Factor Model of Personality (Costa and McCrae, 1985; Caprara et al., 1993; MPBFQ). Ruiz-Barquín et al. (2016) analyzed the predictive ability of Burnout in soccer from Resilience levels. In the present study, the predictive capacity of the Five-Factor Model will be determined. The study consists of 98 male competition players (Medad = 17.02; SDedad = 2.49), distributed in three sports categories (cadet, junior and senior). All the players belong to a Spanish elite club. The tests administered were: BDI Questionnaire from Garcés de los Fayos (1999, 2004) and the five dimensions belonging to BFQ personality questionnaire (Caprara et al., 1993; Bermúdez, 1995,1998). Results show significant regression models with  $p < .001$ . The dimensions Tenacity, Emotional Stability and Extraversion predict Emotional Exhaustion by 20.4%. The Extraversion predicts 11.9% the low Realization in the Sports Activity. Tenacity and Afability predict 16.9% predict the Depersonalization. Therefore, each personality trait has a specific influence on each Burnout factor. These percentages of variance increase substantially when the variable sport age category is controlled. Likewise, the predictive capacity of the MPBFQ is greater than those obtained for Resilience.

*Keywords: burnout, personality model of the five factors, BFQ personality questionnaire, soccer, prediction*

## **Mental toughness: a perspective based on positive personality-trait-like individual differences**

**Félix Guillén García (Universidad de Las Palmas de Gran Canaria), Sylvain Laborde (Institute of Psychology at the German Sport University, Cologne)**

Studying the psychological characteristics of expert athletes was one of the first steps to study mental toughness in the seventies. The topic of mental toughness really started to get momentum at the end of the 20th century and at the beginning of the 21st century, with the work of several authors. Mental toughness was then defined as "a collection of values, attitudes, emotions, and cognitions that influence the way in which an individual approaches, responds to, and appraises demanding events to consistently achieve his or her goals". Despite the fact that in the past 10 years the study of mental toughness increased, there is still many aspects that deserve the attention of researchers, given the importance of the topic for sport and exercise psychology. Currently, the main discrepancies regarding mental toughness theories are related to its nature, for example whether it has to be considered as a trait or state, or as multidimensional or unidimensional. So far, the majority of authors considered it as a trait and with a multidimensional nature, formed by values, attitudes, cognitions, and emotions. Considering attributes, it seems that there is a consensus with self-confidence, positive attitudes, resilience, and self-motivation... To consider the possibility of developing mental toughness, we present here an approach based on positive personality-trait-like individual differences, such as self-efficacy, resilience, hope, perfectionism, and perseverance.

*Keywords: positive personality, trait, mental toughness, sport*

### Optimism, general self-efficacy and competitiveness in young high-performance athletes

**Alejo García-Naveira (Universidad Pontificia de Comillas), Roberto Ruiz-Barquín (Universidad Autónoma de Madrid)**

Optimism, self-efficacy and competitiveness are three important variables of study regarding sports and performance of people. The objectives of this study were to determine the optimism, competitiveness and self-efficacy of adolescent athletes high performance, their relationship and differences according to sex. To do so, the LOT-R, Competitiveness-10 and General Self-efficacy questionnaires applied to a sample of 95 athletes (45 men and 50 women) high performance with an age between 14 and 16 years. The main results indicate that athletes are optimistic, competitive and confident in their general skills; men are more competitive and confident in their general skills than women; and optimism is positively related to competitiveness and general self-efficacy, while also competitiveness does positively with the general self-efficacy. We conclude that young high-performance athletes are optimistic, competitive and confident in their general skills, aspects related to sports performance; there is a social and sporting gap based on sex in competitiveness and general self-efficacy; and positive expectations for the future (optimism) could be linked to the expected result or probability of success associated with self-efficacy and competitiveness.

*Keywords: psychological features, high performance, athletics, sex*

### Differences in personality characteristics as a function of the category by age and competitive level in canarian wrestlers

**Francisco Batista Espinosa (Máster en Psicología de la actividad física y el deporte (UAM-COE)), Iván Pérez Carlos (Colegio Oficial de Psicología de Santa Cruz de Tenerife), Roberto Ruiz-Barquín (Universidad Autónoma de Madrid)**

The objectives of the present study are: to describe the personality characteristics of a sample of Canarian competition wrestlers and to establish the possible differences in personality according to the sports age category (youth vs. senior) and the competitive classification of the wrestlers (unrated, destacado and puntal). The sample consists of 67 men wrestlers ( $M = 23.32$ ;  $SD = 5.79$ ). The instruments used were: NEO-FFI, Lot-R, General Self-Efficacy Scale and Resilience scale. The results show that 25.40% of the sample ( $n = 17$ ) presented high levels of resilience, with average global levels of resilience ( $M = 134.75$ ;  $SD = 16.20$ ) compared to other studies (Ruiz-Barquín et al., 2015). Average levels of general self-efficacy ( $M = 31.36$ ;  $SD = 4.75$ ) are shown, with lower scores than general population (Schwarzer, and Baessler, 1996). Moderate levels of optimism ( $M = 2.46$ ,  $SD = 3.04$ ) are exhibited compared to a sample of football players (De la Vega et al., 2012). In comparison with other studies with football players and non-athletes (García-Naveira et al., 2011), the results show similar values in neuroticism ( $M = 20.73$ ,  $SD = 8.18$ ), lower scores on openness to experience ( $M = 26.16$ ;  $SD = 5.48$ ) and higher values in extroversion ( $M = 33.49$ ,  $SD = 5.93$ ), cordiality ( $M = 30.91$ ,  $SD = 5.15$ ) and responsibility ( $M = 32.30$ ,  $SD = 6.49$ ). According to the category, results show superior scores of the youth ( $p < .05$ ) in neuroticism and extraversion. Concerning the level of performance, significant differences were found ( $p < .05$ ) in openness to experience and personal competence, obtaining the group puntal higher scores. It is concluded that Canarian wrestlers present a profile of differential personality compared to other samples of athletes, non-athletes and general population, existing differences depending on the category of age and performance level.

*Keywords: canarian wrestling, personality five factor model, resilience, optimism, self-efficacy*

## Symposia Session 2. (14.30-16)

### Gold in education and elite sport (GEES): 2. The competences of dual career support providers

*Chair: Paul Wylleman (Vrije Universiteit Brussel)*

This second part of the symposium 'Gold in Education and Elite Sport' focuses on the competences of the dual career support provider (DCSP), defined as "a professional consultant, related to an educational institute and/or an elite sport organization – or certified by one of those – that provides support to elite athletes in view of optimizing their dual career." A lack of competent DC support may lead to elite athletes dropping out prematurely (Wylleman & Reints, 2010). This part of the GEES project provides an overview of the competences that 321 DCSPs from 9 different EU Member states perceived to require in order to optimize their support provision to athletes in their dual 'elite sport and study' career pathway. In the first presentation, the competence framework of DCSPs will be presented, focussing on the importance of the different competences. The second presentation will present the evaluation of DCSPs' competences in the Swedish context, showing how the results contributed to improvements in practice. The third presentation will zoom in DCSPs' competences to empower DC athletes, including suggestions how DCSPs can contribute to the development of elite pupil- and student-athletes' successful dual career competences. In the fourth presentation, the importance of self-regulation competences for DC athletes is emphasized. The fifth presentation will discuss how athletes' needs could be matched to the competences of DCSPs in two specific scenarios.

*Keywords: GEES, Erasmus+ Sport, dual career, professional development, support team, elite athlete*

### A European perspective on the importance of Dual Career Support Providers' (DCSPs) competences

*Simon Defruyt, Paul Wylleman (Vrije Universiteit Brussel), Miquel Torregrossa (Universitat Autònoma de Barcelona), Koen De Brandt (Vrije Universiteit Brussel)*

Although the need for quality and competent dual career support is clear and emphasized in the EU Guidelines on Dual Careers of Athletes (2012), previous research has mainly focused on the structural and organizational aspects of dual career support. Therefore, the GEES project aimed at identifying the competences that are important for dual career support providers (DCSPs). Based on the literature and expert's panel discussions, a framework of 35 DCSP competences was clustered into the following six factors: 1) reflection and self-management competences, 2) advocacy and dissemination competences, 3) organizational competences, 4) empowerment competences, 5) awareness of DC athlete's environment, and 6) relationship competences. A confirmatory factor analysis confirmed the factor structure of this competence framework (Defruyt et al., 2016). Using an online survey, 321 DCSPs (mean age  $44.7 \pm 11.2$  years; 49% female) rated the list of 35 competences on importance (1=unimportant – 5=very important). Results revealed that the calculated competence factor averages ranged from important up to very important (min 4.16 – max 4.39), underscoring the importance and relevance of the competence factors for DCSPs. Statistical analyses will be presented on the importance scores of the factors, also comparing different subgroups (e.g. full time vs. not full time). Findings assist in discovering developmental and educational needs for DCSPs. Future research should aim at linking the competences to behavioural anchors and then tailor these to the different levels of development. Defruyt, S., Wylleman, P., Torregrossa, M., Schipper-van Veldhoven, N., Debois, N., Cecic Erpic, S., De Brandt, K. (2016). A competence framework for dual career support providers: A European perspective. Manuscript in preparation.





*Keywords: GEES, Erasmus+ Sport, dual career, elite sport, professional development, support staff*

## Promoting dual career support services: Swedish perspectives and actions taken

**Lukas Linnér, Natalia Stambulova (Halmstad University), Kent Lindahl (Swedish Sport Confederation)**

In this presentation we share: (a) key findings on experiences and competences of Swedish dual career support providers (DCSP) from the European Project “Gold in Education and Elite Sport”, and (b) insights into the actions derived from the Project and taken to advance the dual career (DC) support services in Sweden. Across the country, 31 DCSPs (mean age= 47.4) completed the DCSP survey that measured perceptions of 35 competences to facilitate student-athletes’ development (e.g., be an active and supportive listener) and explored experiences of, and coping with, six DCSP’s scenarios (e.g., supporting a student-athlete when missing days in school). Additionally, six DCSPs took part in a focus group discussion on how they work and what methods they use to support their student-athletes. Overall, the results revealed that the DCSPs demonstrated high awareness of DC and related challenges, possessed necessary competences, managed the relevant scenarios, and reflected on their work in congruence with a whole person perspective. Results also indicated that the DCSPs worked mainly part time, held higher education degrees, but lacked specific DC education and networks. When positioning the findings within the Swedish DC context two major actions were initiated. First, as a DCSP is a new job profile in Sweden that should be developed, planning efforts for a national DCSP education system and a complementary national digital DC support service are currently in progress. Second, with the recent expansion of the Swedish DC system to include the higher education level, a shared basis is needed for sustainable development. Therefore, the Swedish Sport Confederation initiated the action of developing Swedish national DC Guidelines. The Guidelines will be briefly outlined with strategies to facilitate student-athletes’ DC development including different transitions and their search for optimal balance between sport, studies, and private life.

*Keywords: GEES, Erasmus+ Sport, dual career, competences, dual career support, national guidelines*

## Successful in sports and education: empowerment of the Dutch student-athlete

**Anne Spitse, Nicolette Schipper-van Veldhoven (Windesheim University of Applied Sciences), Ingrid Van Gelder, Irith Kist, Peter Wiggers (Dutch Olympic Committee NOC\*NSF)**

The aim of this study was to gain insight in the needed competences of Dutch student-athletes (DC athletes) for a successful dual career and the needed competences of their support providers (DCSPs) for successful support providing in dual careers. Focus is especially towards empowerment, the process whereby ‘DC athletes gain knowledge by themselves, develop skills and abilities to take control over their own life and body, to act in an autonomous way’. 350 DC athletes (age: 18.7±3.3 years; 58% male, 42% female; 26% secondary education, 74% higher education), completed an online questionnaire, in which perceived importance and possession were measured on a 5-point scale for each competence in a list of 38 DC competences. The difference between importance and possession shows the degree of need to develop these competences. Especially assertiveness (diff = .99), ability to cope with stress in sport and study (diff = .98) and ability to use your time efficiently (diff = .95) are found to be the most needed competences to be developed. 77 DCSP’s (age 46.4±11.5 years; 32% employed in sport, 68% in education) completed a questionnaire including a list of 35 DCSP competences. Results show that empowerment competences (e.g. ‘ability to stimulate autonomy in dual career athletes’; diff = .63) are the most needed DCSP competences to develop. This finding is confirmed by the focus group (11 DCSP’s), which stated in a 2-hours-interview that only DC athletes with appropriate Self-regulation and Resilience competences (e.g. using setbacks as a positive stimulus) will overcome challenging situations in their DC. The DCSPs are aware of the importance of self-regulation and resilience in DC athletes, but are not able yet to specify how they ‘empower’ the DC athletes. Now more is



known about the necessary competences for a successful DC, future research should focus on development of evidence-based education for DCSPs, especially towards empowerment of the DC athlete.

*Keywords: GEES, Erasmus+ Sport, empowerment, dual career, elite sport, study*

### **Working with French DC athletes: opportunity to pay attention to self-regulation competences**

**Nadine Debois, Léonore Perrus, Véronique Leseur (Institut National du Sport, de l'Expertise et de la Performance)**

Within the framework of the Erasmus+ European Project « Gold in Education and Elite Sport », 584 French dual career athletes (DCAs) and 51 dual career support providers (DCSPs) participated to a study focused on (1) competences required by elite athletes to manage their dual career and, (2) competences required by DCSPs to optimize their dual career support provision. Results revealed dissimilarities between DCAs and DCSPs' evaluation regarding self-regulation competences. DCAs tended to evaluate self-regulation competences as important and low possessed whereas DCSPs evaluated dual career management competences as the most important for DCAs. DCAs perceived a high support from DCSPs at the dual career management level but a low support at the affective level. Lastly, the highest gap between perceived importance and perceived possession of DCSPs' competences was found on empowerment competences. These results emphasize in research as well as in an applied perspective the need to focus not only on dual career management competences but also on self-regulation competences when considering competences to be developed by dual career athletes in order to successfully manage their dual career. In an applied perspective, initial as well as continued educational programs for DCSPs should be developed to educate them more consistently on the DCAs self-regulation competences issue.

*Keywords: GEES, Erasmus+ Sport, dual career, self-regulation competences, dual career support provider*

### **Matching athletes' needs with dual career support providers' competences**

**Miquel Torregrossa (Universitat Autònoma de Barcelona), Susana Regüela (Centre d'Alt Rendiment), Andrea Perez-Rivases (Universitat Autònoma de Barcelona), Berta Veiga (Centre d'Alt Rendiment), Salvador Miró (Universitat Autònoma de Barcelona), Anna Benito (Centre d'Alt Rendiment), Anna Jordana, Yago Ramis, Susana Pallarès (Universitat Autònoma de Barcelona)**

The purpose of this work is to match Dual Career Support Providers' (DCSP) competences with Dual Career (DC) athletes' needs to cope with two specific scenarios (i.e., relocate from family home for sport and/or studies, make the best study plan). Embedded in the European Erasmus+ project Gold in Education and Elite Sport (GEES), 44 DCSP (13% of the European sample) and 265 DC athletes (9% of the European sample) from Spain answered an online survey on their needed competences. DCSP answered about competences needed to support DC athletes to combine education and elite sport, and DC athletes answered about competences needed to follow a dual career in sport and education. Results show that DCSPs' competences related to the work with the athletes can be grouped in: (a) Empowerment competences, (b) Awareness of DC athletes' environment, and (c) Relationship competences. Referring to DC athletes instead, competences can be grouped in: (a) DC management, (b) Self-regulation & resilience, (c) Social, and (d) Career planning. To make their best study plan, athletes in the study mainly considered DC management and career planning competences. To relocate from family home for sport and/or studies DC athletes mainly considered social and DC management competences. Considering the results of the study, we conclude that the more the DCSPs possess the competences considered as needed by the athletes to cope with these scenarios (mainly empowerment and relationship competences) the more helpful they will be perceived by DC athletes.

*Keywords: GEES, Erasmus+ Sport, dual career, dual career support provider, competences, scenarios*



## Cultural competence in sport and exercise psychology: extending the issp position stand

**Chair: Noora J. Ronkainen (Shanghai Jiao Tong University, Shanghai, China; Liverpool John Moores University, Liverpool, United Kingdom)**

The ISSP position stand on cultural competence (Ryba, Stambulova, Si, & Schinke, 2013) challenged researchers and practitioners to rethink sport and exercise psychology (SEP) through a culturally reflexive approach. Ryba et al. (2013) explained that cultural competence involves recognizing the ethnocentric assumptions that underpin much of current theorizing, research, and practice in addition to being knowledgeable of cultural differences. This symposium will present examples of culturally reflexive research projects as well as highlight the real world challenges associated with engaging in culturally competent research and practice. Ryba et al. proposed three different research designs (i.e., cross-cultural, cultural psychology, and cultural praxis) for culturally competent research. The first presentation adheres to the cross-cultural research design and explores how cultural competence is developed and promoted within SEP graduate programs. The second presentation uses the cultural psychology approach and explores the challenges of a 'cultural outsider' in conducting a narrative study on runner identity construction in Shanghai. The third presentation exemplifies a cultural praxis research design by focusing on methodological choices and results of a study on female judokas' identities in Finland and Greece. The fourth presentation will discuss culturally competent practice by focusing on common issues within culturally diverse sport teams and suggesting best practices for sport psychology practitioners who work in culturally diverse environments. The fifth presentation focuses on applied practice, exploring coaching practices through a culturally reflexive lens. Each presentation builds upon the ISSP position stand to highlight its main postulates and adds further recommendations for promoting cultural competence in SEP.

*Keywords: cultural psychology, cultural praxis, identity, reflexivity, positioning*

## Cultural competence development in sport and exercise psychology graduate programs

**Sae-Mi Lee (Ithaca College, Ithaca, NY, U.S.A.)**

Researchers have argued that cultural competence is essential for ethical and effective practice in sport and exercise psychology (SEP; Butryn, 2002; Martins, Mobley, & Zizzi, 2000; Ryba, Schinke, & Tenenbaum, 2010). Despite growing research on the importance of cultural competence, limited research exists on how SEP graduate programs are integrating cultural competence development within their curricula. Therefore, the purpose of this study was to examine how SEP graduate programs develop and promote cultural competence within their programs. A survey inquiring about cultural competence development opportunities was distributed to 110 Anglophone SEP graduate programs; thirty-five program coordinators responded to the survey. Eighty-nine percent of programs offered at least one opportunity for cultural competence development; nevertheless, only 11 programs (31.4%) required students to participate in the opportunity. Moreover, only 45% of the programs offered applied practicum opportunities that explicitly integrated cultural competence development into students' supervision and practice. The focus of SEP education appears to remain on gaining cultural awareness and knowledge, but lacks discussion on cultural praxis of integrating knowledge into theory and practice. More experiences targeting behavior and attitudinal change are needed for students to become culturally competent and proficient (Wells, 2000). Graduate programs should integrate the nine postulates and recommendations offered in the ISSP position stand on cultural competence (Ryba, Stambulova, Si, & Schinke, 2013) within their curriculum through course work, research, and practice opportunities

*Keywords: cultural development model, diversity, cultural praxis*



## Exploring gendered construction of runner identities in Shanghai through narrative inquiry

**Noora J. Ronkainen (Shanghai Jiao Tong University; Liverpool John Moores University)**

Long-distance running has long been a popular non-elite sport activity in other parts of the world, but it has only recently become a fashionable form of 'serious' leisure in China. In this presentation, I examine the challenges I encountered as a cultural outsider exploring the gendered construction of non-elite runner identities in Shanghai. Using the guidelines of ISSP position stand on conducting a cultural psychology research project (Ryba et al., 2013), I explore how my project developed in terms of (1) seeking to understand various dimensions of participants' cultural identity and their influence on running narratives; (2) exploring the role of my own cultural situatedness and taken-for-granted assumptions on the research process and interpretations made from the stories; (3) attempts to ensure that my methodology is appropriate for the cultural context; and (4) collaborations with the cultural insiders in the research group and learning from their expertise. I first discuss my challenges in designing the study, communication and practical research work. I will then focus on the analysis and highlight some of the local narratives that runners drew upon in identity construction. While I found that runners in Shanghai share much of the narrative resources circulating the global running culture, local and changing gender narratives tied to the country's rapid economic and societal changes were also important for understanding participants' experiences. Shanghai's cosmopolitan culture served as a backdrop for contesting cultural ideals surrounding gender and the body, and running was used to signify a 'modern', middle/upper class way of life.

*Keywords: gender identity, serious leisure, narrative inquiry, distance running*

## Female judoka's identities in Greece and Finland: A cultural praxis study

**Anna Kavoura, Tatiana V. Ryba, Marja Kokkonen (University of Jyväskylä, Jyväskylä, Finland), Stilian Chroni (Inland Norway University of Applied Science, Hedmark, Norway)**

This presentation discusses findings and methodological choices of a cultural praxis research on female judoka's identities. Based on ethnographic data (interviews and participant observations) gathered in Greece and Finland, the research aimed at exploring the influence of the cultural context on female judoka's experiences and identity negotiation. A discursive analytic procedure was employed which enabled us to trace the discourses through which female judoka articulate and make sense of their experiences. Drawing on dominant cultural discourses, such as a female biological inferiority discourse, female judoka strategically construct multiple identities, each serving different purposes. For example, a naturally born fighter identity was employed to differentiate themselves from "ordinary" women who were thought as being soft, fragile, and incapable of fighting and competition. The findings reveal that gender hierarchies and inequalities persist in martial arts and are discursively constructed and reproduced. We conclude that it is only by disrupting oppressive discourses that we might move towards gender equity. These findings have important implications for those who are interested in advancing the inclusivity and social justice agenda in martial arts. This study showed that the increased presence of women is not always enough to challenge persisting and powerful discourses that construct fighting as a masculine activity and martial arts as a male domain. There is a need for discursive interventions. The call for the future is moving from theory to praxis and exploring what strategies and initiatives might prove more effective in disrupting and challenging these oppressive discourses.

*Keywords: discursive identity, ethnography, feminist poststructuralist theory, gender, martial arts*

## 'Nobody said it was easy': Conducting research within culturally diverse teams

**Anastasiya Khomutova (University of Brighton, Eastbourne, UK)**



Elite sport has increasingly become a multicultural phenomenon due to globalisation and sport labour migration within the last few decades. Scholars in sport psychology have been addressing this 'cultural turn', acknowledging the importance of continuous research in this area as well as culturally informed applied practice (e.g. ISSP position stand on culturally competent research and practice in sport and exercise psychology). The first part of this presentation will focus on a relatively under-researched phenomenon in the area of cultural sport psychology - the functioning of culturally diverse teams, using the example of six professional basketball teams in Europe. Particular focus will be given to the relationships between local and migrant athletes, discrepancies in their cultural orientations as a potential source of conflicts, and other factors that can influence team functioning. The second part of the presentation will discuss the experiences of the presenter in researching culturally diverse sports environment and of applied work with such sport teams. The presentation will conclude with recommendations for practising sport psychologists who would like to expand their cultural competence.

*Keywords: cultural diversity, cultural sport psychology, ISSP position stand*

### **Cultural competence in sport and exercise psychology: Extending the ISSP position stand**

**Brian Gearity (University of Denver)**

The ISSP position stand on culturally competent research and practice in sport and exercise psychology (Ryba, Stambulova, Si, & Schinke, 2013) and a wealth of research on sociocultural issues of sport (Coakley, 2015) shows us the ubiquity of culture in sport. In psychology, several scholars have identified the importance of culturally competent therapists to improve client outcomes and proposed multiple models on how to develop culturally competent practitioners (Cornish, Schreier, Nadkarni, Henderson Metzger, & Rodolfa, 2010). Unfortunately, the intersection of numerous social identities such as race, class, gender, amongst many others, have been identified as a missing component from the sociology of sport coaching (Gearity, 2012). Although researchers generally agree that the coach-athlete relationship is vital to athletic performance and positive psychological functioning of athletes (Gearity & Murray, 2011), including mental health (Baker, Cote, & Hawes, 2000), only one recent study (Gearity & Henderson Metzger, in press) has examined issues of intersectionality, microaggressions, and inclusivity in sport coaching. To overstate, perhaps, our current present time's conundrum—clinical psychology gets it, sport and exercise psychology is getting closer, and sport coaching is just showing up. So, how does a sport psychology consultant (SPC) juggle these complexities? How do we engage sport coaches as culturally aware SPCs and advance the field of sport coaching to enhance their cultural competence? This presentation seeks to address these issues by reviewing related literature on culturally competence in sport psychology and sport coaching, offer the presenter's experience delivering culturally aware mental skills training to teams and organizations, and suggest a framework for sport coach education to develop coach's cultural competence.

*Keywords: coach, consultant, praxis, micro aggression, culture*

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### **Sport psychology applications in Asia**

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**Chair: Emily Ortega (ASPASP)**

Following from the success of the earlier published e-book, *Secrets of Asian Sport Psychology*, this symposium brings together practitioners from Hong Kong, Philippines, Singapore, and Thailand, who will share how sport psychology has been applied in these countries not just to enhance sports performance, but also beyond the realm of sport to improve well-being. Huang Zhijian shares the effectiveness of implementing a long-term intervention focusing on mindfulness for the Hong Kong Wushu team. Similarly, Emily Ortega shares a successful integrated approach in combining mental skills with biofeedback training for youth sport shooters

in Singapore. Naruepon Vongjaturapat reveals the unique approach used in mental training in Thailand that combines methods such as body scanning, meditation, and mixed relaxation technique. Dilip Kumar Dureha, Priyanka Sharma, and Lalit Sharma present their research on Indian athletes, looking at how athletic intelligence and imagery influence athletic performance across athletes from different sports. Beyond elite sports, Maria Luisa Guinto-Adviento and Margarita Asuncion Zavala share their qualitative research study on the power of sport through dragon boat, in improving the quality of life of breast cancer survivors in the Philippines.

*Keywords: mental training, biofeedback, psychological interventions*

## **Effect of long-term mindfulness intervention on wushu training and competition: the case of Hong Kong wushu team**

**Zhijian Huang (Hong Kong Sports Institute)**

The case of mindfulness-based long term applied sport psychology service with Hong Kong Wushu team was introduced with a systematic perspective in the present study. Seven athletes who was preparing for the 13th World Wushu Championship took part in a 12-month mindfulness intervention program which can be divided into four stages. The content of the sport psychology practice was introduced in detail. The combination of mindfulness based interventions and the specificity of Wushu sport, as well as the adaptation of long-term sport psychology practice with the characteristic of the team was emphasized. The effect of the intervention was also examined in both objective and subjective ways. Suggestion for the further mindfulness-based intervention program in elite sport is discussed.

*Keywords: mindfulness training, wushu, world championship, long-term sport psychology intervention*

## **Integrating mental skills & biofeedback training for youth sport shooters in Singapore**

**Emily Ortega (SIM University)**

The importance of psychological factors in sports is believed to be of great importance that separates the winners from the losers as winning margins narrow in competitive elite sports. In closed skill accuracy sports in particular, management of psychological and physiological states are critical to ensure optimal performance. This intervention study examines the effectiveness of a sport-specific mental skills and biofeedback training program on youth athletes in Singapore. Fifty air rifle and air pistol shooters from a school air weapons team were divided equally and matched into control and experimental groups. The experimental group participated in an intervention program focused on self-talk, relaxation, imagery, and automaticity (or routines), together with HRV biofeedback training. Post-intervention, the experimental group had significantly higher pre-performance HRV and had higher scores for self-talk, relaxation, imagery, and automaticity compared to the control group. Although self-efficacy and shooting scores improved at the end of the intervention, the increase was not statistically significant. The improvement in HRV together with the higher shooting scores post-intervention shows the effectiveness of integrating mental skills with a short biofeedback training session – the shooters showed improved psychophysiological control which was translated into better performance.

*Keywords: heart rate variability, mental skills, biofeedback, shooting*

## **Secrets of Asian sport psychology: A unique way of mental training in Thailand**

**Naruepon Vongjaturapat (Burapha University)**

Throughout the world, sport for excellent psychologists search for the best way to help athletes to reach their peak performance. This intention is no exception in Thailand. Even though contemporary sport



psychology started less than a 30 years ago in Thailand, but psychology had been applied to our traditional athletes long before. Many of our Thai number one players of the world have practiced and worked with sport psychologists. This practice makes them different among the others. We apply and test our mental training techniques through research and practice. Our way to work with start from the special and unique way of analyzes athletes' need up until choosing the techniques for their need. Our body scanning, meditation and mixed relaxation techniques will be main parts of this presentation. These practical phenomena are important and unique that sport psychologists need to understand clearly and practice their athletes accordingly. I will share with you also how to do from the beginning until their performance on the field.

*Keywords: psychological interventions, Thai athletes, peak performance*

### **Interactive effect of athletic intelligence, imagery and level of performance among sportspersons**

***Dilip Kumar Dureha (Deemed University, India), Priyanka Sharma, Lalit Sharma (University of Delhi, India)***

The purpose of this study was to understand the effect of athletic intelligence, imagery and level of performance among sportspersons belonging to different games and sports i.e. Badminton, Football, Gymnastics, Handball and Volleyball. One hundred and fifty subjects (30 from each games) were selected representing different games and having different levels of performance (10 players of each level, i.e. beginner, inter-mediate, and advance players) from the different colleges who were currently studying in various colleges and participating in games and sports aged from 17- 25. "Attributing Rating Scale" for Athletic Intelligence which is developed by Johann Erikson (2007) and "SIAQ" Imagery questionnaire for assessing the imagery was developed by Martens (1982). The data was analysed by computing descriptive statistics and one-way ANOVA. The level of significance was set at 0.05. The result of the study found that the athletic intelligence was higher among advance level of players which indicates that the players with higher athletic intelligence will have every possibility to excel in selected sport (Sharma & Kaur, 2013). Similarly, the high performers have shown better Imagery capabilities than the beginner and inter-mediate levels. Hence, it could be concluded that at the talent selection level Athletic Intelligence could be taken as a variable because if an athlete is selected with higher Athletic Intelligence there are chances that an athlete could efficiently be trained as the athlete is having better intelligence capabilities (Haslam, 2008).

*Keywords: athletic intelligence, imagery, level of performance and sports person*

### **"I am a complete woman:" A qualitative study on the meaning of dragon boat to breast cancer survivors**

***Margarita Asuncion Zavala, Maria Luisa Guinto-Adviento (University of the Philippines)***

Being diagnosed with breast cancer is likened by many of its survivors to receiving a death sentence. While some surrender to their fate with diminished meaning of life, others manage to accept the challenges of their condition and move on with greater appreciation of life. This qualitative study examined the experiences of breast cancer survivors whose engagement with dragon boat facilitated the improvement of their quality of life despite the radical surgeries and complex treatment regimens they had to undergo. A focus group discussion was conducted with three female survivors of breast cancer who were actively engaged in dragon boat paddling. The in-depth discussion among these women provided rich data on their survival of breast cancer and how dragon boat provided them physical and psychosocial benefits. Thematic analysis of the transcription from the focus group discussion yielded the following themes: (1) strength from family support, (2) increased personal control, (3) meaningful social relationships, (4) improved physical health and (5) renewed body image. All three women survivors agreed that dragon boat became instrumental in their



experience of meaningful and active lives, and a greater sense of being a “complete woman” despite having one breast less.

*Keywords: breast cancer, dragon boat, focus group discussion, thematic analysis*

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## Cross-cultural examinations of the consequences of the coach-created motivational climate

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**Chair: Isabel Balaguer (University of Valencia)**

Research has confirmed that athletes' optimised as well as diminished health and functioning are impacted by the social psychological environment created by the coach. These past studies have tended to pull from two of the contemporary theories of motivation, namely achievement goal theory (AGT; Ames, 1992; Nicholls, 1989) and self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2007). Pulling from Duda's proposal (2013) of a theoretically integrated view of the motivational climate, three presentations define the climate as multidimensional in nature and differentiated by the degree to which the environment is more or less 'empowering' and 'disempowering'. Castillo and colleagues present a longitudinal study involving young footballers, predominantly boys, from 5 European countries. Appleton et al' research is conducted with female athletes from England and Spain. In both studies, a model is presented testing the predictive power of empowering and disempowering dimensions of the climate on variables of interest. In a study of young soccer players from Spain and England, Hall et al, examine the relationship of dimensions of perfectionism to adaptive and maladaptive outcomes. Also tested the potential moderator effect of the empowering and disempowering climate in the links between perfectionism and basic psychological needs. As coaches are likely to engage in both controlling and autonomy-supportive behaviours simultaneously and to differential degrees, Tristan and colleagues, consider the interaction between autonomy-supportive and controlling features of the coach-created social environment predicting athletes' well and ill-being. Stemming from Bandura's theoretical conceptualisations of moral disengagement (1991) and self-efficacy (1997), Boardley and his colleagues examine processes linking Australian, British and American athletes' perceptions of their coaches' doping confrontation efficacy and susceptibility to intentional and inadvertent doping.

*Keywords: motivational climate, self-efficacy, sport, cross-cultural, adaptive, maladaptive*

## Relationships between motivational climates, goal orientations, perceived competence and self-determined motivation in soccer players from five European countries

**Isabel Castillo, Inés Tomás (University of Valencia), Oddrun Samdal (University of Bergen), Philippe Sarrazin (Université Joseph Fourier), Yngvar Ommundsen (University of Oslo), Jaume Cruz (Autonomous University of Barcelona), Howard Hall (York St John University), Athanasios Papaioannou (University of Thessaly), Isabel Balaguer (University of Valencia), Joan Duda (University of Birmingham)**

Based on the Self-Determination (Deci & Ryan, 1985, 2000) and the Achievement Goal (Nicholls, 1989) theories, this study tested structural process models specifying hypothesized relationships of features of the coach-created motivational climate (how empowering and disempowering at the beginning of the season, T1) to goal orientations (at the end of the season, T2), to perceptions of competence (T2), to the level of self-determined motivation (T2). Participants were 1684 young soccer players from five different European countries (France, n = 253; Greece, n = 206; Norway, n = 184; Spain, n = 784; UK, n = 257) aged 10-14 years. A time-lagged design with two waves of data was used; and models were tested by means of Structural Equation Modeling using Mplus. The fit indices were acceptable in all 5 countries. Results revealed that empowering climate and disempowering climate were positively related to task orientation and ego orientation respectively in Norway, Spain and UK. Whereas in Greece, only the expected positive relationship between empowering





climate and task orientation was statistically significant. In all countries, task orientation showed a positive relationship with perceived competence and self-determined motivation. Additionally, ego orientation was negatively related to self-determined motivation in all countries except for Norway. Ego orientation was positively related to perceived competence in Greece and Spain. Finally, perceived competence was positively related to self-determined motivation in Spain and UK. Overall hypothesized model was holding when testing in each country albeit some differences in particular paths were noted. More work is needed to see if such differences can be replicated and subsequent analyses are warranted which test for invariance across the 5 countries.

*Keywords: motivational climates, goal orientations, perceived competence, self-determined motivation, soccer players, European countries*

### **Anxiety and enjoyment in sport: A test of the basic psychological needs theory among English and Spanish female athletes**

**Paul Appleton (University of Birmingham, UK), Lorena González (European University of Valencia, Spain), Joan Duda (University of Birmingham, UK)**

Guided by basic psychological need theory (Deci & Ryan, 2000) and Duda's (2013) multidimensional conceptualisation of the motivational climate, this project tested whether the coach-created motivational climate – basic psychological needs – outcome sequence was invariant in female athletes from two countries (England and Spain). 590 English (M age = 17.1, SD = 4.0) and 552 Spanish (M age = 15.5, SD = 3.8) female athletes completed measures of the coach-created empowering and disempowering motivational climate (EDMCQ-C; Appleton et al, 2016), psychological need satisfaction (McAuley et al, 1989; Richer & Vallerand, 1998; Standage et al, 2005) and thwarting (Bartholomew et al, 2011), anxiety (Smith et al, 2006) and enjoyment (IMI; McAuley et al., 1989) experienced in sport. Data were analysed using path analyses in Mplus. The hypothesised model showed an acceptable fit to the data:  $\chi^2$  (df = 4) 42.497;  $p < .001$ ; CFI = .96; RSMEA = .09 (CI 95% = .07 – .13); SRMR = .03. Analyses revealed that empowering climate positively predicted need satisfaction and negatively predicted need thwarting. In contrast, disempowering climate negatively predicted need satisfaction and positively predicted need thwarting. Need satisfaction positively predicted enjoyment and negatively predicted anxiety, whereas need thwarting was a negative predictor of enjoyment. These findings were invariant across the two countries. Conversely, the association between need thwarting and anxiety was negative and significant in Spain but non-significant in England, indicating a non-invariant path. Finally, indirect effects were supported except in the climate (both empowering and disempowering) – need thwarting – anxiety sequence. Based on the findings, this study provides partial support for basic psychological needs theory as a framework for understanding determinants of anxiety and enjoyment among English and Spanish female athletes.

*Keywords: motivational climate, anxiety, enjoyment, basic psychological needs, cross-country invariance, female athletes*

### **Perfectionism and psychological needs satisfaction in youth soccer: The moderator role of motivational climate**

**Howard Hall (York St John University), Francisco Atienza, Isabel Castillo (University of Valencia), Lorena González (European University of Valencia), Paul Appleton (University of Birmingham), Isabel Balaguer (University of Valencia)**

The study had three objectives. First, to examine the psychometric properties of the Spanish version of the MIPS (Stoeber, Otto, & Stoll, 2006). Second, to analyze the association between perfectionism and adaptive and maladaptive variables. Third, to explore whether the motivational climate moderated the relationship

between perfectionism and basic psychological needs. The Spanish version of the MIPS was analyzed in a sample of 419 Spanish soccer players (M age = 11.48; SD = 1.2). CFA indicated that a two-dimensional model of the MIPS provided a good fit with the data, sub-scales internally consistent and with concurrent validity. The second and third objective of the study, were analyzed in a sample of 239 Spanish (M age = 11.50; SD = 1.10) and 202 English (M age = 12.31; SD = 1.41) soccer players. Athlete perceptions of the coach created environment (empowering and disempowering climate; Appleton et al., 2016), perfectionism (MIPS and MPS (Cox, Enns & Clara, 2002), and various adaptive (enjoyment, vitality, psychological need satisfaction) and maladaptive (anxiety & drop out) variables were assessed. The findings differed by country. Perfectionistic concerns was positively associated with maladaptive outcomes in the Spanish and English samples and negatively associated with adaptive outcomes in the English sample. Perfectionistic strivings demonstrated associations in the opposite direction. In the Spanish sample, the disempowering climate moderated the relationship between Striving for Perfection (SP) and psychological needs satisfaction. As the disempowering climate decreased, the relationship between SP and needs satisfaction became more positive. However, in the English sample, the disempowering climate moderated the relationship between the Self-Oriented Perfectionism (SOP) and psychological needs satisfaction. In contrast to the Spanish sample, as the disempowering climate increased, the relationship between SOP and needs satisfaction became more positive.

*Keywords: motivational climate, perfectionism, adaptive, maladaptive, needs satisfaction*

### **Interaction of the players' perceptions of the coaches' interpersonal styles and implications for athletes' well- and ill-being in Mexico and Spain**

**José Tristán (Autonomous University of Nuevo León, Mexico), Inés Tomás (University of Valencia, Spain), Jeanette López-Walle, Felipe Reynoso, (Autonomous University of Nuevo León, Mexico) Isabel Castillo, Isabel Balaguer (University of Valencia, Spain).**

This study examines the relationship between players' perceptions of the coaches' autonomy support and indicators of well- and ill-being (self-esteem and burnout), testing the moderating role of players' perceptions of the coaches' controlling style in two countries. 725 Spanish young soccer players aged between 11 and 13 years, and 688 Mexican athletes from different sports aged 18-26 years, completed a questionnaire package tapping the variables of interest. In both countries, the results using moderated regression analysis (PROCESS macro for SPSS) showed that the perceived controlling coaching moderated the relationship between the perceived autonomy support coaching and athletes' well-being (self-esteem). Furthermore, in both countries, perceived controlling coaching moderated the relationship between autonomy support coaching and athletes' ill-being (burnout). Concretely, in the Spanish sample, when low levels of perceived controlling coaching (-1SD) were observed, perceived autonomy support coaching was negatively related to burnout. As far as perceived controlling coaching increased, this relationship became non-significant. In the Mexican sample, the relationship between perceived autonomy support coaching and burnout was not statistically significant for low levels of perceived controlling coaching (-1SD), but became positive and significant for high levels of perceived controlling coaching (+1SD). In sum, in Spanish soccer players and in Mexican athletes, potential beneficial effects that autonomy-supportive interpersonal style could have on well- and ill-being, are diminished, and even blocked or reversed when the social environment is highly controlling.

*Keywords: autonomy support, controlling style, self-esteem, burnout, Mexico, Spain*

### **Athletes' perceptions of their technical and strength and conditioning coaches' doping confrontation efficacy and susceptibility to intentional and inadvertent doping**

**Ian Boardley (University of Birmingham, UK), Nikos Ntoumanis (Curtin University, Australia), Alan Smith (Michigan State University, USA)**

Coach doping confrontation efficacy may deter athlete doping (Sullivan, Feltz, LaForge-MacKenzie, & Hwang, 2015). Thus, we examined a model in which doping self-regulatory efficacy (SRE) and doping moral disengagement (MD) mediated relations between athletes' perceptions of their technical and strength and conditioning (S&C) coaches' doping confrontation efficacy and their susceptibility to intentional and inadvertent doping. Athletes ( $N = 258$ ; age  $M = 22.0$  years) from Australia, the United Kingdom, and the United States completed psychometric measures assessing the study variables. Structural equation modeling supported the fit of the model, ( $\chi^2(212) = 298.16$ ,  $p < .05$ ; CFI = .954; RMSEA = .040; SRMR = .049). Athletes' perceptions of the two coaches' doping confrontation efficacy had a moderate-to-strong correlation (i.e.,  $r = .41$ ). Perceptions of technical coach doping confrontation efficacy positively predicted doping SRE ( $\beta = .22$ ) and perceptions of S&C coach doping confrontation efficacy negatively predicted doping MD ( $\beta = -.25$ ). Doping SRE negatively predicted doping MD ( $\beta = -.41$ ) and susceptibility to intentional doping ( $\beta = -.33$ ). Finally, doping MD positively predicted susceptibility to intentional ( $\beta = .31$ ) and inadvertent ( $\beta = .42$ ) doping. Mediation analyses identified significant indirect negative predictive effects of perceptions of technical and S&C coaches on susceptibility to intentional ( $\beta_{\text{Technical}} = -.14$ ;  $\beta_{\text{S\&C}} = -.13$ ) and inadvertent ( $\beta_{\text{Technical}} = -.13$ ;  $\beta_{\text{S\&C}} = -.14$ ) doping. The strength of the association between athletes' perceptions of the two coaches, and divergent predictive effects for perceptions of the two coaches, support the potential importance of both types of coach for our understanding of coaching influences that may impact intentional and inadvertent doping. Data collection is ongoing; once complete (target  $N = 600$ ) multisample analyses will determine the invariance of model effects across athletes from the three countries.

*Keywords: coach doping confrontation efficacy, moral disengagement, performance enhancing drugs, self-regulatory efficacy, cross-country invariance*

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## Psychological features and interventions in endurance performance

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**Chair: Maurizio Bertollo (University G. d'Annunzio of Chieti-Pescara)**

Endurance performance can be mentally demanding and athletes have reported psychological demands, related to training and competition, that require a variety of mental strategies (McCormick, Meijen, & Marcora, 2017). Early research suggested that there are primarily two coping strategies that can be used to enhance performance in endurance tasks (a) association and (b) dissociation. More recently associative and dissociative thoughts during endurance performance were classified as inward monitoring (e.g., fatigue), outward monitoring (e.g., strategy), inward distraction (e.g., daydreams), or outward distraction (e.g., scenery; see Brick, MacIntyre, & Campbell 2014). Persistence, effort or perseverance are often reported as signature behaviors of mentally tough individuals involved in endurance sport. During the symposium, a practical application of psychological support for runners, defined psyching team, will be presented as well as the influence of natural settings on cognition and the effect of human nature interactions. Moreover, mental toughness in aerobic activity will be discussed as well as the influence of mindfulness training on running economy. Finally, the psychophysiological features related to associative strategies will be presented as well as some preliminary evidence suggesting that anodal tDCS increases exercise tolerance in a cycling.

*Keywords: endurance, attentional strategies, psyching team, mindfulness, mental toughness, green exercise*

## Attentional focus in endurance activities: The influence of natural settings on cognition

**Tadhg MacIntyre (University of Limerick), Noel Brick (Ulster University)**

Endurance activity in sport has been the subject of study by researchers from a cognitive perspective for almost four decades (Morgan, 1978). Recently research has employed a range of methodologies from naturalistic observations to laboratory based studies to explore the cognitions of athletes. New models have

been developed which provide a more comprehensive account than early accounts grounded in an internal and external dichotomy of association versus dissociation. Brick et al. (2014) has proposed that metacognitive processes augment the active self-regulatory processes and both internal sensory and outward monitoring. Additionally, active and involuntary distraction play a role and we argue that the setting in which the activity occurs may have a key role in this process. To explain, many endurance activities and events occur in natural settings ranging from forest trails to lakeside paths. Researchers have become increasingly interested in the effect of human nature interactions. One topic of interest has been 'green exercise' or physical activity in natural settings (Pretty, 2003). Tentative evidence from attention restoration theory has suggested that this human nature interaction enhances cognitive function (Hartig et al. 2014). The theory posits that natural stimuli require effortless attention and thus enable rest from our more typical directed attention system. One question for researchers is whether exposure to natural stimuli is enough for these potential ergogenic effects? Is noticing nature, a more demanding level of engagement with the multi-sensory stimuli, required for these effects to emerge? How do these demands, for example in visual cognition, interact with the competing task demands of endurance running (e.g., pace control and self-regulation). Evidence for the benefits of contact with nature at a cognitive and emotional level are reviewed. Future research directions are outlined and the need for a transdisciplinary approach is advocated.

*Keywords: attentional focus, endurance, cognition, green exercise, attention restoration*

### **Dealing with psychological demands in endurance performance: Brief contact interventions as a practical application in long-distance running events**

***Carla Meijen (University of Kent, Medway, United Kingdom)***

Long-distance running events such as a marathon can be mentally demanding. Recreational athletes in various endurance sports have reported psychological demands related to training and competition, these demands involved time investment and lifestyle sacrifices, commitment to training sessions, pre-event stressors, exercise sensations, optimising pacing, and remaining focused despite adversity (McCormick, Meijen, & Marcora, 2017). To help deal with psychological demands that endurance athletes may experience, sport psychologists can draw on a variety of mental strategies. A practical application of psychological support for runners is the concept of psyching teams. Psyching teams provide brief mental support to runners before, during, and after long-distance running events such as half and full marathons. This use of brief, non-traditional interventions includes strategies such as mantras and anchoring (Meijen, Day, & Hays, 2017). In this presentation, there will be a critical reflection of the potential benefits of a psyching team. In addition, an overview of variables that may help to explain the potential effectiveness of psychological strategies used in psyching teams will be provided. Finally, the challenges of testing the effectiveness of psychological strategies in a real-life setting such as a psyching team will be discussed.

*Keywords: running, psyching teams, qualitative research, psychological support*

### **Mental toughness and behavioural perseverance among Australian rules footballers**

***Brandon Giles, Dylan Warner (School of Sport Science, Exercise and Health, The University of Western Australia), Paul Goods (Western Australian Institute of Sport), Dale Quain, Peter Peeling (School of Sport Science, Exercise and Health, The University of Western Australia), Kagan Ducke, Daniel Gucciardi (School of Physiotherapy and Exercise Science, Curtin University)***

Persistence, effort, or perseverance are often reported as 'signature' behaviours of mentally tough individuals. Although recent work has provided preliminary evidence to support this theoretical expectation, no study to date has examined the association between mental toughness and behavioural perseverance while accounting for an individual's aerobic capacity. To address this gap in the literature, 31 well-trained, male

Australian Rules footballers aged 18 to 28 years ( $21.65 \pm 2.93$ ) completed two testing sessions separated by 7 days. One week prior to the first session, participants self-reported their mental toughness. Session 1 consisted of a graded exercise test (GXT) to measure participants'  $\dot{V}O_{2peak}$ . Session 2 involved the completion of a standalone 20 m multistage shuttle run test (MST). Blood lactate (BLa), heart rate (HR) and a rating of perceived exertion (RPE) were collected at various stages of each testing session. Psychological (RPE<sub>session1</sub>  $18.87 \pm 1.31$ ; RPE<sub>session2</sub>  $17.84 \pm 1.46$ ) and physiological (HR<sub>session1</sub>  $193.23 \pm 7.41$ ; HR<sub>session2</sub>  $191.84 \pm 8.63$ ; BLA<sub>session1</sub>  $10.33 \pm 2.75$ ; BLA<sub>session2</sub>  $8.96 \pm 2.68$ ) data indicated that participants exerted high effort during both testing sessions. Bayesian path analysis with informative priors from past research indicated that  $\dot{V}O_{2peak}$  ( $B = .47$ ,  $CI_{95} = .22, .73$ ) and mental toughness ( $B = .20$ ,  $CI_{95} = .01, .38$ ) but not age or height were substantive indicators of MST performance. Sensitivity analyses revealed a discrepancy between results obtained using informative versus uninformative priors; the incongruence between prior beliefs and the data could be a result of theory, the population, or other study features. As such, these findings require replication (e.g., diverse sample of athletes) and extension (e.g., manipulation of mental toughness) in future research to clarify the nature of the association between mental toughness and behavioural perseverance.

*Keywords: Bayesian statistics, beep test, psycho-physiological, maximum oxygen uptake, mental toughness*

### Psychophysiological features associated with associative strategies in endurance performance

**Selenia Di Fronso, Laura Bortoli, Silvia Comani, Claudio Robazza, Maurizio Bertollo (BIND-Behavioral Imaging and Neural Dynamics Center, Department of Medicine and Aging Sciences, "G. d'Annunzio" University of Chieti-Pescara)**

Associative and dissociative thoughts during endurance performance are usually classified as inward monitoring (e.g., fatigue), outward monitoring (e.g., strategy), inward distraction (e.g., daydreams), or outward distraction (e.g., scenery; Stevenson & Biddle, 1998). There is general agreement about the importance of studying how different attentional strategies influence performance in sport settings (see Brick, MacIntyre, & Campbell 2014). Drawing on Stevenson and Biddle's (1998) classification, Brick et al. (2014) suggested that the associative dimension in attentional studies should include active self-regulation (i.e., thoughts related to cadence, pacing, technique, strategy, or maintaining a relaxed state) and internal sensory monitoring. Recently, in an endurance task Bertollo et al. (2015) showed that both external strategies (focus on outward pacing) and internal strategies (focus on core components of the task) can exert functional effects on performance compared to an attentional focus directed toward irrelevant components. Moreover, Comani et al.'s (2014) findings indicate that specific functional connectivity patterns may be associated with different types of attentional strategies. Further psychophysiological patterns related to internal and external associative strategies will be also presented, as well as some preliminary evidence suggesting that anodal tDCS increases exercise tolerance in a cycling.

*Keywords: focus of attention, attentional strategies, Internal and external associative strategies*

### The influence of mindfulness training on running economy and flow in trained runners

**Antje Hill, Linda Schücker, Julian König (University of Muenster, Muenster, Germany), Norbert Hagemann (University of Kassel, Kassel, Germany)**

Although attentional focusing in endurance sports is a well investigated topic, there is not yet a consensus on which focus can be regarded as the most optimal one. Recently, the role of mindfulness training has been discussed to play an important role in terms of maintaining a beneficial focus of attention (Bortoli et al., 2012), as well as to promote flow experience (Gardner & Moore, 2004). The current study examines the impact of a mindfulness program to optimize attentional focusing in running. 17 trained runners attended a 4-week

mindfulness program. Before (T1) and after (T2) the program, they were asked to run on a treadmill at moderate intensity under three attention conditions that have been proven to be beneficial in the literature (internal focus on running movement, external focus on video, focus on core component of the movement). T1 and T2 were compared in terms of running economy (objective measurement) and flow experience (subjective measurement) to examine if training of mindfulness 1) promotes flow experience and 2) leads to lower oxygen consumption values among all attention conditions. Running economy was assessed via spiroergometry. Repeated measures ANOVA indicated a significant increase of flow experience for T2 among all attention conditions ( $F(1,16) = 7.77, p=.01, \eta^2=.19$ ). No significant difference could be found regarding running economy. This study shows benefits of a mindfulness training program on subjective flow experience. Future studies should be conducted with a higher number of participants and an extended mindfulness program.

*Keywords: running economy, flow experience, mindfulness*

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## Perceptions and concepts of working with elite athletes and coaches

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***Chair: Gershon Tenenbaum (Florida State University)***

The symposium aims at introducing a systematic and evidenced-based approach of implementing mental support for elite athletes. Five presentations comprise this symposium, which consists of practitioners/researchers from North America and Asia describing their research findings and practical lessons in working with elite athletes. The symposium begins by examining Israeli athletes' and coaches' perceptions of the London 2012 Olympic Games as a career change-event, and the mental support provided prior, during, and following the Games. Lessons to be learned are emphasized. The second presentation takes a cultural approach to mental service delivery. Specifically, issues such as race, ethnicity, gender, sexual orientation, education, and nationality must be considered when working with athletes and coaches preparing for world events and the Olympic Games. The third presentation centers on different methods practitioners use to transform research findings and theoretical knowledge into actual situations to instill determination, optimization, persistence and effort leading to enhanced performance in Malaysian athletes. The fourth presentation is devoted to practical principles derived from theory and research to the mental strategies with the Canadian water polo female National team. The final presentation is devoted to practices which help athletes become active participants in their personal development, aimed at enhancing intrinsic motivation and controllable causal attributions. Together, the presentations emphasize the important role of delivering mental services to elite athletes, and highlight the scientist-practitioner perspective while considering personal and cultural needs of the athletes and coaches we collaborate.

*Keywords: mental preparation, performance enhancement, research-based practice, psychological support, cultural sport psychology, Olympic Games*

## Israeli athletes' and coaches' perceptions of London 2012 as a career change-event

***Roy David Samuel (Kibbutzim College of Education Technology and the Arts, Florida State University), Gershon Tenenbaum (Florida State University), Hila Gil Bar-Meher (Binyamina Givat-Ada Local Council Sport Department, Binyamina, Israel)***

The Olympic/Paralympic Games (OGs) represent the highest professional ambition of many athletes (Wylleman, Reints, & Van Aken, 2012). Recently, researchers have begun considering the OGs as a multifaceted within-career transition (Stambulova, 2016). Yet, existing research of this transition mostly applied qualitative designs. This study used the Scheme of Change for Sport Psychology Practice (SCSPP; Samuel & Tenenbaum, 2011a) to examine athletes' and coaches' perceptions of, coping with, and outcome of the London 2012 OGs. A cross-sectional and retrospective design was applied. Sixty one Israeli Olympic and Paralympic athletes and coaches completed the Change-Event Inventory (Samuel & Tenenbaum, 2011b) and Athletic/Coaching Identity





Measurement Scale (AI/CI; Brewer & Cornelius, 2001) two years after the London 2012 OGs. Athletes and coaches reported comparable levels of motivation and AI/CI. The OGs experience was perceived as a highly significant and positive change-event in athletes' and coaches' careers. The perceived significance was associated with AI/CI. At the time of Olympic qualification the participants tended either to ignore this change-event or cope with it independently; however, most participants reported making a subsequent decision to change. Professional resources of support were mainly available prior to and during the OGs, but less after the OGs. During this experience the participants did not consider using sport psychology services, but retrospectively, valued the usefulness of this type of support. Athletes' motivation after the OGs significantly decreased and was predicted from their satisfaction of coping. Athletes' perceived outcome of this change-event was predicted from their satisfaction of competition results. Both athletes and coaches should be given psychological support throughout the Olympic cycle, especially in promoting a decision to change as well as maintaining realistic expectations of results.

### **A creative theory-driven practice to increase team functioning in preparation to Olympic Qualification and World Championship**

**Veronique Richard (Florida State University)**

In this presentation, I describe my psychological work with the Canadian water-polo team preparations for the Rio Olympics and the World Championship. I illustrate how mental performance interventions were conducted in that specific context. Guided by the Optimal Team Functioning (OTF) model (Collins & Durand-Bush, 2015), several creative theories driven interventions were implemented in the team. Structural team processes were developed through extensive workshops following an innovative version of the 3-stage goal setting approach protocol. Team regulation processes were improved using comic improvisation oriented by coping effectiveness training concepts. Communication skills were fostered in short 10 minutes' locker room interventions. Finally, individual regulation processes were reinforced using an imagery script developed by the team and recorded on an inspirational instrumental music for every player to attend to it on their own. Intervention outcome was reflected in an increased sense of cohesion in the team allowing athletes to overcome set backs and difficulties in a much more adaptive manner. Players became more performance-oriented which in turn influenced positively training efficiency and performance enhancement. Communication during plays, openness to feedback from teammates, and persistence during games were only a few performance factors that have benefited from the OTF.

### **Steering 'numbers' to performance: D.O.P.E approach (Determination-Optimization-Persistence-Effort) for performance**

**Jolly Roy (Sport Psychology center, National Sport Institute of Malaysia)**

Of major concern is how research findings published in the scientific assets can be transformed into the practitioners' and athletes' practices in actual competition. While research findings contribute immensely to our understanding of the psychological dimensions of competitive sport, the methods by which these can be implemented remains an art rather than a science. I introduce different methods practitioners use to transform research findings and theoretical knowledge into actual situations to instill determination, optimization, persistence and effort leading to enhanced performance. More specifically, the presentation centers on (1) creating appropriate self-determination for sport engagement by inculcating identified responsibility, (2) keeping athletes in individual optimal zone throughout the competition period by maintaining constructive thoughts and emotions, (3) encouraging athletes to strive in adversity and persist until achieving one's goal, and (4) enhancing the quality of effort. The presentation includes examples from real competitive situations and demonstrates the importance of research-based practices.

### **Research informed practice with the Canadian Olympic boxing team**

**Robert J. Schinke (Laurentian University, Canada)**



Sport psychologists have often utilized a mono-cultural approach to research and practice. Though many scholars have viewed their approaches as race blind, where they treat all sport participants the same, recent literature has debunked this viewpoint of sameness being commensurate with equality. Over the span of 10 years, CSP has developed rapidly, borrowing from cultural psychology. There are now multiple sport psychologies, infused with race, ethnicity, gender, sexual orientation, education, and nationality. These idiosyncratic “approaches to the field” contribute to heightened relevance at the practical level for athletes, coaches, and sport scientists. Within this presentation, I focus on a sub-cultural and contextualized research – practice dialectic situated within the context of the Canadian National Boxing Team over the course of successive Olympic cycles. I draw upon my practical work in the field and its tie back to federally funded research focused particularly on (a) Canadian Aboriginal, then (b) immigrant, and finally (c) marginalized athlete identities. This practice to research linkage will be situated within applications at major games training camps, leading to Olympic birth and performance. Using the Canadian boxing context as a springboard, I consider how I developed into a cultural sport psychology scholar – practitioner who utilizes ontological, epistemological, and methodological alignment, and how these contribute to performance enhancement and holistic athlete development. Recommendations are briefly proposed regarding how to develop a scientist – practitioner model that is uniquely your own, situated within the elite sport context where you wish to work over the long-term.

### Implementation and utilization of post-event reflection in collegiate athletes

***Graig M. Chow, Matteo Luzzeri, Stinne Soendergaard (Florida State University)***

The underlying basis of many psychological interventions is self-awareness. Moreover, self-awareness is a fundamental staple of optimal sport performance (Ravizza & Fifer, 2014), and is thought to facilitate self-reflection and self-monitoring, which are essential skills for self-regulation and correction (Kirschenbaum, 1997). Athletes vary in their ability to comprehensively self-reflect on their performances and may at times over rely on feedback provided by coaches and others. Helping athletes become more active participants in their personal development is theorized to improve intrinsic motivation and result in more internal and controllable causal attributions (Allen et al., 2010; Butler & Hardy, 1992). While there is ample research on pre-competition and pre-performance routines to guide applied practice, there is a lack of research and associated techniques on routines that are beneficial for athletes to utilize post-competition. Within this presentation we introduce a tool—the Post-Event Reflection—that sport psychology practitioners can use with their athletes to assist them in critiquing their performances in a productive, improvement-focused manner. With both open-ended reflective questions and self-assessment quantitative items, the Post-Event Reflection was structured for athletes to constructively reflect on their competition or practice performances in order to maximize learning and adjusting. Specific sections and steps for implementing the Post-Event Reflection will be detailed as well as potential variations depending on the client’s presenting concerns and needs. We will share our experiences using the tool with collegiate athletes, including highlighting its purposes, strengths, and challenges. Data from athletes who have completed the Post-Event Reflection will be presented, and adaptations and extensions of the technique will be advanced.

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### Bridging the research-practice ‘gap’ in sport and exercise psychology: three strategies for reconciliation

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***Chair: Richard Keegan (University of Canberra, Canberra, Australia)***

The research-practice ‘gap’ in sport psychology has been recognized and critiqued by Martens (1979) and Vealey (2006). The ‘gap’ refers to failures in transferring research findings into practice, and/or in establishing the efficacy of key practice decisions and interventions. Such ‘gaps’ exist in many fields of science, and have similar causes and consequences – which will be examined in the first presentation. Most notably, the purposes, contexts and reward structures of research and practice are markedly different (cf. Norman, 2010). A serious consequence of permitting such a gap is that the legitimacy of well-regulated and highly ethical applied

practice can still be questioned if the underpinning research base is lacking. This symposium will seek to characterize the research-practice gap in sport psychology and offer clear, readily implemented routes to achieving a 'reconciliation'. The presentations in the symposium will provide examples and reflections on three different approaches to 'bridging' the research-practice gap: (a) researching applied practice, (b) delivering practically useful research, and (c) research-informed practice. Our presentations will come from a diverse international team of researchers and practitioners, who themselves embody the bridging of the 'gap'. First, Richard Keegan will overview the landscape of this topic, and provide key insights into how we might address the problem. Second, Vana Hutter will report on her research examining how well research is utilised by trainee practitioners in sport psychology (themes a+c). Third, Toby Woolway reports on two research projects examining the ways that sport psychology practitioners are recruited (theme a). Fourth, Renee appeal presents the findings and reflections from the ongoing 'Stay Healthy' injury prevention project at the AIS (themes b+c). Fifth, Richard Keegan reports on a detailed process evaluation of a state sport academy's psychological support service (themes a + b)

*Keywords: Applied practice, scientist-practitioner, consultancy, practitioner, research-informed practice*

## Practice-based evidence on evidence-based practice

**Vana Hutter (Vrije Universiteit, Amsterdam, Netherlands.)**

'Scientific knowledge and methods' was labelled as one of the foundational competency domains in the competency benchmarks for professional psychology (see Rodolfa et al., 2005; Fouad et al., 2009). The question remains however: to what extent is evidence-based practice actually practiced in applied sport psychology? I will shed light on this question from my experience at a postgraduate program in applied sport psychology. I will discuss to what extent trainee sport psychologists find research and literature helpful and to what extent trainees seem capable of applying research in their professional practice. First, findings from interviews with graduates on the use of literature and conferences will be presented. Content review of 58 quotes from the interviews (N=16) illustrate that students and graduates mainly used literature and presentations on professional practice and professional development. They seemed to use literature to build a scientific foundation of professional practice, as apposed to a scientific foundation of psychology and sport sciences. Second, an analysis of the assessment scores on the case reports of trainees (N=18) will be presented. Supervisors and exam committee members scored the extent to which trainees substantiated their application of interventions with their clients with recent and relevant literature. The exam committee members deemed this competency to be under par in half of the cases. Supervisors, on the other hand, only scored 10% of the cases as insufficient in this regard. Although the sample size is very limited, this points to the question whether trainees are appropriately trained to substantiate their practice with evidence, and whether this competency is sufficiently endorsed in supervision.

*Keywords: trainee, training, qualitative, competencies*

## Gaining entry as a Sport Psychologist: a review and extension of current knowledge

**Toby Woolway (Loughborough University, Loughborough, United Kingdom)**

Gaining entry to practice is the precursor to subsequent service provision for any Applied Sport Psychologist. Understanding the factors that influence this process can aid in the development of educational training programs, marketing tools for the field as a whole and what is necessary to gain entry. As part of a two-piece research project, a systematic narrative review was conducted on studies that investigated the preferred characteristics of the Sport Psychology Consultant (SPC) in terms of a clients' likelihood to seek services. However, the majority of participants were prospective, non-decision making individuals. Building on the findings of this study, with particular regard to the limitations of past research, a qualitative study was



undertaken. Seven 'gatekeepers' directly involved with the hiring of SPCs within the United Kingdom participated in interviews guided by an interpretive phenomenology approach. The participants' experiential data revealed four superordinate themes that influenced their historic hiring decisions. Consultant affability, confidence in sport psychology, the ability to find common ground, and the ability to effectively promote one's consultant competencies. The findings of this study provide the applied practitioner with a detailed account of the gatekeepers' perspective on the gaining entry process and what is important to this group of individuals when choosing a practitioner to grant entry.

*Keywords: gatekeepers, hiring, marketing, competencies, practitioner attributes, review*

## Stay healthy to prepare and perform: Opportunities for sport psychology research and practice

**Renee N. Appaneal (Australian Institute of Sport)**

This presentation describes the integration role of sport psychology within an innovative interdisciplinary project at a national sports institute, to promote athlete athletes' health. The project seeks to ensure as many athletes as possible reach international competitions having lost as few training days as possible to injury or illness. Recent data showed that 56% of illnesses among a sample of the nation's elite athletes occurred within the final two months before key events (Raysmith & Drew, 2016); where none of the athletes who fell ill during this period achieved their performance goals. To be proactive in the management of potential risks during the final year of an Olympic/Paralympic cycle, a multifaceted research program was developed across key streams thought to contribute to athletes' illness risk. The Stay Healthy Project represents expertise from across the institute's performance support division, and includes research streams in genetics, medicine, psychology, nutrition, training load, sleep and wellbeing. This project created an opening for sport psychology to participate in the identification of risk factors, and ultimately, the prevention of illness/injury, to enable athletes' uninterrupted preparation. An overview will be given of the psychology stream that reflects links to resilience and stress-recovery balance. A simple framework that ties together mental and physical health, preparation and performance will be offered, including specific ways it links health to performance, and unifies sport psychology research and practice. Also to be highlighted are the ways in which involvement in this project has created a more aligned and strategic research agenda as well as fostered relationships with universities that may nurture and connect the sport psychology community.

## Qualitative process evaluation of a state sport academy's psychology service

**Richard Keegan, Lena Kessler, Sarah Jack (University of Canberra, Australia)**

Process evaluations have an important role in assessing the fidelity and quality of program implementation; clarifying causal mechanisms and identifying contextual factors associated with variation in outcomes (Dieppe et al., 2008; Moore et al., 2015). While the effectiveness of a program can be assessed by examining outcomes, effect sizes do not provide managers and policy makers with information on how efficacy is being achieved in individual instances of support (Moore et al., 2015). For these reasons, a qualitative process evaluation was conducted to identify the current strengths, opportunities, and threats in the psychology service offered by a state sports academy. Semi-structured interviews focused on core theme identified in the Medical Research Council model: (i) aims of service; (ii) context and environment; (iii) implementation – what is done by the sport psychs?; (iv) attributes of the sport psychologists; (v) mechanisms of impact; (vi) outcomes generated. Seven interviews and one focus group were conducted, including all current psychologists, managers, athletes, and one full time coach. Several themes permeated the analysis, including an apparent tension between the aims of supporting performance versus supporting 'the human'; the specific context and constraints of providing a service to a wide array of talented, 'pre-elite' and elite athletes;

a diverse range of support strategies; flexibility in underlying assumptions and models; autonomy and support from management; and an imbalance of time spent on service delivery over strategic planning and reflection. Notably, the 'outcomes' that were highly valued by athletes, coaches and managers were not closely aligned to the 'headline' outcomes that were expected of the service. Findings are differentiated into those that might generalize versus those that are likely to be unique to the context. Conclusions focus on key features that were perceived to make the service effective, and the potential for process evaluations in understanding sport psychology service delivery.

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## Advances in perfectionism research in sport, dance and exercise: The 2 × 2 model of perfectionism

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**Chair: Andrew P. Hill (York St John University, UK)**

Perfectionism is a multidimensional personality trait that includes two broad dimensions: personal standards perfectionism (PSP) and evaluative concerns perfectionism (ECP). These dimensions have been found to predict a range of motivation (e.g., achievement goals), wellbeing (e.g., self-esteem), and performance (e.g., seasons best performance) related outcomes in sport, dance, and exercise. Most research to date has focused on the independent and additive effects of the two dimensions of perfectionism. However, following the proposal of the 2 × 2 model of perfectionism (Gaudreau & Thompson, 2010), researchers have begun to examine the interactive effects of the two dimensions. In the 2 × 2 model, this entails examining four subtypes perfectionism, non-perfectionism (low PS/low PC), pure PSP (high PSP/low ECP), pure ECP (low PSP/high ECP), and mixed perfectionism (high PSP/high ECP). Four hypotheses can be tested in the model. Hypothesis 1 has two versions which state that pure PSP will either be associated with better (H1a) or worse (H1b) outcomes compared with non-perfectionism. Hypothesis 2 states that non-perfectionism is associated with better outcomes than pure ECP (H2). Hypothesis 3 states that mixed perfectionism will be associated with better outcomes than pure ECP (H3). Finally, hypothesis 4 states that pure PSP will be associated with better outcomes than mixed perfectionism (H4). The symposium includes a series of studies that test these hypotheses and, in doing so, provides new insights into the 2 × 2 model. The studies include a re-analysis of all existing perfectionism research in sport, dance, and exercise using the 2 × 2 model as an analytical framework (presentation 1), examination of hitherto unexamined criterion variables (namely, attitudes towards doping, athletic performance, and self-criticism; presentations 2 to 4), and the first test of the 2 × 2 model under conditions of repeated competitive failure (presentation 5).

*Keywords: personality, perfectionism, motivation*

### A test of the 2 × 2 model of perfectionism following repeated interpersonal failure on a cycle ergometer task

**Thomas Curran (University of Bath, UK), Andrew P. Hill (York St John University, UK)**

The diathesis-stress model of perfectionism proposes that perfectionism is a vulnerability factor for psychological, motivational, and performance difficulties under conditions of stress. Few studies have tested this model in sport and those that have done so have examined the effects of dimensions of perfectionism separately. This study provides the first test of the diathesis-stress model in context of the 2 × 2 model of perfectionism (Gaudreau & Thompson, 2010) and guilt, shame, and pride in sport. Participants were 60 university students ( $M = 20.77$ ,  $SD = 3.57$ ) who completed the Multidimensional Perfectionism Scale (Hewitt & Flett, 1991) and the State Pride, Shame, and Guilt Scale (Marschall, Saftner, & Tangney, 1994) during an experimental protocol aimed at evoking stress via perceptions of competitive failure. The experimental protocol involved groups of three and four participants competing in three 4-minute sprint trials on a cycle

ergometer. To induce perceptions of competitive failure, after each trial, participants were instructed that they had performed the worst of all competitors. Moderated multilevel regression revealed perfectionism predicted within-person baseline variability in pride, shame and guilt. For pride, hypothesis 1a and hypothesis 3 were supported (but not hypotheses 2 or 4). For guilt and shame, hypothesis 4 was supported (but not hypotheses 1a/1b or 2). In addition, hypothesis 3 was contradicted as mixed perfectionism was associated with greater within-person deviations in guilt and shame than pure ECP. Results support the diathesis-stress model of perfectionism and suggest that negative reactions to achievement stress are greatest when mixed perfectionism is exhibited.

*Keywords: personality, perfectionism, motivation*

## The 2 × 2 model of perfectionism and athletic performance

**Gareth E. Jowett (Leeds Beckett University, UK), Andrew P. Hill (York St John University, UK)**

Research has found evidence of a relationship between perfectionism and athletic performance (e.g. Stoeber, Stoll, Pescheck & Otto, 2008). In these studies, personal standards perfectionism (PSP) is typically positively related to athletic performance whereas evaluative concerns perfectionism (ECP) is typically unrelated to athletic performance. While these studies highlight the independent effects of perfectionism dimensions, the interactive effects of dimensions of perfectionism have yet to be examined. Consequently, the aim of the present study was to provide the first tests of the hypotheses of the 2 × 2 model of perfectionism (Gaudreau & Thompson, 2010) in regards to athletic performance. Participants were 129 undergraduate sport students (M age = 19.10, SD = 1.58) who completed the Multidimensional Inventory of Perfectionism in Sport (Stoeber, Otto, & Stoll, 2006), and then performed a novel sprinting task on five occasions with standardised rest periods. Moderated hierarchical regressions revealed that perfectionism significantly predicted performance on two occasions (in the last trial and overall improvement in performance). For performance in the last trial, hypotheses 1a, 2, and 4 were supported (but not hypothesis 3). For overall improvement in performance, hypotheses 1a and 4 were supported (but not hypotheses 2 and 3). The findings suggest that subtypes of perfectionism are associated with different levels of athletic performance with pure PSP associated with the best athletic performance.

*Keywords: personality, perfectionism, motivation*

## The 2 × 2 model of perfectionism and attitudes towards doping in junior athletes

**Daniel J. Madigan (York St John University)**

A recent study found that perfectionism predicts junior athletes' attitudes towards doping (Madigan, Stoeber, & Passfield, 2016). Specifically, personal standards perfectionism (PSP) was found to negatively predict more positive attitudes toward doping whereas evaluative concerns perfectionism (ECP) was unrelated. The present study continues this line of research by testing the 2 × 2 model of perfectionism (Gaudreau & Thompson, 2010) in relation to attitudes towards doping. In doing so, the interactive effects of dimensions of perfectionism rather than the independent effects of dimensions of perfectionism are focused upon. Participants were 119 junior athletes (M age = 17.1 years, SD = 0.82 years) who completed the Sport Multidimensional Perfectionism Scale (Dunn et al., 2006), the Multidimensional Inventory of Perfectionism in Sport (Stoeber, Otto, & Stoll, 2006), and the Performance Enhancement Attitude Scale (Petróczi & Aidman, 2009). Moderated hierarchical regressions revealed that, as in the previous study, perfectionism significantly predicted attitudes towards doping. In regards to the hypotheses of the 2 × 2 model, hypotheses 2 and 3 were supported (but not hypothesis 1a/1b or 4). The findings suggest perfectionism may in some circumstances contribute to immoral behaviours in sport. However, this is only likely to be the case when high ECP is exhibited.

*Keywords: personality, perfectionism, motivation*

## The 2 × 2 model of perfectionism and self-criticism in athletes

**Sarah H. Mallinson-Howard, Andrew P. Hill (York St John University, UK)**

Personal standards perfectionism (PSP) is primarily related to self-criticism based on internal standards (ISC) and evaluative concerns perfectionism (ECP) is primarily related to self-criticism based on comparative standards (CSC) (Thompson & Zuroff, 2004). The relationship between PSP and ISC is one possible explanation for why, when testing the 2 × 2 model of perfectionism (Gaudreau & Thompson, 2010), hypothesis 1b (and not 1a) is sometimes supported and why hypothesis 3 is sometimes contradicted. That is, the presence of high PSP also brings with it high ISC that will be exacerbate (not ameliorate) ECP and be more (not less) problematic for athletes, dancers, and exercisers. The present study examined this possibility by testing the 2 × 2 model of perfectionism in regards to ISC and CSC in athletes. Participants were 240 adult athletes (M age = 24.52, SD = 9.43) who completed the Multidimensional Perfectionism Scale (Hewitt & Flett, 1991) and the Levels of Self-Criticism Scale (Thompson & Zuroff, 2004). Moderated hierarchical regressions revealed that perfectionism significantly predicted both ISC and CSC. For ISC, as expected, hypotheses 1b, 2, and 4 were supported and hypothesis 3 was contradicted. For CSC, hypotheses 1a, 2, 3 and 4 were all supported. The findings suggest that the presence of internal standards based self-criticism may explain why pure PSP will not always be associated with better outcomes than non-perfectionism and why mixed perfectionism will sometimes be worse than pure ECP.

*Keywords: personality, perfectionism, motivation*

## The 2 × 2 model of perfectionism in sport, dance and exercise: A review and reanalysis

**Andrew P. Hill, Sarah H. Mallinson-Howard (York St John University, UK), Gareth E. Jowett (Leeds Beckett University, UK)**

Initial research examining the 2 x 2 model of perfectionism (Gaudreau & Thompson, 2010) suggests that a focus on combinations (or subtypes) of perfectionism dimensions can further our understanding of the likely consequences of perfectionism. However, to date, there have been only seven studies to directly examine the 2 × 2 model of perfectionism in sport, dance and exercise. In the absence of more studies on which to assess the value of the model, we reviewed and re-examined all perfectionism studies in sport, dance, and exercise using the 2 × 2 model as an analytical framework. In total our review comprised 80 studies and 454 tests of each hypothesis of the 2 × 2 model. In regards to each hypothesis, our review indicated that hypothesis 1a was supported on 319 occasions (70% of the time) and hypothesis 1b on 137 occasions (30% of the time). Hypothesis 2 was supported on 427 occasions (94% of the time) and contradicted on only 27 occasions (6% of the time). Hypothesis 3 was supported on 314 occasions (69% of the time) and contradicted on 140 occasions (31% of the time). Finally, hypothesis 4 was supported on 427 occasions (94% of the time) and, like for hypothesis 2, was contradicted on 27 occasions (6% of the time). Overall, the findings suggest that the 2 x 2 model is a valuable approach to understanding perfectionism in sport, dance, and exercise. However, further examination of when (and why) hypothesis 1a and hypothesis 3 are likely to be contradicted in sport is required.

*Keywords: personality, perfectionism, motivation*

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## Emotions and psychobiosocial states in sport

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**Chair: Montse C. Ruiz (University of Jyväskylä)**



This symposium reports theoretical and research developments surrounding the area of emotions, emotion regulation and self-control in the context of sports performance. In the first presentation, Ruiz and colleagues outline the conceptualization of emotions as the core modality of psychobiosocial states, and recent developments in the assessment of athletes' functional and dysfunctional experiences. The procedures include individual-, and task-relevant items and can be used for idiographic and standardized assessments. In the second presentation, Robazza and colleagues present a model based on the interaction between performance and action control levels. The model serves as a framework to develop intervention plans aimed to help athletes reach and maintain their optimal performance states. The third presentation by Appleton and colleagues reports the results of a study examining the relationship between motivational climates (i.e., empowering vs. disempowering), the intensity and perceived functionality of athletes' psychobiosocial states. Their findings highlight the importance of developing coach education programs aimed to foster empowering climates to ensure that athletes experience functional states. In the final presentation, Sylvain and colleagues overview motivational and neurovisceral approaches as applied to the study of self-control, and indicate how this combined perspective can be used in the context of sport to develop interventions. It is hoped that these presentations will increase the participants' knowledge and understanding regarding conceptualization and measurement of psychobiosocial states, and will be useful for the development of effective interventions aimed to increase athletes' well-being and well-functioning.

*Keywords: invited IAAP symposium, emotion, performance state, self-regulation, IZOF model, MAP model, self-control*

### **Individualized and standardized approaches for a multimodal assessment of psychobiosocial states**

**Montse C. Ruiz (University of Jyväskylä), Claudio Robazza (Università degli Studi G. d'Annunzio Chieti e Pescara), Asko Tolvanen (University of Jyväskylä), Juri Hanin (KIHU-Research Institute for Olympic Sports)**

A psychobiosocial state is defined as a situational and multimodal manifestation of total human functioning. Psychobiosocial states can be manifested through psychological (emotional, cognitive, motivational, volitional), biological (bodily, motor-behavioral), and social (performance, communicative) components, which can exert beneficial (functional) or detrimental (dysfunctional) effects on performance process and outcome. Psychobiosocial states have been assessed through individualized and standardized methods. An advantage of these methods is the inclusion of person and task-relevant items, for intra-individual as well as inter-individual analyses of athletes' functional and dysfunctional states. Individualized Profiling of Psychobiosocial States (IPPS; Ruiz, Hanin, & Robazza, 2016) is a procedure used for the assessment of athletes' subjective experiences (emotional and non emotional) forming a psychobiosocial state. This procedure has been applied to assess functional and dysfunctional experiences of high-level athletes related to their individually successful and unsuccessful performances. Psychobiosocial States Scale in its trait (PBS-T; Robazza, Bertollo, Ruiz, & Bortoli, 2016) and state (PBS-S; Ruiz, Robazza, Tolvanen, & Hanin, submitted) versions, based on IPPS, is used for individual and group comparisons. Both trait and state versions of the scales revealed good reliability and psychometric characteristics for the standardized assessment of athletes' psychobiosocial states. Data collected using individualized and standardized methods have important theoretical and applied implications.

*Keywords: emotion, performance state, idiographic assessment, nomothetic assessment, factor analysis*

### **Psychobiosocial states in sport performance**

**Claudio Robazza (Università degli Studi G. d'Annunzio Chieti e Pescara), Montse C. Ruiz (University of Jyväskylä), Maurizio Bertollo, Laura Bortoli (Università degli Studi G. d'Annunzio Chieti e Pescara)**





The individual zones of optimal functioning (IZOF; Hanin, 2010) model embraces a holistic perspective in the description, prediction, explanation, and control of psychobiosocial (PBS) states related to performance. PBS states are conceived as situational, multimodal, and dynamic manifestations of the total human functioning in which emotion has a central role. A number of studies across several sports, competitive levels, and age groups have supported the theoretical strengths and the applied advantages of using a comprehensive description of the athlete's emotional experiences (Ruiz, Raglin, & Hanin, 2017). From an applied perspective, sport psychology interventions are aimed at helping athletes regulate their emotional states to better cope with the competitive pressure and achieve a consistently high level of performance in training and competition. Based on the tenets of the IZOF model, the multi-action plan (MAP; Robazza, Bertollo, Filho, Hanin, & Bortoli, 2016) intervention model has been recently proposed as a framework for emotion- and action-centered, self-regulation strategies to optimize the athlete's states and reach optimal performance. In the MAP model, four types of performance situations are identified from  $2 \times 2$  interactions of performance impact by hedonic tone, and performance impact by action control: Type 1, functional-pleasant emotions and/or optimal-automatic performance; Type 2, functional-unpleasant emotions and/or optimal-controlled performance; Type 3, dysfunctional-unpleasant emotions and/or suboptimal-controlled performance; and Type 4, dysfunctional-pleasant emotions and/or suboptimal-automatic performance. According to this view, athletes can use emotion-centered and/or action-centered self-regulation strategies to control their emotions, attentional focus, or both.

*Keywords: emotion, self-regulation, IZOF model, MAP model, emotion-centered strategies, action-centered strategies*

### Examining the interactive effects of coach-created empowering and disempowering climate dimensions on athletes' psychobiosocial states

**Paul Appleton (University of Birmingham), Montse C. Ruiz (University of Jyväskylä), Joan Duda (University of Birmingham)**

Based in Duda's (2013) hierarchical and multidimensional conceptualisation of the motivational climate, the purpose of this study was to examine whether a coach-created disempowering motivational climate moderated the relationships between a coach-created empowering climate and athletes' self-reported functional and dysfunctional psychobiosocial states. Athletes ( $N = 130$ ,  $M$  age = 24.6 years; 53% male) completed questionnaires assessing their perceptions of coach-created empowering and disempowering climates created in training and competition, and psychobiosocial states (functional-intensity; functional-impact on performance; dysfunctional-intensity; dysfunctional-impact on performance) in sport. Following the recommendations of Hayes (2013) and Dawson (2014), and using PROCESS (Hayes), moderated regression analyses showed that the interaction between empowering and disempowering climate dimensions was significant and predicted 4.6% unique variance in functional-intensity states. The Johnson-Neyman technique was employed to plot and probe the significant interaction, which revealed the relationship between empowering climate and functional-intensity states became non-significant at disempowering climate scores of  $>2.7$ . The findings from this study have implications for education programmes aimed to help coaches understand how to avoid (or dramatically reduce) disempowering climates and create empowering climates, which would increase athletes' functional psychobiosocial states.

*Keywords: coach-created climate, motivational climate, emotion, experience*

### The case for a motivational neurovisceral perspective on self-control in sports

**Sylvain Laborde, Sven Hoffmann (Deutsche Sporthochschule Köln), Chris Englert (Universität Bern), Markus Raab (Deutsche Sporthochschule Köln)**

Evolutionarily, self-control may be the most important characteristic that enabled humans to survive. It is no surprise, given its crucial role in adaptation, that self-control plays also an important role in sports (e.g., fast-paced decision making, stress management, choking under pressure). A careful look at the self-control research revealed a “tale of two literatures”, that self-control has been investigated from different perspectives that barely connected to each other so far. Consequently, the aim of this overview is to establish the basis of a motivational neurovisceral perspective on self-control, and to detail how it can be applied to the sport domain. We combined two main approaches to the study of self-control that have been developed independently in different fields: a motivational account coming from cognitive and social psychology, based on the process model (Inzlicht, Schmeichel, & Macrae, 2014), the opportunity cost model (Kurzban, Duckworth, Kable, & Myers, 2013), the integrative theory of self-control (Kotabe & Hofmann, 2015), and the strength model of self-control (Baumeister, Vohs, & Tice, 2007); and a neurovisceral account coming from neurophysiology, based on the neurovisceral integration model (Thayer, Hansen, Saus-Rose, & Johnsen, 2009). The new perspective will make it possible to integrate and extend the motivational and neurovisceral accounts, develop new research questions and hypotheses, and set the stage for integrated interventions in sports aimed at enhancing self-control and preventing its failure.

*Keywords: self-control, self-regulation, heart rate variability, vagal tone, executive functions, emotions*

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## **Cultural sport psychology: Expanding understandings of sociocultural issues and identities within sport**

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**Chair: Amy Blodgett (Laurentian University)**

Given the increasing globalization and mobility of society, sport practitioners are now, more than ever, working with diverse participants from myriad cultural backgrounds. Although a lack of consideration of culture and marginalized identities has been problematized in sport psychology for many years (Duda & Allison, 1990; Fisher, Butryn, & Roper, 2003), recent efforts have been reinvigorated to foster greater inclusivity within the domain and develop cultural competencies amongst practitioners and scholars. Unfurling as a new genre of scholarship and practice termed cultural sport psychology (CSP), the intent is to challenge the ethnocentric biases of traditional sport psychology which have long overlooked the needs and experiences of minority groups (Ryba, Schinke, & Tennenbaum, 2010; Ryba, Stambulova, Si, & Schinke, 2013). This symposium reveals how CSP projects are currently taking up “culture” and novel interpretivist methodological approaches to facilitate new understandings of sociocultural issues within sport. The first presenter explores how sport psychology professionals from seven different countries define and understand the concepts of “culture” and “cultural competencies”, and discusses implications for effective practice. The second presenter emphasizes how researchers’ own cultural standpoints shape the ways we interact with and produce knowledge about others. The presenter’s experiences engaging in a culturally reflexive research process with Indigenous athletes is shared. The final two presenters provide examples of innovative, interpretivist methodologies within CSP projects. Empirical findings are presented on the acculturation experiences of immigrant athletes and the intersectionality of female boxers’ identities. Sport psychology professionals are encouraged to re-think their own research and practice through a culturally reflexive lens in order to facilitate more inclusive and engaging sport spaces.

*Keywords: cultural diversity, identity, reflexivity, interpretivist methodologies*

## **Reflexive engagement: Locating our human selves in cultural sport psychology research**

**Amy Blodgett, Robert J. Schinke (Laurentian University)**



If we, as sport psychology researchers, are to present honest and comprehensive accounts of the lives we study, it is imperative that we continually engage in reflexive research processes that help us examine our subjectivities and positionings as co-constructors of knowledge (McGannon & Johnson, 2009; Schinke, McGannon, Parham, & Lane, 2012). Challenging notions of researcher objectivity, reflexivity is about reflecting on our researcher power to perceive, interpret, and produce knowledge about others in ways that can be either marginalizing or affirming (McGannon & Johnson). While conceptual writings on reflexivity and examples of reflexive forms of research presentation can be found within the sport psychology scholarship (e.g., Butryn, 2009; Douglas & Carless, 2010), in-depth practical accounts of “how to” engage reflexive processes are scant. In this presentation, the first author (Amy) shares her journey delving into the “how to” of a reflexive research process as part of a larger cultural sport psychology (CSP) project with Indigenous athletes in Canada. The project explored the acculturation experiences of Aboriginal athletes as they moved off reserves to pursue sport in “mainstream” contexts, with the aim of identifying support strategies. An innovative, arts-based reflexive process is overviewed, with emphasis on the allure of a context-driven process. The challenges of being self-reflexive are highlighted, along with the critical insights that can be gained through this process. Through an increasing (and ever-evolving) reflexive awareness researchers can work more supportively with marginalized community members, becoming more conscious of the cultural power dynamics at play (Pringle, 2005) and our role in eliciting or subverting participants’ identities and experiences. Implications are revealed for researchers looking to challenge tacit power imbalances in their research and facilitate more socially just and affirming CSP projects.

*Keywords: reflexivity, power, identity, Indigenous research*

### **The culturally competent sport psychology professional: A qualitative exploration of the meaning attributed to culture by practitioners and scholars**

**Alessandro Quartiroli (University of Wisconsin – La Crosse), Justine Vosloo (Ithaca College), Lia Gorden (Ithaca College), Leslee Fisher (University of Tennessee – Knoxville), Robert J. Schinke (Laurentian University)**

Increased attention has been dedicated to the development of a clear model of professional competencies for psychology practitioners. Rodolfa et al. (2005) developed the Cube Model of Competency, recently applied to sport psychology (SP) (Fletcher & Maher, 2013), identifying individual-cultural diversity as one of the functional competencies. They defined this competency as “awareness and sensitivity in working professionally with diverse individuals” (Rodolfa et al. p.351). The need for culturally safe understandings and appreciation of clients’ cultural backgrounds has recently become the focus of many SP practitioners and scholars (e.g., Ryba & Wright, 2010; Schinke et al., 2016). This interest led to the recognition of the necessity to understand diverse cultures and to be aware of one’s own cultural assumptions to work effectively in multicultural settings (Chao et al., 2011). The current study consisted of an in-depth examination of how SP professionals defined and understood the concepts of culture and “cultural competencies.” Through semi-structured interviews, the authors investigated the personal meaning attributed to these constructs and the experiences of 25 SP professionals from seven countries who had been actively engaged as SP consultants or scholars with three to 40 years of experience. The authors analyzed the interviews using Hill’s (2012) Consensual Qualitative Research Method. Five main conceptual domains were identified: Definition of culture; Internal Development; External Development; Effective and Ethical Practice; and Challenges to Cultural Competencies. Summarizing ideas (Hill, 2000), extracted from the interviews, were developed and subsequently organized in categories within each domain, helping to understand how SP professionals experience “culture” in their profession. Suggestions for the development of a framework for SP professionals interested in engaging in culturally competent applied and scholarly activities are provided.

*Keywords: cultural competence, diversity, ethical practice*



## The intersecting sociocultural identities of Canadian national female boxers

**Yang Ge, Robert J. Schinke, Amy Blodgett, Kerry McGannon, Jacob Latour Dupuis (Laurentian University)**

Understanding sport participants as having multifaceted, fluid, and ever changing identities is a new approach in cultural sport psychology (Schinke & McGannon, 2015). Based on an intersectionality framework from critical feminist scholarship (Crenshaw, 1989), we interviewed 10 national female boxers with diverse sociocultural backgrounds about their cultural identities and their sport experience on the Canadian national team. Mandala drawings (Henderson, Rosen, & Mascaro, 2007) and conversational interviews were used to collect data. Interpretive thematic analysis (Braun & Clarke, 2016) and creative nonfiction (McGannon & Smith, 2015) were then used to organize the data around two research questions: (1) how do female boxers view themselves within the sport context and what meanings or experiences do they associate with their identities? (2) What are the implications of the athletes' identities for sport performance? Based on the thematic analysis, three clusters of intersectional identity categories are revealed as influential in the boxing context: (1) gender-sexuality-physicality; (2) socioeconomic status-education-occupation-age; and (3) race-ethnicity-religion-language. Diverse identity intersections within each group are explored through the participants' stories, centralizing the following: a) the challenges of being a female boxer in a male-dominant sport; b) the White identity privileges and institutional power that shapes boxers' sport careers; and c) the impacts of identity marginalization and "difference" on sport performance and team dynamics. Throughout the presentation we endeavor to facilitate a mutual understanding between coaches and athletes about how to promote diversity-inclusiveness within sport teams.

*Keywords: intersectionality, cultural studies, sociocultural locations, identity*

## The permanent relocation of elite level immigrant athletes into the Canadian sport system

**Odirin Oghene, Thierry Middleton, Robert J. Schinke (Laurentian University)**

The number of people moving homes worldwide has steadily increased over the past 15 years (i.e., 173 million in 2000 to 244 million in 2015; United Nations, 2016). Although the reason for relocating varies for newcomers, they all experience the challenge of navigating between a home and a new (i.e., receiving) culture, and how to interact with the host society as part of a reciprocal, shared process (Schinke, McGannon, Battochio, & Wells, 2013). Within our study we sought to examine the acculturation experiences of immigrant athletes both within and outside of the sport context from a critical acculturation lens (Chirkov, 2009; Schinke & McGannon, 2014). We also examined the challenges faced by immigrant athletes during their adaptation, the impact of such challenges and the resources they utilized to overcome these challenges. Our research was framed through a social constructionist epistemological stance (Crotty, 1998) and employed a variety of qualitative methods. Moving stories (Czarniawska, 2007; Jiron, 2011) were collected via shadowing and conversational interviews (Patton, 2002), which were then subjected to an interpretive thematic analysis (Braun & Clarke, 2016) and developed into composite vignettes (Spalding & Phillips, 2007). The vignettes revealed two major themes surrounding athlete acculturation: the role of family and the sense of community. These themes were present throughout athletes' stories about their acculturation. Understanding the acculturation experiences of immigrant athletes and the role that other people in their lives play within these experiences deepens our understanding of acculturation as a dynamic process. This deeper understanding further enables us to develop practical recommendations for practitioners, leading to effective interventions that address challenges immigrant athletes might encounter post-relocation.

*Keywords: acculturation, athlete relocation, immigrants, moving stories*

## Is need for novelty the fourth basic psychological need? Extending self-determination theory in physical activity settings

**Chair: David González-Cutre (Sport Research Center, Miguel Hernández University of Elche, Spain)**

Self-determination theory is currently one of the main motivational theoretical frameworks that research is using to explain physical activity behaviour. For decades, a lot of studies have shown that the satisfaction of the three basic psychological needs (autonomy, competence, and relatedness) during physical activity participation is associated with autonomous motivation and positive outcomes in different settings (physical education, sport, exercise). Recently, novelty has been proposed as another basic psychological need from the self-determination theory perspective, but research about this variable is still scarce in all contexts of life. The objective of this symposium is to provide evidence that novelty could be a basic psychological need that we should incorporate in sport and exercise psychology research to understand physical activity participation better. The authors present four studies that show the antecedents and outcomes of novelty need satisfaction and frustration in physical education, sport and exercise settings. The results reveal that novelty is a different construct from autonomy, competence, and relatedness, which is promoted by an autonomy-supportive context, and it is related to positive consequences such as vitality, flow, satisfaction, and intention to be physically active in physical education; and to intrinsic motivation, enjoyment, physical activity levels, and mental health in exercise settings. The results also show that a controlling context is negatively related to novelty in physical education and sport, and that novelty need frustration is linked to amotivation. These findings are in line with self-determination theory postulates showing that need for novelty could be a basic psychological need. We can conclude that: 1) Novelty should be included in motivational research about physical activity; 2) Physical education teachers, coaches, and instructors should promote a novelty support context to reach positive consequences.

*Keywords: self-determination theory, novelty, basic psychological needs, motivation, well-being*

## Antecedents and outcomes of need for novelty in physical education using a self-determination theory framework

**Javier Sevil, Alberto Aibar, Ángel Abós, Eduardo Generelo, José A. Julián, Luis García-González (University of Zaragoza, Spain)**

A large body of research points out that the interpersonal style adopted by teachers plays a role on students' motivation and (mal)adaptive outcomes. Grounded in self-determination theory, the aim of this study is to show that two interpersonal styles adopted by physical education (PE) teachers (need supportive and controlling styles) could be antecedents of the need for novelty. A total of 942 students, aged 12 to 19 years, participated in this study. Students' perception of basic psychological need support, controlling teaching, basic psychological need satisfaction and intention to be physically active were measured. Structural equation modeling showed that students' perception of basic psychological need support from PE teacher predicted positively satisfaction of basic psychological needs (competence, autonomy, and relatedness) and need for novelty. Students' perception of controlling teaching predicted negatively satisfaction of need for novelty. Furthermore, satisfaction of basic psychological needs and need for novelty predicted intention to be physically active. These findings are consistent with the bright and dark side of motivation where interpersonal styles could fulfill or undermine the basic psychological needs, including novelty. Such findings indicate that autonomy support from PE teachers could stimulate students' inherent tendency to seek out novelty because they provide students with opportunities to participate and choose activities. Competence support from PE teacher could provide feedback to the students to try different possibilities while relatedness support could influence students' integration and the quality of social relationships to seek new experiences. Moreover, controlling teaching could represent a source of pressure that could limit the capacity to explore and bring new

challenges. Results suggest that the interpersonal style could help to satisfy the need for novelty (e.g., introducing new activities in each teaching unit).

*Keywords: physical education, novelty need satisfaction, interpersonal style*

### **Perceived coaching behaviours and motivation in rhythmic gymnasts: the mediating role of perceived need for novelty**

**Triin Põder, Henri Tilga, Andre Koka (Institute of Sport Sciences And Physiotherapy, University of Tartu, Estonia)**

Grounded in self-determination theory, this study aimed to examine the mediating role of athletes' experiences of novelty need satisfaction and frustration alongside with other basic psychological needs in associations between perceived coaching behaviours and athletes' motivation in the context of rhythmic gymnastics. Specifically, we tested two models. The first model tested association between autonomy supportive coaching behaviour and athletes' intrinsic motivation mediated by need satisfaction. The second model tested association between controlling coaching behaviour and athletes' amotivation mediated by need frustration. Female rhythmic gymnasts (N = 128) aged 11-20 years completed measures of coaching behaviours for autonomy support, negative conditional regard, and intimidation. Additionally, athletes completed measures of satisfaction and frustration of the needs for autonomy, competence, relatedness, novelty, and motivation. Results of the confirmatory factor analysis for the six-item rhythmic gymnastics-modified version of the Novelty Need Satisfaction Scale demonstrated adequate fit after setting error covariance to be free between some of the items. Six items devised for use in this study to assess novelty need frustration showed also adequate psychometric properties. Results of multiple mediator models revealed that none of the four perceived need satisfaction variables acted as mediators between the relationship of perceived autonomy support and athletes' intrinsic motivation. The perceived frustration of the need for novelty (indirect effect = .09) and relatedness (indirect effect = .05), however, revealed to be partial mediators between the relationship of perceived negative conditional regard from the coach and athletes' amotivation. Findings of this pilot study support the utility of novelty need frustration as a means of understanding how perceived coaching controlling behaviour is related to rhythmic gymnasts' amotivation towards training.

*Keywords: sport, novelty need frustration, amotivation*

### **The experience of novelty in exercise and its relations with motivation, enjoyment, vitality, physical activity levels, and mental health**

**David González-Cutre, Alejandro Jiménez-Loaisa, María Romero Elías, Eduardo Cervello (Sport Research Center, Miguel Hernández University of Elche, Spain)**

The aim of this study was to analyse the relations between novelty need satisfaction and different motivational variables in exercise from a self-determination theory approach. Participants were 101 adults (52 men and 49 women), aged between 20 and 69 years, who completed questionnaires about the satisfaction of four basic psychological needs, autonomous motivation, enjoyment and vitality in exercise, physical activity levels, and mental health. First, to show that novelty could be a basic psychological need, we asked the participants to rate the importance of novelty, autonomy, competence and relatedness in a direct (asking for the importance in their general life) and an indirect (asking for a satisfactory event of their life) way. Second, we carried out regression analyses to show the predictive relations from basic psychological need satisfaction in exercise to different consequences. Descriptive statistics reflected mean scores from 6.64 of autonomy importance to 5.86 of novelty importance in general life, and from 6.09 of novelty importance to 5.52 of competence importance in a satisfactory life event (range 1-7). Regression analyses showed that novelty need satisfaction in exercise positively predicted intrinsic motivation ( $\beta = .23$ ), enjoyment ( $\beta = .29$ ), vitality ( $\beta = .30$ ),





and vigorous physical activity ( $\beta = .25$ ). Novelty was the second strongest predictor of these four variables after competence satisfaction, and it was the only predictor of moderate physical activity ( $\beta = .37$ ) and mental health ( $\beta = .25$ ). These results strengthen the inclusion of novelty need in self-determination theory postulates and show its importance in an exercise context.

*Keywords: exercise, novelty importance, vitality*

## The importance of novelty need satisfaction to achieve multiple positive outcomes in physical education

**David González-Cutre** (*Sport Research Center, Miguel Hernández University of Elche, Spain*), **Álvaro Sicilia** (*Faculty of Educational Sciences, University of Almería, Spain*)

The purpose of this study was to show the important role of novelty need satisfaction in physical education from the perspective of self-determination theory. Secondary school students ( $N = 764$ , 383 girls and 381 boys, Mage = 14.26 years,  $SD = 1.56$ ) from a Spanish province completed measures of basic psychological need satisfaction (autonomy, competence, relatedness, and novelty), the three types of intrinsic motivation (to know, to accomplish, and to experience stimulation), and different outcomes (vitality, dispositional flow, and satisfaction) in physical education classes. First, a preliminary analysis of the psychometric properties of the Novelty Need Satisfaction Scale (NNSS) was carried out because this scale has been recently developed. Second, a structural equation modeling was performed to analyse the direct and indirect (through intrinsic motivation) predictive relationships of need satisfaction on different outcomes. Confirmatory factor analysis showed a high correlation between autonomy and novelty satisfaction. The problem of discriminant validity was solved removing an item from the original version of the NNSS ("I have the opportunity to innovate") due to its overlapping with the autonomy construct. This modification contributes to improve the psychometric properties of this scale. Structural equation modeling showed that competence and novelty need satisfaction were the strongest predictors of intrinsic motivation: novelty for intrinsic motivation to know ( $\beta = .39$ ), and competence for intrinsic motivation to accomplish ( $\beta = .43$ ) and to experience stimulation ( $\beta = .39$ ). Positive direct effects from novelty need satisfaction to vitality ( $\beta = .10$ ), dispositional flow ( $\beta = .09$ ), and satisfaction with physical education classes ( $\beta = .22$ ) should be highlighted. These results show the importance of teachers developing strategies to provide novelty support with the objective to achieve multiple positive outcomes in physical education.

*Keywords: physical education, novelty need satisfaction, intrinsic motivation*

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## Using an enactive and phenomenological approach for intervention in sport

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**Chair: Roberta Antonini Philippe** (*Institute of Sport Science of the University of Lausanne, CH*)

The symposium integrates contributions from three countries (Switzerland, Belgium and USA). According to the paradigm of enaction, cognition is embodied and expresses the history of the asymmetrical relations of an individual with his/ her environment. The dynamic of actor/environment interactions portrays both the actor's own organisation and the environment with which he/she is interacting (Weber & Varela, 2002). This symposium will propose different studies using this approach completed with a proposition of practical applications in terms of preparation and management in accordance with the embodied dimension of the activity. The objectives are: (a) to present four recent papers in different sports and (b) to engage the audience in a discussion about the current status of research in this area and future research and intervention directions. The first study (Rochat, Antonini Philippe & Hauw) analyzed runners' experience by using an enactive approach during trail and ultra trail races that permits to distinguish withdrawers from finishers and propose practical recommendations for the runners, especially for the withdrawers. Secondly, in Tomlinson, Jaeschke, and Sachs'





study, the essence of mental toughness in a long-distance running was assessed by using the phenomenological approach. The emerged themes afforded the need of a comprehensive definition of mental toughness in such of sports but also to improve psychological interventions. Gesbert & Hauw's study highlighted with an enactive approach the description of the coordination between soccer players in order to better understand and improve an efficient collective organization. Finally, Fincoeur & Hauw present a situated approach to help to better understand the use of illegal products in elite cycling athletes. Six main explaining factors were identified and some proposal to further develop more effective prevention and education strategies have been developed.

*Keywords: enaction, phenomenology, experience, sport-performance, intervention*

## How to be a finisher? An enactive and phenomenological approach for intervention in trail and ultra trail running

**Nadège Rochat, Roberta Antonini Philippe, Denis Hauw (Institute of sport sciences, University of Lausanne (CH))**

Previous studies identified some inherent constraints of trail running like extreme fatigue, injuries, or gastro-intestinal problems (e.g., Holt et al. 2014; Hurdie et al., 2015) but their effects on performance outcome (i.e., finish vs withdraw) is unclear. In this talk, we will present two studies that analyzed finishers and withdrawers' experience from an enactive and phenomenological approach to provide some practical recommendations. The first study analyzed runners' experience during ultra trail races to distinguish finishers from withdrawers and showed that finishers completed the race with significantly more sequences in states of vitality preservation (SVP) (59.5% for finishers and 39.8% for withdrawers,  $t(39)=6.782$ ,  $p=0.000$ ) and significantly fewer sequences in states of vitality loss (SVL) than withdrawers (18.7% for finishers and 42.2% for withdrawers,  $t(39)=-7.853$ ,  $p=0.000$ ) (Rochat et al., 2017). The second study analyzed withdrawers' experience during an ultra trail race and identified seven stages that qualified withdrawals: feeling pain; putting meaning to those feelings; adjusting one's running style; attempting to overcome the problem; other runners' influences; assessing the situation; and deciding to withdraw (Antonini Philippe et al., 2016). Taken together, the results of these studies suggest that finishers could exit SVL by enacting a preservation world whereas withdrawers remained in SVL and, despite attempting to find adaptations, they were confronted to situations in which withdrawal was the only alternative. As recommendations, runners should try to delay the emergence of SVL by preserving themselves at the beginning of the race and should immediately interpret the emergence of physical alerts to find suitable adaptations. We encourage runners to develop a reflective practice about their races by sharing their experience on online blogs to understand the processes that led either to the achievement or the withdrawal of a trail race.

*Keywords: enaction, phenomenology, experience, adaptation, trail running, intervention*

## 100,000 miles closer to defining mental toughness: The use of the phenomenological approach

**Rachel Tomlinson, Anna-Marie Jaeschke, Michael Sachs (Temple University, West Virginia University, USA)**

To assess the essence of mental toughness, the phenomenological approach was used to obtain the perceptions of ultramarathon runners. Mental toughness, as a phenomenon, gives ultramarathon runners the "psychological edge" in long-distance running (Jones, Hanton, & Connaughton, 2002). In the original study, snowball sampling and social networking were employed to obtain the 408 participants. Initially, the participants were asked an open-ended question regarding their definition of "Mental Toughness," which resulted in 476 definitions of mental toughness. Using these criteria, each participant then completed an online survey in which they used a five-point Likert scale to assess the extent to which they agreed with the

descriptive characteristics of mentally tough ultramarathon runners. The following themes emerged from the responses: persistence and perseverance, psychological skills, and external/environmental factors and preparation. Through thematic analysis, a comprehensive definition of mental toughness emerged, specifically within the scope of ultramarathon running. "Mental toughness in ultramarathon running is the ability to persist and utilize mental skills to overcome perceived physical, psychological, emotional, and environmental obstacles in relentless pursuit of a goal" (Jaeschke, Sachs, & Dieffenbach, 2016, p. 251). Due to the nature of ultramarathon running, consultants can employ this understanding to better work with this unique population and focus on pushing them beyond normal expectations through various psychological skills training. During this symposium, the methodological process will be featured, along with the resulting themes and how these themes can be incorporated into specific psychological interventions, encompassing imagery, self-talk, and other strategies, to enhance mental toughness among ultramarathon runners, athletes, and exercise enthusiasts alike.

*Keywords: phenomenological qualitative methodology, mental toughness, interventions*

### **Accessing soccer players' own-world to better understand and enhance individual and team performance**

**Vincent Gesbert, Denis Hauw (University of Lausanne, Institute of Sports Sciences)**

Understanding how team members' actions are successfully coordinated is a key challenge for sports psychologists today (Eccles, 2010). The purpose of this study was to gain greater insights into the coordination between soccer players. Using an enactive approach, coordination is explained by the building of shared meaning between team members (Araujo & Bourbousson, 2016). Firstly, we aimed to access and describe the players' sense-making process. This process fits with the enacted worlds that were linked to what perturbed the players in their situation. As these worlds were not intelligible from an extrinsic point of view (e.g., video-recording), it required to pay attention to the players' lived experience. After having collected behavioral traces of players' activity, we carried out elicitation interviews that allowed us to re-build their experience. Secondly, we synchronized these players' experiences in order to analyze how the meanings that each player built corroborated with the meanings simultaneously built by one's teammates. The results highlighted the interest of integrating player's enacted worlds in the performance analysis framework. Our results indicated how, in certain situations, two players sharing the same objective (e.g., to rapidly attack the opponent's goal) might nevertheless have divergent expectations on how best to do so: the player with the ball (Andrew) expected his teammate to call for a long pass whereas he, in turn, was expecting to beat the defender in front of Andrew by using a simple form of return pass move. These results allowed us to better understand the dynamics of shared meanings among teammates. From a practical point of view, these data made sense to understand how a breakdown in coordination may occur. These results emphasize the need for future sport psychological intervention in order to promote an efficient collective organization (i.e., the development of a common referential).

*Keywords: enactive approach, lived experience, sports performance, intervention*

### **Towards a better understanding of the doping behavior in elite cycling: from situated activity to Wikström's Situational Action Theory**

**Bertrand Fincoeur (University of Liege, Centre de Recherche et d'Interventions Sociologiques & University of Lausanne, Institute of Sports Sciences), Denis Hauw (University of Lausanne, Institute of Sports Sciences)**

The anti-doping policy has always been largely grounded on deterrence-based strategies (i.e. anti-doping tests, invasive surveillance programs, law enforcement activities) against athletes and, increasingly, their suppliers. However, these efforts have a limited impact on the use of illegal enhancers by (elite) athletes. In



order to protect the athletes against the temptation to use illegal performance-enhancing drugs (PEDs), the situated activity approach seems to be a fruitful option for designing anti-doping lifelong education programs (e.g. Hauw & Mohamed, 2015; Hauw, 2016). The doping behavior then emerges from specific contexts (i.e. the dynamics of actor/ environment interactions) and may be considered, both from a sociological and psychological standpoint, as the result of a sense-making process. During the presentation, we will show how Wikström's Situational Action Theory (SAT, i.e. an overarching sociological theory of crime using the person-setting interaction to explain the rule-breaking process) combines with the situated activity approach and, therefore, may help to better understand the use of illegal PEDs. Indeed, we identified six main explaining factors (i.e. the role of peers & staff members, family & education background, lure of money & precariousness, need for prestige/recognition, concern with health, perception of social control) which impact the decision on whether or not to use illegal PEDs. Taking into account these vulnerabilities could then help professionals supporting the athletes (sport psychologists, coaches, etc.) to further develop more effective prevention and education strategies. This presentation will be mainly based on the results from a PhD research about doping in elite cycling, in which 77 interviews were realized with Belgian and French elite riders, staff members (physicians, managers) and policy-makers (e.g. Fincoeur, 2016).

*Keywords: doping, cycling, prevention, education*

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## Moving beyond the coach – athlete leadership within sports teams

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**Chair: Katrien Fransen (KU Leuven, Belgium)**

It has long been argued that effective leadership is central to team functioning and to high performance in elite sport. Historically, vertical leadership has been foregrounded in both research and practice. In line with this approach, leadership research has focused on the impact of coaches on their athletes. In the last years, however, a shift has occurred away from this traditional emphasis on vertical leadership towards the idea that leadership can, and should, be shared. This approach asserts that leadership does not only emanate from the coach, but also from the athletes within the team (i.e., the athlete leaders). The present symposium will present novel and pioneering work that pushes this research line on shared leadership forward. To start, Katrien Fransen will reveal how athlete leaders impact teammates' team confidence and performance. Cliff Mallett corroborates these findings by revealing that high-quality athlete leadership in professional football teams does not only impact team effectiveness but also nurtures the health and well-being of the team members. Niels Mertens will close this first part of the symposium by comparing the impact of athlete leaders with the impact of the coach. The second part of the symposium focuses on the identification of athlete leaders. First, Stewart Cotterill will provide more insight on the role of the team captain, by interviewing elite rugby coaches. Finally, Katrien Fransen will argue that the team captain is highly overrated at the expense of informal leaders. She will demonstrate the usefulness of social network analysis to map the informal leadership structure within the team. To conclude, our findings revealed that shared leadership is a more powerful predictor of team effectiveness than vertical leadership. By mapping the leadership structure in the team and promoting shared leadership, coaches can not only maximize the team's effectiveness, but also nurture the health and well-being of their team members.

*Keywords: athlete leadership, peer leadership, shared leadership, team captain, social network analysis*

## Leading from within: The impact of athlete leaders on their teammates' confidence and performance

**Katrien Fransen (KU Leuven, Belgium), Alexander S. Haslam, Niklas K. Steffens (The University of Queensland, Australia), Norbert Vanbeselaere, Bert De Cuyper, Gert Vande Broek, Filip Boen (KU Leuven, Belgium)**

We will discuss two experimental field studies in sports teams that investigated the impact of leaders' positive feedback on athletes' competence satisfaction, intrinsic motivation, and performance. More specifically, the impact of coaches and athlete leaders was compared. In Study 1 (N = 120), teams of five male basketball players were asked to complete an interactive basketball task twice, where the first test session served as baseline measure. In the second test session, each of the teams was randomly allocated to either a control condition (i.e., no competence support) or one of three experimental conditions in which either (a) the coach (i.e., a research confederate); (b) the athlete leader (identified through social network analysis); or (c) both provided competence-supportive feedback to their team. Study 2 (N = 126) adopted a similar design but strived for a higher ecological validity by using complete teams and the real coach of the team. The results showed that by providing positive feedback both coaches and athlete leaders affected athletes' competence satisfaction, their intrinsic motivation, and their performance. It should be noted though that the positive impact of the coach on competence satisfaction and intrinsic motivation was only found in Study 1, in which feedback was provided by an external research confederate who was trained in providing competence support. We can thus conclude that coaches need to have received a specific training in order to provide effective competence-supportive feedback. In contrast, asking athlete leaders on the spot to provide positive feedback caused an immediate effect on both the motivation and performance of their teammates. The study findings thus highlight that, besides the coach, also athlete leaders can play an important role in fostering teammates' competence satisfaction, thereby nurturing their intrinsic motivation, and enhancing their performance.

*Keywords: athlete leaders, collective efficacy, team identification, social identity approach*

### **Australian football players' leadership: Impact on team effectiveness and health/well-being**

**Clifford J. Mallett, Alexander S. Haslam, Niklas K. Steffens, Kim Peters (The University of Queensland, Australia), Filip Boen, Katrien Fransen (KU Leuven, Belgium)**

Leadership is considered an important determinant of team effectiveness in sport. In particular, there are high expectations of players' leadership both on- and off-field to foster team functioning and performance. Furthermore, there is increasing concern about the rising incidence of mental health and suicide in professional team sports. In the pursuit of successful performance outcomes in elite sport, players experience significant and increasing demands to compete in this highly contested context. Hence, in this study, we investigated the relationship between effective players' leadership, team effectiveness, and players' health and well-being. Three professional football teams (N = 120 players) in the Australian Football League (n = 2) and the National Rugby League (n = 1) participated in this study. Players and coaches assessed players' leadership quality in four leadership roles (on-field [task, motivation] and off-field [social, external]). As hypothesised, the team with the highest athlete leadership scores on each of the four leadership roles performed best in all indicators of team effectiveness. In regards to health and well-being, the findings showed that (a) being a good athlete leader, and (b) having good athlete leaders in the team were associated with better player health and buffered against burnout. In conclusion, the findings support the contention that high quality player leadership contributes to team effectiveness that, in turn, underscores the salience of empirically-based leadership programs. Furthermore, creating a sense of shared identity contributed to health and well-being of team members, highlighting the need to create a strong team identity.

*Keywords: shared leadership, social network analysis, social identity approach*

### **Leaders' impact on motivation and performance: Coaches versus athlete leaders**

**Niels Mertens, Filip Boen, Gert Vande Broek (KU Leuven, Belgium), Maarten Vansteenkiste (UGent, Belgium), Katrien Fransen (KU Leuven, Belgium)**

We will discuss two experimental field studies in sports teams that investigated the impact of leaders' positive feedback on athletes' competence satisfaction, intrinsic motivation, and performance. More specifically, the impact of coaches and athlete leaders was compared. In Study 1 (N = 120), teams of five male basketball players were asked to complete an interactive basketball task twice, where the first test session served as baseline measure. In the second test session, each of the teams was randomly allocated to either a control condition (i.e., no competence support) or one of three experimental conditions in which either (a) the coach (i.e., a research confederate); (b) the athlete leader (identified through social network analysis); or (c) both provided competence-supportive feedback to their team. Study 2 (N = 126) adopted a similar design but strived for a higher ecological validity by using complete teams and the real coach of the team. The results showed that both coaches and athlete leaders affected athletes' competence satisfaction, their intrinsic motivation, and their performance by providing positive feedback. It should be noted, though, that the positive impact of the coach on competence satisfaction and intrinsic motivation was only found in Study 1, in which feedback was provided by an external research confederate who was trained in providing competence support. We can thus conclude that coaches need to have received a specific training in order to provide effective competence-supportive feedback. In contrast, asking athlete leaders on the spot to provide positive feedback caused an immediate effect on both the motivation and performance of their teammates. The study findings thus highlight that, besides the coach, also athlete leaders can play an important role in fostering teammates' competence satisfaction, thereby nurturing their intrinsic motivation, and enhancing their performance.

*Keywords: shared leadership, intrinsic motivation, self-determination approach, competence support*

### **An exploration of the coach's perceptions of the role of captain in professional rugby**

**Stewart Cotterill, Richard Cheetham (University of Winchester, UK)**

Effective leadership in sport at the elite level can make the difference between success and failure. Indeed, effective leadership has been highlighted as a factor both influencing and determining team performance under pressure (Cotterill & Fransen, 2016). The coach has been suggested to be crucial in the success of formal leadership roles within teams (Cotterill & Cheetham, 2016). However, the specific implications are still to be fully understood. As a result, the aim of this research was to explore the coaches' perspectives on the function, selection, and development of team captains in professional rugby union. The participants were seven elite (professional) rugby coaches. The participants were purposefully selected for their knowledge and experience of coaching at the elite (professional) level within the sport of rugby union, and associated experience working with a range of captains. Participants were interviewed individually to gain an understanding of each participant's perspective on the role and influence of the team captain relating to team performance. The data were thematically analysed using interpretative phenomenological analysis (IPA) to highlight emergent themes and to identify links between themes. Results suggest that there is a lack of clarity regarding the specific knowledge, skills, expertise and character traits required to undertake the role. This in turn can be problematic in the selection and development of the most appropriate team leaders. Greater clarity regarding the role of the captain is required to maximise the ability of the selected leaders to fulfil the role.

*Keywords: team captain, rugby, interviews, interpretative phenomenological analysis*

### **Great man or great myth? Moving beyond the team captain by mapping the leadership structure within the team.**

**Katrien Fransen, Filip Boen (KU Leuven, Belgium)**

When it comes to athlete leaders, the team captain is often considered as the best and sole leader within the team. Study 1 investigates whether this assumption is indeed correct or whether informal leaders might be

more important. An online survey was completed by 4,451 participants within nine different team sports. Players ( $N = 3,193$ ) and coaches ( $N = 1,258$ ) were asked to indicate the player with the best leadership quality on four leadership roles; two roles on the field (i.e., the roles of task and motivational leader) and two roles off the field (i.e., the roles of social and external leader). The results revealed that almost half of the participants (44%) did not perceive their captain as the principal leader on any of the four leadership roles. These findings underline the fact informal leaders rather than the captain take the lead, both on and off the field. If informal leaders take the lead, it is important to identify who they are. Therefore, in Study 2 and Study 3, we present a new technique that uses social network analysis to map the leadership structure within the team. These studies included respectively 25 teams ( $N = 308$ ; Mage = 24.9 years old) and 21 teams ( $N = 267$ ; Mage = 24.3 years old). The study findings corroborated the existence of shared leadership in sports teams. More specifically, with respect to the roles of task and external leader, no significant differences were observed between the leadership quality of coaches and athlete leaders. However, athlete leaders were perceived as better motivational and social leaders than their coaches. Furthermore, both the team captain and informal athlete leaders shared the lead on the different leadership roles. Social network analysis was found to be a pioneering but valuable tool for obtaining a deeper insight in the leadership structure within sports teams.

*Keywords: team captain, shared leadership, informal leadership, social network analysis, leadership mapping*

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## An Asian approach to physical activity research: Is it closing a gap within the field's knowledge?

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**Chair: Youngho Kim**

It is well documented that physical activity is one of the most important health behaviors not only to prevent various health problems, but also to promote healthy lifestyles. However, recent statistics indicate that many people around the world are insufficiently active to obtain the many health-related benefits of physical activity. In this regard, a large number of studies have indicated that initiating and maintaining physical activity are significantly associated with various psychological variables. Although much information on physical activity and its related psychological factors has been published in the Western countries, little information of Asian countries is available. Recently, an increasing effort has been paid to aim at identifying the broad range of psychological correlates of physical activity in many Asian societies. The current symposium tries to introduce various research outcomes carried out by different research designs (i.e., experiment, cross-sectional and longitudinal, and intervention etc.) in various Asian countries. Therefore, it is sure that this symposium will be a very meaningful academic bridge to connect Asian and Western scholars.

*Keywords: asian viewpoint, sport and exercise psychology, physical activity, motor behavior, sport*

## Acute Exercise and Cognitive Function: An Update from Asia

**Yu-Kai Chang**

Ansignificant amount of studies have examined whether acute exercise, or a single bout of exercise, may affect cognitive performance, whereas two meta-analyses have concluded that acute exercise produces a small, significant, positive effect on a variety of types of cognitive function (Chang, Labban, Gapin, & Etnier, 2012; Lambourne & Tomporowski, 2010). Regarding the issue of acute exercise and cognitive function, researchers in Asia were also actively involved. The purpose of this presentation was to report on the current developments examining the investigative progress of this issue, by providing three updated studies from our laboratory. These studies emphasized: a) examining the dose-response relationship between acute exercise duration and cognitive function (Chang et al., 2015b); b) identifying the role of moderators between acute exercise and cognitive function (Chang, Chu, Wang, Song, & Wei, 2015a); as well as c) investigating the



potential mechanism of how acute exercise affects cognitive function from a neuroelectric perspective (Chang, Pesce, Chiang, Kuo, & Fong, 2015c). Lastly, the possible and recommended directions for further examination will be also discussed. Generally, along with various scholars from around the world, researchers in Asian have devoted their efforts to filling out the knowledge gap regarding the issue of acute exercise and cognitive function.

## Artificial and active modulation of perception in human behaviour

**Ji-Hang Lee**

Artificial and active modulation of perception, if possible, could open up many interesting possibilities in human behaviour. While there are worrisome perspectives regarding the negative consequences such as brain doping, this has been, indeed, what sport psychologists were trying to do for years. A thought of decreasing the perception of fatigue or enhancing the visual perception could be something hard to resist for many practitioners. Although there have been many practical cases reporting the changes in perception correlated with various intervention, the evidence for the causal relationship between the changes in performance and intentional modulation of cortical activity is needed. In this presentation, the kinesthetic perception will be discussed to illustrate this possibility. We can elicit this kinesthesia by applying tendon vibration at wrist joint. Also, by applying the repetitive transcranial magnetic stimulation (rTMS) on the primary somatosensory cortex, we can artificially facilitate or inhibit its function. Thus, changes in kinesthetic perception after the rTMS would indicate the bi-directional modulation of both cortical activities and behaviors. Results showed that the inhibitory effects of 1Hz rTMS on kinesthetic perception induced by tendon vibration illusion were observed. Both the movement amplitude and velocity decreased. On the other hand, the facilitatory effects of 5Hz rTMS were demonstrated only with the mean movement velocity variable. 1Hz or 5Hz rTMS on the somatosensory cortex could inhibit or facilitate the kinesthetic illusion introduced by tendon vibration, respectively. Therefore, the hypothesized Bi-directional effects of rTMS on the kinesthetic perception could be observed. While these results are limited to the kinesthetic perception, the similar mechanisms could be observed in different types of perception, and the practical consequence of such mechanisms will be discussed.

## Comfortable Self-Established Pace (CSEP) as the Best Strategy in Producing Positive Affect in Exercise

**Kimio Hashimoto**

When prescribing exercise for promotion of individual health and physical fitness, %VO<sub>2</sub> max and %HR max are generally used as indices for setting the appropriate exercise intensity. However, although this relative exercise intensity may achieve the desired physical and mental effects, it is not always possible for individuals to adhere to the exercise program, and therefore consideration also needs to be given to psychological aspects such as motivation. Recently, therefore, behavior modification techniques based on behavior change theory have been used for helping individuals to continue exercising. Also, it may be possible to introduce a psychological aspect to the exercise prescription itself. In studies of anxiety or depression in relation to exercise, the effectiveness of the exercise has been examined by manipulating its intensity. However, no studies have yet focused on exercise adherence, and previous viewpoints have merely centered on whether exercise improves negative affect. Therefore, to promote adherence to exercise, it would seem important to focus on aspects of positive affect, such as pleasantness, satisfaction, relaxation, and so on, both during and after exercise. For this purpose, Hashimoto and Saito (1993) introduced a psychological perspective to exercise intensity with the intention of both acquiring the maximum positive affect after exercise and promoting exercise adherence, and have advocated the concept of Comfortable Self-Established Pace (CSEP) as a self-selected/self-determined index of subjective exercise intensity. So far, we have clarified the objective exercise



intensity, the consistency of CSEP, the degree of increase in positive affect after exercise, and favorable changes in running image. Our results suggest that CSEP may be a useful basis for setting the optimal exercise intensity in order to maximize positive affect, thus encouraging exercise adherence. In this symposium, I would like to describe the utility and practicality of CSE

## Exercise Dependence Research in Taiwan: An Adaptation of Western Research Model

**Frank Lu**

Exercise dependence (ED) is a morbid exercise behavior which exhibited by a constellation of pathological syndromes such as excessive exercise, psychological withdrawal when unable to exercise, exercising more planned, insatiable intention and time in exercise, and neglecting responsibilities because of exercise (Hausenblas & Symons Downs, 2002a, 2002b; Symons Downs, Hausenblas, & Nigg, 2004). The current presentation shows research results of ED in Taiwan. Literature review with updated empirical studies carried out in Taiwan has been introduced. Initially, Taiwanese researchers use self-developed measure in examining ED and correlates (Chen, Lu, & Tsai, 2005). Further, researchers adapted/validated Hausenblas and colleagues measure (i.e., EDS-R, Hausenblas et al., 2002a, 2002b; Symons Downs et al., 2004) and found dancers' ED associates with self-presentation (Chang, 2010), association between self-presentation and ED was mediated by psychological needs (Chang, 2009), and exercise commitment mediated the relationship between exercise identity and ED (Lu et al., 2012). Recently, Chang and Lu (2017) also found male weight trainers' exercise behavior links to anger response but was mediated by drive for muscularity and ED. Exercise dependence can be detrimental to exercisers' psychological well-being and physical health in any population and culture, even in Taiwan. By adapting Western model it is useful to understand ED is a serious psycho-pathological problem for a small group of exercisers. Implications and future research directions are discussed.

## Physical Activity and Weight Control in a Viewpoint of Exercise Psychology

**Youngho Kim**

Obesity is one of several major public health problems, and is quickly becoming an epidemic as evidenced by the rapidly increasing prevalence rates around the world. In this regard, it is broadly accepted that an active lifestyle and regular physical activity are important contributors to the prevention and reduction of the health risks caused by obesity. In a viewpoint of exercise psychology, it is well known that physical inactivity may be associated with psychological attributes, such as self-efficacy, attitude, perception, and motivation. In order to increase the physical activity participation and reduce weight in obese people, concerted recent efforts have been a shift towards theoretically based studies that concentrate on physical activity adherence focusing on the broad range of interactions with psychological variables and that apply an intervention strategy incorporating physical activity and psychological modification. The current presentation tries to share my research experiences regarding physical activity and obesity on the basis of psychological theories.

## Symposia Session 3. (17-18.30)

### Evidencing principles of Positive Sport through theoretical insights, practical applications, and empirical evaluations

**Chair: Artur Poczwardowski (University of Denver)**



Theory-to-practice interventions aim at both advancing the field of applied sport psychology and benefiting the client. In serving the public good, some theoretical frameworks and practical approaches gain additional focus if they are founded on a broader theoretical and philosophical platform (e.g., positive youth development [Larson, 2000; Watson, Conolle, & Kadushin, 2011]). Such an approach as an encompassing professional philosophy and a social movement has been recently developed in a Central European country under an umbrella term of positive sport. The purpose of this symposium is to constructively examine this novel theory-to-practice perspective. Specifically, the presenters will report empirical investigations as well as offer theoretical insights into the developmental and systemic considerations in understanding high achievement in sport. The first presentation will examine retrospective data on issues involving early specialization and professionalization of youth sport. The second presenter will outline the types of conditions that need to be considered separately and collectively in supporting both high athletic achievement and holistic development during the specialization and expert stages. The third presentation will report qualitative data on lives after successful sport careers, and more specifically, on how the lessons learned in sport translate to future fulfilling personal and professional pursuits. The forth presentation will outline the theoretical foundations of a practical model translating core principles of positive sport into coaching practices. Finally, the session will be concluded with a 10-minute discussion of the commonalities and unique pieces of information across all four presentations. This summary discussion will form a bridge to the interaction with the audience and will aim at stimulating and reinforcing the diversity of perspectives on the theoretical and practical issues involved in athletic talent development.

*Keywords: positive sport, athletic career stages, coaching*

### **Positive sport perspective on high achievement of Polish expert athletes: On late talent identification and exploration stage**

**Malgorzata Siekanska (University of Physical Education in Krakow), Artur Poczwadowski (University of Denver)**

Reaching a professional level in any performance domain is based on focused, conscious and systematic work (Bloom, 1985). In sports, the developmental curve from the first attempts in sport to the proficiency phase comprises several stages (e.g., Stambulova, 1994; Wylleman & Lavallee, 2004; 2013). Every phase is typified by a variety of challenges, threats, and opportunities. Phases of relative stabilization and balance are interspersed by crises and circumstances, which have significant effects on the course of a career including both achieving elite status or premature dropouts. In this project, careers of 128 Polish athletes (54 females and 74 males) representing 23 sports were examined retrospectively (psychometric tests and structured interviews). Three phases were identified (i.e., exploration, commitment, and proficiency) and four skill groups emerged (i.e., expert-champions, future experts, those awaiting success, and those discontinuing prematurely). Results showed that the level of competence in the proficiency phase is connected with the type and amount of early phase experiences. Experts-champions (e.g., multiple medallists of the Olympic Games and world championships) when compared with the three remaining groups were identified as “talented” later in their chronological age. Second, they practiced sports in the form of deliberate play for the longest time and entered the stage of competition at a professional level later than the other three groups. Third, expert-champions and future experts had the largest number of positive experiences and the smallest number of difficult experiences. Finally, the expert-champions recalled that the decision to take up professional sports was made based on their own initiative. These findings, further dispel the myth of necessity for early specialization in sports (Cote, Lidor, & Hackfort, 2009) and provide empirical argument against professionalization of children and youth sport.

*Keywords: positive sport, exploration stage, expert athletes*

## Conditions supporting high achievement during the specialization and expert stages: Positive Sport perspective

**Jan Blecharz (University of Physical Education in Krakow)**

The specialization and expert stage in sport is considered as challenge for athletes who are required to repeatedly demonstrate their skills at the highest level as well as to take responsibility for their own achievements. When sports career is considered from the viewpoint of a positive sport, the following question should be posed: what conditions must be fulfilled for the athletic career so they promote holistic development? In this presentation, the notion of conditions is derived from the scientific methodology and distinguishes between sufficient, indispensable, and favorable conditions. Case illustrations will deepen the content of the session. A sufficient condition guarantees the achievement of a goal. It usually comprises a broad set of indispensable conditions and, also, favorable conditions, which increase the likelihood of achieving or pursuing a goal. For a long-term realization of any major goal it is sufficient to: (a) meet all direct indispensable conditions, (b) eliminate all hindering conditions, (c) have possibility to effectively prevent any disruptions, and (d) meet the most important favorable conditions (Kocowski, 1978). In sports, direct indispensable conditions to win a competition include an appropriate level of fitness, technical, and tactical skills. Hindering conditions might include severe injury or lack of any direct indispensable conditions. An athlete should also know how to cope with adversities such as conditions encountered on sports site, pressure, as well as unexpected course of events during the competitions. Favorable conditions vary from the aforementioned direct indispensable conditions to ones such as nutrition, recovery, and convenient accommodation. Sport psychologists should recognize which conditions are indispensable, alternatively indispensable, or favorable for good preparation of athletes for competitions, individual approach to competitors and stimulation of athlete's development through sports.

*Keywords: positive sport, specialization stage, expert athletes*

## Positive sport as a system: Exploring the relationship between athletic and life excellence

**Aleksandra Pogorzelska (Warsaw School of Social Sciences and Humanities, Sopot), Aleksandra Krukowska (Loughborough University), Artur Poczwadowski (University of Denver), Tomasz Kurach (University of Warsaw), Aleksandra Zienowicz (Foundation of Positive Sport)**

According to Nowak and Vallacher (1998), a dynamical system is defined as a set of interacting elements which undergo changes in time. In this perspective, positive sport can be seen as a coherent system of human interactions, which are the source of happiness, holistic development, and effective relationships during an athletic career as well as after career termination (thus, transcending the sport itself across the whole lifespan). In particular, engagement, which is perceived as one of the most important components of sport participation (Lonsdale, Hodge & Raedeke, 2007), is based on various systems affecting each other (e.g., internal motives, relationship with a coach, competitors). This presentation will report a study of 107 professional athletes whose engagement can be characterized in terms of two systems: negative and positive. The system of positive engagement is based on positive emotions, positive bodily responses, effective relationships, trust and cooperation towards one's coach, support networks and social circles, and achievement goal orientation. The system of negative engagement contains opposite characteristics including negative emotions, negative bodily responses, coach-athlete relationship based on mistrust, anger, and shame, and achievement avoidance orientation. Moreover, the results of this follow-up qualitative study with 4 former Olympic medalists investigating their whole athletic careers through semi-structured interviews showed that all of them demonstrated the system of positive engagement. We hypothesized that athletes who show a positive engagement style during their sporting careers are effective in transferring skills from sport to other domains of life. Based on dynamical systems theory, we will present a detailed analysis of how elements of the positive

engagement of an Olympic gold medalist influenced his transfer to a non-athletic career and helped him become highly successful in the pursuit of non-sport goals.

*Keywords: positive sport, dynamical system approach, Olympians*

## **i7W Model as a tool for coaches: Theoretical and applied insights into the practice of Positive Sport**

**Aleksandra Krukowska (Loughborough University), Artur Poczwadowski (University of Denver), Tomasz Kurach (University of Warsaw), Kamil Radomski, Aleksandra Zienowicz, Ewa Serwotka (Foundation of Positive Sport), Martyna Tadzik (Technika Zwyciestwa, Poland), Aleksandra Pogorzelska (Warsaw School of Social Sciences and Humanities, Sopot), Wojciech Tadzik (Technika Zwyciestwa, Poland), Malgorzata Pajackowska (Foundation of Positive Sport)**

One of the fundamental challenges of sport and performance psychology is to effectively communicate its theoretical and practical accomplishments to athletes and coaches. The i7W Model was adapted into practice in an attempt to translate the principles of positive sport into concise and clear recommendations for coaching practice. Forty-three coaches and 435 athletes representing a variety of sports were divided into experimental and control groups. Coaches from the experimental group took part in eight workshops aimed to increase their ability to use the behavioral dimensions of the i7W model: inspire, support, explain, expect, reward, and appreciate. Self-determination theory (Ryan & Deci, 2000), the coach-athlete relationship model (Jowett & Poczwadowski, 2006) and the transformational leadership framework (Callow et al., 2009) constitute the model's theoretical underpinnings. It was hypothesized that in the post-intervention condition, athletes of the coaches who took part in the workshops will perceive higher levels of self-confidence, motivation and team cohesion in comparison to the control group. The results of the 2 (Group) x 2 (Time) fully randomized ANOVA indicated that there was a significant Group by Time interaction for self-confidence  $F(11,184) = 1,85$ ;  $p < 0,05$ , and group cohesion  $F(1,196) = 3,40$ ;  $p < 0,001$ , whereas there was no change in regards to motivation. Athletes classified to the experimental group perceived an increase in their coaches' usage of the behaviors from four categories: explain, reward, expect and appreciate. In the presentation, the content of the workshops along with the results of data analysis will be outlined. Through creative applications of sport and performance psychology knowledge, and empirical validations of coach education programs, sport psychologists can aim to enhance athletes' experience and coaching practice in youth sport (McGuire, 2012).

*Keywords: positive sport, coaching methods, intervention*

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## **The field of sport and exercise psychology in Malaysia**

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**Chair: Philip Lew (National Sports Institute of Malaysia)**

The establishment of the Malaysian Sport Psychology Association (MASPA) provided a platform for academicians and practitioners in sharing their knowledge and promote the field of sport and exercise psychology in the multicultural Malaysia. In paper 1 of this symposium, the author will be illustrating a case study in the implementation of telepsychology as an integrated part of the training routine and its benefit in remotely supporting an elite swimmer throughout his debut participation in 2016 Rio Olympics from Malaysia are being highlighted. Paper 2 focuses on examining the effectiveness of using Mindfulness-Acceptance-Commitment (MAC) as an alternative approach to athletic performance enhancement, as the practitioner is pioneering this approach in Malaysia elite sports setting that lends support to the emerging links between mindfulness, stress and performance. In Paper 3, the psychosocial determinants of physical activity in undergraduates according to gender and physical activity index category are being analysed. The finding has been impacted by the launch of the National Sports Day and FIT Malaysia programmes in encouraging youths

to practice a healthier and active lifestyle. The focus of paper 4 is understanding the coach driven and performance focused support, which includes individual profiling on anxiety, enriching training activities with psychological elements, monitoring coach's mood state and the adaptation of religion and spirituality in establishing pre-match routine, during their qualification quest to the 2018 Hockey World Cup. All 4 papers provide a mixture of practical applications and theoretical concept of sport and exercise psychology in Malaysia. With the nation hosting the upcoming 2017 SEA Games with the participation of 925 Malaysian athletes in 38 sports and 405 events, sport psychology will be among the most integral components in supporting the nation's bid to top the Games medal tally.

*Keywords: Malaysia, telepsychology, Rio, MAC, team, PA*

## **Olympic state of mood through telepsychology: Profile of an Olympic athlete**

***Philip Lew (National Sports Institute of Malaysia)***

The Olympic Games are global sporting events that has an estimated viewership of 3.6 billion people worldwide. Most athletes and coaches structured their training & competition periodization in relationship to the Olympic 4-year cycle. With a 15,631km distance between the Olympic venues in Rio and Malaysia, providing sport psychology support to the first Malaysian swimmer to qualify with Olympic 'A' time in two events, proved to be an intriguing challenge. To enable regular service provision to the athlete, the telepsychology programme, which included the use of video-calling and mobile messaging applications through smart phones, were introduced as an integrated part of the psychology training & competition programme. The online version of the BRUMS (Terry et al., 2013) were being administered daily to monitor his mood profile. His post race feedbacks and performance ratings were also being obtained. The mood profile highlighted higher levels of negative moods (i.e. depression, fatigue) in the early stages of the stay in the Olympic village, which was revealed to be effects of travelling and the associated jet lag. A slight increase in tension was observed as on competition day and higher level of confusion was being reported after the completion of the 1st event, which the athlete was satisfied with the performance despite experiencing some nervousness in his debut appearance on the Olympic stage. Individual discussion sessions became a critical element in ensuring and enhancing the athlete's well-being, especially in dealing with the intense media coverage and reporting. Starting from day 3, his vigour level was consistently high throughout the whole campaign and positively correlated with his performance as he equaled the National Record and his Personal Best record. By identifying & determining the optimal mood state associated with the superior performance of the athlete, it would be beneficial to recreate a similar mood state prior to future competitions.

*Keywords: Olympic, swimming, telepsychology, BRUMS, mood*

## **Effects of mindfulness intervention on stress and performance in Malaysian youth squash players**

***How Peck Ngor (National Sports Institute of Malaysia)***

Mindfulness-Acceptance- Commitment (MAC) is designed as an alternative approach to athletic performance enhancement. The theory suggests that you do not need to control, change, or eliminate negative internal states in order to perform optimally. Objective: to examine the effectiveness of MAC on sport performance and stress level. Method: Single-case, multiple baseline AB design. Participants: 2 male and 1 female national sub-elite squash players (mean aged 15.33 years old) completed the program. Method: Single-case, multiple baseline AB design was used. Participants gone through a 3 weeks baseline, 7 weeks intervention and 4 weeks retention before a social validation were conducted. Mindful Attention Awareness Scale (MAAS), Perceived Stress Scale (PSS), Self-rating Athletic Performance (SAP) was collected throughout the program. Data assessed by visual analysis. Results: Player A has gained MAAS scoring from 54.8 to 65.3 but experienced a



slight increase of stress level (22.0 to 22.8) while maintained performance rating (5). Player B had a significant gain in MAAS (+20.1) and relatively positive improvement in performance rating (+1.3) despite the increased level of stress (+3.9). Player C experienced a slight gain in mindfulness score (+2.8) while reduced in stress (-1.1) although she rated herself a trivial drop in performance (-0.3). Conclusion: Overall the present study lends support to the emerging links between mindfulness, stress and performance. Mindfulness training improves awareness and paying attention to the present which facilitates sport performance. Though individual differences appear for stress level follow an increase of MAAS score, short mindfulness intervention might still be effective.

*Keywords: MAC, squash, MAAS, stress, performance*

## Gender and physical activity index category differences in psychosocial determinants of physical activity among undergraduates

**Hui Yin Ler (Tunku Abdul Rahman University College, Kuala Lumpur)**

Majority of Malaysians do not meet the recommendation of adequate and regular physical activity, with about 61.4 % (aged 15 and above) considered inactive. This study examined the differences of psychosocial determinants of physical activity in undergraduates according to gender and physical activity index category. The psychosocial determinants of physical activity inventory included Self-efficacy Assessment Scale (5 items,  $\alpha = 0.8$ ), Social Support for Exercise Scale (13 items; family support,  $\alpha = 0.9$ , friend support  $\alpha = 0.9$ ), Motivation Scale (16 items,  $\alpha = 0.7$ ) and, Physical Activity Enjoyment Scale (18 items,  $\alpha = 0.6$ ). The Physical Activity Index (PAI) was determined by multiplying exercise intensity, duration and frequency. The total PAI score was categorized as 'Needs improvement' [NI], 'Fair' [F], 'Average' [A], 'Good' [G] and 'Excellent' [E]. A total of 359 undergraduates were conveniently surveyed (male = 74.4%, female = 25.6%). Result in physical index category revealed that 25% of the undergraduates each was in the 'fair' and 'average' category. About 15% of the undergraduates needs improvement and 34.8% was in the 'good' and 'excellent' category. Inferential statistics analyses showed psychosocial determinants of 'self-efficacy', 'exercise enjoyment', 'motivation' and 'support from family' were significant according to gender. Males involved in physical activity due to 'self-efficacy', 'motivation' and 'enjoyment' while females were more influenced by family support. Significant results on PAI category and psychosocial determinants were shown in self-efficacy, social support from friends, motivation, and exercise enjoyment. For 'self-efficacy' and 'social support from friend' factors, the 'Need improvement' group had low self-efficacy and social support from friends. However, for the 'motivation' and 'exercise enjoyment' factors, the 'Needs improvement' was more motivated (mean: NI>A>G>E) and enjoyed exercise more than other groups (mean: NI>A>G>F>E).

*Keywords: psychosocial determinants, gender, physical activity*

## Integrating sport psychology practices in the 2018 World Cup qualification quest of the national field hockey team

**Philip Lew (National Sports Institute of Malaysia)**

A sport psychology program was designed for the national women's field hockey players (n=18; mean age: 28.45) in the preparation for the 2017 World League R2. Besides conducting basic psychological skills training, players were monitored regularly through self-report measures during training and competitions on their psychological states. The analysis provided solid framework in establishing individualized psychological profiling for every players. In comparison to past findings during the 2015 tournament, the current findings demonstrated that the players showed identical high levels of confidence in "low intensity" game (M=37.53, SD=3.21) and in the "high intensity" game (M=37.42, SD=2.49) during this campaign. On specific skills routine (e.g. penalty corners), structured biofeedback assisted imagery training and implementation of the electronic



version of the Harris and Harris' (1984) concentration grid exercise interventions were conducted with the flickers and goalkeepers. There was an increment of 31.8% of penalty corner conversion and 35.3% of saves made by goalkeepers throughout the matches. The importance of spirituality and religion in pre-match preparation was being highlighted (Coakley, 2009; Watson & Nesti, 2005). According to the qualitative analysis, 85% of the players reported a sense of calm and confidence by praying together as a group prior to entering the field ahead of the start of the match. Coach's mood states was also being closely monitored and through maintaining regular interaction with the psychology practitioner, the coach managed to maintain the ideal Everest mood profile in 90% of the matches involved (Terry et al., 2003). The integration of sport psychology practices also directly occurred within the multi-disciplinary members and the importance of systematic monitoring of the team members, integration of applied sport psychology practices in a team and the commitment to this unifying orientation were acknowledged for future Games.

*Keywords: hockey, profiling, mood, anxiety, spirituality*

## The Support of Sport Psychology in Preparation and at the Rio Olympics 2016

**Rebecca Wong (National Sports Institute of Malaysia)**

Every athletes dream to compete at the Olympics. Some are disappointed to qualify, while others will do whatever they could, to excel at the inaugural event. Malaysian badminton mixed double pairs, the Rio Olympics silver medalists will be used as case study in this paper. Sport psychology support in preparation phase: building relationship; on-site observation; regular discussion with coaches helped in need analysis. Returning to high competitive level from injury was a challenge. In order to climb the world ranking to quality at Rio Olympics, it motivated the pairs, at the same time it imposed a lot of pressure due to time constraint. Communication played an important role, to enhance their play to win matches for ranking points. Periodically individual and group (pair) consultations were carried out to ensure both were in good mindset to train and play well. A combination of psychological skill training (PST) and cognitive behavioral therapy techniques (CBT) were implemented to enhance the duo's commitment towards targeted goal. Sport psychology support in competition phase: effective communication; mindfulness and CBT techniques; functional support system and video analysis were the key element in final phase. The moment: Mindfulness CBT and ensuring an optimal level in arousal, anxiety and relaxation in the duo.

*Keywords: Olympics, badminton, mindfulness, CBT, arousal, relaxation*

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## The transition from school to university being an athlete

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**Chair: Miquel Torregrossa (Universitat Autònoma de Barcelona)**

This symposium provides an overview of demands and coping strategies that athletes need for the transition from secondary school to university. First, Cecic-Erpic presents her work on the concurrent transitions in sport and education that athletes face when becoming elite athletes and university students almost at the same time. Second, De Brandt and colleagues compare the prioritization of competences between secondary and university students following a dual career also as elite athletes. Third, Defruyt and colleagues based on the perspective of dual career support providers, compare the competences needed by elite athletes following secondary education with the competences needed by elite athletes following university education. Fourth, Miró and colleagues analyse the different scenarios that student athletes cope with during the transition from secondary education to university. Finally, Díaz de Subijana and colleagues analyse the career path followed at different stages of the sporting career.

*Keywords: dual career, transitions*



## University student-athletes' acclimatization to the concurrent transitions in sport and education

**Saša Cecic Erpic (University of Ljubljana)**

The within-career transition between developmental and mastery stage is one of the important periods in sport career development (Stambulova et al., 2009), represented by process of athletes' adaptation to different changes. This transition coincides with transition to the university, which is one of the major life transitions in developmental period of emerging adulthood. The aim of the study was to research different aspects of transitional process between developmental and mastery stage, explaining the process in according to Athletic career transition (ACT) model (Stambulova, 2003). Using a cross-sectional qualitative design, 75 student-athletes (SA), students of 1st year university study were asked to complete Transitions in athletic career qualitative instrument (TACQI; Cecić Erpič, in press). Directed content analysis was used to analyze data gathered with open-ended questions, with the aim to code answer passages according to the pre-defined theoretical categories, extending the conceptualization of the used theoretical framework. According to Stambulova's model (2003), the process of transition is described by transitional demands, coping barriers, coping resources, and the process of coping itself. The results of the analysis showed that SA perceived all of the above described aspects of their transition from developmental to mastery stage in strong and reciprocal connection to other domains in lives (i.e., educational/vocational, psychological, psychosocial and financial level) as in Holistic athletic career model (Wylleman et al., 2013). Transitions occurring in the athletic career and those occurring in other domains of athlete's life are concurrent and reciprocally interact.

*Keywords: athletic career development, transition, student-athletes, junior-senior transition university students*

## Gold in Education and Elite Sport (GEES): Do elite athletes in secondary and higher education prioritize different dual career competences?

**Koen De Brandt, Paul Wylleman, Simon Defruyt (Vrije Universiteit Brussel), Kristel Taelman (Sport Vlaanderen)**

The aim of this study was to explore if elite athletes in secondary education (SE) prioritize different dual career (DC) competences in several challenging DC scenarios compared to elite athletes in higher education (HE). The GEES project identified i) a GEES list of 38 DC competence items and 4 DC competence factors (DC management competences, Self-regulation & Resilience competences, Social competences, and Career Planning competences), and ii) 6 challenging DC scenarios (e.g. exam coincides with competition (1), making study choices (2), missing significant days of study (3), relocating for sport and/or study (4), suffering from an injury (5), social life expectations (6)) (De Brandt et al., 2016). 471 15-to-25-year-old Flemish SE and HE athletes (mean age  $17.6 \pm 2.2$  yrs; 39% female) selected from the GEES list the five DC competences they perceived as most important to successfully manage each scenario. Independent t-tests showed significant differences in the competences prioritized by SE and HE athletes in 5 out of 6 scenarios ( $p < .05$ ; Cohen d range: .22 - .43). In scenario 1, HE athletes prioritized their DC management competences more than SE athletes. In scenario 3, SE athletes prioritized their Self-regulation & Resilience competences more, whereas HE athletes prioritized their Social competences more. In scenario 4 and 6, SE athletes prioritized their Self-regulation & Resilience and Career Planning competences more than HE athletes. In scenario 5, SE athletes prioritized their DC management competences more than HE athletes. Findings imply that a need exists for a developmental and situational approach in assisting athletes during their DC 'elite sport and study' pathway.

*Keywords: GEES, Erasmus+ Sport, dual career, transition, university, development*



## Dual career support providers' perspective on elite athletes' competences for secondary education (SE) versus higher education (HE)

**Simon Defruyt, Paul Wylleman, Koen De Brandt (Vrije Universiteit Brussel)**

A dual career (DC) can be quite demanding, providing DC athletes with challenges at different levels of development (Wylleman, Reints & De Knop, 2013). Especially the transition from SE to HE involves a set of challenges, requiring specific competences. This study aimed at evaluating how important competences are for DC athletes in order to manage the dual career, comparing secondary education with higher education athletes. To avoid self-evaluation bias, a Dual Career Support Providers' (DCSPs') perspective was adopted. Within the GEES project, 268 DCSPs from 9 European countries evaluated a list of 38 DC athlete competences (De Brandt et al., 2016) on their extent to which they were important (1- not important at all, 5- very important) for the DC athletes they provided support to. Results revealed that the DCSPs working with SE athletes generally evaluated the importance of the competences of SE athletes equally high as the DCSPs working with HE athletes. For example 'Ability to cope with stress in sport and study' and 'Ability to resolve conflicts' were rated as equally important for SE and HE athletes. Only for two competences, significant differences between SE and HE were found: 'ability to prioritize what needs to be done' and 'ability to live independently with competent life skills (e.g. cooking)' were rated as significantly more important for HE athletes. The less-structured environment of HE might increase the importance of these competences. The general findings indicate that although the requirements and challenges of HE are different from those in SE, the level of importance of the main set of competences to manage these challenges is almost similar. DCSPs might use these findings to prepare DC athletes for the SE to HE transition.

*Keywords: transitions, resources, athletic career, holistic, challenges, Gold in Education and Elite Sport (GEES)*

## Comparing dual career during secondary education Vs university: experienced scenarios and competences

**Salvador Miró, Miquel Torregrossa, Yago Ramis (Universitat Autònoma de Barcelona), Susana Regüela (Centre d'Alt Rendiment)**

According to the literature (e.g., Stambulova et al, 2014; Torregrossa, et al, 2015), carrying out a dual career (DC) during athletic career (i.e., combining sports with studies or work) involve multiple benefits (e.g., reduced life stress and developing multiple personal identities). However, student-athletes experience different scenarios that they must successfully manage to continue their sports and academic/vocational career. Embedded in a European project, the primary objective of this work is to compare how do athletes combine studies in sport during secondary and university education. Second we explore which competences are more frequently used to optimally manage each scenario experienced. Student-Athletes (n=246) participated in the study. Questionnaire focused on exploring possible demanding scenarios that student-athletes might have experienced during their DC and 38 useful competences to manage each scenario. Results show that during secondary education and university, student-athletes similarly experienced some of the proposed scenarios (e.g., leave from home or manage exams with competitive phase). On the other hand, more secondary student-athletes experienced the scenarios related to miss significant days of study and how balance DC and social life. The competences most used by both groups to successfully manage the scenarios are related to the management of the DC (dedication to succeed in both sport and study) and self-regulation (ability to cope with stress in sport and study). The competences used to a lesser extent are social competences (e.g., asking advice to the right people at the right moment) and career planning (e.g., being prepared for unexpected and having back up plans). Results of the present study can be useful as a guideline for student-athletes and DC Support Providers, to be prepared to manage the scenarios that will be experienced during their DC and provide appropriate competences in advance to manage scenarios successfully.

*Keywords: education, sport, dual career, young elite athletes, quantitative study*

### Stages and sport career development: the career path makes a difference

**Cristina López de Subijana, Javier Ramos Gómez, Maribel Barriopedro (Universidad Politécnica de Madrid), Carlos Muniesa (Universidad Europea de Madrid)**

The aim of this presentation was to compare the sport career development of elite athletes depending on the career path they took (Pallarés, et. al, 2011). 447 retired elite athletes (62.5% male and 37.5% females) from 32 different sports answered a 52 items questionnaire. The results showed how those athletes that chose combining their sport career with working ( $12.4 \pm 5.8$ ) and those that were focused on sport ( $10.9 \pm 3.7$ ), started later to practice their sport ( $F_{3,469}=9.2$ ;  $p<.001$ ) than the athletes that followed a dual career with studies ( $9.7 \pm 3.5$  and  $10.2 \pm 3.8$ ); they entered in the mastery stage later ( $18.2 \pm 2.9$  sport and  $20.4 \pm 4.4$  working;  $F_{3,471}=30.1$ ;  $p<.001$ ) than the athletes that combined sport with studies ( $16.9 \pm 2.7$  and  $16.9 \pm 2.7$ ) and their best sport result was achieved later too ( $25.6 \pm 5$  for sport;  $27.3 \pm 4.8$  for working;  $22.9 \pm 4.3$  for convergent and  $22.4 \pm 4.9$  for parallel models;  $F_{3,468}=28.1$ ;  $p<.001$ ). The mastery stage was also longer for the sport ( $13.8 \pm 5.2$ ) and working groups ( $13.6 \pm 5.1$ ) than those athletes that combined sport with studies at both models ( $11.9 \pm 4.8$  for convergent and  $10.6 \pm 5.4$  for parallel model;  $F_{3,472}=10.6$ ;  $p<.001$ ). Finally, the athletes focused on sport ( $32.0 \pm 3.7$ ) and those who worked ( $33.8 \pm 5.3$ ), had a significantly higher age at retirement than those who combine the sport with studies ( $28.7 \pm 5.4$  for convergent and  $27.4 \pm 5.8$  for parallel model;  $F_{3,472}=32.6$ ;  $p<.001$ ). It seems that athletes that achieved studies they shortened their sport career in order to start their second career and enter into the labor market.

**Funding:** This project was funded by the Research Advance Grant Program of the International Olympic

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### ID471. Refining the delivery of imagery interventions

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**Chair: Tony Morris (Victoria University Melbourne)**

Imagery has long been a major component of psychological skills training (PST) in sport and is a valuable technique for promoting physical activity for health. Research examining imagery interventions is extensive and diverse. However, reviewers have reported confusing and even contradictory conclusions about the effective delivery of imagery programs (Feltz & Landers, 1983; Morris et al., 2005). This situation points to the need for additional research in a range of contexts to further understand when, how, and why imagery can be used effectively to change psychological states, modify physiological variables, and enhance sport performance or physical activity participation. In this symposium, we present four different contexts and content of imagery interventions to aid understanding of the application of imagery in sport and exercise. First, Garry Kuan and colleagues describe their study aiming to understand the effects of an individual self-guided breathing device with imagery training to ameliorate anxiety among novice and skilled netballers. Next, Sho Itoh and colleagues report on the first study in a series examining the relationship between imagery dose delivery and performance response. Here, the researchers focused on the effect of number of imagery repetitions on basketball free-throw shooting, while holding session duration and number of sessions per week constant. Then, Meisam Savadelavar and colleagues describe a new approach to the content of imagery, basing their imagery script on Neuro-Linguistic Programming as they examined archers' shooting performance. Finally, in a physical activity context, Anaurene Roy and colleagues present the results of an imagery intervention study in which imagery scripts based on imagery functions were applied to increase Harmonious Passion for a physical activity and amount of physical activity in type 2 diabetics. Each of these studies throws a new light on the use of imagery. Tony Watt leads audience discussion.

*Keywords: imagery interventions, physiological responses, dose-response, NLP-based imagery, passion*

### Understanding the effects of using an individual self-guided breathing device with imagery training among novice and skilled netballers

**Garry Kuan, Siti Raihanah Binti Roslan (School of Health Sciences, Universiti Sains Malaysia), Tony Morris (Victoria University Melbourne)**

Breathing patterns are often disrupted in stressful situations. Trained breathing patterns can have a profound effect on individuals' self-regulation for reducing anxiety level. This study examined the effect of using a self-guided breathing device with imagery training between Novice and Skilled netballers. The breathing device employed the concept whereby participants followed the rhythmic breathing using their smartphone to inhale for a count of four, hold for a count of four, exhale to a count of four, and pause for a count of four before repeating the sequence together with the imagery (Williams, 2010). Participants were novice ( $n=13$ ) and skilled ( $n=13$ ) netballers. They completed the Sport Imagery Ability Measure (SIAM), a self-efficacy for netball shooting scale, the Competitive State Anxiety Inventory-2 Revised (CSAI-2R), and a breathing rate counter. We measured netball shooting performance, self-efficacy, and competitive state anxiety before the intervention and at post-test. All participants had moderate to high imagery ability. Skilled netballers showed a significant increase in self-efficacy ( $p=0.015$ ) from  $M=370.00$  during pre-test to  $M=503.85$  during post-test, using paired t-test, but we observed no significant difference in self-efficacy of novice netballers from pre-test to post-test ( $p=0.249$ ). Similarly, skilled netballers showed a significant reduction in somatic state anxiety ( $p=0.026$ ) and cognitive state anxiety ( $p=0.021$ ) using paired t-test. However, no significant difference was observed for novice netballers. In terms of performance, paired t-test showed significant improvement in skilled netball scoring ( $p=0.046$ ) but not for the novice group ( $p=0.222$ ). For breathing rate, skilled and novice netballers showed more negative values than positive values, showing that breathing rate across the 12 sessions decreased in both research conditions as intended by the intervention. Implications of using imagery techniques to enhance breathing are discussed

*Keywords: breathing patterns, imagery, anxiety, self-efficacy, performance*

### Effect of imagery dose repetitions on performance in sport

**Sho Itoh, Tony Morris, Michael Spittle (Victoria University Melbourne)**

Imagery is an effective psychological skill that can be applied to sports performance. Research has shown benefits of utilizing imagery in sport for improving performance and controlling mental states. However, many studies neglect important imagery variables, particularly repetition, duration, and frequency, that are related to determining the most effective dose of imagery for the response of improved sports performance. Identifying the most effective amount of imagery can provide guidance to help athletes, coaches, and psychologists to better use imagery training to improve athletic performance. Moreover, all levels of athletes will be able to use imagery more effectively for their desired goals. In this project, we systematically investigated the dose-response relationships of imagery prescription used to promote sports skill by manipulating the number of repetitions, duration, and frequency of imagery. Specifically, repetitions acted as the independent variable, while duration and frequency remained constant. We randomly allocated 60 participants from local basketball teams to three imagery intervention conditions ( $n=15$  each), who performed 10, 20, or 30 imagery repetitions per session, and a control condition ( $n=15$ ), who maintained their usual basketball training. Imagery participants undertook 4 weeks of imagery training to promote free-throw shooting, continuing their usual basketball training. Duration and frequency of sessions were held constant at 10 minutes and 3 sessions per week respectively. Accuracy of free-throw shooting was measured at pre-intervention, Weeks 1, 2, 3, 4, and follow-up in Week 5. We analyzed accuracy of basketball free-throw



shooting by using 2-way mixed design ANOVA, that is, 4 conditions (3 independent repetition conditions and control condition) x 6 occasions (repeated measures at pre-test, Weeks 1, 2, 3, 4, and follow-up test in Week 5). Results will be described and discussed and implications addressed.

*Keywords: imagery training, dose-response, imagery repetitions, session duration, session frequency*

### The effects of neuro-linguistic programming imagery on archers' shooting performance

**Meisam Savadelavar, Garry Kuan (School of Health Sciences, Universiti Sains Malaysia), Tony Morris (Victoria University Melbourne)**

Neuro-Linguistic Programming (NLP) is a multidisciplinary approach to changing thoughts, feelings, and behaviour based on the use of language and non-conscious cognitive processes. Because mental training is a fundamental property of learning motor skills and enhancing performance of athletes, it should be helpful to examine the efficacy of NLP imagery-based techniques in sport settings. The purpose of this study was to examine the influence of using an imagery script based on NLP principles for enhancing novice archers' performance. Participants were novice archers ( $n=15$ ) with moderate imagery ability evaluated by the Sport Imagery Ability Measure (SIAM). Participants were involved in two introductory sessions. First, they learnt about NLP principles and the "anchoring" technique. In the second session, participants learnt about the 10 basic steps in archery performance, which are stance, finger placement, hand placement, bow arm, drawing, anchoring, holding, aiming, release, and follow through. In the same session, participants also performed a 20-shot shooting trial to apply what they had learnt in action, with feedback on their performance from an experienced coach. We employed a pre-test-intervention-post-test design with a 20-trial 18m archery shooting performance test before and after 10 sessions of listening to the NLP imagery audio script over five weeks before the post-test was conducted. Participants listened to the script twice per week, with the first session in the sport psychology laboratory and the second session at their home with an mp3 player provided. Results from a paired samples t-test showed that there was a significant increase in the gain score for archery performance,  $t(14) = -3.84$ ,  $p$

*Keywords: neuro-linguistic programming, imagery, anchoring, imagery script*

### Using imagery to increase harmonious passion for physical activity in people with diabetes

**Anaurene Roy (Sports Centre, University of Malaya), Tony Morris (Victoria University Melbourne), Selina Khoo (Sports Centre, University of Malaya)**

In a previous study we found significant positive relationships between cognitive imagery use and harmonious passion and between motivational imagery use and harmonious passion (HP) (Roy et al., 2014). Regression also indicated that both types of imagery use significantly predicted harmonious passion. In the present study, we examined the effect of an imagery intervention on passion for PA in 20 voluntary male and female participants with T2DM, aged between 32 and 65 years. Participants practised imagery for two sessions per week for six weeks. Ten participants, assigned at random, practised the harmonious passion imagery (HPI) intervention, including cognitive and motivational imagery related to harmonious passion. Cognitive imagery included images of the place where each individual normally exercised. It also included images of the individual warming up, exerting more effort and cooling down. Motivational imagery included images of enjoying the activity, goal accomplishment, and positive experience associated with completion of the task. The other 10 participants practised a general physical activity imagery (GPAI) intervention with no passion-related content. The script included images of the individual performing and completing their respective activity. Using a two-way repeated measures ANOVA, we found a significant difference,  $p < .05$ , between increase in HP and PA and no significant difference in OP in HPI and GPAI conditions from pre-test to post-test to follow-up. We observed a significant increase in HP and PA, but no significant difference in OP for these periods. No interaction effect

was found between HP, OP, and PA from pre- to post-test or follow-up, Results supported the proposition that an imagery intervention focused on harmonious passion was an effective cognitive-behavioural technique that led to an increase in HP for a preferred physical activity, as well as increased PA for managing diabetes.

*Keywords: imagery, harmonious passion, obsessive passion, physical activity, diabetes*

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## **Emerging approaches to the psychological aspects of physical activity and sports in Puerto Rico**

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**Chair: Mercedes Rivera Morales (University of Puerto Rico- Rio Piedras Campus)**

This symposium presents the diversity of psychological approaches applied to athletes in Puerto Rico—in different settings as, highly competitive settings, at the college level, and in elementary schools. Puerto Rico has a long history of intervention in psychology of the sport different levels where professionals work under the cognitive social perspective and psychophysiology. The discussions will include brain wave management technology and its application during last Olympic Cycle (2014-2016) and the development of instruments to gauge biopsychological factors associated to athlete performance and emotional styles. Additionally, the findings of a study on the relationship between self-efficacy and physical activity level measured with accelerometers in boys and girls in elementary school and test differences by gender and grade level.

*Keywords: brain waves, biopsychosocial profile, Rasch model, self-efficacy*

## **Biopsychosocial profile of a group of student athletes in the southern region of the country**

**Carlos R. Carrasquillo-Rios (Universidad Puerto Rico -Humacao Campus)**

The objective of this research was to identify the resources and needs of a group of university student athletes in southern Puerto Rico. Social aspects could be barriers to training days and performance at university level in order to prevent sport dropout. The study used a psychosocial questionnaire, administered to 145 athletes from different disciplines. Of these, 57 % were male, 43 % female. Family conflicts are usually dealt with respectfully. In their couple relationships, women expressed less satisfaction than males. Half of the participants of both sexes felt discomfort in the lower back after the event. The support provided by trainers seems to be a strengthening element, especially in women. The percentage of pre-competition anxiety was higher among women. More comprehensive attention is recommended for women athletes, as well as giving greater importance to physical/mental preparation and creating support groups.

*Keywords: family conflicts, pre-competition anxiety, university athletes*

## **Brain waves management as a sports psychology tool during the las Olympic Cycle**

**Rosa Hechavarria-Gomez (Universidad Puerto Rico- Medical Science Campus)**

A discussion on the technique of brain wave management and its application during the last Olympic Cycle (2014-2016) in Puerto Rico. Statistics related to participants, athletes treated at the health clinic, and athletes in psychological intervention during each game will be presented, highlighting brain wave management and other interventions that were carried out before, during, and after the event at the Olympic Village. Stress and anxiety are widely acknowledged as symptoms that occurs in sports competitions. Some of the stress symptoms is confusion, attention problems and sleep difficult; this may influence in the athlete's performance and coherence in the National Team.

*Keywords: brain waves, psychological interventions, olympic cycle*



## Development and validation of the Colón and Andújar Emotional Style Scale with a sample of athletes from a university in Puerto Rico's northern region

**Amilcar Colon-Cortés (Universidad Puerto Rico- Arecibo Campus)**

The objective of this research is to present development and validation results on a scale that measures emotional styles, used with 200 athletes from a university in northern Puerto Rico. According to Davidson and Begley (2012), there are six emotional styles: 1. Resilience, 2. Outlook, 3. Social intuition, 4. Self-awareness, 5. Sensitivity to context, and 6. Attention. The results and inferences of the instrument, which were validated using the Rasch model, will be presented. The study's applications and limitations will be included in the discussion.

*Keywords: emotional styles, Rasch model*

## Self-efficacy, physical activity, and physical fitness in elementary school girls and boys in Puerto Rico

**Mercedes Rivera Morales (Universidad Puerto Rico- Río Piedras Campus)**

Physical activity levels change through life stages, is important to identify psychological aspects that will intervene early in life. Children should maintain a level of physical activity of at least one hour per day. Whether they are active or sedentary will depend on social, environmental, and psychological factors, as proposed by Buckworth, et al. (2013). The present study explored the relationship between the level of physical activity and self-efficacy regarding exercise in a sample of 312 (157 boys and 155 girls) students from two elementary schools in San Juan. The study used direct physical activity measures with accelerometers ActiGraph GT3X + for 7 days. Self-efficacy was evaluated using a questionnaire administered by interview, measures repeated during a 5-year period. T-test analyses will be presented.

*Keywords: self-efficacy, physical activity, elementary school*

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## Physical activity and quality of life across ages and cultures

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**Chair: Bonnie Berger, Ed.D (Bowling Green State University, USA)**

This symposium examines specific contributions that participation in diverse types of physical activity can make to participants' quality of life throughout their lives. Quality of life has been defined by the World Health Organization as "individuals' perceptions of their position in life in the context of the culture and value systems in which they live" (WHO, 1994). Each presenter will address contributions of physical activity to quality of life in various age groups and cultures. The first presenter reports on the effects of a year-long exercise and wellness lifestyle intervention program for children (N = 167) ages 3 to 14 years from African-American (80%), Asian (10%), and Hispanic (10%) backgrounds. Results indicated that using pedometers helped children significantly increase number of steps by 300% ( $p < .05$ ). The second presenter will report on an exploratory study (N = 10) on quality of life in senior women golfers, age 50 years. The senior golfers reported high levels of Satisfaction with Life, exercise enjoyment, physical fitness, as well as mood alteration after exercising that was correlated with Satisfaction with Life. The next presenter will examine the benefits of a village women's volleyball program delivered in Fiji and Vanuatu. The program was designed to increase physical activity and improve diet, but also resulted in improving confidence, happiness, perceived village unity, and men's attitudes toward women. The fourth presenter, a clinical psychologist, will examine the impact of exercise on clients' quality of life as reported in three case studies incorporating both quantitative and qualitative analyses conducted before and after therapeutic interventions. The symposium will conclude with a discussant

examining the presentations that highlight the diverse influences of physical activity on quality of life for participants of various ages and cultures.

*Keywords: physical activity, quality of life, culture, psychological correlates*

### **Motivating physical activity by pedometer use: Results of a program focused on quality of life in at-risk youth**

**Mary J. MacCracken (University of Akron, USA), Robert Stadulis (Kent State University, USA), Alexis Holt (University of Akron, USA)**

Sedentary behavior is a health hazard that has contributed to obesity and type 2 diabetes (T2D) in children and adolescents (Manger et al., 2012). The Keeping PACE (Physical Activity/ Tennis & Character-Health-Nutrition Education) Program has guided at-risk African-American, Asian, and Hispanic youth to understand ways to make healthier choices. Researchers (MacCracken et al., 2001) studied whether activities/ environment might motivate youngsters to combat T2D and low levels of exercise. "Having fun" seemed to be a primary consideration especially when lessons involved culturally-appropriate physical activity. The present study asks, "Would using pedometers motivate children and adolescents to increase levels of physical activity thereby addressing potential T2D and resulting in a higher quality of life?" Program participants (N=167) were asked to use pedometers when they exercised. Enrollees were boys (n=76) and girls (n=91) aged 3-5 years (n=55), 6-10 years (n=101), and 11-14 years (n=11); 80% were African American, 10% Asian, and 10% Hispanic. Culturally-infused, free, year-long, face-to-face lessons focused on lifestyle intervention; participants wore pedometers during physical activity lessons. At the program's conclusion, results showed participants took 300% more steps from quarter 1 to quarter 4 ( $p < .05$ ). Children ages 3-4 years increased their steps by 494%. In addition, the older youth seemed to enjoy the pedometers, but not to the same extent as the youngest group. However, these older children were able to explain that daily exercise helps combat T2D, and also able to share that exercise/physical activity impacts self-esteem/competence and improves social interaction. The lifelong influence of these lifestyle changes in physical activity is yet to be determined, but enrolled youth have shown an increase in quality of life.

*Keywords: quality of life, pedometers, youth, exercise, fun, motivation*

### **Quality of life in senior golfers: Psychological and physiological correlates**

**Bonnie Berger, Lynn A. Darby (Bowling Green State University, USA), David R. Owen (Brooklyn College of the City University of New York, USA)**

Golf is a popular recreational activity, yet little is known about the relationship of golf participation with quality of life (QoL). This exploratory study based on the hedonic model of exercise participation (Keyes, Fredrickson & Park, 2012) explored psychological and physiological correlates of QoL in senior golfers. Females (N = 10, mean age:  $63.6 \pm 7.2$  years with  $25.9 \pm 20.3$  years of golf participation) completed an 8-week golf-fitness program (Golf-Fit; Titleist® Performance Institute). At the beginning and end of Golf-Fit, the women completed the Satisfaction with Life Scale and the Physical Activity Enjoyment Scale. They also completed the Profile of Mood States (POMS) before and after 6-min walk tests (6MWT). Results indicated that at both the beginning and end of Golf-Fit, senior golfers scored high (66th and 69th percentiles) in aerobic fitness and reported consistently high scores on Satisfaction with Life ( $M_s = 27.9, 27.8, r = .96$ ). After each 6MWT, Satisfaction with Life scores were significantly inversely correlated with Total Mood Disturbance ( $r_s$ : Post-6MWT Beg and End, range  $-.42$  to  $-.64$ ), and with the Tension and Depression subscales of the POMS ( $r_s$ :  $-.55$  to  $-.83$ ). Their mean exercise enjoyment scores of  $93.1 \pm 18.4$  and  $97.1 \pm 15.5$  were high but did not change due to Golf-Fit. Although the 6MWT tests were performed at high intensities (RPEs: 13.0, 13.5, "somewhat hard;" %HR max = 81.6%, 76.7%), the golfers reported desirable changes in mood. Initially, they reported significant

increases in Vigor and decreases in Confusion, and at the end of Golf-Fit, they decreased significantly in Fatigue. Senior women golfers reported a high QoL as indicated by Satisfaction with Life, aerobic fitness, exercise enjoyment, and desirable changes in mood. These results support a need to further examine the relationships between golf participation and senior women's quality of life.

*Keywords: quality of life, satisfaction with life, mood alteration, exercise enjoyment, senior golfers*

## **The effects of a Pacific Island volleyball program on the well-being and quality of life of village women**

**Stephanie J. Hanrahan (The University of Queensland, Australia)**

Volleyball programs were delivered in villages in Fiji and Vanuatu with the goal of increasing physical activity and improving nutrition in women. Questionnaires investigated the attitudes of participants, and qualitative data focused on opinions about the program and its perceived effects. In Vanuatu 94 individuals (83 females - 63 participants and 20 non-participants; 11 males – all nonparticipants) from three villages completed questionnaires. Ages ranged from 13 to 70 years, with a mean of 32.31 years. Two focus groups, (6 and 8 participants each), took place in one village. In Fiji, questionnaires were received from 33 women from two villages with ages ranging from 19 to 64 ( $M = 38.88$  years). Qualitative responses were obtained from 42 women (four villages; ages 21 to 75,  $M = 45.97$  years), and 11 men (two villages; ages 22 to 60,  $M = 38.22$  years). Overall the attitudes and intentions of the villagers towards the volleyball program, physical activity in general, and healthy diets were positive, although slightly more positive for women and program participants than for men and non-participants. Although the attitudes towards the volleyball program remained positive over time, there was a slight decline over time in the attitudes of the participants towards participating in the volleyball program or physical activity in general over the next 12 months. In Vanuatu, many participants felt they had lost weight, learned new volleyball skills, and changed the way they ate as a result of the program. In Fiji, both the men and women noted that the women were healthier, fitter, or lighter. The women reported feeling more confident and happier as a result of the program. The men observed increased village unity and their own improved attitudes towards women as a result of the volleyball program. Both participants and nonparticipants wanted the program to continue.

*Keywords: well-being, quality of life, gender, attitudes*

## **Exercise and health-related quality of life with complex clinical clients**

**Frances L. Price (Independent Practice, USA)**

Although a set point for life satisfaction may be stable over time, it might be affected by life events (Fujita & Diener, 2005). Health-related quality of life refers to how an individual's health impacts his/her ability to function as well as perceived well-being with respect to physical, mental, and social domains (Hays & Morales, 2001). Clients of different ages and ethnicities were physically active before unforeseen circumstances negatively affected their quality of life, including their ability to exercise. Each client had a unique challenge. Therapeutic modalities included cognitive-behavioral therapy, insight-oriented therapy, solution-focused therapy, play therapy, and relaxation training. This presentation will include three case studies. Assessment, interventions, and the role of exercise with respect to quality of life were examined via quantitative and qualitative analyses. Multi-dimensional, age- and cognitively-appropriate quantitative measures were administered to track clients' progress, determine the effectiveness of the interventions, and generate goals and plans designed to enhance the clients' treatments, outcomes, and overall quality of life. Because qualitative research is not guided by a priori hypotheses, a structured, in-depth, phenomenological, dialogic interview technique using open-ended questions was also employed. Approaching interviews from this perspective allowed the participants to guide the interview and express what they considered to be the most

salient aspects of their experiences. This approach provided insight into a complex interaction of variables and life circumstances. The case studies will examine the roles, the desire, and how the ability to exercise played in the clients' lives prior to, and in the context of life-altering events. This presentation also will raise questions regarding how individuals' needs might better be served and their quality of life and subjective well-being enhanced through exercise.

*Keywords: quality of life, case studies, satisfaction with life, clinical clients*

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## Doing qualitative research with injured populations: our confessions...

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**Chair: Ross Wadey (St Mary's University)**

Since the 1960s, a significant body of research has focused on the psychosocial experiences of injured populations. In the field of sport and exercise psychology, the literature can be divided into two broad themes: athletes' experiences of injury (e.g., Brewer, 2010; Wadey & Evans, 2011) and the role of physical activity in the lives of non-athletic, injured populations (e.g., Day & Wadey, 2015; Douglas & Carless, 2015). To address these lines of inquiry, researchers have predominately used qualitative inquiry, and chosen to represent their findings through the conventions of a realist tale (i.e., experiential author[ity], the participant's point of view, interpretive omnipotence; Van Maanen, 1988). Yet, while this form of representation has been beneficial in foregrounding the research findings, the voice of the researcher about what happened during the fieldwork is left absent. To generate a more reflexive and critical stance towards both the process and product of qualitative research, Sparkes and Smith (2014) recommended that researchers use confessional tales. That is, researchers should reflect on the methodological and ethical perils and pitfalls of their research experience (Van Maanen, 1988), which has significant pedagogical value for neophyte qualitative researchers. Drawing from a wealth of qualitative experience (i.e., >300 interviews, >50 focus groups, & >500 hours of observation) of working with various injured populations (e.g., elite athletes, adolescents, & military personnel) in various contexts (e.g., hospitals, competitive venues, & airports), the aim of this symposium is to share confessional tales of our fieldwork experiences with injured populations. Specifically, we reflect on gaining entry, using qualitative methods, and ethical tensions (e.g., procedural and relational). Recommendations are provided for neophyte researchers (e.g., what to do, what not to do, and how best to foster a researcher-participant relationship)

*Keywords: injury, psychology, qualitative, confessions*

## Doing qualitative research with injured adolescents: my confessions...

**Francesca Cavallerio (Anglia Ruskin University)**

Despite the benefits that arise from participating in competitive sport, a few researchers have started to suggest the existence of a darker side to sport, which may pose a risk to damaging athletes' health (e.g., Douglas & Carless, 2015; Theberge, 2008). The environment and culture of gymnastics have often been pointed at as an example of this darker facet (Krane, Greenleaf, & Snow, 1997), for encouraging the development of unhealthy beliefs and behaviours among young gymnasts (e.g., Barker-Ruchti & Schubring, 2016; Warriner & Lavallee, 2008). Pain and overuse injuries are common negative experiences in gymnasts' life, often overlooked by both coaches and gymnasts (Barker-Ruchti, 2008), but with possible serious consequences in life after sport (DiFiori, et al., 2014). In 2013 I started conducting a 12-month ethnographic study in a high performance Italian rhythmic gymnastics club (Cavallerio, Wadey, & Wagstaff, 2016). The study was underpinned by ontological relativism and epistemological constructivism, and aimed to gain a better understanding of the psychosocial aspects that facilitated the development of overuse injuries among gymnasts. I observed trainings and competitions, conducted formal and informal interviews, as well as focus groups with gymnasts, coaches, and

parents, and kept a reflexive journal throughout the duration of the ethnography. The confessional tales selected from my journal reflect on the difficulties of doing research with young athletes (“How To Do Research With Children?”), while focusing on a sensitive topic like disclosing about pain and injury in the environment I was immersed in (“What Will They Think of Me?”). Lessons learned from these tales include taking time to know and understand one’s participants, keeping in mind the aspect of power and its balance in the relationship, the importance of building a trustworthy relationship overtime, and of tailoring our methods of data collection so that they resonate with our participants.

*Keywords: adolescents, pain, overuse, injury, qualitative*

### Doing qualitative research with in-patients: my confessions...

**Phoebe Sanders (St Mary's University, Twickenham)**

Immersive fieldwork can facilitate an understanding of the richness, complexity, and multifaceted relationships within medical environments, and is increasingly being used to explore sensitive topics within healthcare (Long, Hunter, & van der Gest, 2008). However, few published studies have made use of immersive methods within hospitals or clinics; highly structured, protected, and exclusive institutional spaces (Foucault, 1975) which may prove inaccessible to researchers. There is also a lack of guidance for those seeking to conduct immersive research within medical spaces (Wind, 2008), despite calls to reduce the shock to neophyte qualitative researchers by discussing upfront the range of emotions, role conflicts, physical and mental effort, discomfort and stress at play during fieldwork (e.g., Kleinman & Copp, 1993; Owton & Allen-Collinson, 2014). This study utilised immersive fieldwork methods, including participant observation, informal conversation, and interviews, to explore the experiences of amputee patients attending a specialist rehabilitation centre at a hospital in the U.K. In this confessional tale, the author draws on reflective diary entries and fieldnotes to explore her experiences of integrating into this environment as a neophyte researcher with no medical training. Overall, four main challenges are discussed: finding a role, navigating waiting spaces, encountering the unfamiliar, and ethics in the boardroom and in the field. Specific recommendations for novice researchers entering medical environments include: preparing to encounter those who do not share their beliefs, identifying a safe environment in which they can share their emotions, and exploring the impact their (in)experience and willingness to embrace opportunities for learning may have within their own research context. The importance of reflective practice is also highlighted as a means of improving researchers’ capacity to recognize and negotiate ethical complexities.

*Keywords: fieldwork, healthcare, hospital, amputee, qualitative*

### Doing qualitative research with out-patients: my confessions...

**Ross Wadey (St Mary's University, Twickenham)**

What participation in physical activity means in the lives of injured military personnel has attracted increased research attention (e.g., Brittain & Green, 2012; Carless, Sparkes, Douglas, & Cooke, 2014). Findings have demonstrated how physical activity can affect participants’ psychological, subjective and social wellbeing. Yet, while we are gaining a more in-depth understanding from the perspective of military personnel, the researchers’ experiences of doing qualitative research with this injured population has been absent in the literature. In this study, I draw upon my confessional tales from conducting a longitudinal, qualitative study with injured military personnel. Underpinned by ontological relativism and epistemological constructivism, the aim of the study was to examine the impact of different types of physical activity on the lives of injured, military personnel. The sample pool consisted of 54 participants (51 males, 3 females; Mean age = 55 years, SD = 13 years). Specifically, 14 activities (e.g., ski-diving, sailing, golf, fishing) were explored that took place in various countries (e.g., Austria, California, England, Greece). Data collection involved formal interviews (N=84),

focus-groups (N=2), observation (> 150 hours), fieldnotes, and a reflexive journal. Drawing upon my fieldnotes and reflexive journal, the confessional tales reflect on the challenges of doing research with this injured population. The tales selected cohere around gaining entry (i.e., “Letting Go and Moving On”) and data collection (i.e., “Interviews, Observation, and the Masculine Self”, “Cigarettes, Alcohol, and the Focus Group”). Recommendations for neophyte qualitative researchers and those seeking to work with injured populations include examining one’s prior beliefs, reviewing early transcripts, appreciating the role of informal interviews, using elicitation devices, understanding what questions to (not) ask, having an exit strategy, and mobilising a critical friend.

*Keywords: military, injury, physical activity, qualitative*

## Doing qualitative research with victims and witnesses of athletic injury: my confessions...

**Melissa Day (University of Chichester)**

The importance of researching and understanding experiences of athletic injury has been recognised by researchers for several decades (Evans & Hardy, 1995; Maddison & Prapavessis, 2005; Podlog et al., 2015). More recently, attention has not only focused on the injured athlete but on the wider sports network, highlighting the negative impacts of injury on coaches (Day, Bond, & Smith, 2013; Martinelli & Day, 2016) and teammates (O’Neill, 2008; Day & Schubert, 2012). Conclusions from all these lines of research have demonstrated the detrimental impact of injury, both for the injury victim and the witness of injury events. Yet what has been noticeably absent from this literature is how the vulnerability of both participant and researcher can be managed when narrating athletic injury. This confessional tale draws on a reflective diary kept during a series of narrative interviews that asked injury victims and witnesses to story their experiences of injury. Participants included injured athletes, coaches, and teammates, all of whom had been involved in an injury event that resulted in a severe or life-changing injury. This confessional tales focuses on the challenges of asking participants to narrate athletic injuries. Two tales (Ready to return in body and mind?) and (Beginning at the end) illustrate the difficulties that may be experienced by participants narrating injury. The final tale (Imagining the world of others and struggling to leave) focuses on the researcher and considers how connected or detached a researcher should be when listening to stories of injury. Recommendations for neophyte qualitative researchers include considering the order in which stories are narrated, becoming aware that physical recovery and return to sport may not equate to psychological recovery, and strategies for listening to sensitive or vivid descriptions of injury.

*Keywords: victim, witness, injury, qualitative*

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## The role of structured and unstructured sport activities in skill acquisition and talent development

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**Chair: Patrícia Coutinho (Centre for Research, Education, Innovation and Intervention in Sport, CIFI2D)**

The benefits and costs associated with various types of sport activities performed during different stages of an athlete’s development have been a topic of discussion in the last two decades (Coutinho, Fonseca & Mesquita, 2016). Specifically, the role of structured and unstructured sport activities has been examined in order to understand how these activities may aid the acquisition of skill and talent development. Whilst structured activities have been considered a key factor in distinguishing performers at different skill levels (Ericsson et al, 1993; Coutinho, Fonseca & Mesquita, 2016), unstructured activities have been recognized as a type of activity equally relevant in the development of an athlete (Coutinho et al, 2016). The main purpose of this symposium is to explore the characteristics of both structured and unstructured sport activities and discuss how they could aid the development of expertise in sport. More specifically, we will present the main





advantages of unstructured activities and discuss how they could promote the athlete's motor, physical, cognitive, psychological and social development. This symposium will include four communications. The first two communications will provide a theoretical perspective of the core concepts, emphasizing the benefits and potential negative consequences of both structured and unstructured sport activities. Here, we will particularly highlight the relevance of unstructured sport activities for skill acquisition and talent development. Then, the third and fourth communications will present empirical findings on the perceptions that adult (retrospective perspective) and youth (prospective perspective) volleyball players have about the importance of unstructured activities for their development. It is therefore expected to shed light into the existing knowledge in this research field, clarify potential misunderstandings and to discuss important avenues to explore in future research.

*Keywords: sport activities, practice, play, athlete development, talent development*

### How unstructured sport activities aid the development of expertise in volleyball players

**Patrícia Coutinho, António M. Fonseca, Isabel Mesquita (Centre for Research, Education, Innovation and Intervention in Sport <CIFI2D>, Faculty of Sport, University of Porto, Portugal)**

Within the panoply of early developmental sport activities that constitute the athlete's sport participation, unstructured activities has been considered an important contributor to the acquisition of skill and expertise. The purpose of this study was to analyse the involvement in unstructured sport activities by volleyball players and understand their contribution to talent development. Thirty highly skilled (HS) and thirty less skilled (LS) players participated in retrospective interviews. The data were subjected to thematic analysis. Results indicated that both HS and LS participated in unstructured activities during their early development. However, only HS players recognized the importance of these activities as a key formative experience in their expertise achievement. Moreover, HS players particularly indicated the participation in specific unstructured activities (street volleyball) as relevant for their development. On the contrary, LS players reported being involved in general play activities (other activities rather than volleyball). When the characteristics of the context were considered, only HS players mentioned having played specific unstructured activities (street volleyball) with older peers, recognizing this opportunity as a key element for their development at different levels (motor, physical, social and cognitive). These findings highlight the importance of considering not only the role of unstructured sport activities in the development of expertise in volleyball, but also the overall environment in which practice activities are experienced (the degree of formality and specificity of activities, peers age). Coaches and sport systems are therefore encouraged to consider the role of unstructured activities in the early years of athlete development as this type of learning context may provide additional stimuli in developing important attributes (technical, tactical, physical, cognitive) for expertise development and achievement.

*Keywords: play, skill acquisition, talent development*

### Perceptions of youth volleyball players about the importance of unstructured sport activities for their skill acquisition and talent development

**Cristiana Bessa, Patrícia Coutinho, António M. Fonseca, Isabel Mesquita (Centre for Research, Education, Innovation and Intervention in Sport <CIFI2D>, Faculty of Sport, University of Porto, Portugal)**

In the last decades, much attention has been given to the role that unstructured sport activities play in athlete and talent development (Coutinho et al, 2016). These informal child-led activities foster innovation, creativity, adaptability, and flexibility (Memmert et al, 2010), which are important contributors to expertise in sport. While studies have retrospectively examined the perceptions of adult athletes about the importance of these activities in their development, the perceptions of youth athletes have not been considered. The purpose

of this study was to examine the perceptions of youth volleyball players about the importance of unstructured sport activities for their skill acquisition and talent development. Twenty players from 6 to 12 years of age participated in semi-structured interviews. The data were subjected to Braun and Clarke's (2006) approach to thematic analysis. After reading the transcripts, it was generated the initial codes (units of information with similar ideas). Then, units with similar meaning were grouped into more comprehensive themes, which allowed organization and interpretation of the unstructured data. Finally, themes were reviewed and checked for accuracy. Players highlighted that the involvement in unstructured sport activities were important in developing their technical and tactical skills as well as the "smartness" of the game. However, apart from these motor skills, youth players reported that these activities were important in developing their autonomy, responsibility and engagement in sport. Youth players also mentioned that unstructured activities were an important contributor to their self-confidence, social acceptance and equity within the sport context. These findings highlight the importance of unstructured sport activities during the early years of development not only for skill acquisition, but also for personal and social development, which are core factors in the development of expert performance in sport.

*Keywords: play, expertise, athlete development*

### The psychological benefits of unstructured learning environments for young players

**Sara da Silva (School of Psychology, Cardiff University, UK), Patrícia Coutinho, António M. Fonseca, Isabel Mesquita (Centre for Research, Education, Innovation and Intervention in Sport (CIFI2D), Faculty of Sport, University of Porto, Portugal)**

Across their life span, individuals encounter optimal age-periods for achieving certain goals (Heckhausen et al., 2010), such as to achieve expertise in a given career domain. Once those optimal age-periods have passed and investment in a given goal is no longer possible, developmental regulation theories claim that disengagement from the goal and reengagement in alternative goals will contribute to an adaptive development (Haase et al., 2013). The present study explored the regulatory strategies used by retired elite football-athletes. We applied an interpretative phenomenological analysis (IPA) to semi-structured interviews conducted separately with four football ex-athletes. Our findings show that participants found it difficult to disengage from their career goal as football athletes and this had a negative impact on their wellbeing. The main reasons stated for finding it difficult to disengage from their careers as athletes were the reduction of sense of identity and high intensity emotions, the lower level of responsibility when compared to being a coach, and loss of social recognition. Additionally, while participants did invest in alternative life-goals linked to the football field (e.g, becoming a coach), they did not consider these goals to be as fulfilling as their career as athletes. These findings suggest athletes approaching retirement might benefit from support interventions since this process seems to have a negative impact on their wellbeing. These interventions should aim at helping ex-athletes to reframe the meaning of retirement, and to identify new life-goals that could be equally fulfilling.

*Keywords: sport activities, play, self-esteem, self-confidence, motivation*

### What constitutes an optimal talent development environment? The role of structured and unstructured sport activities

**Patrícia Coutinho, António M. Fonseca, Isabel Mesquita (Centre for Research, Education, Innovation and Intervention in Sport <CIFI2D>, Faculty of Sport, University of Porto, Portugal)**

Research addressing the acquisition and development of sport expertise comprises the study of how athletes reach and stay at the pinnacle of their sport as well as what particular attributes or components of performance are key contributors to the expert's performance advantage in sport (Coutinho, Fonseca &

Mesquita, 2016). Sport scientists have examined the development of expertise in sport through different lenses, focusing their attention on either environmental (nurture) or genetic (nature) contributions (Davids & Baker, 2007). Regarding the environmental factors, researchers have examined the athletes' sport participation to understand what type of sport activities constitutes an optimal environment for athletic development. Here, both structured and unstructured sport activities are considered important contributors to the acquisition of skill and expertise (Coutinho, Fonseca & Mesquita, 2016). Whilst the amount of highly structured sport activities has been considered a key factor in distinguishing performers at different skill levels, several negative consequences is associated with this type of activity, including burnout, dropout, overuse injuries and lower levels of attainment (Coutinho, Fonseca & Mesquita, 2016). Alternatively, unstructured activities have been pointed out as a type of activity equally relevant for skill acquisition and talent development (Coutinho et al, 2016). Apart from emphasising fun, enjoyment, being intrinsically motivating, and providing immediate gratification, these activities may foster innovation, creativity, adaptability, and flexibility (Memmert et al, 2010), which are core factors for expert performance in sport. The benefits and potential negative consequences of both structured and unstructured sport activities will be discussed in this session. More specifically, we will explore the main advantages of unstructured sport activities, how these may help the acquisition of skill and the development of expertise in sport.

*Keywords: practice, play, skill acquisition, athlete development, talent development*

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## Research on Morality in Sport in Chinese Athletes

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***Chair: Zuosong Chen (Shanghai Jiao Tong University)***

Sport has traditionally been considered an important platform for the learning of life skills and the fostering of positive youth development. However, increasing media attention on aggression and different forms of cheating in sport have led to questions of whether or not (elite) sport athletes provide good role models for youth. Athletes' moral issues have also recently gained an increasing amount of attention from sports psychology researchers. It is of importance to understand the potential antecedents and mechanisms of moral behaviors in sport, such as prosocial and antisocial behavior and doping behavior. To our knowledge, previous studies on the moral behaviors in sport have been primarily conducted in Western countries. It is unclear whether these findings are applicable to other countries with different sport system and large cultural distances such as China. Therefore, the purpose of this symposium was to investigate the morality in sport, its potential antecedents, and potential neural mechanisms in Chinese Athletes. The symposium consists of four presentations. Study one sought to cross-culturally adapt and validate the performance enhancement attitude scale (PEAS) and to examine the relationship between sport moral disengagement and attitudes toward doping in Chinese athletes. The second study was to examine the influence of coaching style on attitudes toward doping in Chinese athletes. The third study sought to examine the relationship between moral disengagement and prosocial and antisocial behavior towards teammates and opponents in Chinese athletes. The fourth study was to investigate the cognitive neural mechanisms of sport moral judgment in Chinese athletes.

*Keywords: morality, sport, athletes, China*

## Coaching style and attitudes toward doping in Chinese athletes: The mediating role of moral disengagement

***Zuosong Chen (Shanghai Jiao Tong University), Dong Wang (Fujian Normal University), Kun Wang, Tao Huang (Shanghai Jiao Tong University)***

Previous studies in Western countries indicated that coaching style had significant influence on athletes' attitudes toward doping. The purpose of this study was to investigate the association between coaching style

and attitudes toward doping among Chinese athletes. The potential mediating role of moral disengagement was examined. Participants were 203 athletes (Mean age = 19.0 years, 36.9% females) from the Fujian Provincial Sports Team, China. Athletes' perception of autonomy-supportive and controlling coaching style was assessed using the adapted Health Care Climate Questionnaire and the Coach Controlling Behaviors Scale, respectively. Moral disengagement in sport was assessed using a scale developed by the authors. The Performance Enhancement Attitude Scale was adapted to measure athletes' attitudes toward doping. Structural equation model (SEM) was established to assess the mediation effects. The results from SEM testing showed that autonomy-supportive coaching style had no direct effect on attitudes toward doping, and the indirect path through sport moral disengagement was also not significant. Controlling coaching style had an indirect and positive effect on attitudes toward doping through moral disengagement. Results indicated that controlling coaching style was positively associated with attitudes toward doping among Chinese athletes. The relationship was mediated by moral disengagement. Autonomy-supportive coaching style was not associated with attitudes toward doping. The findings provided evidence supporting the important role of moral disengagement in mediating the positive relationship between controlling coaching style and attitudes toward doping among Chinese athletes. The findings indicated that avoiding construction of controlling coaching climate and reducing moral disengagement in sport may be relevant for reducing athletes' pro-doping attitudes.

*Keywords: doping, attitudes, coaching style, moral disengagement*

## Cognitive neural mechanisms of moral judgment in Chinese athletes: evidence from ERPs

**Dong Wang (Fujian Normal University)**

Previous studies of sports moral judgment mainly focused on the antecedents of sports moral judgment and the relationship between sports moral judgment and moral behavior. The underlying neural mechanisms remains to be elucidated. The purpose of the study was to investigate the cognitive neural mechanisms underlying sport moral judgment in Chinese athletes, mainly loaded on four parts. Study 1 sought to investigate the types and characteristics of moral misconduct behavior for Chinese athletes with Nvivo8.0 through the analysis of gathered 537 news on the Internet and 22 athletes in-depth interviews. Based on the study 1, study 2 developed four types of 160 materials of moral judgment in sports. Study 3 tested the validity of four types of materials of moral judgment in sports from percentages of affirmative responses, decision times, moral conflicts, moral acceptability, emotional valence and arousal valence. Study 4 investigated the cognitive neural mechanisms of different type's moral judgment in Chinese athletes used ERPs. Results showed that: (a) Types of moral misconduct behavior for Chinese athletes can be mainly divided into violence, doping, negative ball or game and self-knowing lose honesty. (b) The validity of developed four type's materials of moral judgment in sports were acceptable, violence, doping, negative ball or game and self-knowing lose honesty have 40 cases each, can be used as effective experimental materials to conduct moral decision-making research in the sports. (c) No significant difference were found between the four types of moral judgment in stimulating lock and reaction lock in which induced every ERP components, and anterior cingulate cortex (i.e. BA10 and BA25) were activated by four types of moral judgment. The findings indicated that the four types of moral judgment with the same cognitive neural mechanisms and validated the dual-process theory of moral judgment.

*Keywords: athlete; moral misconduct behavior; moral judgment; cognitive neuroscience*

## Relationship between moral disengagement in sport and prosocial and antisocial behaviors in Chinese athletes

**Kun Wang (Shanghai Jiao Tong University), Kaihong Sun (Yangzhou Polytechnic University), Dong Wang (Fujian Normal University)**

Moral disengagement is a psychological process in which people use different cognitive strategies to justify their potentially problematic actions and to reduce feelings of shame and guilt. Athletes with high level of moral disengagement in sport may show more antisocial behavior and less prosocial behavior than other athletes. Since the majority of past studies have been conducted in western countries, we know little about moral disengagement of Chinese athletes. Therefore, the purpose of the present study was to examine the relationship between sport moral disengagement and prosocial and antisocial behavior among Chinese athletes. Three hundred and six Chinese athletes (mean age=19.9±1.5 years) were recruited and responded to the 20-items moral disengagement questionnaire and the Chinese version of prosocial and antisocial behavior in sports scale (PABSS). Results showed that gender, type of sport and competition level predict antisocial behavior towards teammates and opponent better than prosocial behavior towards teammates and opponents. Type of sport was the strongest predictor which negatively predicted antisocial behavior towards teammates and opponents. After controlling for gender, type of sport and competition level, non-responsibility was the strongest predictor which significantly and negatively predicts prosocial behavior towards teammates and opponents; euphemistic labeling was the strongest predictor to positively predict antisocial behavior towards teammates; conduct reconstrual was the strongest predictor which could significantly and positively predict antisocial behavior towards opponents. The present study contributes to research into moral disengagement in sport by analyzing the relationship between moral disengagement and prosocial and antisocial behavior in Chinese athletes.

*Keywords: athlete, moral disengagement, prosocial behavior, antisocial behavior*

## **The relationship between moral disengagement and attitudes toward doping in Chinese athletes**

**Tao Huang, Kun Wang, Zuosong Chen (Shanghai Jiao Tong University)**

Doping has been a widespread issue in various sports. Before immoral behaviors happen, individuals may change cognition and attitude toward immoral behaviors through moral disengagement. Previous studies examining the relationship between moral disengagement and attitudes toward doping have been conducted in Western countries. It is unclear whether the relationship are applicable to other countries with different sport system and large cultural distances such as China. The purpose of the study was to cross-culturally adapt and validate the performance enhancement attitude scale (PEAS) and to examine the relationship between sport moral disengagement and attitudes toward doping in Chinese athletes. Firstly, eighty-three athletes (mean age=21.1±1.3 years) were recruited for the adaptation of PEAS in order to investigate the measuring characteristics of PEAS. PEAS items were revised and adapted based on the adaptation results. Another two hundred and three athletes (mean age=20.0 ± 2.0 years) were recruited and answered the revised PEAS in order to establish the evidence for the reliability and validity of the revised PEAS. Results showed that: (1) the construct validity of original PEAS was poor in Chinese athletes; (2) the revised PEAS consisting of 10 items had good reliability and construct validity; (3) significant and positive association was observed between sport moral disengagement and attitudes toward doping in Chinese athletes. In conclusion, the Chinese version of the performance enhancement attitude scale showed satisfactory psychometric properties. Sport moral disengagement positively predicted attitudes toward doping in Chinese athletes.

*Keywords: athlete, doping, attitude, moral disengagement*

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## **Motivation and psychological intervention in dance: State of the issue and analysis of the educative and professional context**

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**Chair: Diana Amado (University of Extremadura)**

With the aim to understand the psychological processes that explain the commitment with dance as an emerging physical activity (Gao, Hannan, Xiang, Stodden, & Valdez, 2013), currently there is a great interest to study motivation in dance by the professionals involved in the psychology context (Gillet, Vallerand, & Lafrenière, 2012; Jang, Reeve, & Deci, 2010) and their consequences about the well-being or ill-being of their participants. According to this issue, the current symposium gives findings about this topic in different contexts. At educative level, results from a research based on a teacher-focused intervention which supports the needs for autonomy, competence and relatedness, to help experienced teachers develop a motivating style that could increase students' psychological need satisfaction and self-determined motivation at dance teaching sessions at school is shown. At professional level, firstly the outcomes from a work developed in dance schools that aimed to test the mediating role of stress appraisals in the associations between need satisfaction and well-being, and need thwarting and ill-being among dancers are shown. Secondly, a study carried out in the Basic Teaching of Dance with the aim to know the state of students' motivation, as well as the prediction that has on different factors such as sex, age, physical self-concept and teaching competences was conducted. Thirdly, a work that explored the role of motivation as a mediator in the relationship between perfectionism and indicators of well-being (i.e., life satisfaction and subjective vitality), and an indicator of ill-being (i.e., burnout) is shown. Finally, a study about a psychological intervention in dance sport, aiming to investigate the psychological needs perceived by athletes in dance and to describe the applied work designed to meet those needs is shown.

*Keywords: dance, motivation, professional context, educative context, psychological intervention*

### Daily experiences of basic need satisfaction and frustration experienced in dance schools

**Eleanor Qusted, Veronica Formentin Formentin, Nikos Ntoumanis (Curtin University, Perth, Australia), Peta Blevins, Luke Hopper (Edith Cowan University, Perth, Australia)**

Autonomy, competence and relatedness are considered by basic needs theory (Deci & Ryan, 2000) as fundamental human needs for optimal functioning and health. The current study tested the mediating role of stress appraisals in the associations between need satisfaction and well-being, and need thwarting and ill-being among dancers. 87 full-time dance students aged 14 to 25 years ( $M_{age} = 17.57 \pm 2.55$ ) completed daily diary measures to assess need satisfaction and need thwarting experienced in dance school for eight days. The dancers' perceptions of challenge and threat in relation to their classes the following day were also measured, as well as state vitality and anxiety. Findings from multilevel modelling analysis indicated competence need satisfaction to be most salient in predicting daily vitality and anxiety. Relatedness satisfaction positively predicted vitality and autonomy need thwarting predicted anxiety. Challenge appraisals mediated the relations between autonomy/competence need satisfaction and vitality. Threat appraisals mediated the relations between autonomy/competence need thwarting and anxiety. Findings indicate that daily experiences of need satisfaction and thwarting in dance classes predict dancers' cognitive appraisals of up-coming classes, and in turn their feelings of vitality and anxiety. Dance learning environments that are need supportive are more likely to facilitate performance states that are more conducive to healthful and optimal functioning.

*Keywords: need satisfaction/frustration, well/ill-being, perception of challenge and threat vitality, anxiety, dancers*

### In the mind of the dancer. Psychological intervention in dancesport

**Irene Checa (Departamento de Metodología y Ciencias del Comportamiento. Universidad de Valencia)**

In recent years, dancesport has expanded as an important discipline itself and has received increasing attention from all continents. There are few experiences published in scientific literature (Tremayne & Ballinger, 2008; Cantón & Checa, 2011), while some authors have published their applied projects with dancers



(Winkelhuis, 2011, 2015). In our present paper, the psychological characteristics of the dancesport are described and the results of the focus group are discussed with the previous literature. By using a qualitative methodology, a focus group formed by 7 dancers between 20 and 42 years old ( $M=27.28$ ;  $DT=7.34$ ) with 12.43 average years of experience ( $DT=3.99$ ) was undertaken. The group interview was designed from the specific characteristics of duo sports (Bohórquez & Checa, 2016) with queries concerning six aspects: communication, rules, cohesion, leadership, roles and collective effectiveness. Qualitative results have shown the following conclusions: 1) communication is verbal during the trainings and nonverbal in the competitions, being this exclusive of each pair; 2) the trainer is not present in the trainings, and experience provides more autonomy; 3) rules are not written and they are established by the trainers at the beginning of the career and modified by the dancers themselves; 4) leadership is generally shared and tasks related to competition are distributed; 5) roles are remarkably set by the mixed training formation of this discipline and they are not habitually interchangeable; 6) there are difficulties related to the romantic relationships which come up inside the pair; 7) difficulties to confront subjective results of the judges arise and its influence in the perception of the efficiency. These qualitative results are related to the applied work and the psychological intervention in this discipline, offering applied tools for dancers and trainers.

*Keywords: dancesport, focus group, qualitative methodology, psychology intervention*

### Motivational intervention in educative dance context

***Diana Amado, Pedro Antonio Sánchez-Miguel, Inmaculada González-Ponce, Pablo Molero (Department of Didactic of Musical, Plastic and Corporal Expression. Faculty of Sport Sciences. University of Extremadura)***

Based on self-determination theory framework (Deci & Ryan, 2000), we designed and implemented a teacher-focused intervention which supports the needs for autonomy, structure and interpersonal involvement, to help experienced teachers develop a motivating style that could increase students' psychological need satisfaction and self-determined motivation at dance teaching sessions at school. A quasi-experimental design was used in Spain, with 2 natural groups (one class of 27 pupils as control group and one class of 20 pupils as experimental group) and Mexico, with 40 natural groups (16 classes of 474 pupils as control groups and 24 classes of 447 pupils as experimental groups) already established by the schools, so it was not possible to ensure randomisation. Participants belonged to different schools, ranging in age from 11 to 17 years old. Both groups undertook the same dance teaching programme (12 sessions), but for the experimental groups, a motivational intervention programme was also developed. A prior training programme was carried out with the teachers in the experimental group to support the basic psychological needs. An initial and final measurement was taken in both groups, using different questionnaires to measure the basic psychological needs satisfaction and the level of self-determination. Results from both studies showed that students from experimental group revealed significantly greater levels of autonomy, interpersonal involvement and self-determined motivation after the application of the program. Nevertheless, to significantly increase perception of structure in these types of new contents, maybe it is needed more time of intervention for students. As conclusion, the results emphasize the importance of the teacher's role in the teaching of dance at school, and therefore they should include in their teaching style strategies to support pupils' autonomy, structure and interpersonal involvement.

*Keywords: motivation, methodology, gender, dance, education, pupils.*

### Predictors of motivation within the Basic Dance Studies

***Dellia Ibáñez-Granados (Facultad de Ciencias de la Educación. Universidad de Granada, España.), Diana Amado (Department of Didactic of Musical, Plastic and Corporal Expression. Faculty of Teacher Training. University of Extremadura), Néstor Sánchez-Rivera (Facultad de Traducción e Interpretación. Universidad de Granada, España.)***

When it comes to dance, motivation is essential, for dancers will either continue carrying out this activity or, on the contrary, end up abandoning it (García-Dantas y Caracuel, 2011; Carlin et al., 2009; Montero, 2010). We shall take into account that there are not only physical, but also psychological challenges throughout each dancer's career (Fuentes, 2007; Sanahuja, 2009). Research has shown that motivation can be directly determined by teaching competencies (Amado et al., 2014, Baena-Extremera et al., 2015). Motivation is also related to factors as important as physical self-concept (Requena-Pérez et al., 2015; Ezquerra, 2013; Amado et al., 2010). Thus, research was carried out within the Spanish Basic Dance Studies (Enseñanzas Básicas de Danza) with the aim of finding out how the students' motivation actually was, in terms of self-determination (Deci & Ryan, 1985, 2000). The influence of different factors upon motivation was also considered, such as gender, age, physical self-concept and teaching competencies. 174 students participated in the research (165 female and 9 male students) whose age varied from 10 to 17 years. They were all studying their last year of the Basic Dance Studies at five different Andalusian Professional Dance Conservatories (located at Almería, Cádiz, Córdoba, Granada and Seville). The design was descriptive, with a cross-sectional study. The instrument used was the questionnaire, to assess the level of self-determination, physical self-concept and teaching competencies. The results show that the motivation of those students who have successfully completed their Basic Dance Studies tends to be self-determined and related to physical attractiveness, self-confidence and the teaching competencies.

*Keywords: motivation, dance, self-concept, teaching competencies*

## **The role of perfectionism and motivation in the prediction of well- and ill-being in vocational dancers**

**Lorena González (Facultad de Ciencias de la Salud, Universidad Europea de Valencia), Miguel Goltermann, Francisco Luis Atienza (Facultad de Psicología, Universitat de València)**

Perfectionism is considered to be an important personality factor to take into account within the dance context given the high number of dancers who are influenced by its negative consequences (Hamilton, 1998; van Staden, Myburgh, & Poggenpoel, 2009). Therefore it is necessary to consider the relationship between perfectionism and dancers' well- and ill-being and the existence of possible mediational variables. To this end the present study explores the role of motivation as a mediator in the relationship between perfectionism and indicators of well-being (i.e., life satisfaction and subjective vitality), and an indicator of ill-being (i.e., burnout). Participants of the study were 146 male and female Spanish vocational dancers aged between 12 and 26 years old ( $M_{age} = 15.40 \pm 2.96$ ) who completed a package of questionnaires measuring the variables of interest. Results of MANOVA revealed that there were no significant gender differences (Wilks' Lambda = .95,  $F = .82$ ,  $p > .05$ ), and therefore subsequent analysis were conducted considering the whole sample. Hierarchical regressions analysis showed that self-oriented perfectionism (SOP) positively predicted well-being indicators and negatively predicted ill-being. Whereas, social prescribed perfectionism (SPP) positively predicted ill-being and negatively predicted well-being. Autonomous motivation positively predicted well-being, and amotivation negatively predicted well-being and positively predicted ill-being. Results also indicated that autonomous motivation partially mediated the relationship between perfectionism and well-being. On the other hand, amotivation partially mediated the relationship between perfectionism and well-being; and totally mediated the relationship between perfectionism and ill-being. The findings of the present study support the role of social prescribed perfectionism as the negative dimension of perfectionism, while self-oriented perfectionism was associated with positive outcomes.

*Keywords: perfectionism, motivation, well-being, ill-being, dancers*

## Identification and development of performance competences in young talented athletes

**Chair: Jolan Kegelaers (Vrije Universiteit Brussel, Brussel, Belgium)**

It is generally recognized that certain psychological qualities and mental skills are essential to reach high levels of performance in sports. This symposium will present recent scientific work trying to identify and/or develop these essential psychological characteristics for sport success, also labeled performance competences. Each study is coined around the idea that performance competences should be (a) appropriate for the stage of athletic development an athlete is in, and (b) the development of these competences should be incorporated within the everyday work of elite coaches. The first presentation will present a rationale for incorporating the development of performance competences during daily training activities. The second presentation will introduce a theoretical framework for cognitive readiness: the cognitive competences needed to establish and sustain high-level performance in a complex and unpredictable environment. The third presentation offers a developmental perspective of career challenges and performance competences in Dutch female gymnasts. The fourth presentation will look at the potential of deliberate practice in order to develop performance competences. Finally, during the fifth presentation, biofeedback as a method to train adaptability and resilience will be discussed.

*Keywords: mental skills, cognitive readiness, deliberate practice, biofeedback*

### Cognitive readiness in elite youth sport

**Jasperina Coenen, Paul Wylleman (Vrije Universiteit Brussel), Caroline Jannes (Gent University Hospital), Jolan Kegelaers (Vrije Universiteit Brussel)**

O'Neil, Perez & Baker (2014) describe Cognitive Readiness (CR) as relevant for those who must adapt quickly to rapidly emerging, unforeseen challenges such as athletes in elite sports. Fletcher (2004) defined CR as the mental preparation (skills, knowledge, abilities, motivations, and personal dispositions) someone needs to establish and sustain competent performance in complex and unpredictable environments. CR has been investigated within military contexts, such as warfare situations. Elite athletes, like military personnel, must have the ability to deal with complex and unpredictable situations. However, little research has been done in athletic contexts. First, a literature study investigated the theoretical frameworks of cognitive readiness. Research considered Adaptive expertise, Working memory, Mental models, Decision making, Communication, Interpersonal skills, Pattern recognition, Situational awareness, Critical thinking, Problem solving, Adaptability, Resilience, Self-regulation, Metacognition and Creativity to be competences of CR. Secondly, we discussed which competences apply to the context of elite sports in 12 focusgroups. Subjects included in this study are athletes (2), high-level coaches (36) and sport psychologists (8) from the Flemish Gymnastics, Judo, Tennis, Athletics and Swimming federations. In order to define the competences that were discussed, a thematic analysis approach was chosen. The most mentioned competences were Self-regulation (62.5%), Knowledge (25%), Adaptability (17.5%) and Resilience (7.5%). It can be concluded that both literature and practitioners in elite sports made a contribution to the understanding of the concept of CR in elite sports. After reviewing both sources of information, a theoretical framework applied to elite sports was conceptualized. This study was supported by Sport Vlaanderen.

*Keywords: adaptability, self-regulation, decision-making; resilience, creativity*

## Does deliberate practice promote the use of performance competences in talented athletes?

**Jolan Kegelaers, Paul Wylleman, Jasperina Coenen (Vrije Universiteit Brussel), Caroline Jannes (Gent University Hospital)**

The theory of deliberate practice has been extensively used to predict expertise in elite sports. However, there remains a lack of attention for the possible relationship between the quality of deliberate practice and the development of performance competences. Our study aimed to test this relationship using a mixed method quasi-experimental design. We measured the impact of an instructional design, based on the principles of deliberate practice, on both short-term performance and on the use of four performance competences (i.e., motivation, focus, self-regulated learning, communication). A total of 10 young talented athletes, divided in an experimental and a control condition, were compared over the course of 10 consecutive training sessions. Performance was assessed by coaches using a standardized performance tool, competences were assessed using an observation instrument, specifically designed for this study. Semi-structured interviews were conducted with the coaches and athletes of the experimental condition immediately after completing the study and again three months after completion. Results indicated that even though there was no difference between conditions on short-term performance, athletes in the experimental condition demonstrated more behaviour related to focus, self-regulated learning, and communication. No difference was found for motivation. Qualitative evaluation confirmed this finding and seemed to suggest that the experimental condition might demonstrate better long-term performance. Our study seemed to confirm our hypotheses that deliberate practice can lead to an increase in the development and/or use of performance competences in talented athletes. Even though no difference in short-term performance was found, we expect that the development of performance competences might lead to an increase in long-term performance. Further longitudinal research is needed to confirm this hypothesis. This study was supported by Sport Vlaanderen.

*Keywords: competence development, self-regulated learning, focus, communication skills*

## Identification of within-career challenges and performance behavior competences for Dutch gymnasts

**Suzan Blijlevens (Rijksuniversiteit Groningen), Paul Wylleman (Vrije Universiteit Brussel), Marije T. Elferink-Gemser, Chris Visscher (Rijksuniversiteit Groningen)**

The purpose of the present study is to identify within-career challenges gymnasts are confronted with during initiation, development and mastery stages of athletic development in training sessions, competition, and in daily life. Furthermore, we also identified the stage-appropriate competences necessary for gymnasts to cope with these challenges. In-depth interviews were used to explore the views of 16 talented and elite gymnasts. Participants were divided into three groups, corresponding to the stage of athletic development they were in. The results show differences in the challenges for the three different stages of athletic development. The number of quotations as well as the number of challenges increases as the gymnasts enter the mastery stage. However, some challenges were identified in each stage of athletic development. Furthermore, we found 14 different competences gymnasts should possess in order to deal with these challenges during different stages of the athletic career. The results offer new insights in common challenges gymnasts are confronted with in specific stages of their athletic development and the competences needed to deal with these challenges. This study was supported by the Netherlands Olympic Committee\* Netherlands Sports Confederations (NOC\*NSF).

*Keywords: talent development, challenges, transition, gymnastics, elite sports, performance behavior*

## The development of competences related to performance behavior in talented and elite athletes

**Paul Wylleman, Jolan Kegelaers (Vrije Universiteit Brussel)**

It is generally recognized that mental skills are essential for reaching and maintaining the highest level of performance. The development of these mental skills is not only influenced by personal characteristics of the athlete, but also by his/her environment. However, there exist a lack of knowledge on the way coaches (supported by sport psychologists) can develop these mental skills in their athletes on an everyday basis. Based on scientific literature and applied experience in counseling talented and elite athletes, five specific topics (i.e., cognitive readiness, deliberate practice, resilience, biofeedback, performance behavior competences) were selected for study, which will be highlighted during the following presentations. This presentation will provide a rationale for the incorporation of these topics in the everyday functioning of elite coaches. Furthermore, it will provide insights into the ways coaches, supported by psychologists, can develop these competences in their athletes.

*Keywords: mental skills, elite sports, talent development, coaching*

## Biofeedback to improve cognitive readiness: Case studies in elite youth sport

**Caroline Jannes (Gent University Hospital), Paul Wylleman, Jasperina Coenen, Jolan Kegelaers (Vrije Universiteit Brussel)**

Fletcher and Wind (2014) propose a framework for cognitive readiness including skills such as metacognition, communication, adaptability, and resilience preparing people to learn or perform in unpredictable and new situations. Biofeedback (BF) is a tool to train optimal arousal regulation which ultimately enhances self-regulation and other cognitive skills. The purpose of current evaluative case study is (1) to enhance arousal regulation and (2) to train adaptability and resilience. Three elite youth athletes in track and field, gymnastics and tennis (ages 17, 14 and 14) participated in an intervention based on the Wingate 5-Step Protocol with on average 12 sessions (1 hour per session). They filled out pre- and post-test questionnaires such as IZOF and CSAI-2, and trained heart rate variability (HRV) with EmWave Pro. Overall, analysis over time of the SDNN showed no significant increase of HRV coherence. However, power spectrum analysis showed an improvement of HRV when using cue words or imagery scripts for relaxation, adaptability and resilience. Two athletes performing at a competition reported less negative and more positive emotions on the post-IZOF. In general, athletes quickly adopted the protocol and showed improvement in arousal regulation, adaptability and resilience both in sport and in non-sport related situations. Limitations and future research on biofeedback for cognitive readiness in sports will be discussed. This study was supported by Sport Vlaanderen.

*Keywords: Cognitive readiness, adaptability, resilience, biofeedback, heart rate variability*

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## Human performance and long distance and marathon runners

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**Chair: José Carlos Jaenes Sánchez (University Pablo de Olavide)**

The World records in the marathon was ratified by the International Association of Athletics Federations (IAAF), the international governing body for the sport of athletics. The IAAF world record for men is 2:02:57, set by Dennis Kimetto of Kenya on September 28, 2014 at the Berlin Marathon. After IAAF accepted this record, scientifics, marathon coaches and athletes began to arguing about if men could 42, 195 meters under 2.00. Spanish athletes consulted said no but scientific and coaches basically said yes. In the symposium we have the opportunity to share opinions with an Olympic Champion in the distance, an European Champion in 15000

meters and at the same time researcher, and present different research about training and competing in the distances. Physiological, biological, psychological and other explanations will take part in the Symposium. We also present studies about motivation, running addition, mental preparation (PST training) in order to learn more about and try to answer some questions about the chance to run under 2.00 hours.

*Keywords: marathon, long distance, anxiety, self-confidence, concentration, Olympic champion*

## Differences in performance in elite Kenian and Caucasian long distance runners

**Arturo Casado (University Isabel I)**

Differences in performance in elite long distance Kenyan runners and elite long distance Caucasian origin runners are explained by multiple factors. These are physiological, biomechanical, feeding, training, genetics, altitude, psychological and socioeconomic factors. For instance, it's been reported that physiological aspects such differences between maximal oxygen consumption, haematological profile, muscle fibres composition couldn't explain these performances differences. Nevertheless, sports biomechanics prove a better race economy in Kenyan distance runners than in Caucasian origin distance runners due to Kenyan's longer and thinner legs. Altitude has also been proposed as a potential factor because most of Kenyan runners have been born, lived and trained in high altitude, in the Rift Valley area in Kenya. Furthermore, genetics has also been proposed as a differential factor between these two populations, arguing that Kenyans genetic is better adapted to long distance running. Previous mitochondrial DNA, Y-Chromosome and candidate gen research has shown that genetics doesn't play an important role in these different performances. Nonetheless, future genetic research could explain these differences. Besides, Kenyan natural feeding based on carbohydrates and vegetables has also been proposed as a differential factor. Finally, psychological and socioeconomic factors have been shown as important differential factors which explained these different performances. Kenyan twentieth century History show the way British taught Kenyans how to train in athletics. Even more, economics has been shown as a crucial factor in Kenyan runner's motivation to achieve greatest performances. Casado (2016) reported in his PhD study that most of elite long distance Kenyan runners had to go running barefoot to school for ten kilometres (go and back home) during school days. This author also evidenced greater amount of training in elite long distance Kenyan runners compared to Spanish o

*Keywords: kenyan, spanish, performance, long distance, marathon*

## Intervention with recreational marathon runners

**David Peris-Del Campo (University of Valencia), Eneko Larumbe-Zabala (Clinical Research Institute. Texas Tech University HSC. Lubbock, Texas, USA.)**

Brief psychological intervention with recreational marathon runners increased popularity during the 2000s decade both in US-Canada and Europe, and especially in Spain. The so-called "Psyching teams" are usually composed of sport psychologists and graduate sport psychology students that voluntarily serve during the marathon expo, one to three days prior to the race day. The intervention model developed at UNED university by Dr. Buceta, tailored for Madrid marathon and later used in other endurance races (e.g., Oporto, Mexico City, Vitoria, Castellon, Valencia), typically involves different steps: 1) using posters to present useful information; 2) proactively approaching the recreational marathon runners at the expo; 3) inviting the runners to fill out a specific questionnaire, usually the "Podium"; 4) briefly interviewing with the runners to discuss their perceptions, goals, and mental strategies; 5) providing them with a brochure that will help them remember the discussed ideas and do some homework; 6) and approaching the runners during the race day and help them share their experience. The whole process at the expo typically takes no more than 10 to 15 minutes. Consequently, in order to make the intervention significant for the runner, the interview needs to be very focused and straight to the point. The questionnaire helps the psychologist get a profile on the runner's



perceived states of motivation, self-confidence, fitness, social support, and anxiety. With these results in mind, the psychologist can conduct the interview exploring the hypotheses that emerged from the assessment, and complete the quick evaluation. More importantly, the psychologist can help the runner think about the goals and their transcendence, develop plans and coping strategies, dissipate concerns, reduce anxiety, and enhance self-confidence. Despite the brevity of the assessment/intervention process, “psyching teams” also disseminate the usefulness of sport psychology consulting among this

*Keywords: psychological intervention, psyching teams, marathon, recreational runners, running*

## Psychological skill training for long distance and marathon runners

**José Carlos Jaenes Sanchez (University Pablo de Olavide), Jose Carlos Caracuel Tubio, Patricia Jaenes-Amarillo (Universidad de Sevilla)**

Based on the Psychological Skill Training Model (PST), an individually designed combination of methods selected to attain psychological skill needs (Gill, 2000), tested in different Sports such tennis, golf, track and field, swimming, rowing (Jaenes, 2002) and others. The authors present a PST program for long distance and marathon runners that has been tested in the field with a group of male marathon runners (Jaenes & Caracuel, 2005, 2016) who run marathon between 2.25.12 and 3.10. This PST program is included in the physical training log, so runners will practice those mental skills while they are running at different paces. The program include evaluation of precompetitive Anxiety (Trait, State, cognitive and somatic) and Self-confidence according to the Martens, Vealey and Burton model (1990), and Mood State evaluation; attention and concentration skills training, coordination, making decisions, sensations self –evaluation, coping with anxiety, and present different correlations between Anxiety, self-confidence and performance in the distance of 42,195 kilometers. An useful and practical approach to PST.

*Keywords: marathon, long distance, anxiety, self-confidence, concentration*

## Rosa Mota, the psychological experiences of an Olympic Champion

**Rosa Mota**

Rosa Mota, a women born in Porto, in a country without large experience in women long distance runners was European marathon Champion in the first European Champion in the distance in Athens, 1982; she was awarded the bronze medal in the first Women's Olympic Marathon in Los Angeles Olympic Games, 1984; European Champion in 1986, and World Champion in Rome, 1987; and Olympic gold medal in Seoul, 1988. She also won the Chicago Marathon twice and Boston three times and London, 1992. Her best time in the distance was 2:23:29 in the 1985 Chicago Marathon. She has been considered as the best marathon runner in the history. In our Symposium she will talk about psychological aspects of the marathon, mental practice and training, how to cope with problems and how to solve it; how she prepared her races and her experiences as a top runner. Her personal experiences, memories and anecdotes will enrich this Symposium as nobody can do it.

*Keywords: marathon, Olympic champion, experiences, training, coping*

## Running, “the new fashionable addiction”, in the society

**Abel Nogueira Lopez (University of Leon)**

The phenomenon of "running" is one of the sports which more people practice in last years, there are many people that regularly take to the streets day after day to run (Siphway, 2009). Running has become a regular behavior in our society, being considered as one of the best activities to improve the physical, mental

and psychosocial health of those who practice it (Warburton, Nicol & Bredin, 2006; Siphway & Holloway, 2010; De Mello et al., 2013; Márquez & de la Vega, 2015; Antunes et al., 2016; Ruiz-Juan & Zarauz, 2016). In this boom, the phenomenon of "runner's high", (Glasser, 1976; Kostrubala, 1976; Carmack & Martens, 1979; Sachs & Pargman, 1979) - neurobiological reward, which appears both During, as after running long distances and affecting at central level (regulator mood, welfare effect) and at peripheral level, decreasing the sensation of pain - (Glasser, 1976; Kostrubala, 1976; Carmack and Martens, 1979; Sachs and Pargman, 1979), plays a very important role. The problem arises when running becomes a harmful need causing negative health consequences, produce as a result the Exercise Addiction - "positive addiction" (Galsser, 1976) and "negative addiction" (Morgan, 1979). This "running addiction" is characterized by the appearance of six common symptoms such as abstinence, mood modification, salience, tolerance, relapse and conflict (Terry et al., 2004; Griffiths, 2005; Egorov & Szabo, 2013, Berczik et al., 2014, Jaenes & Caracuel, 2005, 2016; Márquez & de la Vega, 2015). In light of the relevance of this issue, the research group Exercise, Health and Quality of Life from the University of León, has decided to study this phenomenon in order to identify, analyze and describe the levels and the type of addiction among the popular Spanish runners.

*Keywords: addiction, marathon, long distance, negative addiction, positive addiction "runner's high"*

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## **Sport and exercise psychology practitioners: Competences and challengers strategies of psychological intervention in Mexican sport**

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**Chair: Claudia Rivas (ISSP/Solcpad/AMPDAF)**

In Mexico, sport psychology emerged and developed mainly in the applied field, followed by academic programs, research and publication of work. The present symposium shows the different techniques of intervention, varied football contexts of the young semiprofessional soccer players to the 2nd and 3rd division until the individual intervention with elite soccer players, professional soccer teams of the first division and national team. In addition, this symposium shows the psychological strategies in face to the demand for a major division. As well as the work in a "minor" equip of third division. The similarities and difference in the context of intervention with the lower categories of a Professional Club like Santos de Torreón and university clubs. It shares the intervention in youth tennis and the difference of context with the youthful and professional soccer of Mexico. The differences between individual intervention in a sport such as tennis and in an overall sport such as football are raised. Situations and recommendations for collective and individual psychological intervention are suggested.

*Keywords: sport, psychology, practices, soccer, tennis, México*

## **Creation and application of a sport psychology intervention model for national youth tennis teams on tour**

**Ricardo Ponzanelli (AMPDAF), Claudia Rivas (ISSP/SOLCPAD/AMPDAF), Alexandre Garcia-Mas (ISSP)**

The Mexican Tennis Federation (FMT) has incorporated the area of sports psychology into the National Tennis Program (PNT) aiming to create a platform for athletes, coaches and family members to be aware about the importance of psychology in the process of sports development. As part of the PNT, a series of international tours had been defined to achieve formative and performance goals. To begin to incorporate the application model, it was necessary to identify the main behavioral tendencies on national tennis in the different youth categories in both branches. Observation and registration of competitive and training habits during the 7 main national tournaments that are hosted during the year was carried out. Finally, the psychological work model for tours was designed and applied, including individual and collective sessions, body awareness and social conscience, emotional education, self-registration on matches and orientation in

decision-making processes to promote Self-confidence for independence. During the tour, it was possible to notice behavioral adaptations associated with higher confidence in decision-making within matches and more adaptive behaviors, as well as competence coping skills. Over 75% of players reported more pleasure playing tournament matches and training.

*Keywords: integral training, paradigm shift, and psych educational work*

### **Mental training in the professional third-division soccer team in Mexico Colts Uaemex**

**Ada Sarai Albarran (ISSP/Solcpad/AMPDAF), Juan Carlos Perez (ISSP/SOLCPAD/AMPDAF), Alexandre Garcia-Mas (ISSP)**

The professional football tournament of the third division is between the most demanding in the Mexican Football Federation. In the competition 220 teams at national level, 207 with right ascension, 13 branches, (teams representative of each first division club) divided into 14 groups. The duration of the tournament is 1 year, where 26 games are played. If you qualify for the league, you play 12 games to reach the final. Altogether they would be playing 38 games of a high level to be able to be champion and to obtain the promotion to second professional division. The age of the players is of 15 to 20 years and they have by rule the teams have to play with a minor and two medians. The characteristics of this tournament generate the need for an arduous and specialized work by the technical and multidisciplinary team. In this symposium I will share the mental training carried out during 5 five years with managers, coaching staff, multidisciplinary bodies and players. The intervention is focused on training psychological skills (Identity, cooperation, self-confidence, self-efficacy, self-regulation, concentration) that complement and increase their athletic and personal performance. At the sports level, goals will be set and restated, performing performance evaluation in the short, medium and long term. At a personal level, they will monitor their integral education, taking care of family, school, social and professional aspects. The methodology carried out per week is a collective session with the players, 5 to 10 individual sessions, daily feedback with the technical body and multidisciplinary body. The results achieved, Consolidate and maintain the figure of the sport psychologist and mental training in technical-tactical planning and applied sciences. To be a team protagonist to be fighting finals, to be quarry of the teams of second division and promotion of the institution, to cement the autonomy of the player.

*Keywords: soccer, young, applied, psychological, development*

### **Psychological intervention in high performance young soccer players**

**Jonatan Yañez (Solcpad/AMPDAF), Luz Antonia Vazquez, Claudia Rivas (ISSP/SOLCPAD/AMPDAF), Alexandre Garcia-Mas (ISSP)**

This symposium aims to describe the psychological intervention with a group of young soccer players (U13, U14, U15, U17, U20) belonging to the Club Santos Laguna, the different needs that are present in this specific population, as well as the influence of the Institutional Philosophy In sports training. Fundamental variables such as self-knowledge, cohesion, values, belonging and the motivational climate have generated a basis for sports development. The conviction towards coaches and managers has generated a high level of cooperation and interdisciplinary work that re-dimension the psychological intervention and helps the technical bodies to draw the clearest and most adequate objectives for teams and individuals. A long-term intervention program has been drawn up for athletes and coaches that establish profiles of psychological training for admission and discharge of each category, work schedules and intervention techniques that seek formation established in the institutional philosophy. A positive response has been observed and evaluated by athletes, physical and general coaches of the institution who confirm the usefulness of the proposals of the department of sports psychology.

*Keywords: psychological training, young footballers, intervention methodology*

## Psychological intervention with professional football players

**Claudia Rivas (ISSP/Solcpad/AMPDAF), Ada Sarai Albarran (ISSP/SOLCPAD/AMPDAF), Alexandre Garcia-Mas (ISSP)**

Beginning in 2013, a personal interest (outside of their home clubs) began to be generated by professional soccer players, through a "mental training", seeking the psychological intervention of a sports psychologist. In the present paper, 6 case studies are shared: 3 goalkeepers, a containment, and 2 lateral defenses, all playing in clubs of the first division, all belonging at a time to the National Major Selection, and all active. The objectives that each player sought of the psychological work, the obstacles presented, the solutions and the different strategies for the different objectives, the obtained results and the techniques of intervention used will be presented. The special situations of work are shared: preseason intervention, endings, and crisis situations.

*Keywords: soccer, professional, mental training, goals, stress, performance*

## Psychological training program in obtaining the ascension of the football team colts UAEM F.C.

**Juan Carlos Perez (SOLCPAD/AMPDAF), Ada Sarai Albarran (SOLCPAD/AMPDAF)**

This document describes the application of a psychological training program with a professional second division team from Mexico that managed to get promoted to the next division. Once observed the last 4 tournaments of the professional team Colts UAEM F.C. and analyzing the previous situation of having lost an ascension, it was considered determinant to strengthen the emotional intelligence of the players through psychological training and to repeat key moments where they have already experienced performing their functions at an optimal level of performance. In addition to developing the management of psychological variables, which individual and collective performance influenced to achieve the goal of ascending to 1st Division A. That is why a program of psychological training was developed which was integrated as a whole to the integral preparation Physical, technical and tactical. The methodological structure consisted of observing the psychological aspect of the team in training, matches and evaluation, a diagnosis (current psychological needs) of the team; Psychological planning according to the stage of the season in which the team was; Effective intervention in the short and medium term; Follow-up and feedback of the intervention program in training and matches. The program consisted of 26 sessions and aimed to increase the psychological abilities of the players of the 2nd Professional Division of the UAEM to meet the goals set and to get the team up in the circuit 1st Ascension MX. This is through the development and strengthening of the aforementioned psychological variables and provides strategies to become effective people and players with quality of life, as well as to raise their personal and collective potential within

*Keywords: observation, diagnosis, psychological planning, intervention, monitoring and feedback*

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## Use of quantitative methods to evaluate psychological factors as predictors of sports behavior

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**Chair: Sara Márquez (University of León, Spain)**

To date, a great deal of effort has been put into learning more about the psychological characteristics separating the most successful athletes from those not so successful. Research in sport psychology has predominantly used quantitative methods to understand in depth the effects of psychological factors and how they relate to human performance. The need for questionnaires being valid, reliable and as specific as possible for the field of sport has led to the development of psychological assessment tools with potential for predicting

athletic performance. In this symposium, we present four papers that involve the use of quantitative methods, such as questionnaires or psychophysiological responses, as tools aimed to predict sports performance, along with other related variables. In the first place, we find a study by Salguero, Nogueira and Márquez, entitled The Grit Scale, a predictive tool for performance in long distance runners where the authors present the Spanish adaptation of the short version of the Grit scale and its psychometric properties. Next, an approach is presented that allows to identify adverse effects of training loads on young swimmers performance; the title of the work is Monitoring of the load during the period tapering and influence of the indexes of monotony and fatigue in the levels of stress-recovery and their authors are Molinero, Aranzana and Salguero. The following contribution, signed by Barquín and Robles and entitled The evaluation and prediction of sports performance in the 51st military judo championship of the land army, employs an experimental battery of questionnaires to predict performance in a military championship. Finally, the presentation Light conditions affect the psychophysiological warfighters stress response in close quarter combat, coauthored by de la Vega-Marcos and Clemente-Suárez, continues the line of previous work, and analyzes how different light conditions could alter participant response in contexts of stress.

*Keywords: psychological assessment, performance, stress, grit, light*

### The grit scale, a predictive tool for performance in long distance runner

**Alfonso Salguero, Abel Nogueira, Sara Márquez (University of León, Spain)**

The personality trait of GRIT, defined as the tendency to pursue long-term goals with sustained zeal and hard work, has been shown to predict achievement in academic, vocational, and avocational domains (Duckworth, Peterson, Matthews y Kelly, 2007; Duckworth y Quinn, 2009; Duckworth, Quinn y Seligman, 2009; Von Culin, Tsukayama, y Duckworth, 2014). GRIT is a measure that can predict success beyond individual skills. GRITTIER individuals, according to the literature, are people who share many personality trait with runners, above all with marathon runners. The purpose of the present study was to analyze in Spanish long distance runners the relationship between GRIT, sport and performance, through the validation and adaptation of "The Short Grit Scale (Grit-S)", developed by Duckworth y Quinn (2009). Participants were 204 amateur runners (Mage= 37.1±11.1 years) who were applied the Spanish version of The Sport Short Grit Scale. The scale is composed by 7 ítems and 2 factors (persistence of effort and consistence of interest). Validity was demonstrated by exploratory and confirmatory factor analysis, with adequate reliability for the scale ( $\alpha = .75$ ) and each factor ( $\alpha_{\text{persistence}} = 0.69$ ;  $\alpha_{\text{interest}} = 0.77$ ). Results obtained reflect that men ( $M_{\text{persistence}} = 3.51 \pm 0.88$ ;  $M_{\text{interest}} = 3.77 \pm 0.80$ ) obtained higher scores than women ( $M_{\text{persistence}} = 3.38 \pm 0.91$ ;  $M_{\text{interest}} = 3.58 \pm 0.78$ ) for both factors scores. Regarding age, runners between 56-65 years showed a GRITTIER profile for persistence of effort ( $M = 3.6 \pm 0.6$ ) and those between 36-45 years for consistence of interest ( $M = 3.81 \pm 0.72$ ). We consider that GRIT, can be a good quantitative tool useful to predict sports performance, together with the monitoring of other variables, such as number of training days or of hours per day, related to personal involvement.

*Keywords: grit, validation, persistence, interest, runners*

### Monitoring load during tapering stage and monotony and strain index influence on stress-recovery levels

**Olga Molinero, Miguel Aranzana, Alfonso Salguero (University of León, Spain)**

Training periodization is important to improve athletic performance and to reduce possible adverse effects for the athlete (Armstrong & VanHeest, 2002). Specifically, tapering stage seeks a reduction of physiological and psychological stress, generating the necessity to monitor the internal training load, and to observe the relationship with variations in stress-recovery levels (Black et al., 2016). High loading levels coupled

with high levels of monotony and fatigue, are factors related to negative training adaptations, and they are indicators of the early stages of overtraining syndrome (Foster, 1998, 2001) with the consequent effect on performance in this sensitive phase of athlete development (Oca, 2007). The aim of the present study was to analyze the variation and relationship of stress-recovery, monotony and fatigue indexes during tapering stage of Spanish young swimmers. 36 subjects, aged between 13 and 16 years old ( $M_{age}=14.0$ ,  $\sigma_{age}=0.9$ ) were evaluated for stress-recovery levels (RESTQ-Sport, Spanish version González-Boto et al., 2008), considering specifically the sport-specific stress and recovery scales (EED, RED); internal training load using the Session-Effort Subjective Perception method (session-RPE) (Foster et al., 2001), and the monotony index (MI) and fatigue index (FI) proposed by McGuigan et al. (2004) and calculated from the load. Despite the significant decrease in the load ( $p_{P1-P3}=0.002$ ) and FI ( $IF_{P1-P3}=0.032$ ) during tapering, stress-recovery levels ( $EED_{P1-P3}=0.55$ ;  $RED_{P1-P3}=0.82$ ) and IM ( $IM_{P1-P3}=0.085$ ) did not change significantly. These findings could indicate that training load reductions and changes in its distribution ( $\%Load\ T1-T2=-25.13$ ) might not be enough to modify the stress-recovery levels of our athletes, taking into account the specialized literature.

*Keywords: athletic performance, overtraining, swimmers, load*

### The assessment and prediction of sports performance in the 51th judo military championship of the army

**Roberto Ruiz-Barquín (Universidad Autónoma de Madrid, Spain), José Juan Robles (Armed Forces Headquarters, Spain)**

Many researchers emphasize the need to design specific psychological assessment tests for certain sports because theoretically there is a greater potential for predicting athletic performance. The aim of the present research study was to determine the relationships between a battery of psychological tests specifically used in competitive judo and the performance obtained in the modality of male category teams in the 51th Military Judo Championship of the Army (School Central of Physical Education of the Army, Toledo). 39 judoka men ( $M_{age}=26.9$ ,  $\sigma_{age}=4.6$ ) were evaluated, 30 of them participating in the team competition. The test battery called "Sports and Multidimensional Performance Inventory in Judo" was applied experimentally (IRDYMEJ, Ruiz-Barquín, 2006). This battery was designed with two objectives: To design a test with special implications from a practical point of view; to enhance the processes of psychological evaluation and prediction of performance in judo, trying to provide additional information to the use of general psychological assessment tests (Ruiz, 2004, 2006, 2008, 2009). The test battery for athletes is composed of six scales: Technical Rating Scale, Tactical Rating Scale and Regulation, Physical Rating Scale, Psychological Rating Scale, Training Rating Scale, and Performance- Sport Result Rating Scale. The administration of the tests was carried out prior to the competition. The tests were completed on a voluntary basis. General reliability levels are adequate for the six scales ( $\alpha > .70$ ). There were significant correlations between performance and four of the scales ( $p$

*Keywords: judo, performance, psychological assessment, army*

### Light conditions affect the psychophysiological warfighters stress response in close quarter combat

**Ricardo de la Vega (Universidad Autónoma de Madrid, Spain), Vicente Javier Clemente (Research Center in Applied Combat <CESCA>, Toledo, and European University of Madrid, Spain)**

We aimed to investigate the effect of different light conditions (no light, rotatory light and light) on the psychophysiological response and specific fine motor skills of warfighters during a close quarter combat (CQC) simulation. The initial hypothesis was that in no light conditions the psycho-physiological response would be higher than in light conditions. We analyzed 20 male soldiers of the Spanish Army and Spanish Forces and Security Corps ( $33.8 \pm 3.4$  years;  $177.1 \pm 7.9$  cm;  $72.9 \pm 5.9$  kg). Soldier served in the Army, Air Force, Navy, Civil



Guard, and National Police. Soldiers were equipped with standard uniform and boots, tactical fighting load carrier of the Army, simulated pistols, simulated rifle, simulated knives, shackles or flanges and a backpack with 12 kg to simulate the equivalent weight of a task force. We measured the rated of perceived exertion, blood lactate concentration, cortical arousal, isometric lumbar strength, legs strength and pistol magazine reload time before and after a CQC. Normality and homoscedasticity assumptions were checked with a Kolmogorov-Smirnov test. Then a MANOVA test was performed to analyse differences. The Effect Size (ES) was tested by Cohen's D. Finally, a bivariate correlation analysis between all the study variables was performed using a Pearson correlation analysis. The results showed a different psychophysiological response, measuring the highest psychophysiological response in rotatory light and no light conditions: showed a significant decrease in the magazine reload time in no light conditions as well as significant increase in cortical arousal in rotary light conditions (p

*Keywords: stress, cortical arousal, strength, fine motor skill, lactate, perceived exertion*

## Wednesday July 12th

### Symposia Session 4. (10.30-12)

#### Evaluating sport programs promoting social inclusion: Which challenges using participative approaches?

**Chair: Caterina Gozzoli (Università Cattolica del Sacro Cuore)**

Can sport enhance social inclusion among disadvantaged youngsters? Affirmative answers are provided by the international literature (Schulenkorf et al., 2016; European Commission, 2015; Gozzoli et al., 2013;): sport produces several benefits, such as social capital, self-esteem, self-regulation, skills development, reduction of deviant behaviors and scholar abandon rates (Williams et al., 2015). Although the positive impact of sport is generally recognized, different authors express criticism concerning the evaluation of sport projects (Coalter, 2015). To provide a contribute to the current debate, we propose the use of participative evaluation as a tool to monitor the activities in sport projects aimed at social inclusion. This kind of strategy assumes a strong collaboration between evaluators and evaluated subjects in collecting assessment data. The innovative aspect of this method concerns the higher commitment of 'assessed subjects' in the evaluation and the higher attention to the context. Literature points out that the dialogic sharing of information between evaluators and evaluated subjects allows to collect better data than traditional methods (Cousins & Earl, 1992). The symposium includes four contributions. The first is an explorative research where the main strengths and weaknesses of sport projects for social inclusion are investigated, with a particular focus on their participative evaluation designs. The second presents the evaluation of a sport project for social inclusion in Denmark. The third shows a complex participatory evaluation framework where aims, objectives, expected results and indicators of efficacy are continuously re-defined with the program's actors. The last concerns the evaluative research of a sport project for the development of skills in NEETs.

*Keywords: sport programs, social inclusion, evaluation research, participative evaluation*

#### Strengths and weaknesses of sport projects for social inclusion: a meta-evaluation

**Gaspar Maza (University of Blanquerna (Barcelona), Department of Exercise and Sport), Chiara Corvino (Catholic University of Sacred Heart, Department of Psychology), Ricardo Sanchez, Xavier Camino (University of Blanquerna (Barcelona), Department of Exercise and Sport)**

In recent years, the number of inclusive sport activities have increased, mainly thanks to the recognition by governments and private institutions of sport benefits for disadvantage people, which has resulted in an increase of funding allocation in this area (Cortês Neto, Cruz Dantas & Chaves Maia, 2015). In Spain and Italy, the rise in sport projects for social inclusion is a consequence of the growing interest of the European Commission and the local entities in this area. These projects are usually carried out in collaboration with youth organizations, social entities and sport clubs (Hermens, Super, Verkooijen & Koelen, 2015). For this reason, now more than ever, the use of a meta-evaluation for inclusive sport projects is needed. The present work provides a critical reflection regarding sport projects for social inclusion, with a focus on their evaluation designs. Taking into consideration the different perceptions of different kinds of actors involved in sport programs, we interviewed 15 people aged between 30-60 (7 Italian, 8 Spanish): 4 sport workers; 6 project managers (3 F and 3 M); 5 social workers (3 F and 2 M). Strengths and weaknesses of inclusive sport projects were explored using semi-structured interviews. All the collected material was transcribed and analyzed using a phenomenological approach, with the support of ATLAS software. The interviews analysis confirms that the active participation of

various stakeholders (local entities, workers and project managers) is essential for a good choice of the project actions and for an efficient redefinition of the project itself (Cockerill, Myers & Allman, 2000; Rossi & Freeman, 1993). On the other hand, the data analysis points out that the different actors involved have diverse representations of sport which can badly impact on their co-working in the participative process if not adequately captured and faced by evaluators.

*Keywords: sports programs, social inclusion, strengths and weaknesses, evaluation*

### Using team sport (football) to enhance social inclusion, what pitfalls exist and what about the slurred perspective of measurements?

**Knud Ryom, Reinhard Stelter (University of Copenhagen, Department of Nutrition, Exercise and Sports, Denmark)**

Social inclusion is highly valued in the public school system in Denmark (Dolin & Krogh, 2010) and sport is suggested to have a positive impact (Bailey, 2005; Kelly, 2010). Due to reported difficulties to participate in school and society, boys with migrant background are often seen as excluded by teachers, head masters and governmental agencies (OECD, 2010). The study aimed to investigate the effects of team sport as a tool to develop social inclusion, active citizenship and social capital in a school context. Team sport (football) was chosen because of documented positive results in regard to social integration of individuals with a diverse cultural background (Hatzigeorgiadis et al, 2013). A multidisciplinary approach was applied based on theories on community psychology (Kloos et al., 2011), social capital (Putnam, 2000), and active citizenship (Biesta, 2011). The activities were organized by a local sports club (6th to 9th graders, N=44, age: 12-16) in a two years intervention in a lower secondary school of Copenhagen with a high percentage of pupils with migrant background. 3 weekly training sessions (1-1½ hours), matches and referee/coach education were part of the study. Initial results from the overall study, has showed improved social resilience (Ryom, et al., 2017). In regard to team sport, social inclusion and connectedness had increased. Moreover, if participation was perceived as meaningful, football could be an occasion for active citizenship. Such important developments were registered through a participative evaluation approach. On the other hand several pitfalls were noticed, and an important factor were participants' understanding of football. Thus football as tool for development gave certain possibilities but at the same time inhibited others. A multimethod (Brewer, 2006) approach (questionnaires, interviews and observations) was applied, but qualitative measurements proved difficult as other studies also suggest (Baumgartner & Burns, 2013).

*Keywords: sport for social inclusion, participative evaluation, team sport, social capital*

### “Play for change”. Some outputs of the participative evaluation research

**Chiara D'Angelo, Caterina Gozzoli (Catholic University of Sacred Heart, Department of Psychology)**

Recent studies show that sport is one of the leisure activities through which it is easier to engage the so called “hard-to-reach youth” (Haudenhuyse et al., 2014). This presentation aims to showcase the evaluation research on a sport program involving at risk children in an Italian metropolitan area from 2014 to 2016. The program involved 113 youths (95% male; average age: 14.2; 25 % foreigners) attending multi-sport activities. They were monitored by a multi-professional team (coach, educator and a sport psychologist) in two weekly training sessions and twice/month laboratory activities (cooking, mosaic, video making). Through these activities the program aimed at: developing participants' motivation to sport, growing their sense of self-efficacy; developing the occasion for young boys and girls to create positive relationships with peers and significant adults; creating and implementing a social network starting from the soccer clubs. This work presents how the participative evaluation research contributed to continuously redefine the program itself and understand its real impact. Using a longitudinal multi-method approach we collected 113 questionnaires

exploring athletes' representation of and motivation to sport and their sense of self-efficacy; 32 semi-structured interviews to social and sport workers; 16 observation sections of sport activities (creating an ad-hoc observation grid). The interviews analysis shows that the participative approach helped in the redefinition of the project actions starting from the stakeholders' point of view. The interviews analysis also highlights a positive evaluation of team cohesion and the creation of new social relations starting from the soccer club and involving territorial associations, municipality services, youth centers. The questionnaires results show a rise of young's motivation to sport practice; finally, the observations point out an increase of adults' integration in their work with youngsters.

*Keywords: participative evaluation research, sport for social inclusion, play for change, longitudinal multi-method approach*

### "Between words and numbers": the combination of qualitative and quantitative instruments for a good efficacy evaluation

**Sara Alfieri, Elena Marta, Lucia Calloni, Eleonora Reverberi (Catholic University of Sacred Heart, Department of Psychology)**

Around 14 million young people aged between 15 and 19 aren't engaged in education, employment or training (NEET). After Greece, Italy is the second European country with the largest number of NEET (Istat, 2015). The huge consistency of this phenomenon brought many Governments and non-profit associations to enhance and promote several project against social exclusion, in order to try to reduce this youthful pervasive condition. Among these ones, a famous Italian association proposed a project with the aim of providing soft skills to the young NEET, exploitable within the labour market. This project lasted three months and was based on sport and job training (e.g. mock job interviews, CVs editing, etc.). The aim of the present study is the assessment of project's efficacy. The evaluation was carried out with two different instruments: a) semi-structured interviews developed at the end of the project in order to understand the young people perception about the exploitability of acquired soft skills and the project strengths and weaknesses. Furthermore, it was assessed the actual engagement of participants in educational or employment training. b) a self-report questionnaire given at both the beginning and the end of the project, in order to outline the differences between the participants' level of Quality of Life, Self-efficacy and Locus of Control. The sample consisted in 11 male NEET, aged between 16 and 24. The interviews analysis showed a general satisfaction of the participants, who identified sport as a good way to obtain several soft skills. However the participants have reached different level of social engagement. On the other hand, the questionnaire analysis showed a participants awareness about the lack of auto-efficacy in problem solving. Both questionnaire and interview show strengths and weaknesses, for this reason the combination of qualitative and quantitative instruments seems to be an indispensable requirement for a good efficacy evaluation.

*Keywords: NEETs, efficacy evaluation, mixed-methods, sport for skills aquirement*

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### Investigating facilitating conditions of careers in sport

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**Chair: Dorothee Alfermann (Leipzig University, Leipzig, Germany)**

Pursuing a sport career may be an exhausting and time-consuming task, but at the same time also an exciting and enjoyable one. In youth sport, the main challenge for athletes is to pursue a dual career as a student and an athlete. This means that young athletes have to combine training and competitions with school or other types of education. This quite a demanding task, and requires a variety of facilitating conditions, not only on the part of the athlete, but also on the part of the environment, particularly from the nearer and wider social environment (parents, clubs, school). In two contributions from Sweden and Spain there will be a closer

look on young athletes and how to foster their motivation and career development and in consequence, help them in making career transitions, e.g. from junior to senior phase. The third contribution will focus particularly on social influences on career development, mainly on the contribution of parents and other social agents. In a fourth contribution from Germany the main focus lies on the question if and how sport psychology service is able to help young athletes in performance development and thus to make a successful career on the long run. In a similar vein, the fifth contribution will give practical advice how to build a successful talent environment that would facilitate the career development of athletes. All in all the symposium covers a range of facilitating conditions that proved to be successful and are exemplified through research and practice results gained from a variety of target groups from different cultures, sports and both males and females.

*Keywords: career transitions, dual career, social support, sport psychology services, talent development environment*

## Social influences on the junior-to-senior transition in Swedish athletes: Narrative case studies

**Alina Franck, Natalia Stambulova (Halmstad University, Halmstad, Sweden)**

The junior-to-senior transition (JST) is decisive for athletes who want to reach the elite/professional sport level. The JST: (a) is initiated by a set of demands relevant to athletic and non-athletic development, (b) lasts between one and four years, and (c) is characterized by athletes' high dropout rate (Bruner, Munroe-Chandler, & Spink, 2008; Franck, Stambulova, & Weibull, 2016; Stambulova, 2009). This study is a follow up of the quantitative longitudinal study of the JST in Swedish club-based athletes (Franck et al., 2016; Franck, Stambulova, & Ivarsson, in press) and aimed at further qualitative exploration of the JST process emphasizing social influences involved. Four athletes (age  $M = 24.2$ ,  $SD = 1.5$ ) representing tennis, swimming, football, and basketball were interviewed. They were encouraged to reflect retrospectively on their JST process using five measurement points of the longitudinal study as an aid to structure their narratives. The interviews lasted for about 90 minutes. Thematic narrative analysis (Smith, 2016) was used to identify themes related to social influences during the JST and their perceived facilitative or debilitative effects. All four JST narratives were unique, however, to structure the results the narratives were pared to represent individual vs. team sport contexts. The results revealed that the social factors facilitating the JST were shared by both sport contexts and included family support, and good relationships with coaches and peers. The debilitating social factors that worked as the JST barriers were more diverse across the sport contexts. These factors covered a lack of sponsors/financial support and the ambiguity of requirements from the sport federations in individual sports, and changes in the structure of the team and selection to a higher level team not being ready for, in team sports. All participants went through the JST, continued a few years after, and then terminated their athletic careers.

*Keywords: career transition, social factors, individual sports, team sports*

## Female elite athletes' transition to university: a longitudinal approach

**Andrea Perez-Rivases (Universitat Autònoma de Barcelona), Susana Regüela (Centre d'Alt Rendiment), Carme Viladrich, Susana Pallarès, Miquel Torregrossa (Universitat Autònoma de Barcelona)**

The promotion of Dual Careers (DC) among athletes to combine elite sport and studies is concern shared by most European Countries (EU guidelines on dual careers of athletes, 2012). Research has shown that following a DC benefits athletes in the long term and makes it easier for the transition to an alternative professional career (Torregrossa, Ramis, Pallarès, Azocar & Selva, 2015). Although, other studies have shown that the combination can be stressful (Cosh & Tully, 2015). Moreover, there are only few longitudinal studies exploring the transition from high school to university (Guidotti, Cortis & Capranica, 2015). This work explains

the advantages of using Qualitative Longitudinal Studies (QLS) to explore female elite athletes' dual career and their transition from high school to university. Seven female athletes participated in this QLS lasting one year and a half. Four semi-structured interviews were conducted with each athlete at different moments of the transition (i.e., mid last year of high school, beginning first year university, middle first year university, beginning second year at university). The interviews included reflections on their ideal and real time management to combine sport and education as well as the elicitation of words defining each phase of the transition. Results show that studying female elite athletes' transition from high school to university using a QLS allows: (a) to describe and understand the development of the athletes and their paths followed in the different life domains, (b) to explore the match between what they expected (prospective view) and what they experienced (retrospective view), (c) to know facilitators and barriers of this transition, and (d) to increase athletes' awareness on the process they are going through.

*Keywords: career transition, dual career, longitudinal study*

### Social influences on athlete career development

**Daniel Gould (Michigan State University, Institute for the Study of Youth Sports, East Lansing, MI, USA)**

It is often said that "it takes a village to raise a child". The same can be said for developing an athlete. Family, friends, coaches and peers are just some of the significant others influencing athlete career development. Social influences affecting athlete career development likely start before the child is even born as research shows that more physically active pregnant mothers are more likely to have more physically active children who engage more in competitive sport (Pivarnik et al., 2006). Historically, socio-cultural research has shown that boys and girls are socialized differently (e.g., boys engage in more rough and tumble play) and these socialization practices have been related to sport involvement (Vilhjalmsson & Kristjansdottir, 2003). Coaches have also been shown to influence athlete development across their careers (Gould et al., 2002). Research on peer influences in sport also show that one's peers influence a child's motivation for involvement (Smith & d'Arripe-Longueville, 2014). Lastly, research on Olympic athletes have shown that families and friends are perceived as playing an important role in athlete performance, both having the potential to provide much needed social support or to become a distraction that hinders performance (Gould et al., 1999). Sport parents, in particular, have been the focus of many studies (Knight & Holt, 2014). These studies support the notion that parents have important influences on athletes initial participation in sport (e.g., sign young children up for programs), how they interpret their sport experiences (e.g., do they view anxiety as a positive or negative experience), and how athletes react to their sport experiences (e.g., interpret success and failure). While these studies provide important ground work for understanding how and in what ways social influences operate to influence athlete career development, more studies that specifically link social processes to stages of career development are needed.

*Keywords: career development, social influence, parents, coaches*

### Talent Development Environment – Psychological Intervention Studies and Their Implications for Athletes' Career Development

**Nadja Walter, Marc-Oliver Löw, Franziska Preis, Marie Hengst (Leipzig University, Leipzig, Germany)**

Since the discussion about young athletes and their dual career (DC) started, much has been reported about challenges and demands for youth elites. To support athletes in their DC we implemented psychological skills training in the daily routine of young athletes in two Elite Sport Schools in Germany. These schools provide an optimal environment for athlete students, aged 10 to 18, where school education and competitive sports are combined and jointly supported. We conducted three intervention studies with an experimental/control group design. Our first study (Preis) tested the effects of basic and systematic



psychological skills training. Almost 320 participants underwent the SAT program containing psychological stress prevention training, methods for systematic relaxation, goal setting and developing routines. Results show positive effects for the experimental group on motivation, recovery and perceived self-efficacy. The second study focused on motivation. As dual career athletes need consistent motivation, Hengst designed an intervention study to develop athletes' achievement motivation, particularly in winter sports. In this study ( $n = 83$ , aged 13 to 19) the participants of the experimental group improved their achievement motivation significantly. The latest project in this line is our S4WIN-Project (Walter, Löw), an intervention study helping athletes to develop their individual self-talk skills. The aim of this project is to enhance athletes' performance in competitions and to regulate the individual state of activity through self-talk. In this project about 160 athletes of various sports are involved. With the results of these three studies and in line with the EU Guidelines on Dual Careers of Athletes (2012) we are able to frame some practical implications for young athletes and how to develop an optimal psychosocial environment (e.g. long-term sport psychological support; psychological education of coaches and teachers).

*Keywords: career development, intervention studies, psychological skills training*

## Six fundamental principles that facilitate the transition from junior to professional in football: An example from the Danish premier league

**Carsten Hvid Larsen (Southern Denmark University, Odense, Denmark)**

The transition from talented youth level to professional level is considered to be the most difficult and complex transition in sports. Literature in career transitions highlights that a match between an athlete's resources and the demands of a transition will allow an athlete to enjoy a successful transition whereas a mismatch is likely to result in a crisis transition. Such resources are internal as well as external factors. The purpose of this presentation is to present practitioners and applied researchers with specific details and six principles of an ecological inspired program that facilitates transitions in a professional football (soccer) club in Denmark. Insights are provided into delivery of workshops, the supervision of the coaches, on pitch training, evaluation of the program and integrating sport psychology as a part of the culture in the club. First, findings highlight that the practitioner should acknowledge that the athlete is embedded in an environment. Second, the intervention should be built on a thorough assessment of the environment from a holistic perspective. Third, the practitioner should not only work with the individual athletes but also aim to optimize the entire environment around the athlete or team. Fourth, an intervention should take into consideration that an environment is always situated in a larger cultural setting of e.g. a national culture and a sport specific culture, and plan accordingly. Fifth and sixth, the intervention should aim to create and maintain a strong and coherent organizational culture and treat the athletes as whole human beings by supporting their development of a holistic package of psychosocial skills that will be of use for the athletes not only in their sport but indeed in their other life-spheres as well.

*Keywords: career transition, football, psychological support, talent environment*

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## If you listen very hard, a tune will come to you: Applied sport psychologist professional training and development

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**Chair: David Tod (Liverpool John Moores University)**

Over the past two decades, formal education and registration, accreditation, and licensure pathways have been established in several countries across the globe. Variation among these education pathways and registration schemes has resulted from factors such as the influence of different parent professional bodies (e.g., psychology or sport science organisations) and the presence or absence of country specific legislation.

Nevertheless, these efforts reflect the understanding that individuals need to be suitably trained to be effective, safe, and ethical practitioners. An associated development has been an increased research focused on practitioner training and supervision. Such research is needed to inform and optimise education and registration pathways. Ideally, research and practice should inform each other as encapsulated by the scientist-practitioner model of education. The purpose of the current symposium is to bring together researchers and educators to share current investigations to stimulate debate about best practice and new avenues of empirical study. The specific investigations presented include (a) an examination of practitioners' life histories and professional identity, (b) a comparison of developmental themes in sport, clinical, and counselling psychologists, (c) an exploration of the professional decision making process in trainee sport psychologists, (d) an assessment of trainees preferences regarding the content and process of learning, and (e) a discussion of practitioner development observations in sport psychologist professional training. Together the presentations will signal the value of integrating research and practice in helping to ensure that future generations of practitioners are sufficient prepared to help clients and manage their careers.

*Keywords: training, supervision, professional development*

## A whole lotta learn: What trainees want to learn and how they learn it

**Vana Hutter (VU University Amsterdam)**

Relatively little is known about learning for sport psychology practice. Training and education for the field should be informed by an understanding of learning and professional development of (future) practitioners. We have investigated learning and professional development in two consecutive studies. In the first study, we developed a model of supervisory issues, based on 365 questions that were raised in supervision by 14 trainee sport psychologists (TSPs). The 19 themes in the model represent what TSPs want to learn in supervision and provide insight into the professional challenges that young practitioners encounter. The 19 themes fall into two higher order categories, that is 'know-how' and 'professional development'. In the second study, we studied the learning experiences of TSPs. Uniquely, we determined which learning experiences are useful for which learning outcomes. A total of 530 learning experiences were mentioned by the 15 interviewed TSPs, falling into 22 different categories of learning experiences. We determined the associations between these categories of learning experiences and the themes from the model of supervisory issues by calculating odds ratios for the relative contribution of each learning experience to each theme. The results suggest that traditional learning experiences such as courses, teachers, and literature, are most useful for development on know-how themes. In addition, practical experience and reflective activities appear useful for learning on both know-how and professional development themes. Learning from others was associated with development on professional development themes. Collectively the studies illustrate what TSPs want to learn and which learning experiences are useful to them. This knowledge can inform education and training for sport psychology practice.

*Keywords: professional development, identity*

## Dazed and confused: The stairway to reason

**Michelle Smith, Hayley McEwan (University of West Scotland)**

This study explored how UK trainee sport psychologists' developed their professional judgment and decision-making (PJDM) skills during training. Participants (N = 7) were enrolled on the British Psychological Society Qualification in Sport and Exercise Psychology. Participants were interviewed 4 times over 3 years during training regarding their professional development. Interviews were transcribed verbatim and a deductive thematic analysis was applied based on PJDM literature. Participants emphasised the role of storytelling in developing their PJDM skills. For example, listening to the experiences of other practitioners

acted as a prompt for participants to consider the decision-making of the practitioner. Using analytical thinking, a key characteristic of applied practice, participants typically thought about alternative options that may have been available to the practitioner (e.g., why a particular skill was included in an intervention and not others). The development of analytical thinking encouraged participants to develop representations of how and why approaches might work in practice. Observation of other practitioners also allowed participants to develop a range of routines that could be used during consultations. Participants identified that being exposed to skills, techniques, and approaches other practitioners used was an opportunity to integrate ideas for the participant's own practice. The current results suggest opportunities exist in current training to accelerate the development of trainee's PJDM skills by maximising the use of vicarious experience. For example, training supervisors to embed critical cues (e.g., the moment that the situation is recognised as typical, triggering knowledge and causing shifts in the line of reasoning) within the stories they share, may be useful for expanding the experience base that trainees can draw from in their own future consultations.

*Keywords: professional development, decision making*

### **Good times bad times, you know I had my share: Applied sport psychologists' professional identity narratives**

**David Tod, Martin Eubank, Mark Nesti (Liverpool John Moores University)**

We aimed to explore applied sport psychologist's perceptions regarding their professional identities, along with the people, events, and critical moments that shaped these beliefs. Interviewees (N = 10) included male and female applied sport psychologists with a minimum of 5 years' service delivery experience and who had recognised qualifications enabling them to practice. Unstructured interviews began with interviewees discussing their current professional identities. Interviews then moved to the construction of a life history timeline on which events, people, and critical moments were added to create a personal narrative regarding development and shaping of professional identities. Interviews were transcribed verbatim and subject to a thematic narrative analysis. The personal narratives were amalgamated via an abductive analysis informed by relevant professional development literature. The personal and group narratives were feedback to participants for review and to other sport psychology practitioners, educators, and researchers for additional comment. Participants' professional identities were constructed along three dimensions including their roles, personal characteristics, and group memberships. Participants discussed an individuation process regarding their development, whereby the people (e.g., clients and supervisors), and the personal and professional critical moments they encountered (e.g., personal trauma) helped them to shape professional identities that reflected their attempts to be both authentic and successful within the environments they operated. These professional identities were dynamic and influenced by both personal beliefs and current circumstances. These results may inform trainee development (e.g., help trainees understand and prepare for changes they will likely experience during their careers) and future research (e.g., examine ways that professional identities may be optimally developed).

*Keywords: professional development, identity*

### **Over the hill and far away: Sport psychologists learning to play**

**Hayley McEwan (University of West Scotland), David Tod (Liverpool John Moores University)**

The aim of this study was to present an understanding of how UK trainee sport psychologists changed with practice, compared to clinical and counselling trainee psychologists. Following university ethics approval, 18 trainee psychologists (sport and exercise, n = 9, clinical, n = 7; and counselling, n = 2) were interviewed 3 times over 2 years during their training programmes regarding their professional development. Semi-structured interviews allowed participants to explore their development. Interviews were transcribed verbatim

and subject to a thematic content analysis. All trainees demonstrated a process typified as becoming increasingly authentic (i.e., integrating more of who they were within their practice). For example, a trainee had a personal interest in anxiety and this interest was consistent with his theoretical allegiance to an existential approach. Differences were found in the ways trainees in each sub-discipline tried to become authentic due to environmental influences such as placement structure and access to clients. Sport and counselling trainees could align their learning with their personal interests through the design of their own placements (e.g., working with endurance athlete-clients or volunteering in eating disorder clinics). Interactions with significant others (e.g., peers and elders) were the drivers of development and enhanced authenticity. Access to significant others allowed trainees to reflect on, and develop their philosophies and service delivery practices. Differences among sub-disciplines may assist educators in the cross-fertilisation of ideas on how to develop training environments. For example, sport trainees may benefit from increased facilitation of peer-to-peer collaboration and alternative methods of competency assessment similar to the related clinical and counselling psychology fields, such as observation of skills practice.

*Keywords: professional development, identity*

## **That's the (stair) way: Practitioner development observations in sport psychologist professional training**

**Martin Eubank (Liverpool John Moores University)**

This presentation discusses practitioner development observations in sport psychologist professional training. Scaling the training stairway and stepping into the applied practice arena of sport can be a daunting prospect, and represents a critical moment for trainees. Not knowing how big the step might be and not wanting to trip-up, early career advances are tentative and laden with anxiety. Underpinned by naive expectations about applied practice and the professional helping process, an urgency to demonstrate competence through practitioner led problem-solving and advice-giving, and using traditional approaches transferred from educators and supervisors, appears to be a comfortable choice. Effective professional development involves an integration of the personal self into a coherent professional self. This process implicates the importance of fostering a congruent alignment of service delivery with personal beliefs regarding individual's worth, capacity for change, experience of the world and the context that frames the meaning for behaviour. Professional identity then forms, shaping the stable internal philosophical foundation on which to base service delivery. Many trainees build this self-awareness too late or too flimsily in the development process, risking instability and incongruence in their applied practice stairway. To resolve these shortcomings, trainees should, as a starting point, take time to reflect on professional values that underpin the type of practitioner they want to be, independent of any model or theory, then review which theory 'fits into' those professional values. A training process that involves thorough and continuous self-reflection, a skilled supervisor who provides a space for meaningful dialogue in which to discuss ongoing practitioner identity, philosophy, congruence and normalisation of anxiety, and assessment and feedback that optimises learning represent key considerations for future professional training.

*Keywords: professional development, identity*

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## **Mobile Technology for Ecological Momentary Assessment (mEMA) in Sport and Exercise**

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*Chair: Lluís Capdevila (Universitat Autònoma de Barcelona)*

Researchers and sport psychologists could consider combining Ecological Momentary Assessment (EMA) with other objective measurement to capture sport and exercise behaviours. We propose the term mEMA for

referring to the use of mobile devices for monitoring or sampling strategies to assess phenomena at the moment they occur in natural settings. Smartphones and tablets can be useful for mEMA purposes using own sensors and capabilities for recording behaviours at real time. The aim of the symposium is to present some sport and exercise mEMA applications from an inter-disciplinary research: (1) How to promote and follow the adherence to healthy lifestyles by using mHealth and mEMA tools. Five lifestyle habits are considered: physical activity, nutrition balance, stress, sleep quality and social activity. All are related with the people perception of wellness and the increase of life expectancy. (2) A smartphone application developed to continuously estimate physical activity through accelerometry and to measure mood state daily in elderly people. (3) An intervention to assess the Spanish national basketball team to improve recovery, team performance and coaching. FitLab Team app offers the capability to follow up players in a non-invasive procedure during training camps. It allows the stress and recovery management as a key factor to get optimal peak performance. (4) Examples of different mEMA apps combining analysis of psycho-physiological and behavioural parameters to manage effort/recovery and stress in athletes and physical activity practitioners. For example, the use of this system in Futbol Club Barcelona for monitoring the basketball and soccer teams. Or some applications for breathing control and stress reduction using biofeedback and gaming strategies.

*Keywords: EMA, mHealth, sport, mobile technology*

### **mHealth tools to promote healthy lifestyles in general population**

**Juan Ramos-Castro, Miguel Ángel García-González, Federico Guede-Fernández, Víctor Ferrer-Mileo, Mireya Fernández-Chimeno (Universitat Politècnica de Catalunya), Lluís Capdevila (Universitat Autònoma de Barcelona)**

We present different tools based on mHealth technologies to follow the adherence to healthy lifestyles in the general population. For this work we have considered five lifestyle indicators: physical activity, nutrition balance, stress, sleep quality and social activity. All of them are related with the people perception of wellness and the increase of life expectancy. The goal is to build an almost "transparent" monitoring system that does not interfere very much on the daily life of people using platforms that are not unknown for the majority of population such as smartphones, or web based interfaces. The data recorded by the system is: Physical activity: We have developed specific apps for recording the daily activity by using the embedded sensors in the smartphone. The app is running in background and is continuously analysing the sensors data. We can analyse distance travelled, speed, climbed stairs and estimate approximate energy expenditure. Heart activity: Heart rate and HRV are estimated by the pulse waveform recorded by the integrated smartphone camera and flash. This can be done as request by the user or at certain instants during the day. Social interaction: A customized social network with users with the same profile allows them to interact and share experiences and create mini challenges. Specific questionnaires: An ecological momentary assessment can be done at the same time the physical activity and heart activity is recorded. This is carried out by a Weekly Physical Activity Log where the user can select from a predefined list the activity and intensity. The time resolution for this data is 15 minutes and can be filled out during the day, when requested (every 1-4 hours, programmable) or at the end of the day. There are also specific questionnaires for evaluating the mood state (POMS), the dietary habits etc. We are currently evaluating these tools to analyse the effect on the adherence to healthy lifestyles by empowering the people thorough feedback

*Keywords: m-Health, lifestyles monitoring, physical activity, smartphone, accelerometry*

## Changes in physical activity in the elderly assessed by smartphone 3-axes accelerometry: A pilot study monitoring changes in mood state

**Federico Guede-Fernández, Víctor Ferrer-Mileo, Mireya Fernández-Chimeno, Juan Ramos-Castro, Miguel Ángel García-González (Universitat Politècnica de Catalunya)**

More people are now living longer, so healthy ageing is a challenge to health-care system. Strong evidence demonstrates that physical activity (PA) has many health benefits. A smartphone application (Seniorfit) has been developed to, among others, continuously estimate PA and to measure mood daily. Mood has been assessed by a reduced POMS questionnaire asking directly for 6 items (Tension, Depression, Anger, Vigour, Fatigue and Confusion). Each day, subjects under measurement quantified each item from 0 to 10 and a final score of mood has been estimated by averaging all items (except vigour that has been previously converted to weakness subtracting to ten the vigour quantifier). PA has been assessed by estimating the magnitude of the acceleration after using bidirectional bandpass Butterworth filters and quantifying each minute of activity using a PA index (PAI) inspired by the time-above-threshold index. Seniorfit has been tested in 11 elderly subjects (mean age  $\pm$  SD: 67.2  $\pm$  3.6 years, 8 female/3 male) during periods ranging from 3 weeks to one month. Subjects were asked to fill her/his POMS questionnaire every morning and were informed that the device will monitor PA. After the measurement period, one female subject was excluded for analysis after failing to complete the POMS questionnaire. The results for the remaining subjects show that mean PAI is very heterogeneous among subjects (the most active subject has a mean PAI 3.6 times higher than the most sedentary subject) and a linear regression over time shows that PAI decreases for every subject ( $p < 0.001$ ). Moreover, active subjects are less prone to show significant changes of mood over time and all subjects with significant changes in mood had improvements of mood over time. Nevertheless, no direct correlation of changes in PA with mood was observed. Although the number of subjects and the observational time are low, we think that Seniorfit can be a useful tool to assess relationships between PA and mood.

*Keywords: physical activity, mood, smartphone, mhealth, accelerometry*

## Stress index in sport throughout HRV analysis: Assessment of a basketball national team during its training camp for the Euro'2015

**Toni Caparrós, Jordi Martín, Lluís Capdevila (Universitat Autònoma de Barcelona)**

**Introduction.** With the aim to assess team staff professionals to improve recovery, team performance and coaching, concurrent HRV testing offers the capability to follow up players in a non-invasive procedure. During training camps, the load and recovery management is a key factor to get optimal peak performance on a short time championship. National basketball teams call for training camps more players than the last 12 that will be the roster for the championship, so the use of internal load parameters, as Stress Index, allows to design programs according each player profile, adapting load, specific recovery and psychological protocols to individual needs on these contexts. **Methods.** A basketball national team ( $n=14$ , age 27,85  $\pm$  4,5 years and height 200,5  $\pm$  7,9 cm) was monitored during its training camp for the Eurobasquet 2015 (from 1st to 23rd august). HRV 5min-tests (Fitlab® system; healthsportlab.com) were performed during that period (every Sunday, during video session, before morning practice). **Results.** 4 tests were done during the period ( $n=10,75 \pm 1,78$ ), with a team stress index as follows: 42,4 for test 1; 48,6 for test 2; 55,2 for test 3 and 47 for test 4. The mean stress index for the period was 48,3  $\pm$  4,6. The 2 players that were finally cut at the end of the training camp (august 24th) had a mean Stress Index of 73,1  $\pm$  4,9 **Conclusions.** Stress factors as internal load parameter offers relevant information in professional sport. Sport training is multifactorial, and high competitive context all insides has to be target to get a full picture of every player needs. Sports Science and specific technology offers the capability to design specific and optimal programs in all sport training fields, to get better performance and player health.



*Keywords: stress index, HRV, professional basketball, training camp, internal load, recovery*

## EMA applications and interventions using biofeedback and gaming for psychological training

**Lluís Capdevila (Universitat Autònoma de Barcelona), Juan Ramos-Castro (Universitat Politècnica de Catalunya), Jairo Vázquez, Gil Rodas (Futbol Club Barcelona)**

mEMA refers to the use of mobile devices for monitoring or sampling strategies to assess phenomena at the moment they occur in natural settings. We will show different mEMA applications from our interdisciplinary research. We are using non-invasive systems combining analysis of psycho-physiological and behavioral parameters to manage effort/recovery and stress in athletes, physical activity practitioners and general population: (1) We will explain the use of this system in Futbol Club Barcelona for monitoring 14 basketball players of the first basketball team during several seasons. HRV 5min-tests at rest with FitLab® Team system were performed in group to assess and monitoring an individual stress index. HRV analysis was also applied continuously during training sessions and permitted to obtain conclusions about the recovery state of players in intermittent loads like basketball. (2) We will present results about the application of this system in other sports like the Spanish national team of field hockey, combining the analysis of stress indexes with effort/recovery cognitive scales. (3) We will present a mEMA application for collective recordings of optimal breathing frequency with the aim to provide resonant frequency biofeedback training to increase cardiac variability. It could be used for stress and anxiety management in sport situations. (4) Finally, we will show gaming strategies for mobile devices to achieve stress reduction using HRV biofeedback and for breathing control.

*Keywords: biofeedback, psychological training, gamification, EMA, breathing control, resonance frequency, stress management*

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## Psychological training in professional football. Applications in Spain and Latin America clubs

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**Chair: Tomás García-Calvo (University of Extremadura)**

The aim of this symposium is to present different proposals for psychological intervention in professional football context, from an applied perspective. Specifically, participants will expose different possibilities to improve fundamental psychological variables in training and competition, as well as personal and social life variables, with players and teams in Spain and Latin America. Thus, these proposals range from interventions with national federations from Mexico and Peru and their selections teams, practical applications with clubs of the first division Spanish League and Costa Rica League, as C.F. Villarreal and Saprissa Club, or approaches carried out with Argentine training teams. Finally, in this symposium we have managed to bring together great professionals from different countries who are working in the professional context, and who will expose the strategies and resources they use to intervene with players and teams

*Keywords: cohesion, efficacy, coach behavior*

## Psychological training in Spain and Latin American clubs

**Parma Aragon (Federacion Mexicana de Futbol Asociacion, A.C.)**

Quality Management applied to Sports Psychology Cantú-Berrueto, A. Aragón, P. México A lot is known about the work of the sport psychologist within sports clubs and federations, successful interventions have been clearly documented, however, there is very little information on how to implement an area in an

institution. The systematization does not only belong to the world of research, within the applied psychology it is necessary to document and publish a working method that complies with the norms and processes of international quality management. This work aims to present the model that we have developed for the quality of the service provided by the Personal Growth area of the Mexican Football Federation. Sample: The work was carried out with 10 National Teams, male and female, age limit ( $N = 7$ ), Female Senior Team ( $N = 1$ ), Beach Soccer Team ( $N = 1$ ) and Futsal Team ( $N = 1$ ), the teams have an age range from 14 to 31 years. The model has been developed based on the needs of each national team, taking into account the demands and the psychosportive requirements of international competitions, the implications of being a national team player and the particular characteristics of each branch and category. As a main result the Personal Growth area of the Mexican Football Federation has managed to generate a model from which it seeks to make the most of human and material resources, providing quality care to the National Soccer Teams. We believe that the standardization of processes leads to offer a professional quality service for the players and national teams. Keywords: Quality; Sport Psychology; Soccer; National Teams.

*Keywords: cohesion, efficacy, coach behavior*

## Development of psychological skills in professional football

***María de los Ángeles Corró Molas (Club Atlético La Barranca, La Pampa, Argentina)***

The aim of this work is to describe how the role of the sport psychologist was included in a professional football club. All the intervention was carried out with the team and technical staff of the "Club Atlético All Boys" (La Pampa, Argentina) during its participation in three tournaments: Federal Tournament, Provincial Tournament and Cultural League Official Tournament. Period of work was from August 2015 to May 2016. To that end, a tailor-made project was designed and objectives were defined in different areas. At the individual level: focus was in the acknowledgement of sport psychologist's role and the acquirement of psychological skills to optimize their performance. At group level: the aim was to consolidate a cohesive team and with the technical staff we worked with an interdisciplinary model facilitating psychological resources to each of the actors. Based on Carron and Hausenblas' (1998) model of cohesion the strategy of work began with interviews, observations, semi-structured questionnaires and group dynamics. As a conclusion of the process, an evaluation of the objectives was carried out and improvements were identified regarding the psychological abilities of the players (anxiety management, confidence and mental toughness), group cohesion, coach's leadership and communication skills. As a challenge, it is proposed to design specific intervention strategies for each sport discipline and to deepen into design of attractive, effective and scientifically validated techniques that allow the improvement of key aspects in football such as decision making, concentration and the ability to cope with and control emotions.

*Keywords: football, mental training, psychological skills, cohesion, leadership*

## Developing new learning environments for footballers. An applied experience at Villarreal C.F.

***Eduardo Morelló Tomás (Villarreal C.F.)***

Behaviour and character formation of boys and girls is determined in part by the interaction of personal and situational factors (Bandura, 1991). Given the importance of optimizing and enriching the process of personal development in Villarreal C.F.'s players, the 'Endavant Igualtat' programme has been developed as a part of the club's personal training process. In this case, the purpose was to confront teams with learning contexts different to those they normally encounter in their sports environments. The objective is to allow our players to carry out activities of coexistence and collaboration with other social groups and experience other ways of living that are different from their reality. In addition, it seeks to give media visibility to both users and

associations working with vulnerable people, groups at risk and/or with functional diversity. The Club has 600 players trained by 100 coaches. The intervention has been carried out with 200 players and the coaching staff of each of the ten elite teams. The ages of the participants range from 12 to 30 years. Each team is assigned an association with whom they engage in different activities once every 3-4 weeks. These meetings begin in October and last until June. In these activities the members of both entities spend time together, exchange experiences from their diverse lifestyles and share their different characteristics with the purpose of learning from one another. Our experience sampled during our first two years leads us to interpret satisfaction expressed from both sides, players and staff as well as the associated entities and their members, which encourages us to continue working in this direction and to share our experience with other professionals participating in professional training of junior athletes.

*Keywords: football, values, learning environments*

### **Neuropsychology and sports performance: Case applied to soccer players of the first team of the saprissa sports club of Costa Rica**

**Carlos Marín (Universidad Nacional de Costa Rica)**

The exhibition will try to explain and demonstrate the need to apply cognitive training techniques from a neuropsychological and biomechanical base in the soccer players of the Saprissa Sports Club of Costa Rica. In addition, to offer the practical bases of the scientific methodology in the evaluation and training of the necessary skills and abilities in the improvement of the sport performance in the soccer. Several theories on neuropsychology applied to sport in the area of attention will be explained, understanding that it is a process that from a neurophysiological approach involves the sensation and comprises elements like stimuli generated by internal or external energy to the organism. It will also expose the importance of developing cognitive skills that facilitate different learning at an early age that parallels the development of motor skills. These two involved in psychomotor development including social skills. Finally, it will give an approach on the study of neuropsychomotor development which consists of the study of the neuroscientific nature of voluntary movement in its three main phases and theories of Laterality, cognitive training and Football. All of the above will be reinforced with explanatory videos of the topics exposed, videos of the exercises and practices performed with the players of Deportivo Saprissa and players of other football teams in the leagues of Spain, England and Argentina.

*Keywords: neuropsychology, training, cognitive, concentration, attention, performance*

### **The Sports Psychologist in interdisciplinary work for the development of sports talents**

**Mario Reyes-Bossio (UPC)**

The purpose of this presentation is to make known the importance of psychological approach in the selection and interdisciplinary development in the search of sports talents. Sports talent is the innate potential with which each player is born and the skill is what the player is forming through the training and experience formed during his career. In this sense, maximizing the mental ability will allow the development of the different skills that every soccer player needs for his professional development. The Peruvian Football Federation has been working on a project that promotes the strengthening of psychological work in the training of athletes from different regions of Peru, including youth teams, regional teams (High Performance Centers) and professional clubs. A model has been created to promote the individual and collective development of football players for their strengthening as professionals and as individuals, promoting healthy lifestyles and quality of life. It is fundamental this interdisciplinary work and with the family, the relevance of the sports pentagon is an important key for the work and strengthening of each athlete. All this work allows to promote group identity and teamwork, developing positive attitudes in each player. The goal is to promote this

systematic work to all regions of the country, to strengthen the national sub-15, sub-17 and sub-20 national teams.

*Keywords: cohesion, efficacy, coach behavior*

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## Theory and practice: Condemned to understand each other

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**Chair: Rosana Llames (University of Seville)**

In 1979 Martens presented some defects about research made in psychology applied to the field of sport. At this simposium we try to analyze the developments that have followed this tandem, academical research/professional activity, taking into account four relevant aspects: assesment, intervention, cost of professional sport psychologist's intervention, and adaptation of deontologic norms to reality of professional sport psychologist's activity. Our aim is to detect and present this development, to analyze the differences and actually distance that exist between and particularize needs and demands from academical research to professional activity, and vice versa, from professional activity to academical research.

*Keywords: sport psychology, research, professional activity, assessment, intervention, deontologic code*

## "Smocks and jocks (from 1979 to 2017)". A reflection about sport psychology assessment

**Juan Tomás Escudero (University of Balearic Islands), Rosana Llames (University of Seville), Pep Marí (Sport psychologist. Free-lance Barcelona), Jaume Martí (Sport psychologist. Psicosport. Barcelona)**

The aim of this presentation is to share some observations and considerations related to Sport Psychology assessment. Specifically, I will compare research activity, carried out by academic researchers, and professional activity, carried out by professional sport psychologists. Is there any relation between them? How close or how far are academic researchers and professional sport psychologists with regards to sport psychological assessment? What is the situation of current research, since Martens (1979) exposed some of its defects? The field still needs a true communication between academic researchers—who know the basic principles of research (methodology and statistical analysis)—and professional sport psychologists—who know the ecological conditions and the demands of actual sports men and women and athletes

*Keywords: research, professional activity, sport psychology, assessment*

## Sport psychological intervention, the most artistic part of our profession

**Pep Marí (Sport psychologist. Free-lance. Barcelona), Rosana Llames (University of Seville), Juan Tomás Escudero (University of Balearic Islands), Jaume Martí (Sport psychologist. Psicosport. Barcelona)**

Sport Psychology handbooks present several methodological and intervention techniques. The scientific literature on psychological preparation programs combine them as a function of the athletes' needs. It is difficult to imagine a work program, oriented to the improvement of performance, that is not flexible. There is little research, however, on the criteria to manage this flexibility in practice. Too often they depend on professionals' own experience and intuition. Further research on this issue would reduce this artistic component and would improve the efficiency of interventions. Another issue that should be addressed is the maintenance of changes produced by the intervention. The best procedure is that which exhibits the optimal relation between the time invested to achieve the changes and the duration of those changes in time. If we had more information about the duration of the effects of preparation, we could support the most efficient procedures

*Keywords: research, professional activity, sport psychology, intervention*

## Taking advantage of the portable technology: Use of smartphones as instrument of goal registration

**Joan Vives Ribó (Centro de Alto Rendimiento. Sant Cugat del Vallès. España), Rosana Llames (University of Seville), Juan Tomás Escudero (University of Balearic Islands), Pep Marí (Sport psychologist. Freelance Barcelona), Jaume Martí (Sport psychologist. Psicosport. Barcelona)**

Goal setting is a well-known technique, very used and effective. It mobilizes the effort and helps to persist in it, directs focus of concentration and facilitates the use of new learning strategies. The registration of goals achievement improves the consciousness about the work done on the objectives. The more consciousness about learnings, the more confidence in the resources acquired. But traditional pen & paper registers (or by computer) have drawbacks in achieving the appropriate adherence to register consistently. Instead, registers though mobile (smartphone) provide instant access, an easy use, data saved instantly, and the possibility to share and edit this data from the cloud by athletes, coaches and psychologists. As an example of use of this type of registers, it will be presented a double intervention developed in the CAR of Sant Cugat del Vallès (High Performance Center), with the group of waterpolo junior female players. On the one hand, an individual program of setting goals. Individual goals were established for players, with a customized form for each of them, built by Google Forms and directly accessible in their smartphones through a shortcut. The objectives were registered from March to June 2017 included. It will be presented the results of the progress achieved in the objectives, the adherence levels in registration, and the relation between results and registration adherence. On the other hand, a communication training program for the coach, in order to change communication patterns to increase players' consciousness about their work in practice, their achievements and the concentration or resources used. Coach communication follow-up was done through the same portable methodology. It will be presented the changes perceived in the communication of coach, and the effects of these changes in the motivational orientation and confidence levels of the players.

*Keywords: goal setting, consciousness, portable technology, smartphone*

## Price of sport psychologist's work

**Jaume Martí (Sport psychologist. Psicosport. Barcelona), Rosana Llames (University of Seville), Pep Marí (Sport psychologist. Free-lance Barcelona), Juan Tomás Escudero (University of Balearic Islands)**

Since 1990, when more of us began to work as sport psychologists, to 2017, we have confirmed that students of Sport Psychology masters and also "novice" sport psychologists, have a problems to establish psychologist's fees or psychological intervention prices. In this presentation we try to discuss and make a reflection about a disturbing observation that happens for a long time: Sport psychologist still have problems to determine how much sport psychologist's work cost? or how much could sport psychological intervention cost? It's clear that our education (psychology degree, sport psychology master, go to congress...) to become a sport psychologist has a prize for us and now, as a professionals, we are paying different taxes (social security as autonomous worker, professional association fee....); in other words, all of it isn't free for us. It's necessary to clarify these aspects in our professional activity that permit us to compute our work in order to avoid undervalue it and undervalue to ourselves and also our colleagues. All of us would like to work as a sport psychologist and this activity enjoyed us but we also need to cost-price this passion

*Keywords: sport psychology, sport psychologist's fees, prices, intervention*

## Norms of deontological code vs reality of professional practice in sport

**Rosana Llames (University of Seville), Juan Tomás Escudero (University of Balearic Islands), Pep Marí (Sport psychologist. Free-lance Barcelona), Jaume Martí (Sport psychologist. Psicosport. Barcelona)**

Deontology is not attained through common sense. It requires training and learning to achieve this competence. Therefore, ethical education has to promote professional identity. Although Sport Psychology is a young discipline, the last years have witnessed a substantial advance in consulting and counselling in this field. This, in turn, has led to problems related with professional ethics. The appearance of people without sufficient competences and, on occasions, with only market criteria, generated an increasing interest in establishing the norms that direct the discipline's professional exercise. That was the origin of the first agreements that dealt with deontological and normative issues, such as the Association for the Advancement of Applied Sport Psychology or the Canadian Society for Psychomotor Learning and Sport Psychology. In Spain, the General Council of Official Psychology Colleges also includes the profession's general ethical norms in its Deontology Code. Nevertheless, it is not always easy to interpret the regulations in the context of applied sports. Several issues create a split between the written norms and the actual implementation, including who is the client, the cooperation or exchange of information with other professionals, confidentiality (in an inherently public activity), the management of occasionally contradicting interests (technical staff, clubs, sports men and women), the temporal use of the collected information, and the limits of the psychologist's involvement. In this presentation we will analyse these aspects, which we believe might lead to confusion, confronting specific articles included in regulations and codes, with real examples taken from professional practice.

*Keywords: research, professional activity, sport psychology, deontology, deontologic code*

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## Mental well-being in athletes from different perspectives

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**Chair: Jeannine Ohlert (German Sport University Cologne; University Hospital Ulm)**

A general mental well-being is important for elite athletes, not only for their personality development and their daily life, but also in order to be able to perform on the best level in their sport. However, well-being can be threatened by different obstacles, problems and challenges the athletes have to face in their sport and in their life. This symposium targets well-being of athletes from different perspectives. Three communications will concentrate on recent research results regarding well-being in athletes, and two communications will present best practice initiatives from two countries. First, results from a study on the influence of coping with different developmental tasks on well-being in adolescent elite athletes will be presented. The second communication will focus on team flow in different settings with a particular focus on well-being. The third communication will deal with the experience of sexual violence in elite athletes and its influence on well-being and depressive tendencies. Finally, two best practice initiatives to preserve and/or regain mental well-being in elite athletes, the Mental Health Clinic in Sweden and the network MentalEmpowerment in Germany will be presented.

*Keywords: well-being, developmental tasks, team flow, sexual violence, medical health clinic, mentallyprepared*

## A mental health clinic to support elite sports: a multidisciplinary approach integrating performance psychology, clinical psychology and psychiatry

**Göran Kenttä (The Swedish School of Sport and Health Sciences & The Swedish Sport Confederation)**

Due to increasingly high demands in competitive sports, prevention of poor health and promotion of good health becomes more important. Unfortunately, in sport science, mental health research is limited. Nevertheless, research indicates that elite athletes are at the same or greater risk of developing mental health problems as non-athletes (Schaal, Tafflet and Nassif, 2011). Moreover, concerns have been raised that athletes may receive inadequate and substandard versions of treatment as a consequence of how preconceptions regarding mental health problems in competitive sports influence the choice of treatment (Pipe, 2001). Consequently, in order to provide professional assessment and treatment of clinical issues a Mental Health Clinic started within public health care in 2015 – with the mission to better support elite sport. The overall purpose of the Clinic is to provide a multidisciplinary support system not only to current elite athletes and high-



performance coaches, but also to those struggling with a career transition out for sports. All athletes and coaches who seek help for any mental health problem, defined as psychological distress that inhibited normal functioning in sport and life in general during two weeks or more, will perform a comprehensive psychiatric assessment with a licenced psychiatrist and a licenced psychologist before receiving the most appropriate evidence based treatment. However, it has been argued that there is a need for adapting psychiatric assessment and treatment to the population of elite athlete with specific concern of sport performance. A recent review with elite athletes and mental health concluded that specific models of care are yet to be established for this group (Rice et al, 2016). This presentation will reflect upon lessons learned from 2 years at the mental health clinic. Experiences and data from psychiatric assessment and clinical treatment in elite sport as well as the relationship to performance will be discussed.

*Keywords: mental health clinic, performance, elite sports*

## Coping with developmental tasks and well-being in elite athletes

**Jeannine Ohlert, Jens Kleinert (German Sport University Cologne)**

The adolescent years are the most important years for personality development. Young elite athletes have to solve the same developmental tasks (DTs) as non-athletes even though they spend a lot of time with their sports and also have to solve certain sports related DTs in addition (Ohlert & Kleinert, 2014). Two studies were conducted to find out if this situation leads to a shortfall in certain DTs and furthermore to reduced wellbeing in adolescent and adult elite athletes. The first study addressed adolescent elite athletes and non-athletes, the second one adult elite athletes. Participants answered questions regarding the personal relevance of different DTs, their actual progression, satisfaction with their actual progression, and their well-being. Results showed that compared to non-athletes, adolescent athletes reported a different relevance for some DTs, especially for the DTs circle of friends and independence from parents. No significant differences between the two groups could be found in progression or satisfaction with progression. A stepwise multiple regression resulted in two significant predictors for well-being in adolescent athletes: satisfaction with progression in the DTs to find oneself and circle of friends. For adult athletes, only satisfaction with circle of friends was a significant predictor of well-being. Furthermore, this satisfaction correlated negatively with the number of hours in sport per week. These findings suggest that in general, elite athletes do not suffer from problems with DTs. However, if satisfaction with the own progression in certain DTs is low, well-being will also be reduced. Thus, sport organisations and coaches should think about a targeted planning of free times for their athletes in order to have time for their developmental tasks outside sport.

*Keywords: personality development; adolescent athlete; adult athlete*

## MentalEmpowerment – Organisation and utilisation of mental health care in German elite sport

**Marion Sulprizio, Jens Kleinert (German Sport University Cologne)**

In addition to the physical demands of elite sport, athletes also encounter mentally and socially stressful conditions, which can potentially endanger their mental health. With this in mind, MentalEmpowerment (MentalGestärkt; MG), a network initiative founded in 2011, pursues three basic goals: Firstly, MG aims to preserve and support mental health (i.e. health promotion) and strengthen athletes' mental skills; secondly, MG aims to prevent mental health problems (e.g. stress, depression or burnout) in elite sport (i.e. prevention) through the early detection of symptoms; and, finally, MG aims to refer athletes to optimal treatment or therapy partners where necessary. MG is a service-oriented initiative that operates in the areas of information, events, further education, screening and mediation. Through our coordination, a network of experts and institutions are brought together to ensure that elite athletes are optimally informed about health promotion, prevention of mental health problems and how to get the correct intervention or therapy for their problems. The network currently comprises 230 qualified partners from the fields of sport psychology, sport psychotherapy and sport psychiatry. The two key branches of MG are (1) the steering group, consisting of psychologists, psychotherapists and psychiatrists and (2) the funding board, consisting of representatives from the financial partners. In 2011 – 2016 we were able to offer optimal support to 229 athletes: 45% of whom

reported signs of depressive mood, with some even thinking about suicide (2.2%); 7.6% suffered from a lack of wellbeing, either in general or as a result of injuries; 5.8% reported eating disorders, 2.7% reported sport addiction, and 9% suffered from stress in their sport. MG continues to work towards extending the support network, providing information, coaching trainers and parents, and combining services and research in the field of mental health in elite sports.

*Keywords: depression, networking, prevention, therapy*

## Sexual violence experiences and well-being in German elite athletes

**Jeannine Ohlert (University Hospital Ulm; German Sport University Cologne), Thea Rau (University Hospital Ulm), Bettina Rulofs (German Sport University Cologne), Marc Allroggen (University Hospital Ulm)**

The experience of sexual violence is known to have long term consequences on mental and physical well-being of the victims. In organised sport, however, research regarding the prevalence of sexual violence experiences and consequences on mental well-being is still rather scarce. Thus, the aim of the current study was to research prevalences of sexual violence experiences for German elite athletes, and to explore correlations with mental well-being. Overall, 1,799 German national squad athletes over 16 years of age from 128 different sports took part in an online survey. Mean age was 21.5 years, 54% were female. Seventeen different situations of sexual violence (from sexist jokes to forced penetration) were presented to the participants, and they had to indicate how often they had experienced this particular situation in the sport setting. Mental well-being was measured using the WHO-5 well-being index and the PHQ-2 measure for the risk of depression. Results revealed that 37.6% of the athletes had experienced at least one situation of sexual violence in organised sport; 11.2% even reported a severe form of sexual violence. Regarding mental well-being, significant lower values of well-being were found in those participants who had experienced at least one situation of sexual violence. However, levels of well-being did not differ between the victims of so called “mild” forms of sexual violence (e.g., verbal sexual behaviours), “moderate” sexual violence (e.g., exhibitionism), and severe sexual violence (e.g., forced sexual penetration). The same pattern was found for the risk of depression. Our results show that the experience of sexual violence in sport is comparable to other studies and lead to reduced well-being in the victims no matter if it is a severe form or only a so called “mild” form of sexual violence.

*Keywords: sexual harassment, squad athletes, depression, prevalence*

## Team flow in different contexts: A systematic review with particular focus on well-being

**Fabian Pels, Jens Kleinert (German Sport University Cologne)**

A multitude of studies examined the concept of flow in individuals in the context of sports (see Swann et al. (2012) for an overview), finding that flow is associated with a variety of positive outcomes (e.g., well-being). However, few studies explicitly examined flow during group tasks in team sports (i.e., team flow) and potential beneficial outcomes (e.g., athletes’ well-being in teams, patients’ well-being in health sport groups). Therefore, this work aims at providing a systematic overview of the existing research on team flow in different contexts, with particular interest on implications for future research on team flow in sports. The literature search was carried out with the use of several databases and additional sources (e.g., reference lists). Only peer-reviewed articles and publications in English language were included. The included 21 publications varied widely in team flow definitions (e.g., team flow as an aggregation of individual flow vs. team flow as a collective state of mind) and, in turn, in related team flow measures. The majority of studies examined team flow in teams of musicians and employees in both low-interdependence tasks and high-interdependence tasks. Studies identified different antecedents (e.g., collective efficacy, feedback from others) and different outcomes of team flow (mostly performance outcomes). This review shows that team flow can occur in different tasks and contexts and is characterized by specific team-related antecedents and outcomes. However, in contrast to research on individual flow, few studies explicitly examined well-being as an outcome of team flow. The recent publications demonstrate the need for a consensual definition and theory, and related measurements of team flow in general. Moreover, there is a need to confirm and expand the results on antecedents and outcomes of team flow in the sport context.

*Keywords: flow, group, overview*

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## Structure and development of sports psychology before the new challenges in Iberoamerica

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**Chair: Antonio Hernández Mendo (Universidad de Málaga)**

The new century raises global questions that must be solved from the different areas of knowledge and from cultural diversity. There is no doubt that the Sport Psychology does not remain unrelated to these issues and the very breakthrough in the solution of these discover new problems. The scientific and methodological progress of this area requires that from the new perspectives the old problems are analyzed, resulting in new strategies. This symposium reflects the focus of four research groups in Iberoamerica (Spain, Portugal and Mexico) before the new challenges posed in the Sport Psychology. The challenges posed by these groups cover a wide range of issues ranging from methodological aspects, through substantive issues of areas of interest, to procedures in research through the use of networks or to a humanistic vision of intervention in Sports Psychology in the high performance derived from the current scientific and ethical maturity, to the gender stereotypes in sports practice and the psychological benefits of this participation once the barriers and brakes have been overcome. The contributions of this Symposium are established at three levels, quantitative, qualitative and reflection. There is no doubt that the data, necessary for the genesis of knowledge and theory, whether these are qualitative or quantitative, need a reflection on the scope of these, which will clarify the new strategies that must respond to the challenges.

*Keywords: methodology, online platforms, networks, humanism, sport and women*

## Challenges of Sports Psychology in the 21st Century

**Antonio Hernández Mendo, Verónica Morales Sánchez, Rafael Reigal, Sergio Luis González Ruiz (Universidad de Málaga)**

Informatics and the Internet have meant a technical, methodological and conceptual revolution that has impacted in all areas of knowledge. It is a technical and methodological revolution for having affected the design, implementation and analysis of tasks. Conceptual revolution because it has reduced the uncertainty of theories and conceptual models where it has been implanted. This technical / conceptual revolution has affected, between others, fundamental and basic functions of science, data collection and sharing of results. In this sense the online platforms pose a conceptual change in the context of the Psychology of Sport. In the temporal plan a change occurs, it is not necessary for an encounter "face to face". In the field of research the presence of the researcher is not necessary, there is no limit on the size of the sample (nor physical space, time availability or economic costs), people of different cultures, genres, races, nationalities, socioeconomic conditions or religions, can simultaneously access the study. Nor is it necessary to type the data obtained from the evaluation. Platforms provide quantitative and qualitative data (eg: order to perform the questionnaire in a direct, inverse or non-sequential way). This situation makes it possible to connect the online platforms in the Mixed Methods approach and consequently to question the static estimation of the psychometric properties of the questionnaires in front of a dynamic estimation based on quantitative and qualitative data. The data of the online platform [www.menpas.com](http://www.menpas.com) is presented, currently has 19 work areas, a user area, an administrative area and 72 questionnaires / tests or tasks or programs implemented. Currently, the platform has 11,000 registered users and a registered annual activity of more than 135,000 events (events). Some of his tasks already have more than 45,000 realizations.

*Keywords: computers, internet, online platform, mixed methods*

## Development of sports psychology in Mexico: Network work

**Jeanette López-Walle** (*Facultad de Organización Deportiva, Universidad Autónoma de Nuevo León, Nuevo León, México*), **Rossana de Fátima Cuevas Ferrera** (*Facultad de Psicología, Universidad Autónoma de Yucatán, Yucatán, México*), **Claudia Rivas Garza** (*Asociación Mexiquense de Psicología del Deporte y la Actividad Física, Estado de México, México*), **María Pilar Rodríguez** (*Instituto Tecnológico de Estudios Superiores de Occidente, Jalisco, México*)

In Mexico, the psychology of sport begins when psychologists do not penetrate mental preparation with high-performance athletes, such as the doctor Octavio Rivas, who started with first division players. His premise was to promote multidisciplinary work to develop the psychological well-being of the athlete. Later, different psychologists offer various continuing education courses, through the organization of national events such as congresses, symposium and conferences. These events led to the union of different members to local and national associations and / or groups that apply different methods of intervention to optimize the psychological skills of athletes, as well as the constant training of referees, coaches and parents. Along with continuing education, various institutions of higher education develop and consolidate projects to grant undergraduate and graduate degrees, which allows them to have formal training in various states of the Republic, and even in some of them recognized by its quality in the National Register of Postgraduate Quality of the National Council of Science and Technology. As a result of the different efforts made in various trenches in Mexico, the proposal for a Thematic Network, which, from the area of psychology, seeks to promote the psychological well-being of the individual through quality sport. For this reason, the psychology of sport in Mexico has been, is and will be a reflection of the work in networks, which guarantees the consolidation and internationalization of the contributions of all the members that participate in the Network, under the acronym.

**Keywords:** *networks, research, training*

## Psychosocial benefits of women's sports participation

**Isabel Balaguer, Isabel Castillo, M<sup>a</sup> Ángeles Atienzar, Paula Muiños** (*University of Valencia*)

Throughout history women have encountered many barriers, especially cultural and educational, to participate in sport, which has prevented them from enjoying the benefits of sport participation. In this presentation, the psychological benefits of sports participation, from quantitative and qualitatively approach, are analysed in two team sports, basketball and soccer, the latter being the main brake on women's access to sport, mainly due to gender stereotypes. At the quantitative level, the differences between some indicators of psychological well-being (self-esteem and subjective vitality), youth development (personal and interpersonal), and competence in everyday life, between athletes and non-athletes are studied. Secondly, in the group of athletes, different theoretical models are tested in which the predictive power of coach perceived empowering climate on the athletes' psychological benefits is explored. At the qualitative level, the barriers that the players have perceived to sport participation and the benefits they receive from their participation in sport are investigated. 795 female athletes (soccer = 313; basketball = 240) and non-athletes (n = 242) with an average age of 15.21 years (SD = 2.88) completed a questionnaire package with the variables of interest and a selection of them participated in the qualitative study. MANOVA's analyses were carried out to analyse the differences between soccer, basketball and non-athletes, indicating that athletes obtained higher values ( $p < .001$ ) in all variables, with the exception of interpersonal development. The results of the structural equation models report that the empowering climate is positively associated with greater competence in daily life and that this leads to greater well-being and more positive development in the players.

**Keywords:** *psychological benefits, sport, woman, motivational climate*

## Training Psychology: New challenges for a humanistic approach

**Sidónio Serpa** (*University of Lisbon*)

Superior athletes challenge their own limits in order to achieve excellence and competitive success. Their sports careers tend to start at very early ages. Therefore, their lives became dependent of performance development demands. Their perception of life meaning, self-concept, or their personality development are shaped by their sports experience, which is the major dimension of their lives in most cases. Despite the success on reaching outstanding patterns, there are many dramatic situations experienced by young and superior athletes. Promising sports careers that fail or are interrupted by drop out, serious mental problems requiring clinical treatment, very young athletes included in fulltime coaching programs by their parents' imposition, or post-career emptiness and misery, are examples contradicting the humanistic goals of sports. Applied sport psychology to the competitive context has been focused on improving athletes' performance, which has inspired the new expression "performance psychology" that is currently extended to other activities. Griffith in USA as well as Puni and Roudick in Russia were the most important fathers of applied SP to sports competition. In fact, Griffith was focused on perception and motor learning in order to increase the quality of coaching to improve the athletes' performance. On the other hand, the Russian approach aimed at developing a scientific based system of mental training and psychological preparation of athletes leading to performance excellence. In both cases, the psychologist's mission was to work for the performance improvement. The World important development of sports as well as the current scientific and ethical maturity of Sport Psychology suggests that a reflection should be made regarding the professional role of sport psychologists working as top sports consultants.

*Keywords: performance enhancement, performance psychology, personal development*

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## **Get Set to Go, a multi-site physical activity intervention for mental health service users: Measure developments and real-world practical considerations**

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***Chair: Florence Kinnafick (Loughborough University)***

Mental illness continues to pose a social and economic burden for health care systems worldwide. Sport, exercise and physical activity (PA) is gaining the attention of services, practitioners and researchers as a tool for prevention and treatment of various psychopathological abnormalities by improving physical health whilst reducing negative symptoms. However, individuals with mental illness engage in significantly less PA than healthy controls. Tailoring measurement tools and improving our understanding of individual experiences within PA interventions can enhance health promotion initiatives and inform future interventions for mental health (MH) recovery. Get Set to Go (GStG) is a Sport England /National Lottery funded three year intervention delivered by Mind, a national mental health charity in England and Wales, which uses PA to aid MH recovery in Mind service users. To date, 1274 participants have registered for GStG across eight local Mind services in four priority regions in England. Each local Mind provides tailored PA and sport groups using peer-volunteer support. The aim of the intervention is to increase motivation, participation, and decrease barriers to PA whilst improving MH recovery. This symposium will outline the development of measurement tools suitable for populations with mental illness, and to enhance our understanding of the practical considerations of PA initiatives aimed at MH recovery. Presentation 1 will examine the psychometric properties of a short-form version of the Behavioural Regulation in Exercise Questionnaire-3 (BREQ-3; Wilson, et al., 2006) and presentation 2 will provide detail on the feasibility and acceptability of using objective measures of physical activity for GStG participants. Presentation 3 will detail the key socio-contextual determinants of adherence for participants of GStG while presentation 4 will focus on the experiences of peer navigators who volunteered as sport group leaders and provided one to one support.

*Keywords: mental health, intervention, motivation, peer support, measurement, qualitative*

## Examining the factor structure of a short-form version of the Behavioural Regulation in Exercise Questionnaire in mental health service users

**Nathan Smith (University of Northampton), Paul Appleton (University of Birmingham), Timothy Osborne (Warwick Hospital), Florence Kinnafick (Loughborough University)**

The study's aim was to examine the psychometric properties of a short-form version of the Behavioural Regulation in Exercise Questionnaire-3 (BREQ-3; Wilson, Rogers, Loitz, & Scime, 2006) in a mental health service user population. The most recent iteration of the BREQ-3 contains 24 items exploring key motivation regulations including: intrinsic motivation, identified regulation, introjected regulation, external regulation and amotivation. The BREQ-3 assesses the motivation regulations of individuals participating in physical activity and exercise. A brief version of the BREQ-3 may be more practical for younger and/or hard-to-reach populations (e.g., mental health service users). We aimed to reduce the number of items required to target the motivational regulations, whilst retaining a valid and psychometrically sound measurement instrument. In total, 780 participants (379 males, 363 females, 38 non-disclosed) involved in the Get Set to Go intervention participated. Mental health diagnosis included anxiety, schizophrenia and schizoaffective disorder. A 10-item version of the BREQ-3 was produced by identifying the 2 highest loading items for each motivation regulation based on findings from previous research. Items were scrutinised by the research team and presented to a mental health lived experience advisory panel for review. All participants completed the short 10-item version of the measure. Confirmatory factor analyses (CFA) were used to test the proposed theoretical structure underpinning the BREQ-3. Results indicate a good model fit ( $\chi^2 = 247.04$ ; CFI = 0.98; TLI = 0.96) and support a 5 factor structure where the 2 retained items for each motivation regulation loaded onto their named factor (item-loading range 0.80-0.94). Results provide evidence for the construct validity of the short-form version of the BREQ-3 within the current population group. Future applications of the short form BREQ-3 are discussed and suggestions for further validity testing identified.

*Keywords: Mental health, intervention, motivation, BREQ-3, measurement*

## The feasibility and acceptability of the objective assessment of physical activity in mental health service users

**Richard Pulsford (University of Exeter), Lorna Tweed (University of Northampton), Nathan Smith (University of Northampton), Florence Kinnafick (Loughborough University)**

Information on the feasibility and acceptability of the objective measurement of physical activity (PA) in individuals with mental illness is limited. To inform the evaluation of the Get Set to Go (GStG) intervention, the current objectives were to: a) examine recruitment, feasibility and acceptability of objectively assessing PA within the intervention, and b) examine the influence of accelerometer wear-time criteria on compliance and PA estimates. Attendees to GStG focus groups in four locations in England were invited to wear GENEActiv accelerometers on their non-dominant wrist for 24 hrs on seven consecutive days. Accelerometer data was analysed for compliance to wear-time instructions and habitual PA in R using GGIR software (<https://cran.r-project.org>). On day seven participants completed an acceptability survey providing quantitative and qualitative feedback of wearing a GENEActiv. Fifty-seven % of attendees (22 of 38) volunteered to participate. This sample was similar in age ( $53.3 \pm 12.0$  yrs vs  $49.8 \pm 12.49$  yrs), distribution of gender (50% vs 57% male), and mental health diagnoses to the group overall. All participants recorded PA data for  $\geq 12$  hrs/day on  $\geq 3$  days although compliance reduced if wear-time inclusion criteria (hrs/day or number of valid days) were increased. Estimates of daily MVPA were comparable to samples from the wider population and influenced by wear-time criteria. Approximately 75% responded positively to questions regarding acceptability of the measurement protocol. Over 65% agreed that the PA assessment itself did not alter their behaviour or choice of activity. Qualitative comments were consistent with these positive responses. Findings support the feasibility and acceptability of assessing PA objectively in a population with poor/severe mental health as part of an



intervention like GStG. Compliance to measurement instructions (and subsequent sample size), and estimates of PA are dependent on decisions about accelerometer wear-time criteria.

*Keywords: physical activity, accelerometer, mental health, feasibility, acceptability, compliance*

### **A physical activity intervention in a mental health setting: Social-contextual determinants of adoption and adherence**

**Florence Kinnafick (Loughborough University), Lorna Tweed (University of Northampton), Timothy Osborne (Warwick Hospital), Anthony Papathomas (Loughborough University)**

Exercise can improve clinical outcomes in individuals with poor/severe mental health. However, this population group typically engage in low levels of physical activity (PA) and demonstrate poor adherence to PA interventions. In this study, underpinned by self-determination theory (SDT: Deci & Ryan, 1985), we aimed to understand the key social-contextual determinants of adoption and adherence of a three year national PA intervention (Get Set to Go: GStG) for mental health service users. Thirty-five (19 male, 16 females, M age=49.03 SD=11.57 years) participants, with a range of mental health diagnoses, were interviewed as part of four separate focus groups in four regions across England; North West, North East, London and West Midlands. All focus group participants had been registered on the GStG programme for a minimum of 10 months. Perceptions of programme satisfaction, and barriers and facilitators to adoption and adherence to the programme were explored. Data was subjected to a deductive thematic analysis approach as described by Braun and Clarke (2006). A need supportive environment was perceived via various sources including; the sports coordinator, peer-volunteers, and other participants registered on the programme. Each source of support was considered central to enabling adoption and adherence to the exercise sessions by facilitating perceptions of enjoyment, competence, and minimising feelings of control. The shared lived experience of mental health between members was crucial in creating a sense of community, and initiated feelings of relatedness. Lapses in adherence to GStG occurred in conjunction with changes to individual physical and mental health. However, perceived need support from within the programme enabled participants to feel able to return to the programme during their recovery. Practical considerations are offered in terms of facilitating a need supportive environment within the context of a real-world physical activity intervention.

*Keywords: mental health, intervention, motivation, qualitative, adherence*

### **Reciprocity and relatedness: Volunteer experiences of providing unpaid peer support for mental health recovery within a physical activity intervention**

**Lorna Tweed (University of Northampton), Florence Kinnafick (Loughborough University), Nathan Smith (University of Northampton)**

Research suggests that motivation to volunteer as peer support is dependent on three basic psychological needs; autonomy, competence and relatedness (Haiva et al., 2012). In particular, relatedness need satisfaction occurs when individuals form reciprocal social relationships and feelings of connectedness towards others, further motivating prosocial behaviour such as volunteering (Pavey et al., 2011). This study aimed to explore the psychological processes involved in the motivation to volunteer as peer support within Get Set to Go (GStG), a physical activity (PA) intervention for mental health service users. Using a purposeful criterion-based recruitment process, 30 peer support volunteers (14 male, 16 female, M age=48 years, SD=9.5 years) participated in a telephone interview or one of four focus groups conducted in four priority regions in England. Experiences of, and motivation to providing peer support within GStG were explored. Theoretical thematic analysis was conducted to identify, analyse and generate themes from data collected. Criteria (validity, credibility, reflexivity and conformability) were used to ensure trustworthiness. Reciprocity (dual opportunity to help others whilst receiving personal gains) emerged as a recurring theme. Positive experiences of

reciprocity through volunteering resulted in basic psychological need satisfaction (BPNS) and further improved mental health. Specifically, relatedness need satisfaction promoted feelings of connectedness to other mental health service users through peer support mutuality, and consequently influenced motives towards sustained volunteering. Participants reported improvements to self-esteem, aspirations, competence and in their ability to deliver PA sessions, and a sense of autonomy described as an increased sense of control over their own mental health recovery. Those designing PA interventions for mental health should aim to facilitate BPNS of volunteers through positive experiences of reciprocity.

*Keywords: self-determination theory, peer support, volunteering, mental health, reciprocity, relatedness*

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## Thriving on pressure: Examining the stress experiences of performers in elite sport and military domains

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**Chair: Rachel Arnold (University of Bath)**

This symposium aims to unite and showcase innovative research on stress and thriving in elite sport and military domains. Specifically, the studies presented utilize various methods (e.g., autobiographies, interviews, questionnaires, physiological biomarkers) to explore elite performers' stress experiences. Performers represented include athletes, captains, psychologists, support staff, and military veterans. Various components of the stress process are covered, including stressors, appraisals, responses, and coping. Additionally, novel insights are offered into the impact of stress on performers' health, well-being, performance, and ability to thrive. The symposium has five presentations. The first outlines a study which used autobiographies to explore the stressors encountered by sporting captains. Turning to the demands originating from the organizational environment, the second presentation discusses an interview study with 40 support staff on the organizational stressors they encounter and the impact these can have. The third presentation highlights research examining the professional demands of psychologists, the appraisals of and responses to such demands, and the undesirable consequences they can have. Reflecting the intersection between sport and military domains, the fourth presentation summarizes an examination of the stress process experienced by military veterans pre, during, and post an international sports competition and the impact of this on their health, well-being, and performance. The final presentation outlines an investigation on the most adaptive response to the stressors discussed – thriving. Specifically, predictive relationships of need satisfaction and challenge appraisal to in-game functioning are examined and an avenue through which practitioners can look to facilitate thriving is offered. The symposium concludes by the organizer summarizing and then facilitating an interactive discussion.

*Keywords: elite, military, performance, sport, stress, thriving*

## “The Team Behind The Team”: Exploring the organizational stressor experiences of support staff in elite sport

**Rachel Arnold, Samuel Collington, Hannah Manley, Samuel Rees, James Soanes, Matthew Williams (University of Bath)**

Research examining the organizational stressors encountered in sport has primarily focused on athletes' experiences. As recognition of the impact that sports science and medicine related factors can have on elite performance has grown, the size and sophistication of teams of support staff in elite sport has also witnessed rapid expansion. Sport psychology practitioners, therefore, often find themselves working with other performers in addition to athletes. The purpose of this study was to explore the organizational stressors encountered by this “team behind the team” in elite sport and the impact these can have. 40 support personnel currently working in elite sport (e.g., performance directors, strength and conditioning coaches, sports scientists, physiotherapists) participated in an interview. Thematic analyses unveiled 35 lower-order and eight higher-order themes, which were separated into the stressors encountered (e.g., relationship and

interpersonal, physical resource, contractual and performance development, organizational structure and logistical) and their impact (e.g., personal, job performance, broader life, positive). Building on extant literature and theory, this study not only moves the focus beyond athletes' stress experiences to that of the broader "team behind the team" in elite sport, but it also heralds a significant shift from primarily investigating the first stage of the stress process to additionally exploring the responses, feeling states, and outcomes that stressors can elicit. The presentation will also discuss the practical implications of the findings, which include a clearer understanding of the challenges that support staff face in elite sport and their subsequent educational needs. Additionally, the findings can raise employers' awareness of their duty of care to employees and the factors that need to be managed given the proximal position the "team behind the team" hold in facilitating athletic and organizational success.

*Keywords: athletic, Olympic, professional, response, strain, stress*

### **A mixed-methods examination of the stress process experienced by military veterans competing at the Invictus Games**

**Gareth Roberts, Rachel Arnold, James L.J. Bilzon, James Turner (University of Bath), Martin Colclough (Help for Heroes Sports Recovery)**

This study explored patterns of change in a number of stress-related variables (i.e. organizational stressors, appraisals, emotions, coping) experienced by military veterans in the build up to, during, and post an international competition. Furthermore, the study aimed to examine the associations between these patterns of change and veterans' health, well-being, and performance. To achieve this, a longitudinal design was adopted, whereby 40 Invictus Games (IG) athletes completed questionnaires measuring study variables at seven time points (6-, 3-, and 1-week before, during, and 1-, 3-, and 6-weeks post-games). In addition to psychological variables, the participants also provided saliva samples at four time points (1-week before, 24 hours after landing, 24 hours prior to competition, and 1-week post-games) to measure cortisol and salivary secretory immunoglobulin A. Informed by the quantitative data, interviews were conducted with a subset of IG participants (N = 15) to gain deeper insight into athletes' experiences. The participants had a mean age of 37.43 years (SD = 8.56) and had lived with their wound, injury, and/or illness for an average of 6.58 years (SD = 5.22). Multilevel growth curve analyses revealed significant differences in growth trajectories over the 12-week period in experiences of stress-related variables. The presentation will provide a novel insight for attendees into how veterans' experiences of stress fluctuated in the 12-week period and how this can be crucial for performance, health, and well-being. Additionally, the presentation will discuss the results from a secondary data analysis which was completed to determine how comparable individuals who attended the Invictus Games were to individuals who did not participate in this event. Finally, the presentation will offer recommendations for practice regarding optimal support of military veterans using competitive sport as part of their recovery.

*Keywords: growth models, Invictus Games, military, performance, stress, veterans*

### **On the front line: Reflections on a program of research examining the professional demands of practitioner psychologists in elite sport**

**Christopher Wagstaff, Rebecca F. Hings, Richard C. Thelwell (University of Portsmouth), Sarah Gilmore (University of Exeter)**

This presentation will reflect on a program of work examining the working lives of practitioner psychologists in elite sport. Drawing from both stress and emotion work theory, emerging findings will be used to illuminate the professional demands faced by a subgroup of practitioners. Specifically, this presentation will discuss how psychologists working in elite sport in the UK commonly face stressors aligned with a precarious and contingent employment status, nepotistic employment practices, the need to "sell" their professional services, and the re-setting of sport psychology practices in response to organizational change. The presentation will then reflect on practitioners' appraisals of and responses to such demands, with a focus on the insecurity experienced by this precariat and the necessity for emotion management to navigate the professional landscape. Indeed, such experiences appear to have potentially undesirable consequences for

practitioner development, well-being, performance, and retention. Hence, the presentation will conclude with a discussion of the key messages for the training, development and support of practitioner psychologists, suggestions for regulatory bodies and employers, and considerations for future research.

*Keywords: stress, emotional labor, professional development, precarious employment, job strain, organizational change*

### The prediction of thriving in elite athletes: An exploration of potential process variables and salivary biomarkers

**Daniel Brown (University of Portsmouth), Rachel Arnold, Martyn Standage, James Turner (University of Bath), David Fletcher (Loughborough University)**

Thriving (i.e., high-level functioning) represents the most adaptive response to sporting encounters, and previous research with sport performers has identified possible relationships between thriving and two process variables (viz., basic psychological needs satisfaction (BPNS), challenge appraisal; Brown, Arnold, Standage, & Fletcher, 2017). The purpose of this study was to examine these predictive relationships, and investigate whether salivary biomarkers of thriving can be established (cf. Epel, McEwen, & Ickovics, 1998). Fifty-one elite male hockey players (Mage = 24.94 years, SDage = 4.73; Mcompeting = 16.89 years, SDcompeting = 5.92) completed a diary survey over seven consecutive days prior to a match and a saliva collection protocol on the day of the match. Functioning was assessed using indices for performance and well-being following the match, and saliva was assayed for the hormones cortisol and dehydroepiandrosterone. No associations were identified between the salivary hormones and functioning. Latent growth curve modelling revealed pre-game levels of BPNS and challenge appraisal positively predicted in-game functioning. In addition to providing the first piece of evidence to support these predictive relationships in sport, these findings offer an exciting avenue through which practitioners can look to facilitate thriving in sport performers.

*Keywords: functioning, latent growth curve modelling, performance, salivary hormones, thrive, well-being*

### Using autobiographies to explore stressors encountered by elite sporting captains

**Matthew Smith (University of Chichester), Rachel Arnold (University of Bath), Richard C. Thelwell (University of Portsmouth)**

Captains of sports teams must balance their role to play and compete at an elite level, with leadership responsibilities both on and off the pitch. However, while numerous studies have been conducted to examine the challenges and stressors faced in elite sport for coaches and athletes (e.g., Arnold & Fletcher, 2012; Olusoga, Butt, Maynard, & Hays, 2010; Thelwell, Weston, & Greenlees, 2007), limited research has examined the demands captains face in an elite sporting environment. Therefore, this presentation aims to provide further insight into the demands and challenges captains face in such an elite context. To achieve this aim, the autobiographies of 10 international cricket captains were read and analyzed. Stressors were identified and categorized into seven general dimensions, which included multiple roles, team stressors, interactions with players, selection, interactions with other personnel, the media, and extreme situations. The findings that emerged extend our knowledge of stress in elite sport by illustrating the stressors faced by a specific population (captains in elite sport), who must balance the dual roles of playing role and their leadership responsibilities. Findings are considered, and practical applications are outlined, including how they might inform practitioners and coaches who work with captains. Additionally, the use of autobiographies as a data source is critiqued.

*Keywords: autobiographies, captaincy, dual role, elite, leadership, stressors*

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### Examining correlates of the physical activity and leisure motivation scale (PALMS)

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**Chair: Tony Morris (Victoria University Melbourne)**



Measuring motives for participation in sport and physical activity (PA) is an important component of research to understand why people become involved and sustain their participation in PA in the long term. This is crucial to the worldwide efforts to increase population participation in activities involving movement to promote physical health and psychological wellbeing. The Physical Activity and Leisure Motivation Scale (PALMS; Morris & Rogers, 2004) is an instrument developed to measure motives for participation in PA. PALMS has been used in several languages and administered in diverse cultures showing considerable robustness to variations in characteristics of samples from countries as varied as Australia, Thailand, China, Israel, Finland, Japan, Turkey, and Iran. In this symposium, researchers present the results of their studies examining correlates of motives for participation in PA from samples in Malaysia, the Netherlands, Brazil, and Greece. First, Abdullah Nurzulaikha and colleagues report results of their examination of whether PALMS motives for participating in PA distinguished between Health Science students in Malaysia, who were involved in three different co-curricular activities. Next, Niki Stolwijk and colleagues describe their study of the reliability of the Dutch language version of the PALMS among runners in the Netherlands. Then, Andréa Duarte Pesca and colleagues discuss the reasons for adherence to PA and Sport measured by PALMS in a number of cities in Brazil. Finally, Maria Psychountaki and colleagues consider the role of individual characteristics and social physique anxiety on motives for participation in PA measured by PALMS among exercise participants in Greece. Each of these studies adds breadth and detail to the expanding mosaic of motives for participation in PA leading to the use of PALMS to strengthen motives and match individuals to activities that will satisfy their principal motives. Tony Morris will lead audience discussion.

*Keywords: PALMS, participation motives, correlates, cultures, social physique anxiety*

### **Co-curricular activities: The motives for participating in physical activity among health science students in Malaysia**

**Abdullah Nurzulaikha, Garry Kuan, Yee Cheng Kueh, Mohd Ismail (School of Medical Sciences, Universiti Sains Malaysia), Tony Morris (Victoria University Melbourne)**

The World Health Organization has suggested that physically active young people are more ready to adopt other healthy behaviour and demonstrate higher academic performance at school (WHO, 2015). Motivation to participate in physical activity (PA) could be a way to keep young people active in their daily life. The purpose of the study was to compare motives for participating in PA between different types of co-curricular activities of health sciences students in Malaysia. Participants were 588 university students (female=79.1%, male=20.9%) aged 18-31 years with mean age of 19.77 (SD=1.39) from the Health Campus, Universiti Sains Malaysia, Kelantan. We invited the students to volunteer to complete measures, comprising a demographic form, type of co-curricular activities (arts, uniform, and sports), and the Physical Activity and Leisure Motivation Scale (PALMS; Morris & Rogers, 2004). PALMS consists of eight motive subscales, namely enjoyment, mastery, psychological condition, physical condition, appearance, affiliation, others' expectations, and competition/ego. We used one-way ANOVA to compare means of motives for participating in PA between three types of co-curricular activity (arts, uniform, and sports). Results showed that there were significant differences between motives of affiliation,  $F(2,584)=8.22$ ,  $p<.001$ , appearance,  $F(2,582)=4.83$ ,  $p=.008$ , and physical condition,  $F(2,575)=4.63$ ,  $p=.010$ , by type of co-curricular activity. Students who enrolled in sports co-curricular activity had higher motives for PA than students in other types of co-curricular activity. The information from the present study could provide further insight on motives for participating in physical activity among health sciences students, encouraging students to integrate PA involvement into their daily routine. Findings suggest a relationship between motives for participation in PA and PA behaviour in terms of student choice, which adds construct validity to PALMS.

*Keywords: physical activity, motives, student, co-curricular*

## Reliability of the Dutch version of the Physical Activity and Leisure Motivation Scale (PALMS) in runners

**Niki Stolwijk, Koen Buseman, Rick Van Eupen, Jeffrey Thijssen, Simon Voorwinden (School of Physical Therapy, HAN University of Applied Sciences, Netherlands), Bart Staal (Research Group Musculoskeletal Rehabilitation, HAN University of Applied Sciences, Netherlands), Wim Van Lankveld (Radboud University Medical Centre, 3) Radboud Institute for Health Sciences, Nijmegen)**

Many people recognize the value of physical activity, leading to increasing popularity of low-threshold sports like running. However, a significant proportion of new runners stop the activity within one year. To increase long-term sports participation, it is crucial to identify motives for participation in physical activity and promote effective motives. The aim of this pilot study was to translate the English version of the Physical Activity and Leisure Motivation Scale (PALMS) into Dutch and investigate its reliability for use with recreational runners. The PALMS was translated into Dutch according to internationally accepted guidelines. Measurement properties of the Dutch PALMS were tested in 106 runners (mean age=35.1, SD=13.2 years) of which 86 were recreational runners and 20 novice runners. Test-retest reliability was examined in 36 random runners, after an interval of seven days. Participants accepted translation of the scale. In a principal-component analysis, the expected 8 factors accounted for 70.68% of the variance. Items had significant factor loading ( $>.5$ ) on the desired factors, with the exception of items from the subscale "others' expectations". The factor loadings of item 7 (To earn a living) and item 21 (Because people tell me I need to) were poor ( $< 0.35$ ). Despite the small sample size, we conducted a confirmatory factor analysis, resulting in moderate fit (CMIN/DF=1.68, TLI=0.80, CFI=0.82, RMSA=0.08). The PALMS Dutch version showed good overall internal consistency (Cronbach's alpha = 0.90). Internal consistency for 7 subscales was good, ranging from  $\alpha=0.83$  to 0.92. Alpha of the "others' expectations" subscale was poor ( $\alpha=0.41$ ). Test-retest reliability was good, ranging from  $r=0.79$  to 0.97 for the separate subscales. In this pilot study, the Dutch PALMS appeared to be a reliable instrument to measure motives for participation in physical activity of Dutch runners. A larger sample is required to confirm the factor structure.

*Keywords: PALMS, Dutch, running, motivations*

## Reasons for adherence to physical activity and sport in Brazil

**Andréa Duarte Pesca, Juliana Frainer, Roberto Moraes Cruz (Universidade Federal de Santa Catarina, Florianópolis, Brasil), Sidónio Serpa, António Fernando Rosado (University of Lisbon, Portugal), Tony Morris (Victoria University Melbourne)**

Research investigating the reasons for adherence to sport and physical activity practice is traditionally elaborated by motivation theories. Motivation is understood as an active process, which intensifies a behavior or intentional effort aimed to an objective or goal and depends on the interaction of personal and environmental factors. One approach to motivation is Self-determination theory. The measurement of motivation in sport and exercise can support the elaboration of public policies to promote health, prevent sedentarism and diminish the number of overweight people. The goal of this research was to evaluate the motives for participation in sport and physical activity practice in the Brazilian context. We adapted the Physical Activity and Leisure Motivation Scale (PALMS; Morris & Rogers, 2004) and tested its reliability and validity, also examining socio-demographic predictors of motives for participation in and adherence to physical activities and sports related to life satisfaction. Participants were 640 individuals (50.8% male, 49.8% female), aged 16 to 73 ( $M=27.9$ ;  $SD=9.91$ ) from various Brazilian cities who did regular physical activities and sports in the previous six months. Besides PALMS, sociodemographic forms were administered, along with a life satisfaction survey. Analysis showed main components of factorial analysis of PALMS. A KMO=0.87, Bartlett sphericity test was significant [ $\chi^2(780)=11465.317$ ,  $p<0.001$ ] showing proper factorial analysis. Seven factors were extracted, explaining 55.9% of the total variance. To examine the 8-factor solution from the original scale, an analysis was performed to force the extraction of 8 factors, explaining 60.4% of total variance. Cronbach's Alpha, in most of the factors, proved to be satisfactory (between  $\alpha=0.77$  and 0.86). We concluded that the instrument showed



good indices of construct validity and internal consistency. Socio-demographic and life satisfaction correlates of PALMS motives will be reported.

*Keywords: motivation, adherence, physical activity, sport, psychometric parameters*

### Exercise motivation: the role of individual characteristics and social physique anxiety

**Maria Psychountaki, Nektarios Stavrou, Forteini Zervou (National & Kapodistrian University of Athens, Greece), Selina Khoo (Sports Centre, University of Malaya, Malaysia), Tony Morris (Victoria University Melbourne)**

Motivation is a crucial factor for exercise participation. Research shows that exercise participation has a positive effect on physical and psychological health. We examined the link between exercise participation, participants' gender, BMI, marital status, and social physique anxiety. We surveyed 412 (female=275 male=137) adult exercise volunteers, mean age=32.68, SD=11.28. Exercise participants completed a demographic form, the Physical Activity and Leisure Motivation Scale (PALMS), and the Social Physique Anxiety Scale. MANOVA results showed significant gender differences in PALMS factors ( $F(1,410)=17.079$ ,  $p<.001$ ,  $\eta^2p=.26$ ). Males' indicated higher competition/ego motivation, whereas females were higher on appearance, others' expectations, psychological condition, and enjoyment than men. Regarding BMI, results did not show significant PALMS differences among underweight, normal, and overweight individuals (single, married, divorced). MANOVA analysis of marital status indicated significant differences in exercise motives ( $F(2,409)=3.715$ ,  $p<.001$ ,  $\eta^2p=.071$ ). Post hoc analysis of PALMS factors revealed significant differences for competition/ego, others' expectations, and affiliation, indicating that divorced participants were more highly motivated to participate in physical activity. Significant positive correlations arose between social physique anxiety and exercise motives, specifically for appearance, others' expectations, mastery, and enjoyment motives. Findings suggest that motives for participation in physical activity differ based on adult participants' gender and marital status, but not for BMI. Individuals' subjective evaluation of physical appearance may be a key motivator for participating in exercise programs. Social physique anxiety may be an important indicator of physical activity in relation to appearance, mastery, enjoyment, and others' expectations. Results provide fruitful information to increase physical activity participation.

*Keywords: exercise motivation, social physique anxiety, BMI, individual characteristics*

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### The increasing motivation for physical activity (IMPAct) project: Theory development and intervention strategies

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**Chair: Taru Lintunen (University of Jyväskylä, Finland)**

There is good evidence supporting the health benefits of increasing physical activity (PA). Behavioural scientific and psychological theories may play an important role in promoting PA. The assumption of these theories is that psychological factors such as attitudes and beliefs are related to individuals' behavior, often through a number of processes (e.g., direct or indirect effects through other factors). In the current symposium we present influential motivational frameworks for explaining PA and theory-based interventions that systematically target the motivational factors from the theories to change PA. In the first study, a recent meta-analysis of research adopting the reasoned action approach on health behaviour including PA is extended by including additional studies and examining the critical effect of past behaviour on PA. Results will also provide formative evidence for the development of behaviour change interventions to promote PA. The second study introduces the development and validation of assessment tool to capture the effects of social influence perceived by young sport participants. The three intervention studies adopt multiple motivational theories (the theory of planned behaviour, the stages of change framework, self-determination theory, and achievement goal theory) as a basis for interventions that promote participation in PA in various populations. Presenters are members and collaborators of the Increasing Motivation for Physical Activity (IMPAct) project, which aims to promote PA behavior change using motivational theories.

*Keywords: motivation, interventions, determinants of exercise*

## **A motivational physical activity intervention in a residential psychiatric institution**

**Marit Sørensen, Marte Bentzen (The Norwegian School of Sport Sciences, Oslo, Norway)**

Recent reviews demonstrate a lack of theory based physical activity interventions that systematically target and evaluate motivation as an outcome among populations with psychiatric illness. This in spite of reports that such populations are often physically inactive, not very motivated for physical activity, and have increased co-morbidity and mortality that physical activity may counteract. This presentation will describe the development and implementation of an intervention consisting of coaching physical activity instructors who then carry out a physical activity intervention program for residents in a psychiatric institution. The coaching was based on the stages of change framework and self-determination theory. The study was a time series design with multiple measurements during baseline and intervention. Two physical activity sessions were held each week of the intervention period that lasted for 8 weeks. Results on motivational variables, physical activity and general function are presented for those patients that completed the whole intervention.

*Keywords: psychiatric patients, motivation intervention, physical activity*

## **Meta-analysis and path analysis of the reasoned action approach to understand pa and health behaviour: The effect of past behaviour**

**Juho Polet (University of Jyväskylä, Finland), Martin S. Hagger (University of Jyväskylä, Finland and Curtin University, Australia), Taru Lintunen (University of Jyväskylä, Finland)**

There is good evidence supporting the health benefits of increasing physical activity (PA). An influential framework for explaining PA is the Reasoned Action Approach (RAA). According to the RAA attitudes, norms, and capacity and autonomy beliefs explain prospective behaviour mediated by individual's behavioural intention. We extend a recent meta-analysis of McEachan & al. (2016) by including additional studies and conducting a path analysis to examine the pattern of effects among RAA constructs, particular the critical effect of past behaviour in PA and other health behaviours. Results will also provide formative evidence for the development of behaviour change interventions to promote PA. A path analytic model based on the meta-analysis fit the data well. We found a medium-sized effect of intention on prospective behaviour ( $\beta = 0.387$ ). Intention was predicted by capacity ( $\beta = 0.411$ ) and affective attitude ( $\beta = 0.263$ ). Adding past behaviour to model to predict all the proposed RAA constructs improved model fit. Past behaviour explained prospective behaviour ( $\beta = 0.375$ ) and intention ( $\beta = 0.324$ ), and its inclusion in the model reduced the effect of intention on prospective behaviour ( $\beta = 0.179$ ). Capacity ( $\beta = 0.367$ ) and affective attitude ( $\beta = 0.213$ ) remained predictors of intention when past behaviour was included. Past behaviour predicted affective attitude, instrumental attitude, descriptive norm and capacity ( $\beta$ s  $> 0.300$ ), whereas past behaviour was a weak predictor of injunctive norm and autonomy ( $\beta$ s  $< 0.250$ ). Results indicate that past behaviour is a predictor of prospective behaviour and including it in RAA theory diminishes the strength of the effect of intention on prospective behaviour. This finding reduces the effectiveness of RAA in accounting for variance in intention. Results suggest that past behaviour should be taken into account when predicting health and PA behaviour using the RAA.

*Keywords: reasoned action approach, meta-analysis, path analysis, physical activity, intention, past behaviour*

## **Motivation for sustained behaviour change: the case within EuroFIT**

**Glyn C. Roberts, Marit Sørensen, Eivind Anderson, Øystein Rønnesdal (Norwegian School of Sport Sciences, Oslo, Norway, and The EuroFIT Consortium)**

EuroFIT involves 4 countries in Europe (Norway, England, Portugal and The Netherlands) and the consortium members developed an intervention including motivational strategies for sustained behaviour change for at-risk football fans. Both Self-Determination Theory (SDT) and Achievement Goal Theory (AGT) are integral components of the core intervention and measurement protocol. Specifically, the program is designed to help men develop autonomous and SMART goals, build self-referenced competencies through challenging physical activity and dietary changes, a mastery-oriented coaching climate, and strengthen relatedness with fellow fans. The materials and activities help participants to embed the new behaviours into their everyday life to sustain the changes. Once the intervention was completed, we initiated a process evaluation with participants (focus group interviews), coaches and stakeholders. About 1200 middle-aged at-risk men (BMI<27) participated in the 12-week behavior change program delivered at their local professional football club. Club coaches delivered the EuroFIT intervention. The men are encouraged to engage in behaviours that personally fit into their lifestyle. For the present study, we used part of the process evaluation interviews in Norway. We were interested in whether the participants felt empowered by the motivation strategies we had built into the EuroFIT programme. Using a structured thematic analysis to interpret the data, the results presented here represent text samples derived from all three Norwegian clubs. The process evaluation gave evidence of the success of EuroFIT. However, the data was drawn right after the programme finished. The real test of EuroFIT strategies to enhance sustained behaviour change will be in the 12 month follow up of the participants (March 2017 in Norway).

*Keywords: sustained behaviour change, motivation strategies, achievement goal theory, self-determination theory, EuroFIT*

### **School-based intervention programs in promoting leisure-time physical activity: Applying the theory of planned behaviour**

***Sviatlana Kamarova, Nikos Chatzisarantis (Curtin University, Australia), Masato Kawabata, John Wang (National Institute of Education, Singapore), Martin S. Hagger (University of Jyväskylä and Curtin University, Australia)***

Developed applying ideas of the theory of planned behaviour, the current research examined whether school-based intervention programs to change attitudes, perceptions of control, or both attitudes and perceptions of control in combination, were successful in promoting participation in leisure-time physical activities. The sample was comprised from 1372 pupils recruited from 10 secondary schools. The participants reportedly exercised for less than 3 days per week in the previous month. Using a cluster-randomized design, participants were presented with one of the intervention conditions each lasting 10 minutes delivered as part of physical education classes twice per week over a period of 8 weeks. The interventions included: (i) an attitude-based intervention that targeted salient behavioural beliefs; (ii) an attitude-based intervention that targeted non-salient behavioural beliefs; (iii) a control-based intervention program that targeted salient control beliefs; and (iv) a combined intervention program that targeted both salient control beliefs and salient behavioural beliefs. Results indicated that while all of the intervention programs resulted in increased participation in leisure time physical activity, the combined intervention program targeting change in attitudes and perceptions of control was least effective. Overall, the findings suggest that schools and teachers can promote leisure time physical activity through brief, cost-effective interventions.

*Keywords: additive effects, behaviour change, physical activity, theory of planned behaviour*

## Significant others' positive reinforcement, punishment, and dysfunction behaviours in youth sport

**Derwin King Chung Chan (University of Hong Kong and Curtin University, Australia), Richard Keegan (University of Canberra, Australia), Chris Lonsdale (Australian Catholic University, Australia)**

Significant others, such as coaches, parents, teammates/friends, and PE teachers, are important to children and adolescence's participation in sport. Research have been interested in exploring their social interaction and relationship quality with young sport players in sport, and what leads to an adaptive social environment that encourages adaptive sporting experience. We present two studies that respectively introduce the development and validation of assessment tools (i.e., Perceived Social Influence in Sport Scale; PSISS) to capture the young sport participants' perception of social influence from significant others. Study 1 was the initial development and validation of the first version of PSISS that measured positive reinforcement (i.e., praise or reward for achievement) and punishment (i.e., punishment for mistakes) of significant others among 433 young swimmers (Aged 9 to 12). Using qualitative data, expert panel review, and factor analysis among 355 young sport players (Aged 8 to 18), Study 2 revised the PSISS-1 and developed PSISS-2 that refined the items and introduced two more dimensions of perceived social influence that reflected the unconditional responses given by significant others, including affiliation (i.e., respect, affection, supportiveness, understanding) and dysfunction (e.g., conflicts, causing negative emotions, lack of respect, negative behaviours). The score reliability and factor structure supported the hypothesized framework of perceived social influence, and the dimensions of PSISS-1 and PSISS-2 explained considerable variance of enjoyment, effort, competence, and trait anxiety among young sport players. In summary, Perceived Social in Sport Scale may help identify the specific types of social influence and the social agents that are important and adaptive to youth's sporting experience.

*Keywords: coaching, parenting, friendship, role of significant others, youth sport, social influences*

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## Incidental physical activity in aging: A perspective from neuroscience

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**Chair: Javier Sanchez-Lopez (Department of Neurosciences, Biomedicine and Movement Sciences, University of Verona)**

High levels of physical activity seem to positively affect health and cognition across the life span. Nevertheless, the effects of Incidental Physical Activity (IPA) on health and cognition during aging have been little studied. The main topics in the study of the effects of IPA in elderly, comparing groups of healthy older participants with high (H-IPA) vs. low (L-IPA) levels of IPA are: a) the systemic effects on health and behavior, and b) the effects on brain functions during resting state and cognition, as executive functions and language. Among the systemic effects, we observed differences in anthropometric characteristics, amount of oxygen in the blood and performance variables of the WAIS scores, suggesting advantages in H-IPA groups. Regarding to the effects on brain function at rest, it was observed slower baseline EEG activity involving frontal and temporal regions in the L-IPA, which suggest better brain adaptations in H-IPA. Brain functional advantages in H-IPA were also corroborated during cognitive tasks performance and event-related potentials recordings. In the study of executive functions, better inhibition and frontal distribution of the brain electrical activity was observed in H-IPA during the Stroop task, and differences in the topography of the brain electrical activity of the H-IPA and the L-IPA during a working memory task. These results suggest that high levels of IPA produce positive effects on inhibition and a functional reorganization of brain activity during working memory. A less studied topic in relation to physical activity is the language. However, our recent study about reading comprehension has reported better and faster identification of syntactic errors in H-IPA, which is a more similar pattern to that observed in young participants. The relevance of these findings lies in unraveling the importance of IPA as an active lifestyle in aging.

\*Supported by IN225414 and IN200817 from PAPIIT-DGAPA.

*Keywords: incidental physical activity, aging, cognition, health, brain electrophysiology*

### Effects of incidental physical activity in aging on language processing

**Graciela C. Alatorre-Cruz (Facultad de Estudios Superiores Iztacala, Universidad Nacional Autónoma de México)**

During aging, older adults have difficulties in sentences comprehension. Structured physical activity has been related to improvements in cognitive processing; however, no effect on language has been yet reported. The aim of this study was to evaluate how incidental physical activity (IPA) affects language processing on healthy older adults with high (H-IPA) vs. low (L-IPA) levels of IPA. Event-related potentials were recorded during two tasks: semantic priming (implicit memory) and language comprehension (low and high working memory load, and gender agreement between noun and adjective). 20 H-IPA and 20 L-IPA older adults were compared using semantic priming task, while for the language comprehension task 34 H-IPA and 34 L-IPA were assessed. There were no differences between groups in semantic priming task. But, differences were found in the language comprehension task, H-IPA group had a better performance than L-IPA group in all conditions. Electrophysiological results suggest that both groups use different strategies: H-IPA group directly identifies disagreement conditions, while L-IPA needed a syntactic re-analysis to solve the task. These findings suggest that IPA affects language comprehension in older adults, regardless of working memory required for its processing. The strategy used by H-IPA group is more similar to that of youngsters than L-IPA group; hence, IPA could be a protective agent of language comprehension in aging. \*Supported by IN225414 and IN200817 from PAPIIT-DGAPA.

*Keywords: incidental physical activity, language comprehension, semantic processing, aging, event-related potentials*

### Effects of incidental physical activity on cognitive performance and physiological indices of healthy elderly

**Mauricio González-López (Instituto de Neurobiología, Universidad Nacional Autónoma de México)**

It has been reported that physical activity has a beneficial effect on health and cognition across the lifespan and may even prevent cognitive decline in older adults. However, most studies have looked into the effects of structured physical activity, whereas incidental physical activity (IPA) has not been thoroughly studied. Therefore, the aim of the present study was to assess the effects of IPA on cognitive functions and systemic physiological indices in healthy elderly. Volunteers underwent a series of psychometric and neuropsychological tests, as well as blood analyses and only those within the normal range of values were included, giving a total sample of 98 participants. Two groups were established, namely, those with high levels of IPA (n=49) and those with low levels of IPA (n=49). There were no important differences neither in terms of socioeconomic status, life satisfaction, cognitive reserve and general cognitive status; nor lipid and thyroid profiles between the groups. However, we observed an effect of the group on the mean corpuscular hemoglobin indices (higher in participants with high level of IPA) and body mass index (higher in the group with low level of IPA). The neuropsychological assessments revealed significant differences in the performance variables of the WAIS-III-R scores, where the group with high levels of IPA showed higher scores than participants with low levels of IPA. These results suggest that IPA may provide benefits across the lifespan and the mechanisms, both physiological and cognitive, may be similar to those proposed among the structured physical activity literature.

\*Supported by IN225414 and IN200817 from PAPIIT-DGAPA.

*Keywords: incidental physical activity, elderly, cognition, physiology*

## Effects of incidental physical activity on inhibition and working memory in aging

**Juan Silva-Pereyra (Facultad de Estudios Superiores Iztacala, Universidad Nacional Autónoma de México)**

During normal aging, incidental physical activity (IPA) becomes almost the only form of movement in daily life that promises caloric consumption. However, the effects of IPA on general and mental health in aging have not been deeply studied. In the present study, we investigated the behavioral and brain effects of IPA on working memory and inhibition in older healthy participants. Two groups of older healthy volunteers with high (H-IPA) and low levels of IPA (L-IPA) performed two different task: a Stroop task in order to assess inhibition, and a working memory task (WM), while event-related potential (ERPs) were recorded. Groups were compared in terms of their reaction times, accuracy and ERPs during both tasks. During the Stroop task, H-IPA showed slightly better inhibition than L-IPA group when interference occurred. Brain electrical response associated with inhibition was characterized by a greater frontal distribution of the effect on H-IPA and posterior distribution in L-IPA. No significant differences between groups were observed during the WM task, but differences in the ERP topographical distribution were found at the stage of memory processing where the probe stimulus is identified to be stored in the memory and then make a decision. In conclusion, our results suggest that IPA likely produces brain adaptations that protect or enhance inhibition and working memory processes in aging. These beneficial effects on executive functions in older adults are similar to those found during the practice of structured physical activity. \*Supported by IN225414 and IN200817 from PAPIIT-DGAPA.

*Keywords: incidental physical activity, inhibition, working memory, aging, event-related potentials*

## Electroencephalographic differences between physically active and passive elderly subjects

**Thalía Fernández Harmony (Instituto de Neurobiología, Universidad Nacional Autónoma de México)**

Under the assumption that electroencephalographic abnormalities in baseline electroencephalogram (EEG) could be responsible for behavioral or cognitive alterations, and that physical activity improves cognitive performance in elderly subjects, we hypothesized that elderly subjects with more incidental physical activity (IPA) will show lower EEG power in slow frequency bands and higher EEG power in fast frequency bands. Based on Yale Physical Activity Survey (YPAS) applied to 98 elderly subjects, a Cluster Analysis was performed to obtain two groups: high (H-IPA) and low (L-IPA) levels of IPA. EEG was recorded in the 10-20 system during rest with eyes closed. The EEG spectra was calculated in each lead, and absolute power with geometric power correction was obtained for each frequency band: delta (1.5-3.8 Hz), theta (3.9-7.5 Hz), alpha (7.6-12.5 Hz) and beta (12.6-19.9 Hz); Z values were obtained comparing raw values with normative database values. A multivariate permutation analysis was conducted to look for differences between the Physically Active and Physically Passive groups in EEG absolute power. H-IPA group showed significantly ( $p < 0.05$ ) higher EEG alpha power and lower delta power in frontotemporal leads, mainly in the left hemisphere; increased theta powers in left temporal and right frontal regions were also observed in the L-IPA group. As we hypothesized, subjects with more incidental physical activity presented faster EEG activity. More alpha activity in anterior leads could be a sign of functional compensation to perform cognitive processes. Incidental physical activity seems to promote changes in EEG compatible with improvement of cognitive performance, which probably reduces the risk of future cognitive decline. To our knowledge, this is the first report that relates incidental physical activity and quantitative EEG in this population.

\*Supported by IN225414 and IN200817 from PAPIIT-DGAPA.

*Keywords: incidental physical activity, qEEG, aging, cognition*



## Thursday July 13th

### Symposia Session 5. (8-9.30)

#### Documenting athletes' activity by articulating phenomenological data and third-person descriptions: A new avenue of research in sport psychology?

**Chair: Denis Hauw (UNI Lausanne, CH)**

Since Varela's publications (e.g., Varela, 1996; Varela & Shear, 1999), a real interest in conceiving a circulation between first and third-person levels for data collection and analysis emerged in the cognitive sciences. In sport psychology, some attempts were observed by joining analyses of experience and biomechanical data (e.g., Hauw et al., 2016; Sève, & et al., 2011). This kind of approach offers new perspectives for understanding the relationship between what emerged at the conscious level of athletes' activity in relation to their body and environment. Conversely, it also makes possible to understand how the mental processes linked to the athletes' experience can impact biological organization of human performance. However, the epistemological and methodological implications of the combination of these different levels of analysis remain unclear and the consequences for applied sport psychology are not well known. Therefore, the aim of this symposium is to discuss the inherent issues of such approach and then, to identify impacts for research and practice in sport psychology. To do that, four studies in different sports using different measuring tools articulated in their research designs third-person descriptions to athletes' accounts at the first-person level. The first presentation shows how trail-runners' experience over an ultra trail-running race is phenomenologically shaped and how it can be linked with running speeds. The second presentation highlights how the use of carrying systems in trail running is documented by the interplay of phenomenological experience and the vertical oscillations of both runners and carrying systems. The third presentation explores how the progressive way to surpassing the personal limits can be analyzed at the levels of crossfit athletes' experience and at their cardiac activity. Finally the fourth presentation introduces a protocol that combines EEG data with the phenomenological data in gymnastics.

*Keywords: first person approach, third person approach, dynamics, enaction, activity*

#### A neurophenomenological approach to sport performance sport: Associating phenomenological analysis of representative sports tasks in ecological settings with patterns of neural activity using EEG devices

**Joana Osorio, Denis Hauw, Vincent Hagin (UNI Lausanne, CH), Ricardo Chavarriaga (Defitech Chair in Brain-Computer Interface, Center for neuroprosthetics, EPFL Lausanne, CH), Enrico Staderini (HEIGVD, Yverdon, CH), Jose Milan (Defitech Chair in Brain-Computer Interface, Center for neuroprosthetics, EPFL Lausanne, CH)**

Recent situated and dynamic approaches to sport performance show that athletes' activity at the phenomenological level is organized as a function of their interaction with the environment, and that experts and novice athletes differ in their modes of involvement with a situation (e. g., Hauw et al., 2016; Hauw & Durand, 2007, 2008). Congruently, different patterns of neural activity are observed when sports tasks are analyzed in ecological settings as opposed to simple lab tasks (Park et al., 2005). A combination between neurological and phenomenological analyses provides an opportunity to bridge the gap between subjective experience and neural dynamics, providing a richer picture of how the human being interacts with the world (Petitmengin, Navarro, & Le Van Quyen, 2007). The aim of this study is to combine first (phenomenological)

and third (neurological) person approaches in the analysis of sport performances. Four participants with different levels of expertise volunteered to take part in this study. The main task consisted in performing a standing split on the floor on one leg. Data was collected through (a) video tapes of the athletes' behaviour while performing the sporting task, (b) video-recorded and transcribed self-confrontation interviews, and (c) 64-electrode EEG during the task. Qualitative analyses were performed using the course-of-action method to identify elementary units of meaning and their components (involvement, focus and general feelings). Results showed that each participant typically organized their activity around three or more sequences, with differences across expertise levels. Preliminary EEG results show the possibility of extracting neural activity correlated to the preparation of movements (Bereitschaftspotential) and we are currently assessing differences in these correlates depending on the participant's level of expertise. This study is a promising entry point to provide advances in learning and optimisation of sports performance.

*Keywords: neurophenomenology, first and third person approaches, enaction, EEG, "being and acting", Consciousness*

### Analyzing ultra-trail runners' activity by associating phenomenological data and speed indicators

**Nadège Rochat, Denis Hauw, Vincent Gesbert, Tiffany Astolfi, Roberta Antonini Philippe (UNI Lausanne, CH.)**

Ultra-trail running is an outdoor endurance sport covering long distances requiring resources to adapt to environmental constraints, extreme fatigue or other physical issues. Previous studies provided physiological observations about neuromuscular damages or sleep deprivation effects (e.g., Hurdie et al., 2014) and other ones explored runners' experience using phenomenological accounts (e.g., Simpson et al. 2014). However, it is unclear how runners' experience that unfolds during a race can be documented by their speed and vice versa. In an enactive and phenomenological framework, the aims of this study were to analyze ultra-trail runners' activity by analyzing (1) the temporal emergence of their experience and (2) their elevation speeds. Phenomenological data were collected from self-confrontation interviews with ten runners of the "Tor des Géants" (330km), who volunteered to run with a Physilog® sensor. The data were coded using the course of action methodology, by identifying the elementary units of meaning (EUM) and their components and then grouped together by sequential links forming macrosequences. Macrosequences were ranked in phenomenological gestalts, which are forms of experience that synthesize heterogeneous sensorimotor information. Results showed three typical phenomenological gestalts (a) "Controlling global ease", (b) "Enduring general fatigue and experimenting difficult situations" and (c) "Feeling the possibility to free pace". Their temporal succession enabled to characterize typical runners (i.e., "careful runners", "opportunistic runners", "unstable runners" and "struggling runners"), whose psychological activity was evidenced by changes of their running speeds. Our analysis highlighted methodological considerations for combining first and third-person descriptions. As practical recommendation, runners should try to maintain their global ease to increase their chances to finish an ultra-trail race.

*Keywords: experience, enaction, speed, ultra-trail running, phenomenology, third-person descriptions*

### Behavioural dynamics in trail running: interaction between individual and equipment

**Ludovic Seifert (Uni Rouen, FRA), Nadège Rochat, Denis Hauw (Uni Lausanne, CH)**

Research in the field of motor control following the Ecological Dynamics framework has emphasised continuous organism-environment interactions through the circular coupling between perception and action, as the relevant scale of analysis for understanding human behaviours in performance environments. Ecological Dynamics theory focuses on how coordination patterns emerge, adapt, persist, and change in humans when they interact with various constraints in order to satisfy task-goals. In this talk, it is exemplified by studying the

adaptive coordination between athletes and their equipment (e.g., backpack) during trail running in order to analyze how they perceived the tightness of the backpack on their backs, and thus adapted their hip vertical acceleration in order to run efficiently (i.e., best compromise between running speed and comfort relating to the backpack oscillation). For that, the vertical accelerations (in the Earth reference) of the hip and the backpack were collected and computed by using two inertial measurement units for nine experienced trail runners. From there, the vector coding technique was used from the hip acceleration - backpack acceleration plots and the local correlation was computed to assess the cycle-to-cycle coupling between the vertical acceleration of the hip and the backpack. Additionally, we have interviewed the athletes right after running in order to explore how they perceived the task constraint (i.e., tightness of the backpack on the back). The interplay of such phenomenological and behavioral data helped to interpret the perception-action coupling relating to the hip-backpack coupling time-series during running. Our results showed that the level of backpack tightness impacted on the coupling between the hip and backpack vertical acceleration and helped to interpret the relation between comfort and performance. Manufacturers should be considered source of discomfort in cognitive design.

*Keywords: ecological dynamics, adaptive coordination, phenomenological and behavioral data, running*

### Pushing beyond the limits in sport: linking phenomenological and cardiac data

**Tiffany Astolfi, Denis Hauw (UNI Lausanne)**

Performance achievement often required to push beyond personal limits and suggested the need to use coping strategies. Coping reduces the impact of the constraints when athletes experienced attaining their limits. However, these limits are not well-known by athletes and surpassing them requires an exploratory activity. To analyze this phenomenon, we studied 10 crossfit athletes' activity when performing their WOD (i.e., Work of the day). Cardiac activity during the WOD and phenomenological data elicited through selfconfrontation interviews were collected. Phenomenological data were coded with the course of action methodology (e.g., Hauw & Durand, 2007), ranked in relation to the adaptation to the effort during the WOD and linked to their cardiac data (i.e., mean and SD). Results showed three profiles of crossfit athletes' activity: (a) the « economical athletes » who paced at a low or medium intensity and only increased their pace at the end of the WOD, (b) the « competitive athletes » who kept their pace at a high but controlled level to finish their WOD incapable to increase their pace at any moment, and (c) the « resistant athletes » who despite suddenly feeling high level of pain, exhaustion, nausea or loss of awareness, tried to maintain their activity without modifying it, expecting they would feel better shortly. Differences between athletes' cardiac activity were only observed when comparing « resistant athletes » to the two others. These results were comparable to those observed in ultra trail running (e.g., Hauw et al., 2016) and showed that cardiac activity is a good indicator to distinguish controlled pace and uncontrolled experience in relation to personal limits in energetic sport. Such results provide evidences that could help coaches and sport psychologists to understand the real situation in which the athletes perform that help them to monitor the access to their limits.

*Keywords: coping, limits, cardiac and phenomenological activity, crossfit*

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## Values Symposium 1: Frontiers and futures for the value theory paradigm in sport psychology

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**Chair: Jean Whitehead (University of Brighton, Eastbourne, UK)**

This symposium explores what we know (frontiers) and need to know (futures) about the role of values in sport and PE. Values are enduring beliefs about what is desirable. They transcend situations and guide decisions and actions. The Schwartz (1992) value theory has been relatively neglected in sport, but provides an

explanatory mechanism for the unethical sport behaviour which is a growing cause for concern. Hierarchical value systems identify the relative importance of specific values which govern behaviour, while a circumplex value structure shows which values conflict. Together they indicate conflict situations, and the values to promote for behaviour change. Whitehead's paper overviews the study of value systems and value structure in the UK. It uses an interactionist model to summarise previous findings and identify gaps for future research. Aplin's pedagogical paper explains the application of the Schwartz circumplex model as a tool to provide guidelines to enhance moral standards in teacher education. It demonstrates the model's merit in identifying and resolving value conflicts which arise when students are required to teach physical education in an inclusive manner and also coach competitive sport teams. An empirical paper by Balaguer's team shows differences among adolescent female European footballers, basketballers, and non-participants, in 6 basic values of Schwartz (1992): achievement, hedonism, stimulation, self-direction, benevolence, and conformity. Values on different Schwartz axes predicted measures of perfectionism (self-enhancement values) and personal development and well-being (conservation values). A conceptual paper by Chambers & Sandford, explores the role of values in a digital age, and explains the need to develop and apply a notion of both digital literacy and value literacy in physical education, to translate and transfer appropriate values for different cultural contexts, both virtual and real. Future directions will be discussed.

*Keywords: values, value systems, value structure, values based education, physical education, identity*

## The application of value theory as a new paradigm in sport psychology

**Jean Whitehead (University of Brighton, Eastbourne, UK)**

Values are enduring personal beliefs about what is desirable. They transcend situations, guide decisions and actions, and over time they form hierarchical value systems showing their relative importance to individuals. Drawing on work by Rokeach (1973) on value systems and Schwartz (1992) on value structure Martin Lee undertook a series of studies over two decades to apply the value theory paradigm to youth sport in the UK. This paper adopts an interactionist model (Lee & Cook, 1995; Whitehead, Telfer & Lambert, 2013) to outline research development in this new field. Within the box representing Individual variables, a test of the value expressive theory of attitudes in youth sport showed that moral, competence and status values predicted prosocial attitudes (commitment to sport, respect for sport conventions) and antisocial attitudes (cheating, gamesmanship). A path model demonstrated that this relationship was mediated by task and ego orientation, and a further study showed that values also predicted self-determination variables. Interactions between Individual and Environmental variables showed that personal value systems (of school pupils) related to the values of significant others (PE teachers) and differed with type of school. Field studies explored how the values of a Football4Peace programme and its coaches create a motivational climate to influence both personal value systems and behavioural consequences. Swimming data showed Consequences arising from both Individual and Environmental variables. The Schwartz (1992) circumplex value structure shows inherent neutral, conflicting, and compatible relationships among values based on their motivational content. This underpins effective intervention for value change in conflict situations, e.g. there is conflict between playing fairly and winning at all costs, but personal improvement is compatible with playing fairly and may be substituted for a focus on winning. Discussion will include other scenarios.

*Keywords: values, attitudes, goal orientations, significant others, motivational climate, value conflict*

## The Schwartz values model: A pedagogical tool in the National Institute of Education Singapore

**Nick Aplin (National Institute of Education, Singapore)**

Faculty members of the Physical Education and Sports Science Academic Group at the National Institute of Education Singapore (NIE) are responsible for foundation courses in Physical Education Teacher Education (PETE). The Schwartz Values Model (1992) has been used in such modules, in conjunction with sociological instruments that portray organised sport (e.g. Ingham, 1979). This paper demonstrates how this combination of theoretical constructs has been used to introduce tertiary level students to both cognitive and practical aspects of the study of PE and sport. These models reflect the educational and cultural context that prevails in Singapore. Concepts of hegemony underpin all aspects of life in Singapore, a meritocratic society, where a balance is sought between high moral standards and intense personal endeavour leading to enhanced status. The espoused values relating to education as a whole are generated and driven by the Ministry of Education (MOE). There is a strong emphasis on character development and 21st century citizenship competencies. The core values are stated explicitly: respect, responsibility, integrity, care, resilience and harmony. There are three main focal points in this paper. The first two relate to providing value guidelines for trainee teachers. An important implication is understanding the presence of conflict and conflict resolution for a teacher, who is expected to teach PE in an inclusive and enjoyable way, but also to coach competitive games and sports. The third focal point relates to conceptualising the culture of sport itself and the values that have evolved locally and universally. This paper also explores the use of the Schwartz model as a practical tool for PE trainees when teaching games. It is assumed that all ten value types represent significant reference points for teachers.

*Keywords: values, Schwartz values model, pedagogy, physical education, conflict resolution, Singapore*

### A study of values with athletes and non athletes

**Isabel Balaguer, Isabel Castillo, M<sup>a</sup> Ángeles Atienzar (Faculty of Psychology, University of Valencia, Spain), Joan Duda (School of Sport, Exercise and Rehabilitation Sciences, University of Birmingham, UK)**

In recent decades, increased attention in the study of well-being and its antecedents and correlates has been observed. Sagiv and Schwartz (2000) proposed that pursuing values should promote well being and pursuing deficiency values should undermine well-being. The objective is twofold: First to explore the differences in values among adolescent female Spanish footballers, basketballers, and non-athletes, in the 10 basic values defined by Schwartz (1992): power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity and security; and in the Values at opposing poles of 2 second order dimensions (Conservation, Self-transcendence, Openness to change, and Self-enhancement). Second, to analyse the relationships between Values on the 2 Schwartz axes, and youth development (personal and interpersonal), personality (perfectionism) and well-being (subjective vitality and self-esteem) variables. 695 female adolescents ( $M=14.85+1.58$  years), comprising 247 footballers, 217 basketballers, and 231 non-athletes, completed a questionnaire package. For the first objective MANOVA shows differences among footballers, basketballers, and non-participants, in 6 basic values: achievement, hedonism, stimulation, self-direction, benevolence, and conformity. In general football players reported higher values than basketballers and non-athletes. In the second order dimensions, football players presented higher values in Openness to change and in Self-enhancement than basketball players and non-athletes. For the second objective, the 4 Values at the poles of the Schwartz axes, Conservation was the best positive predictor of the majority of variables studied (personal and interpersonal development, subjective vitality and self-esteem), in both athletes and non-athletes. In contrast, Self-enhancement was a positive predictor of both dimensions of perfectionism (SOP and SPP) in athletes, and also of SOP in non-athletes. We will interpret results.

*Keywords: values, athletes, non-athletes, youth development, personality, well-being*

## Lost in translation? Proposing a model of values literacy for physical education

**Fiona Chambers (University College, Cork, Ireland), Rachel Sandford (Loughborough University, Loughborough, UK)**

There has been a proliferation of international interest in values-based education (VBE) in recent times and the field of physical education has been identified as a pertinent context through which values such as citizenship, character and life-skills can be taught (McCuaig et al., 2015, Luttrell & Chambers, 2013). Indeed, Spracklen (2015) argues that the geography of PE renders it a key space for meaning-making and identity construction. Others note that the contemporary negotiation/performance of identity is inherently linked to 'lived spaces' and the values embedded within these (Hopkins, 2010). However, the increasingly complex geographies of young people are played out in both real and virtual space (Blundell, 2016) and there are challenges inherent in navigating 'borderland' areas where competing ideals/norms can abound (Sandford, in press). There are implications here for VBE, particularly with regard to the transfer and enactment of values across contexts. It is argued that as 'digital natives' (Prensky, 2001), contemporary youth do not fully understand the use/impact of global technologies and these 'wired generations' may need assistance in navigating the digital landscape (OECD, 2015). We contend that digital natives inhabit hybrid topographies which are both real and virtual and therefore need to be both digitally literate and values literate if they are to successfully navigate the landscape. Values literacy is understood to be the ability to read a situation (real or virtual), make a value judgment on it and then enact that value judgment. Within the paper, a new model of digital praxis in PE (with embedded values literacy) is presented to show how young people can be taught to both transfer and translate values, to ensure a better 'fit' with different contexts. The new model harnesses the notion of digital technologies as social forces (Fioriani, 2015) within the education, management, transfer and translation of values.

*Keywords: values based education, physical education, space, identity*

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## Sport as a tool for positive youth development: The TPSR model

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**Chair: Gloria Balague (University of Illinois at Chicago)**

The symposium will describe a model using sport and physical activity for positive youth development. Hellison's (1978, 1985, 1995, 2003) Teaching Personal and Social Responsibility model will be described, highlighting its principles, foundational values and daily structure. The presentations will also focus on specific applications of the model in different environments and cultures, the United States, the Caribbean, Mexico and Spain. Examples using Physical Activity as well as Sport Initiation and Competitive Sport will be described. Finally, the very crucial aspect of training the trainers will be addressed and specific interventions and their impact will be presented.

*Keywords: positive youth development, teaching personal and social responsibility model*

## TPSR: A Model for Positive Youth Development using Sport and Physical Activity

**Gloria Balague (UIC)**

TPSR is a model developed by Don Hellison (1978, 1985, 1995, 2003) to work with at risk youth using sport as a medium for teaching personal and social responsibility. The ultimate goal is to develop young men and women who are self-reliant and who also care for their peers and community. Its main principles are: Empowering youth, respecting their voices, seeing their strengths, not only their shortcomings, and encouraging self-direction and responsibility. TPSR has a structure and methods but it is essential to understand that it is mainly a value-based approach. The foundational values are: Putting Youth First, Emphasis



on Relationships, Global Development, not just physical or technical. The presentation will describe the structure of TPSR, which is organized as a series of levels, and the daily format: Level I : Self-Control, respect for the rights and feelings of others; Level II : Effort towards the goals set; Level III : Self-Direction, setting personal goals, making decisions and taking responsibility for oneself; Level IV : Helping others, coaching others, working together; Level V : Transferring outside the field, including winning and losing with respect, acknowledging the community, using good judgement and self-control in other areas. Sports activities may need to be modified so that the program's main goal, developing personal and social responsibility is achieved. Examples will be presented in the symposium. The daily format of TPSR programs includes Relationship time: connecting individually with each participant. Focus talk: reminder of the goals of the program, Physical Activity: the main portion of the program. The activity must be structured respecting the values of TPSR; Group meeting : to hear the voice of the youth, ask for evaluation; Self-reflection.

*Keywords: Positive Youth Development, Teaching Personal and Social Responsibility*

### **Impact of a TPSR coach education program on participants' self-efficacy beliefs related to teaching personal and social skills**

**Paul Wright, Lucia Cabrera, Steve Howell, Jenn Jacobs, Jim Ressler (Northern Illinois University)**

The Teaching Personal and Social Responsibility (TPSR) model has been embraced by teachers and coaches in physical education and sport programs and there has been a recent increase in the focus on best practices for teaching coaches to implement this model. Qualitative and observational studies have assessed the process and perceptions of coach education as well as subsequent implementation. However, few reports have directly measured the impact of these education programs on coaches or connected it to their learning experiences during the program. The current study draws upon Bandura's social learning theory to assess changes in self-efficacy beliefs related to teaching personal and social skills. Mixed methods were used to evaluate the extent to which the participants' learning experiences fostered changes in their self-efficacy beliefs. Participants were 30 (17 male; 13 female) adult teachers and coaches from Belize, a small Central American nation. They participated in a four-day education program delivered through the Belizean Youth Sport Coalition. All participants completed a self-efficacy survey before and after the program. Six (3 male; 3 female) were purposefully selected to participate in the qualitative component of the study which included interviews and observations. Results indicate there was a statistically significant increase in participants' self-efficacy beliefs from pre- to post-survey ( $p < .001$ ). Qualitative analysis indicated all four of Bandura's self-efficacy sources (vicarious experiences, mastery experiences, social persuasion, and emotional states) were supported to varying degrees in the participants' learning experience during the program. Findings contribute to the literature on best practices for teaching coaches to use the TPSR model. Future research should confirm the impact of TPSR coach education programs on participant self-efficacy with a larger sample and a comparison group.

*Keywords: positive youth development, TPSR*

### **Implementation of the personal and social responsibility model to improve positive youth development during physical education classes**

**Amparo Escarti, Maria Martinez (Universidad de Valencia), Federico Carreres (Universidad de Alicante)**

This study analyzes the application of personal and social responsibility (TPSR) model to primary and secondary school physical education classes during an academic year. The goal was to evaluate its relevance as a method of positive youth development. The participants were 495 primary and secondary students of ages between 8 and 16 (mean=11.97, standard deviation=2.116) and 10 physical education teachers. The intervention group was 250 students between 8 and 16 years old (mean =12,13, standard deviation = 2,15)

(108 females and 142 males). The comparison group were 245 between 8 and 16 years old ( $M = 11,80$ ,  $SD = 2,06$ ) (112 females and 133 males). The intervention group and the comparison group were 10 intact physical education classes, located in the same area of a large city in Spain. The teachers were given an intensive 30-hour training course before the program was implemented. The Multidimensional Scales of Perceived Self-Efficacy, and the Contextual Self-Responsibility Questionnaire were administered to each of the participants before and after the program. The results show the teacher's participation in the TPSR model to be a positive experience for both, the teacher and the students. A significant increase was observed in social responsibility, self-efficacy, and prosocial behavior of intervention group participants. The practical implications of this study are discussed.

*Keywords: positive youth development, teaching*

### Training sport youth coaches in the implementation of the tpsr model

***María Pilar Rodríguez, Andrea Partida Ochoa (ITESO, Jalisco, Mexico)***

Hellison's teaching personal and social responsibility model (TPSR) has been used to implement programs aimed to increase youth's repertoire of life skills and protect them from risk factors, teaching them to be responsible for themselves and with others. The success of these programs is closely tied to the performance and investment of the coaches, but many of them lack the necessary training for sports education, and even more the knowledge needed to have a positive impact in the development of the young athletes. This presentation will describe the intervention program implemented with coaches of 8 activities, such as tae kwon do, basketball, volleyball, tennis, soccer and animation in a sport initiation academy in a large city in Mexico. The goal of the intervention was to train coaches in the use of the TPSR model with their teams. The intervention had 5 phases: 1) identification of the philosophy and values. 2) instruction sessions, 3) individual follow-up, 4) modeling of behaviors and 5) outcome evaluation. We use the TARE observation tool to assess behavioral change before and after the intervention. Results show an increase of 72% in behaviors related to personal and social responsibility after the intervention. The biggest increase was observed in the area of social responsibility, with the factor "modeling respect" showing the biggest increase, while the "transfer" factor showed the smallest level of change. Instruction sessions and individual follow-up were the intervention aspects most valued by the coaches.

*Keywords: positive youth development, sports initiation, TPSR*

### TPSR Incorporated to a highly competitive academy

***Cristina Fink (Philadelphia Union/YSC Academy)***

TPSR has been applied mainly to underserved youth and its main goal is the development of the whole person, not just the athlete. Skill development is a goal, but not the primary one. It may appear as if the goals and structure of TPSR would not apply to competitive sport, where the goal is to perform at the highest level possible. For the past four years a highly competitive soccer program and high school located in the North East of the United States has incorporated TPSR both in the school and soccer curriculum. This presentation will argue that the TPSR values of self-management, self-respect, respect of others, and its emphasis on effort, decision-making and goal setting actually result in outcomes that favor competitive sport, including the path to elite sport. Examples of these outcomes are that players coached in the TPSR model will have more personal goals and intrinsic motivation, be better able to make decisions, be better team members by respecting themselves and others and helping their teammates. Finally, they will also be likely to function better outside the field and adjust to the stress of elite level sport. The presentation will describe some of the specific TPSR strategies that have been incorporated into the coaching and teaching system. A commitment from teachers and coaches to abide by the principles of respecting the players, empowering them to have a voice and

emphasizing respect of others and the ability to work independently and put forward effort regardless of who is watching has been crucial for the program to work.

*Keywords: positive youth development, competitive sport, TPSR*

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## Promoting parenting expertise in youth sport: From evidencing needs to innovative intervention programmes

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**Chair: Chris Harwood (Loughborough University)**

Research on sport parent characteristics and experiences has burgeoned over the last decade, yet there continues to be a limited understanding of the needs of parents in executing their roles and the ways that they appraise and manage the challenges that they face within youth sport (Harwood & Knight, 2015). In addition, organisational interventions to help develop expertise in supporting their child-athlete and managing environmental demands remain under-reported. This symposium will present research to practice initiatives that bridge gaps in the aforementioned areas of knowledge. Firstly, Chris Harwood will present his work investigating the stress and coping process in youth sport parents, including empirical data on stress appraisal, emotions, coping strategies and their effectiveness. Secondly, Rachael Newport will explore the support needs of parents in youth academy football. Following immersion in the club environment, she will illustrate how parental needs and requirements change and evolve as the child-athlete progresses along the academy journey. Thirdly, Camilla Knight will share an evaluation of the UK's Child Protection in Sport Unit (CPSU) "Parents in Sport week". This initiative sought to highlight to National Governing Bodies the key roles of sport parents and 'change the conversation' regarding the nature of parental involvement. The evaluation highlights the value of helping sports organisations to engage more appropriately with parents as stakeholders. In drawing the symposium further towards a focus on practical interventions with parents, Sam Thrower will present the development, implementation, and evaluation of an online education programme designed to address the needs of tennis parents during the initial stage of their involvement. Finally, Professor Nick Holt will serve as the symposium speaker, given his expertise as a youth sport scholar interested in the experiences of parents and their development in the context of competitive sport

*Keywords: parents, interventions, youth sport, coping*

## "I cope by not watching him play!": Investigating the stress and coping process of parents in competitive youth sport

**Chris Harwood (Loughborough University), Sam Thrower (Kingston University), Lucy Frearson (Loughborough University), Faye Didymus (Leeds Beckett University)**

Within the field of sport psychology, the stress and coping process experienced by athletes has been well documented (e.g., Didymus & Fletcher, 2012; Neil, Hanton, Mellalieu, & Fletcher, 2011). However, although research has started to explore the range of stressors sport parents' experience (Harwood & Knight, 2009a; 2009b; Harwood, Drew & Knight, 2010), little is currently known about parents' cognitive and emotional responses to these stressors or the coping strategies they employ to manage them. Therefore, informed by Lazarus' transactional model of stress and coping (Lazarus, 1999; Lazarus & Folkman, 1984), the current study investigated the full stress and coping process in parents of competitive tennis players. Adopting a novel mixed methods design, 135 British tennis parents completed an online questionnaire to examine cognitive appraisal, emotions, and coping strategies associated with prominent self-disclosed stressors experienced in their sport parent role. Qualitative findings revealed a wide-range of organisational, competitive and developmental stressors. These stressors were most commonly appraised as a threat or challenge with anxiety and anger serving as the most frequently cited emotions. Findings also highlighted how parents used a number of

problem and emotion-focused coping strategies, varying both in degrees of reported effectiveness and in terms of their adaptive versus maladaptive orientation. Quantitative analyses revealed significant differences between various components of the stress process leading to novel insights into the interactions between stressors, appraisals, emotions and coping strategies. The contribution of these findings to the stress management literature will be discussed in the context of better understanding the strategic needs of parents. Applied implications will also be offered for practitioners in relation to the education and support that may be offered to parents.

*Keywords: stress, coping, parents, tennis, emotions*

## An examination of parental needs in youth academy football

**Rachael Newport, Camilla Knight (Swansea University)**

In 2009, The Football Association introduced the Respect Code of Conduct for Spectators and Parents/carers in an attempt to encourage good parental behaviour within its system. Preliminary research into parents within professional academy football has documented the transitional and social challenges facing parents (Clarke & Harwood, 2015) and the range of stressors associated with competitive, organisational, and developmental factors in this setting (Harwood, Drew & Knight, 2010). However, we have limited understanding of more precisely what support parents need across different age groups in academy football. Consequently, the purpose of this study was to explore the needs of academy football parents across the age-related phases of youth football. Drawing on the work of Thrower, Harwood, and Spray (2015) in youth tennis, the researcher was overtly embedded in the youth academy football environment for four months. Initial research focused on undertaking observations, informal conversations, and focus groups with parents from different age groups in training and match environments. To develop a broader understanding of the support needs of parents, semi-structured interviews were also conducted with parents. Data analysis indicated that parents' experiences changed considerably over the course of their child's involvement in the academy. Specifically, parents described an initial period of excitement, followed by acceptance of their child's engagement in the academy. Next the parents described a time of frustration relating to the demands, constraints, and expectations associated with their child's football. Finally, parents moved beyond this frustration to focus on the bigger picture of their child's development as an individual. Consequently, as parents move through this journey their support needs change and particularly the emphasis placed on managing their own stressors versus the support they want to provide to their child seems to alter.

*Keywords: parents, youth football, qualitative*

## Changing the conversation about parents in sport

**Camilla Knight (Swansea University), Paul Stephenson (Child Protection In Sport Unit)**

The current literature base in sport parenting highlights the critical need for parents to be positively involved in their children's sport, as well as the numerous roles parents fulfil within the lives of young athletes (Knight, Harwood, & Berrow, in press). Unfortunately, perceptions of sport parents as "pushy," "overinvolved," and "pressuring" still dominate within popular media and many coaches seek to distance themselves from the parents of their athletes (Knight & Gould, 2016). Recognising the need to change the dominant discourse regarding parents, in 2016, the National Society for the Prevention of Cruelty to Children (NSPCC) Child Protection in Sport Unit (CPSU) launched "Parents in Sport week" to encourage organisations and coaches to celebrate parents' contributions within sport. The aim of this study was to evaluate the impact of "Parents in Sport week" across the UK and Ireland. Evaluation occurred through a number of avenues, namely an examination of engagement with the online information, analysis of online material produced by sports organisations and clubs, an online evaluation survey, and follow-up interviews. Overall, more than 250 sports

organisations and clubs from around the UK and Ireland registered their support for the initiative. Data from the CPSU indicated that there were twice as many visits to the CPSU website during parents in sport week than in the preceding weeks. The first day of the initiative was associated with the most website hits in the history of the organisation and access to parent resources on the CPSU website rose by 50% during the initiative. Data obtained from 67 sports organisations indicated that the message of the week had been understood and supported with benefits noted from encouraging parents to be involved in their children's sport. Key reflections from the implementation and evaluation of this initiative are presented with respect to the overall education and support of parents of young people in sport.

*Keywords: parents, policy, organisations, integrity*

### **Educating and supporting tennis parents using digital delivery methods: A novel online education programme**

***Sam Thrower (Kingston University), Chris Harwood (Loughborough University), Christopher M. Spray (Loughborough University)***

Despite academic interest in sport parenting, there is a lack of published intervention research with this population (Harwood & Knight, 2015). Researchers in the UK (Thrower et al. 2016) and US (e.g. Dorsch et al. 2016) have recently engaged sport parent education programmes. Although initial findings have been encouraging, these studies highlight the cost, time and expertise needed to plan and deliver face-to-face programmes as well as the barriers to initiating and maintaining parents' participation. As a result, there have been calls to develop more innovative delivery methods to replace or supplement face-to-face programmes. The purpose of this study, therefore, was to design, implement and evaluate the effectiveness of an online education programme for British tennis parents (n=38) during the initial stage of their involvement. A website was developed which included eight 20 minute online workshops, workshop quizzes, a forum, and a library database. The effectiveness of the programme and parents' experiences of using this online resource were examined using a convergent parallel mixed methods design. A total of 13 (38%) parents finished the full programme, while a subset of nine participants also shared their experiences via an asynchronous email interview. Quantitative findings revealed positive directional changes (albeit not statistically significant) for almost all of the variables in relation to tennis parent efficacy, general parent efficacy, emotional experiences, and goal orientations. Alongside this, six qualitative themes emerged: (a) awareness of the programme; (b) initiating engagement in parent education programmes; (c) online education and programme accessibility; (d) workshop content and intervention effectiveness; (e) programme design and intervention effectiveness; and (f) factors influencing programme completion. The contribution of these findings in relation to existing literature and their applied implications will be discussed

*Keywords: parents, tennis, intervention, digital methods*

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### **Dealing with protective and risk factors in the athletic career transitions: a reflection on recent trends of psychological research and practice**

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***Chair: Chiara D'Angelo (Catholic University of Sacred Heart, Psychology Department, Milan)***

An athletic career is unique: it starts in early age, it condenses few years of the life and ends in early adulthood, or may stop suddenly for physical reasons; thus, the athlete must re-think himself into social contexts completely new for him. Recently, next to the normative transitions, new kinds of non-normative transitions were introduced in the athletic career, such as cultural adaptation (moving to a foreign country), entrance into high level centers of training or premature professionalization (Stambulova, 2016), which leads to a decrease in the time available for pursuing an educational path. Moreover, environmental factors have been

recognized of great importance in supporting or hindering the transition process (Henriksen, 2010). We'll examine career transitions of athletes together with the issue of dual career, since this last often occurs contingently with the youth-to-senior transition, and could lead to a subsequent difficulty in the transitions to the work context. The challenge for sport psychologists that work with elite athletes is to sustain them in the transition process to develop the whole person, both in sport and non-sport contexts (Taylor, Ogilvie & Lavallee, 2006). So, we propose that experts contribute to understand what could be protective or risk factors in the main transitions faced by athletes, in sport and in the educational context. The first contribution presents a literature review of qualitative research on career transitions; the second one is a qualitative research involving Italian athletes from different sports about the elements that can favorite or obstacle dual career and career transitions. The third presentation shows a comparison between male and female student-athletes' opinion on the main skills necessary to deal with dual career in Slovenia; and finally, the last contribution presents the implications of an experience of a psychological service with young athletes in transition.

*Keywords: new career transitions, dual career, athletic career, risk and protective factors*

### Retiring from elite sports: a review of qualitative research

**Anna Jordana, Miquel Torregrossa, Yago Ramis (Universitat Autònoma de Barcelona, Spain), Alexander T. Latinjak (Universitat de Girona, Spain)**

The aim of this review is to offer an integrated theoretical perspective of the different qualitative studies that have studied athletes' experiences related to retirement from elite sport and the transition to an alternative professional career. We carried out a systematic research based on key words, following the CHIP tool (i.e., Context, How, Issues and Population). After reading the title and the abstract, 20 papers have been obtained by searching databases in English, Spanish and Portuguese (e.g., PsycINFO, Web of Science, Scopus, SPORTDiscus, Latindex, SciELO, Psycodoc). Additionally, following the PRISMA method, we have registered the process of decision making that has allowed us to obtain the most relevant papers for the in-depth analyses of this meta-synthesis. As a result, we selected 17 qualitative studies, 14 of those in English (11 developed in Europe and 3 in North America) 2 in Spanish and 1 in Portuguese. 10 of this papers gather information through semi structured interviews, which were analysed in a thematic or inductive way. In general, that information shows, especially in a retrospective way, the experiences of retirement of Olympic and elite ex-athletes (mainly gymnasts), as well as the influence that a dual career exerts in this transition process. Most of the selected studies concur that conceptualizing the retirement from elite sport as a process instead of as an event, and having alternative dedications such as study and/or work are protective factors in the athletic career transition.

*Keywords: meta-synthesis, qualitative studies, retirement, elite sport*

### A psychological service for young football players in youth-to-senior transition: research in practice

**Caterina Gozzoli, Chiara D'Angelo (Catholic University of Sacred Heart, Psychology Department, Milan)**

The youth-to-senior transition occurs when an athlete enters the higher level of his sport, moving from age-grade competition to playing in open events where participation is unrestricted by age (i.e. the first team of a Club, the national team). A study found that: 17% of junior national champions became senior athletes, while 31% reported stagnation and became recreational athletes, 28% performed irregularly and inconsistently and 24% dropped out (Vanden Auweele, DeMartelaer, Rzewnicki, De Knop, and Wylleman, 2004). Athletes frequently describe the youth-to-senior transition as the hardest of their career, giving the increase of athletic and non-athletic requests they must face (Stambulova et al., 2009). To manage this key passage Clubs should give psychological support to their young athletes. In this contribute we'll present a project of psychological



support dedicated to 16 talented footballers (17-18 years old) of a professional Club, facing the youth-to-senior transition during season 2015/16. For each player has been set an individual path of meeting (4-5 meetings, 1-2 hours each) with a sport psychologist, to reflect on how they were facing the increasing demands from sport and extra sport life and working on their strength and weaknesses. 13/16 players spoke about normal transitions difficulties (i.e hard times at school, with girlfriends or in family), that they perceive must be hidden to coaches or tutor even if they adverse their performance. For 3/16 players, instead the path works only on strengths to face transition process. Players appreciated the individual guarded setting outside team and club's dynamics they had, where they face the critical issues of sport and non-sport contexts, without being judged. It seems important for professional Clubs and Federations to set up a psychological support service to facilitate the detection of possible risks factors that could cause the loss of many talented athletes.

*Keywords: youth-to-senior transition, psychological support, risk and protective factors*

### **Slovenian student-athletes' competences for dual career related scenarios: gender differences**

**Saša Cecic Erpic (University of Ljubljana, Faculty of Sport, Ljubljana, Slovenia)**

Talented and elite athletes face numerous challenges combining education and high-level sport (Stambulova & Ryba, 2013; Tekavc, Wylleman & CeciĆ Erpič, in press; Wylleman & Reints, 2010). The main aim of the 'Gold in Education and Elite Sport' (GEES) project was to study competences for dual career (DC) in order to assist athletes preparing for successful combination of education and elite sport. The purpose of this presentation is to study competences related to student-athletes' (SA) coping with seven DC specific scenarios. A cross-sectional quantitative design was implemented, using questionnaire Gold in Elite Sport and Education (GEES) that consists of 7 DC typical scenarios (e.g., miss significant days of study, being injured) and a list of 38 DC competences (attitudes, knowledge, and skills). It was administered to 198 Slovenian student athletes (97 males and 101 female) aged between 15 and 25 ( $M = 18.92$  yrs;  $SD = 3.7$  yrs). The athletes indicated whether each of scenarios was experienced, how well they coped with it and which five (from the list of 38) competences are most important for coping with these DC typical situations. The results showed several gender differences. Female SA encountered more challenging situations than male athletes and were more successful in coping with situation related to missing significant number of days from school. Male SA were more successful in coping with scenarios related to injury and rich social life. Female athletes report to be stronger in life management (e.g., dedication, discipline, organization and prioritizing) and independency skills. Male athletes on the other hand report to be stronger in emotion management, coping skills, career management and social skills.

*Keywords: GEES, dual career, competences, gender differences*

### **At the end of the match: comparing career termination process between football players and other-sport's athletes**

**Eleonora Reverberi, Diletta Gazzaroli (Catholic University of Sacred Heart, Psychology Department, Milan)**

A peculiar moment in the athletic career is retirement, that usually occurs at a very early age, unlike a "normal" worker, implying deep and fast modification in the athletic identity and a process of adjustment to another life (Alfermann & Stambulova, 2012). In Italy, this theme is little explored: there are few studies on football players' career termination (Croce, Piani, Russo, 2011), but in mostly unexplored. We involve 42 former high-level athletes (18 football players and 23 other sports athletes, from both individual and team sports), in a retrospective research to explore their lived experience of leaving sport context and identifying differences. We investigate the subjective meaning they gave to the transition outside sport, the adaptation process to retirement and the way they manage the educational path to prepare to post sport career (dual

career), comparing football players with other sports athletes. We use semi-structured interviews and Professional Life-Space (PLS), an adaptation of the Family Life Space by Motswin (Italian version by Gozzoli & Tamanza, 1998, 2008), a graphic-symbolic tool by which the person draws his professional and personal network during different phases of his life. It emerges that: dual career isn't considered a support for retirement, nor by athletes nor by sport culture, because football players are more often favored in retirement by strong ties with their Clubs and they can easily remain in sport context, while other sport's athletes have more difficulties to remain there, given the lack of resources. Families are considered a strong support factor and sport is often considered "the best place to remain" for a former athlete. Implications comprehend the necessity to sensitize athletes to post sport career just during their career, with the possibility to deal with a dual career path, to avoid identity closeness and post retirement crisis.

*Keywords: career transition, dual career, retrospective interviews, career termination*

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## The game of emotions, under which rules?

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**Chair: Alejandra Florean (APDA)**

The general objective of the present Symposium is to share and transmit the inferences, analysis and conclusions reached in the work with the emotions within the sports field for the different actors and situations of this environment. It is frequent to assign the word problem a negative connotation referring to it as an obstacle or difficulty. However, we chose to link the term problem to an issue or situation, which should not necessarily create barriers to our professional work, although it may be difficult. Reflecting on the situations to be solved in the field of sports psychology that deserve a psycho-sociological approach, because they are components of the social fabric that weaves their actors from their interactions, that led us to notice the determining role emotions play. In other words, we notice that emotions play. They play in the coach, in each one of the athletes and on them as a group under the team motto, and they also play in the sport's psychologist. Not only we notice it, we live with it in the exercise of our role. Emotions prescribe ways of relating, of manifesting and behaving, and seem to be decisive in achieving goals and persistence in the task, both of coaches and athletes, as well as ours. Emotions play, under which rules? Do they depend on the sport? Are they limited to the role? Are there limitations or inequalities depending on gender or disability? The papers presented here were the result of empirical and experimental field work, in some cases, and resulted from the application of surveys and techniques for exploring personality and specific behaviors circumscribed to the sports field, among others.

*Keywords: emotions, coach, team, disability, performance, role*

## "Teamless" emotions

**Sandra Ferro (APDA)**

The present work aims to place the role of emotions in team sports as a study variable: how often and in what way they are expressed and, in particular, if it is possible to work with them collectively as we do with other factors that Intervene in this sports modality. The work with sports teams offers the sports psychologist different psychosocial problems he will face and which will be required to deal with. These problems have existed since the formation of a sports team until its structural strengthening, having crossed on its path interactional processes tending to achieve cohesion, identification, identity and feelings of belonging that generate transcendental ties among its members. It is in the field of our work that we notice emotions influence the athletes conditioning in particular the levels of individual and collective performance that they are intended to achieve. Objectives as well as levels of motivation and trust need to transcend the singular to meet and amalgamate in collective functioning, emphasizing the degree of cohesion team members

intentionally and deliberately direct towards that end. Emotions, on the other hand, seem to maintain the unalterable character of the singular, being considered a determinant variable in the heterogeneity of the behavior of a sports team. In this sense, the problem would then appear to emerge from the game of emotions and these put into play in the sports competition operating, in some cases, as a strong resistance to group effects. From the application of CPRD-f and CCD, which gives a framework to a descriptive and exploratory study of two sports teams, an attempt will be made to verify the existence of "teamless" emotions in collective performance.

*Keywords: emotions, teams, cohesion, subjectivity*

## Emotions in the role of sports psychologist

**Alejandra Florean (APDA)**

The objective of the present work is to know what emotions are experienced by sports psychologists in the exercise of their role and if these are evident. Frustrations, anger, joys, sadness, how they come into play and how they influence the professional? The exercise of the role requires different resources and/or personal and professional skills to meet sports, cultural, institutional, and even psycho-social demands. Dr. Chirivella Canton, E. "Another challenge we face in our area is to continue improving our training and education for professional performance, which involves optimizing three elements: increase and update training, be able to integrate knowledge with professional practice, and to develop our personal skills or abilities involved in the effective exercise of the profession. " Professional practice in a sports institution can be oriented to improve the performance, management of emotions, social skills, and resources of athletes, coaches and leaders. However, it is scarcely possible to consider the emotions of the institutionalized sport Psychologist. As if the professional was not crossed by the same emotions and variables of other actors. The methodology used to respond to our objective was a survey designed ad hoc, with variables and specific characteristics that will make possible to investigate experimentally the sports psychologists perceptions regarding the emotions involved in their professional work. It was based on an exploratory longitudinal study.

*Keywords: emotions, role, education, institutional traversing*

## In sport and disability, emotions count

**Belen Pineda (APDA)**

The following work has the purpose of sharing some reflections on sport and disability, taking as a transversal axis the emotions placed in the athlete, coaching team, and public/society. The same arises from the professional experience of the author working on the psychology of sport with blind Paralympic athletes. In recent years the development of inclusive and Paralympic sport has been very significant. Moreover, the last Games of Rio 2016 broke the record of participants, 4360 were the number of athletes, representing 175 countries and 22 sports. Also we are frequently told stories about people with some incapacity (physical, sensorial or cognitive) that choose to practice a sport either in a recreational or competitive way. Additionally, there are more and more institutions that offer proposals for adapted sports. In many cases these athletes become referents or "models of inspiration", as is the case of medalist Irene Villa whom Simeone summoned to motivate the Atletico team. As sports psychologists we can reflect on our contribution in this area. The adapted sport collaborates in the development of the person who practices it and its environment; promotes self-improvement, favors the development of mental strength, propitious habits of autonomy, self-management, collective responsibility and overcoming of communicational and social barriers. An empirical and experimental field work was done in the approach of disabled athletes. Conceptually, the term "disability" will be used with reference to the International Classification of functioning Disability and Health (WHO), understood as a result of the interaction between the deficit of the subject and his/her environment.

*Keywords: adapted sport, Paralympic sport, inclusive sport, disability, motions*

## **Socio-emotional variables in the psychological preparation of national teams**

**Nely Giscafne (CENARD)**

The work consists of exposing and sharing the author's experience in the psychological preparation of the Argentinean National Hockey Team on female turf in international competitions from 1994 to 2010. Team work invites the Sports Psychologist to pay special attention to the socio-emotional variables that arise during the whole cycle of sports preparation and in the different stages of the competition, as well as the pedagogical influence and the training methods to grant the psychological qualities required to meet hockey requirements. The psychological task primarily consisted in assessing the character of the players and their emotional states, giving them the possibility of self-regulation through mental training (goal setting, breathing and relaxation techniques, focus on attention, activation control and development of self-confidence). At the same time it was very important to identify and get to know the leaders of the team, as well as the way in which they faced the possible conflicts derived from the activity that called them upon. For this purpose, different interventions were carried out in order to achieve the cohesion of the team and the effective interaction between the team and the coaching staff. A psycho-deport evaluation was made to each player. For this, several techniques and tests were applied, such as Martens' Anxiety, Eysenck's Character Inventory, Gonzalez's 10 Desires Method, Butt Short Scales and Carron's Group Cohesion test, in parallel with the realization of Group dynamics and guidelines for athletes and coaches.

*Keywords: national teams, cohesion, mental training, leadership*

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## **Current professional skills on sport, health and exercise psychology experts in Spain**

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**Chair: Joaquín Díaz (FEPS Spanish Federation of Sports Psychology)**

In this Symposium we will talk about the Spanish Federation of Sports Psychology and the main events of the history of psychology of sports in Spain and we will show some of the different current professional skills that the sports psychologists perform in Spain. The topics that we will address are the following: The FEPS and the competencies of sports psychologists, professional intrusions, the diffusion of the profession and associationism. A description of the roles that professionals play, and focus on knowledge, attitudes, and applied skills. Weaknesses, Threats, Strengths and Opportunities of Sports Psychology in Spain SWOT Analysis. In this presentation we intend to conduct a SWOT study (weaknesses, threats, strengths and opportunities) of the psychology of the current sport in Spain, reflecting on possible future improvements for the profession. Improvement of health and general well-being through sport, physical activity and exercise. The goal we want with this presentation is to take a tour of the literature in Spanish from which the three challenges are addressed; As well as to carry out a first approximation of the role that the so-called placebo effect in the practice of exercise can develop. The Sports Psychologist in multidisciplinary teams. Counseling, counseling and psychological intervention in sports and sports groups. The goal of this topic is the competences related to its performance as a sports psychologist: to negotiate the working conditions well, to wait for the right moment to act, to recognize the psychological needs to work, to use the best strategies according to the circumstances.

*Keywords: specialist, skills, health, physical exercise, Spain*

## **Improvement of health and general well-being through sport, physical activity and exercise**

**Felix Arbinaga (Universidad de Huelva y Secretario de la FEPS)**

It has been considered that the practice of physical exercise, regularly and immersed in the habits and lifestyles of the person, reports a varied and wide range of possible health benefits. It can be said that three have been the great challenges and objectives that science has maintained in this regard. The first is to define the mechanisms by which these benefits are achieved. The second of the objectives has been to determine which exercises, and forms of execution, are useful and beneficial for each of the pathologies; Either as a form of treatment and preventive. Finally, the third great challenge is to establish that the practice of exercise is a habit of behavior immersed in lifestyles; That is, how to achieve a change in the sedentary lifestyle and achieve adherence to physical practice that is maintained over time. Thus, it can be seen that the idea that the practice of physical exercise has physical and psychological benefits is widespread among the population and professionals; and the data seems to show it. However, from a methodological point of view, many authors point out in their studies that a psychological improvement derived from exercise practice cannot eliminate the possibility that, in some way, a placebo effect was present. The goal we want with this presentation is to take a tour of the literature in Spanish from which the three challenges are addressed; As well as to carry out a first approximation of the role that the so-called placebo effect in the practice of exercise can develop.

*Keywords: health, exercise, sport, placebo, wellness*

### **The FEPD and the competencies of sports psychologists, professional intrusions, the diffusion of the profession and associationism**

**Pablo Jodra Jiménez (Vocal de la FEPD)**

The consolidation of the Sport Psychology as a professional discipline requires the presence of organizations that bring together the different theoretical-practical tendencies that make up their applied development. The representativeness of the professional group must serve to strengthen the areas of presence, its dissemination in the social context, drawing the necessary structures for the organization of professional practice. Competencies provide a description of the roles that professionals play, and focus on knowledge, attitudes, and applied skills. The structural organization makes possible the advance of the discipline as a labor category, based on the basis of scientific knowledge

*Keywords: professional competence, associationism, intrusism*

### **The Spanish Federation of Sports Psychology: main events of the history of psychology of sports in Spain and current state of affairs**

**Joaquín Díaz (FEPD)**

In 1986, the first National Congress of Sports Psychology was held in Barcelona and it acquired the commitment to work on the constitution of a Spanish Federation that brings together the different regional associations. The Spanish Federation of Associations of Psychology of Physical Activity and Sport (FEPD) was created in 1987. The FEPD is currently formed by 11 associations, each one of which has different number of partners, objectives and initiatives. On the international front, the FEPD is a member of the International Society of Sport Psychology (ISSP) and the European Federation of Sports Psychology (FEPSAC), in which it actively participates as a full member. In its recent history, regardless of the number of members, it is necessary to emphasize its active participation in the activities developed by the FEPD, as well as the quality achieved. This is reflected in the level of participation in congresses, conferences and seminars held so far, as well as the publications done. The Spanish Federation of Sports Psychology organizes a National Congress with the participation of national and international experts. It is held every two years, together with one of the autonomic associations. Up to date, fourteen National Congresses have been held. The next national congress will be held in 2019 in Zaragoza

*Keywords: history, Spanish Federation of Sports Psychology, congresses*

## **The Sports Psychologist in multidisciplinary teams. Counseling, counseling and psychological intervention in sports and sports groups**

**David Peris (Vicepresidente de la Federación Española de Psicología del Deporte)**

In modern sport, where the work of the professionals involved is increasingly specialized and specific regarding a methodology of work and each sporting modality, the professional of the sports psychologist needs special competences to perform his work well. Besides having the necessary skills regarding the knowledge that must possess the psychologist of the sport it is necessary that this professional knows how to do his work fine; That is to say, it has competences related to its performance as a sports psychologist: to negotiate the working conditions well, to wait for the right moment to act, to recognize the psychological needs to work, to use the best strategies according to the circumstances ... and all that as a Professional team within an interdisciplinary team (with all that entails) are fundamental aspects in counseling, counseling and psychological intervention in sports groups and athletes.

*Keywords: psychological intervention, sport psychologist, multidisciplinary work*

## **Weaknesses, Threats, Strengths and Opportunities of Sports Psychology in Spain SWOT Analysis**

**Jaume Martí Mora (Treasurer of the Spanish Federation of Sports Psychology)**

The sport psychology as a professional discipline in Spain has kept a variable evolution in function of many circumstances that have accompanied the sport throughout its trajectory, since Olympic Games in Barcelona 92 that took it to a high level of participation of professionals of the sport psychology, to different economic crises in the country with its consequences in the sport that has led to a decrease in the recruitment of specialists psychologists in the field. At present we could add a lot of supposed professionals who without having the qualification or sufficient knowledge, have landed in the world of the sport and of intrusive form for the professional psychologists of the sport. In this presentation we intend to conduct a SWOT study (weaknesses, threats, strengths and opportunities) of the psychology of the current sport in Spain, reflecting on possible future improvements for the profession.

*Keywords: SWOT, professional sport psychologist, intrusion, sport psychology, evolution*

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## **Interventions for Enhancing Flow in Sport and Exercise**

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**Chair: Nektarios Stavrou (1-Faculty of Physical Education and Sport Science, National & Kapodistrian University of Athens, Greece, 2-National Sport Research Institute, Olympic Athletic Center of Athens, Athens, Greece)**

The concept of flow has created increasing research attention in sport and exercise. Flow is a subjective experience of total absorption in a task in which individuals possess skill and face a challenge equaling that skill. Csikszentmihalyi (1975) proposed nine key dimensions of flow. In addition, to Challenge-Skills Balance, these are Action-Awareness Merging, Clear Goals, Unambiguous Feedback, Total Concentration, Sense of Control, Loss of Self-consciousness, Time Transformation, and Autotelic Experience, which refers to the enjoyable, self-motivating aspect of flow. As well as promoting enjoyment and intrinsic motivation for tasks, flow is often associated with high levels of performance, making its presence valuable to sports performers and exercisers. Thus, developing interventions to enhance flow state is a key area of research. In this symposium, presenters report on studies that each examined the efficacy of an intervention designed to enhance flow experience.



First, Hamzah et al. report research examining the effects of listening to music on flow state, heart rate, rated perceived exertion and performance during a single session of moderate intensity exercise among sedentary individuals. Then, Waraphongthanachot and colleagues focused in their study on using imagery to enhance flow antecedents to promote flow and increase performance. Next, extending the research of Pates et al. (2001), which showed the positive impact of hypnosis on flow, Dao and colleagues discuss the effects of hypnosis on flow and performance in golfers, focusing on the similarity between flow concomitants and phenomena associated with hypnosis. Finally, continuing the hypnosis theme, Savadelavar et al. report on the effect of a Neuro-linguistic Programming (NLP) intervention on sub-elite air-pistol shooters' flow state and performance. These studies refine understanding of several key intervention directions with implications for practice. Tony Morris will lead audience discussion.

*Keywords: flow, music, flow dimensions, imagery, hypnosis, NLP*

### Effects of music listening on flow state, heart rate, RPE and performance during a single session of moderate intensity exercise

**Nurul Hamzah, Tony Morris, Dan van der Westhuizen (College of Sport and Exercise Science, Victoria University, Melbourne, Australia)**

In the present study, we applied a two-group randomized experimental design to examine the effects of listening to music during a single exercise session on flow state, heart rate (HR), rate of perceived exertion (RPE), and aerobic exercise performance. We randomly assigned physically inactive participants ( $N = 20$ ;  $M_{age} = 29.3$ ,  $SD_{age} = 6.5$ ) into a Music Condition ( $n = 10$ ) and a No Music Condition ( $n = 10$ ). Participants in both conditions performed cycling for 30 minutes at a moderate-intensity (40-60% Heart Rate Reserve, HRR). During cycling exercise, we recorded HR, RPE, and power output (Watts). We also assessed participants' flow state using the Flow State Scale-2, immediately after exercise. There was no between-condition difference for global flow state, however, the dimension of time transformation was significantly higher in the Music Condition than the No Music Condition ( $p < .05$ ). Mean RPE was lower and mean HR was higher in the Music Condition than the No Music Condition across three time intervals (10-min, 20-min, 30-min). There were no between-condition differences for HR and RPE. The percentage increment of power output was higher in the Music Condition than the No Music Condition across three time intervals. The present study suggested that music contributed to participants' perception that the duration of the cycling exercise was shorter than the actual duration of the session. In addition, RPE was relatively low in the Music Condition despite participants cycling at a higher power output, suggesting they were more at ease to physically cope with the higher workloads.

*Keywords: music, flow, heart rate, RPE, performance, moderate intensity exercise*

### Enhancing flow antecedents to promote flow and increase performance

**Phatsorn Waraphongthanachot, Tony Morris (Institute of Sport, Exercise & Active Living, Victoria University, Melbourne), Anthony Watt (1Institute of Sport, Exercise & Active Living, Victoria University, Melbourne, 2College of Education, Victoria University, Melbourne)**

Imagery is a powerful technique that has been shown to enhance performance and flow state in sport (Pates et al., 2002). Stavrou and Zervas (2004) proposed that five dimensions of flow are antecedents that can enhance the experience of flow. Flow is a peak experience associated with enjoyment, motivation, and performance in sport (Csikszentmihalyi, 1975). Three key antecedents of flow are challenge-skills balance, clear goals, and unambiguous feedback. We examined the impact on flow and performance of an imagery intervention designed to increase these three antecedents, illuminating mechanisms underlying the positive experience of flow in sport. Eighteen male and 8 female basketball players ( $M_{age} = 30.73$  years) from a Melbourne league completed a pre-test, shooting 40 shots (8 trials x 5 locations around the basketball key) at

4.5 metres (2-point) and 40 shots (same five angles) at 6.75 metres (3-point shots). Participants were randomly assigned to an imagery intervention condition and a video placebo condition. The Flow Antecedents Imagery (FAI) condition involved imagining clear goals and unambiguous feedback of shooting in an individualized challenge-skills balance context, for six 15-minute sessions over two weeks. The Video Placebo condition involved equivalent time watching video of elite performers shooting in competition. All participants then completed the same 80-shot shooting task at post-test. We used one-way ANOVA at pre-test and post-test on all nine flow dimensions and two-way mixed-design ANOVA and Tukey post hoc to examine performance. Results indicated that both the FAI and Video Placebo conditions increased flow state ( $p < .05$ ) and enhanced athletes' shooting performance ( $p < .01$ ). However, the FAI condition improved 3-point shooting significantly more than the Video Placebo condition ( $p < .05$ ). We concluded that imagery of key antecedents did enhance flow and performance. Also, we discuss the possible positive effect of incidental video modeling.

*Keywords: flow antecedents, imagery, intervention, performance, basketball*

### **The effect of a neuro-linguistic programming (NLP) intervention on sub-elite air-pistol shooters' flow state and performance**

***Meisam Savadelavar, Garry Kuan (Exercise and Sports Science, School of Health Sciences, Universiti Sains Malaysia (USM), Kelantan, Malaysia), Tony Morris (Institute of Sport, Exercise and Active Living, College of Sport and Exercise Science, Victoria University, Melbourne, Australia)***

Neuro-Linguistic Programming (NLP) is a cognitive-behavioural approach to changing thoughts, feelings, and behaviours based on the use of language (Tosey & Mathison, 2010) and non-conscious cognitive processes. Koehn et al. (2014) suggested that cognitive interventions can increase flow state, which in turn could enhance athletes' performance. Thus, the aim of this study was to examine the effectiveness of an imagery-based NLP intervention on 12 sub-elite shooters' flow state, as well as their shooting performance scores. Six female and six male shooters, aged from 15 to 20 years ( $M = 16.58$ ,  $SD = 1.44$ ), volunteered to participate in this study. Before and after the intervention, we measured shooting performance based on a standard 10-metre air-pistol competition target using 60 shots within 90 minutes. We evaluated flow state using the Flow State Scale-2 immediately after each performance test (Jackson & Eklund, 2002). We conducted eight sessions of face-to-face NLP, anchoring memory of optimal performance to participants' left knee. Then we did future pacing of the experienced mental state during the sessions. We used paired samples t-tests to identify mean differences between pre-test and post-test on flow and performance scores and Pearson product-moment correlation coefficient to examine the relationship between changes in flow scores and gain scores on performance from pre- to post-test. Results indicated that flow state did not change significantly ( $t_{11} = -1.755$ ,  $p > .05$ ). However, shooters' performance increased significantly ( $t_{11} = -9.574$ ,  $p < .05$ ). Also, there was no significant correlation between changes of flow state and gain scores on performance ( $r = -.511$ ,  $p = .09$ ). These results suggest that the kinaesthetic anchoring pattern of NLP was a suitable strategy for enhancing air-pistol shooting performance, but further study is needed to understand the effect of NLP on flow state.

*Keywords: neuro-linguistic programming, flow state, shooting*

### **The effects of hypnosis on flow and performance in golf putting**

***Dung Tien, Tony Morris, Daryl Marchant (Victoria University, Melbourne, Australia)***

Csikszentmihalyi (1975) introduced the flow concept, involving total absorption in the task, control, with effortless, automatic movement. Flow dimensions divided into five antecedents and four concomitant dimensions (action-awareness merging, loss of self-consciousness, time transformation, and autotelic experience), which have similarities with hypnotic trance states. We evaluated whether a hypnotic state facilitates flow and enhances performance via its concomitant dimensions and whether the trance work

component of traditional hypnosis is crucial. Participants were 16 golfers (3 females, 13 males, aged 31 to 59) with handicaps from +1 to 20 ( $M=11.84$ ). We matched participants for hypnotic susceptibility. Golfers performed 56 4-metre test putts at pre- and post-test. We measured radial error of each putt from the centre of the hole to the centre of the ball. Then Traditional Hypnosis participants undertook a 60-minute, face-to-face active session, then listened to a recording of that session for seven days, whereas Neutral Hypnosis participants experienced a face-to-face session (no trancework) then listened to the recording for seven days. Using two-way mixed-design ANOVA, for putting performance, we found no significant effect of hypnosis,  $F=1.28$ ,  $p=.28$ , or occasion (pre-test, post-test),  $F=0.64$ ,  $p=.436$ , but a significant interaction effect,  $F=16.16$ ,  $p=.001$ . For global state flow, we observed no main effect of hypnosis,  $F=1.00$ ,  $p=.33$ , but there was a significant main effect of occasion,  $F=20.28$ ,  $p<.001$  and a significant interaction effect,  $F=5.03$ ,  $p=.04$ . There was no significant main effect of hypnosis for the time transformation,  $F=.878$ ,  $p=.365$ , but we observed a significant main effect of occasion,  $F=37.11$ ,  $p<.01$ , and a significant interaction effect,  $F=9.97$ ,  $p<.01$ . We concluded that active hypnosis enhanced golf-putting performance and global state flow. Findings suggested that traditional hypnosis improved performance and flow through the time transformation.

*Keywords: hypnosis, golf putting, flow, hypnotic putting, putting performance*

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## Bridging the gap – Helping young sport psychology enthusiasts stepping out into the real world

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**Chair: Svenja Wachsmuth**

Being finally recognized as an international non-profit organisation, the European Network of Young Specialists in Sport Psychology is stepping into a new era, ENYSSP 2.0. Starting as an alumni network of the European master's studies in sport and exercise psychology (Wylleman & Seiler, 2016), ENYSSP has since grown in numbers, diversity (e.g., education, specialisation, culture), and professionalism. It is one of many organisations aiming at the dissemination and development of knowledge and practice in sport and exercise psychology (SEP). Most of these organizations, like FEPSAC or AASP, are led by SEP experts who rely on their extensive experience and understanding of the field. In contrast, ENYSSP has to rely on its young members' enthusiasm and creativity, on their skills to critically evaluate the fields' status quo, as well as on their heart to push for innovative and sometimes unconventional ideas. While Wylleman and Seiler (2016) acknowledge ENYSSP as an "active and innovative partner" of FEPSAC, its position and responsibilities within the wider field of SEP, however, need to be re-evaluated. This symposium offers an opportunity to reflect upon ENYSSP's development, contributions to the field and its future potential. The presentations will start with an evaluation of the core principles and values of the organisation, which are thought to facilitate young sport psychologists' own ethical and professional development. The remaining presentations will draw upon ENYSSP members' experiences of "stepping into the real world", providing an overview of young sport psychologists' perceived challenges and hopes in regards to research, education and applied work. Overall, it is aimed at stimulating thought and debate about how organisations, such as ENYSSP, in cooperation with senior SEPs may support the development of young professionals and shape the future sport psychology.

*Keywords: professional development, networking, enyssp, novice practitioners*

## Introducing applied working philosophies for young practitioners

**Peter Schneider (FC Carl Zeiss Jena, e.V.), Snezana Stolarova (Tallinn University)**

Sport psychology practitioners demand goals and clear direction from their athletes, but how often do they evaluate and research their own core values, goals, and philosophies? How deep is a sport psychology practitioner's understanding of various philosophical underpinnings of modern-day applied psychological

techniques? Andersen (2005) highlighted the importance of working philosophies through practical experiences, and Poczwadowski et al. (2014) argued against “intervention-based” thinking, and working rather from a consistent philosophical approach. Where does one begin to build a personal and effective working philosophy in sport psychology? The temptation is to begin with classic modern psychological theories, such as psychodynamic (Freud), humanistic (Maslow), or social-cognitive (Bandura) approaches, but this would not give the full human story. For example, whilst an understanding of a psychodynamic approach can assist in the structure and framework of a young practitioner’s daily work, philosophical works provide alternative understandings of human interaction; a vital skill, which could assist in creating a deeper connection with clients. ENYSSP pushes its young members to dig behind the modern theories and evaluate classical philosophical approaches. Through workshops including texts and quotes from such classics as Plato’s “Allegory of the Cave”, Descartes’ “Passions of the Soul”, or Lao Tzu’s Taoist teachings we see how humans have tackled their thoughts and motivations for behaviour for centuries. In this seminar, we will discuss some classic and modern philosophical works which have greatly influenced the ENYSSP working philosophy, their relation to psychological theories used in applied sport psychology, and how these philosophical underpinnings can help a young practitioner starting out.

*Keywords: professional philosophy, career development*

### Applying research skills in diverse professional contexts

**Malgorzata Slawinska (Independent Consultant), Maximilian Pelka (Ruhr University Bochum)**

One of the main strengths of ENYSSP is the promotion and facilitation of cross-national cooperation for research in Sport and Exercise Psychology (SEP). Sharing knowledge from a multicultural perspective allows for deeper understanding of opportunities that can be reached when looking for a career in SEP. The foremost aim of our department in ENYSSP is to promote and disseminate research within sport and exercise psychology. This aim is achieved by stimulating interest and practice through various research activities such as peer consultations, where we analyse various research methods used in SEP, conducting webinars on research related topics, such as statistical methods of analysis, leading group meetings and discussions, and supporting individual and group research initiatives among ENYSSP members. The goal of our research department is to create an international network that supports research initiatives as well as to help the integration of ENYSSP members into the scientific community by coordinating European links between aspiring, settled and successful researchers. Drawing on collective experiences we provide an example how knowledge gathered from studies could be translated into practice. Understanding how research skills, which are learnt during Master and PhD studies, could be used to further career or find a position is an important feature of transition from the university to a professional career. For example, entering the competitive field of science requires publishing at a high rate and of high quality. Journal articles are the currency through which young researchers move forward in their careers. Getting one’s manuscripts published is tough work and dependent on others’ reviews. During this symposium we will provide an outline of our work in the research department and provide specific examples of our activities and how we support young sport and exercise psychologists to transit from a student into their professional career.

*Keywords: international cooperation, multicultural research, knowledge dissemination*

### ENYSSP education department: Helping members on their journey in academia

**Cristiana Conti (University of Chieti)**

Being one of three ENYSSP departments, Education team’s main objective is providing support to undergraduate, postgraduate and doctoral students all over Europe. The department provides regular up-to-date information regarding sport psychology educational programs in Europe – whether it is accredited degree

programmes, international conferences, PhD offers or short-term intensive courses in sport psychology. Early career academics are also one of the target groups of the department, and can benefit from online discussion group Teasers For Teachers (T4T) that offers novice lecturers an opportunity to share good practice examples or discuss any issues they might face. Another aim of the department is regular reviews of the sport psychology literature, including classic academic textbooks and cutting-edge academic publications. These reviews are published in ENYSSP regular newsletters. More recently, Education department has been working with ENYSSP' country reps (members that represent the network in their respective countries) in order to collect (and consequently present) information on the requirements on working as a sport psychologist in various European countries, including legal job title protection, professional education requirement etc. This presentation will focus on more detailed discussion of the Education department's aims and activities (particularly online webinars), and will be followed by the analysis of the survey conducted within ENYSSP' members, which explored their expectation of sport psychology education in Europe, and their reflections on the support and opportunities they receive during their academia journey.

*Keywords: sport psychology education, webinar, students, support*

### First steps in the world of applied sport psychology

**Michala Bednáriková (Independent Consultant), Grzegorz Wieclaw (Independent Consultant)**

For young professionals in the field of sport psychology, finishing a master's degree is an important milestone, but in the world today even the best degree does not guarantee employment and development. In many ways it is a challenging task to start and develop one's own professional practice, and only persistent sport psychologists will achieve their goal to work as a full-time applied practitioner. Although there are many documented paths to develop a successful career in this field and different ways of disseminating academic knowledge (cf. McCarthy & Jones, 2014), it remains difficult to make the first steps into the real world. There are many challenges one needs to manage in order to build a successful career in the applied field. These may include intrapersonal (e.g., low self-confidence due to limited experience), interpersonal (e.g., limited access to supervision and peer support), educational (e.g., limited access to continuous education), as well as financial factors (e.g., not having funds to rent out an office or a space to work in). Furthermore, experiences may differ between countries as requirements for certification vary across the world (Keegan, 2016). As early-stage applied sport psychology practitioners we will present some of the challenges we have come across at the beginning of our careers and show how being part of the European Network of Young Specialists in Sport Psychology (ENYSSP) has given us an opportunity to gain peer support from other professionals who are facing similar challenges at this early stage of their career development. At ENYSSP we offer, for example, regular online meetings known as the peer consultation sessions (Bednarikova, Schneider, & Więclaw, 2016), applied webinars, and workshops at the annual conference. These professional connections gained at ENYSSP are extremely valuable both for now and the future. They can give inspiration and the right push in coping with professional challenges ahead.

*Keywords: novice practice, supervision, consulting, professional challenges*

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### Understanding and preventing doping in sport

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**Chair: Maria Kavussanu (University of Birmingham)**

The purpose of this symposium is to enhance our understanding of doping in sport. It consists of five papers. The first paper reports a latent profile analysis of intrinsic and extrinsic motivation, doping attitudes and moral disengagement and presents three athlete profiles that differ significantly in doping susceptibility. The second paper is an experimental manipulation of moral disengagement and examines its interactive effects

with moral identity in predicting doping likelihood. The third paper examined the relationship between implicit doping attitude and athletes' awareness of unintentional doping in Australian athletes. The fourth study reports a school based anti-doping intervention on variables from the theory of planned behavior, while the fifth paper is a qualitative study of doping investigating clean athletes' beliefs about the legitimacy of anti-doping control procedures. Overall, the research reported in this symposium enhances our understanding of doping in sport.

*Keywords: doping attitudes, moral disengagement, intervention, implicit association test*

## **Interactive effects of moral identity and moral disengagement on doping: An experimental investigation**

**Nicholas Stanger, Susan H. Backhouse (Leeds Beckett University)**

Moral disengagement has been linked with higher susceptibility to dope. However, the temporal direction, or potential moderators, of this relationship have not been examined. In this project, funded by the World Anti-Doping Agency, we experimentally investigated the interactive effects of moral identity and moral disengagement on doping. Seventy-two team sport players completed measures of moral identity and doping moral disengagement. Then, at least 3 days later participants engaged in a moral disengagement manipulation involving doping-related scenarios reflecting conditions of low or high moral disengagement. For each situation, participants reported their likelihood to dope, anticipated guilt and moral judgment. A within-subjects design was employed with experimental conditions fully counterbalanced. Participants reported being significantly more likely to dope, anticipated less guilt and perceived doping as less morally wrong in the high, compared to the low, moral disengagement condition. Hierarchical regression analyses revealed that dispositional moral identity negatively, and dispositional moral disengagement positively, predicted likelihood to dope in the low moral disengagement condition. A two-way interaction indicated that dispositional moral disengagement was a positive predictor of likelihood to dope for individuals low in moral identity, but not for those high in moral identity. Conversely, in the high moral disengagement condition – moral disengagement positively predicted likelihood to dope, however moral identity was not a significant predictor and no interaction was revealed. Our findings suggest that moral identity can protect athletes from being likely to dope even if athletes are prone to morally disengage. However, this protective effect can be over-ridden in situations, where the potential for moral disengagement is heightened.

*Keywords: doping, emotion, morality*

## **Implicit Doping Attitude and Awareness of Unintentional Doping**

**Derwin King Chung Chan (University of Hong Kong), Martin S. Hagger (Curtin University)**

This study examined the relationship between implicit doping attitude and athletes' awareness of unintentional doping. Participants were 143 Australian athletes ( $M_{age} = 18.13$ ,  $SD = 4.63$ ) who completed a brief single-category implicit association test for measuring implicit doping attitude, and Self-Reported Treatment Adherence Scale for the assessment of behavioural adherence to the avoidance of unintentional doping. In addition, we evaluated participants' awareness of unintentional doping (reading the ingredients of an unfamiliar food product, and awareness of the presence of banned substances) using a standard lollipop decision-making protocol developed in a previous study about unintentional doping awareness. The results showed that implicit doping attitude was negatively related to athletes' likelihood of reading the ingredients table of an unfamiliar food product, and positively related to athletes' awareness of the presence of banned substances in the given food product. Implicit attitude did not form a significant relationship with the behavioural adherence to the avoidance of unintentional doping. In conclusion, athletes who reported positive



implicit doping attitude were less likely to read the ingredients table of an unknown food product, but they were more likely to be aware of the possible presence of banned substances in certain food products.

*Keywords: implicit association test, automaticity, awareness to doping, banned substances, nutritional supplement, avoidance of unintentional doping*

### Doping susceptibility in young Australian athletes: A latent profile analysis

**Maria Kavussanu (University of Birmingham), Daniel Gucciardi (Curtin University), Geoffrey Jalleh (Curtin University), Robert Donovan (University of Western Australia), Vassilis Barkoukis (Aristotle University)**

Doping is a pervasive phenomenon in sport with the number of athletes using illegal substances and methods to enhance performance increasing in recent years. As doping itself is difficult to investigate, researchers have typically examined proxies of doping, such as doping susceptibility. The purpose of this study was to identify psychological profiles of athletes using variables linked to doping in previous research and determine whether these profiles differ in doping susceptibility. A total of 983 competitive athletes from a variety of individual and team sports completed a baseline survey, as part of a larger study, funded by the Australian Research Council. Latent profile analysis with intrinsic and extrinsic motivation, (positive) doping attitudes, and moral disengagement as the indicators revealed three profiles, which were distinguished primarily by the level of doping attitudes, extrinsic motivation and moral disengagement. The three profiles differed significantly in doping susceptibility. Specifically, the athlete profile that was most susceptible to doping ( $n = 119$ ,  $M = 3.15$ ,  $SE = .14$ ) was characterized by moderate levels of doping attitudes, and low-to-moderate levels of extrinsic motivation and moral disengagement. In contrast, the least susceptible to doping profile ( $n = 868$ ,  $M = 1.74$ ,  $SE = .04$ ) had low extrinsic motivation and very low doping attitudes and moral disengagement. Finally, the profile that had some susceptibility to doping ( $n = 35$ ,  $M = 2.64$ ,  $SE = .25$ ) was characterized by very high doping attitudes, low-to-moderate extrinsic motivation, and low moral disengagement. Intrinsic motivation was high in all three profiles. These findings suggest that the critical factor that could make athletes susceptible to doping is their propensity to morally disengage, combined with extrinsic motivation and positive doping attitudes. In addition, high levels of intrinsic motivation do not protect the athlete from doping.

*Keywords: intrinsic and extrinsic motivation, moral disengagement, doping attitudes*

### A new school-based intervention program against doping: Early empirical evidence supporting its effectiveness

**Fabio Lucidi, Andrea Chirico, Luca Mallia, Fabio Alivernini (Sapienza University of Rome)**

The use of illegal Performance and Enhancing Substances poses significant threats to adolescent health. Several scholars (e.g., Barkoukis, 2016) identified the need to develop effective anti-doping interventions. The aim of this study was to evaluate the effectiveness of a school-based intervention in changing adolescents' beliefs about the use of doping in sports, attitudes, subjective norms and perceived behavioral control toward doping. Overall, 389 students (52% male; mean age =16.56 SD=1.26) participated in the intervention group, while 103 students (mean age =16.10, SD=1.38) formed the control group. The intervention was developed in order to transfer knowledge to adolescents in an interactive way. Participants were asked to develop a sensitization campaign against doping having as target their peers. Students in both groups, completed a questionnaire twice within 3 months, measuring social-cognitive beliefs (i.e., attitudes, subjective norms, perceived behavioral control) doping use and supplements use in the previous 3 months. Repeated measures ANOVAs were conducted with Group (Intervention Vs Control) as between-subjects factor and Time (Before Vs After) as within-subjects factor. The changes in doping and supplements self-reported use were evaluated through McNemar test. The results showed a significant interaction between the Group and Time only for the positive doping attitudes ( $F(1,472) = 7.02$ ;  $p = .008$ ). The intervention group showed a significant decrease in the positive doping attitudes (Mean(time 1) = 2.2, SD = .85; and Mean(time 2) = 2.05, SD = .82), while the control

group reported an increase in these attitudes (Mean(time 1)= 1.96, SD = .85; and Mean(time 2) =2.09: SD = .94). The intervention group also showed a significantly lower level of supplement use after the intervention (Use(time1)=6.7%; Use(time2)=3.8%;  $p=.05$  for McNemar Test ), while the control group showed an increase in this use.

*Keywords: anti-doping interventions; school; social-cognitive beliefs*

## Elite athletes' beliefs about the legitimacy of anti-doping control procedures: A qualitative study

**Vassilis Barkoukis, Ioannis Ntovolis (Aristotle University)**

The purpose of the present study was to investigate clean athletes' beliefs about the legitimacy of anti-doping control procedures. A qualitative approach with the use of semi-structured interviews was used. More specifically, 18 Greek elite athletes participated in four focus group interviews. One group comprised individual sport athletes, one included team sport athletes, and two groups were mixed. A former elite athlete was trained and served as interviewer in order to facilitate establishing rapport with participants and ensure higher participation rates. The questions about the legitimacy of anti-doping policies were based on past research on athletes' perspectives of doping and anti-doping, and on Tyler's review of the literature about the psychological perspectives on legitimacy of regulatory authorities. Focus group data were transcribed verbatim and processed using specialist qualitative data analytical software. The results of the focus groups were analyzed using thematic analysis and revealed that the athletes believe that the anti-doping control procedures are not transparent and they don't protect the values of sport. Additionally, the athletes reported that sport authorities do not act always in a transparent manner and do not promote the values of sport. Furthermore, the results of the analyses demonstrated differences between individual and team sport athletes with the former believing that team sports are protected and the doping controls are not often transparent. The findings of the study offer insight about the legitimacy of current anti-doping programs and approaches and valuable information about developing alternative approaches to anti-doping.

*Keywords: sports integrity, sports transparency, values of sport*

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## Psychology of performance in soccer

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**Chair: Erkut Konter (Dokuz Eylül University)**

Soccer is the most popular sport worldwide attracting millions including sport psychology consultants, coaches, players, officials etc. Soccer has many unique features in need of specific investigation and intervention (e.g., psychological skills, courage, standard situations like free kicks, corner kicks etc.) in relation to performance. Therefore, the purpose of this symposium is to discuss different aspects of the performance psychology in soccer. Data were collected and analyzed using a number of different approaches including qualitative, quantitative methods, parametric and non-parametric statistics. The first study is on psychological skills in relation to level of courage in soccer indicating significant results with the data of  $N = 380$  male soccer players. The second study is on psychological interventions to stabilize performance in standard situations in soccer. In modern football games are frequently decided through standard situations like a free kick, a corner, or a penalty shot. These decisive situations put pressure on players which can result in failure, i.e. they choke under pressure. The research addresses the effects of integrating the embodiment technique into a more encompassing pre-shot routine for standard situations, as well as a specification of conditions for optimal technique application. The third study also focus on the relationship between Courage and Coping among soccer player in Kelantan State indicating significant relationships between sport courage and coping skills. The final presentation is on expert approaches to sport psychology consulting in high performing teams including

soccer. Interviews were conducted with eight esteemed applied practitioners (5 men & 3 women with the elite level professional experience). Findings suggest that psychological consultancy, psychological skills, courage, coping skills and optimizing performance in standard situations in soccer can significantly predict success and performance in soccer.

*Keywords: soccer, performance, psychological skills, courage, consultancy*

## **Psychological skills of soccer players in relation to level of courage, individual and performance variables**

***Erkut Konter (Dokuz Eylül University)***

The exact nature of the relationship between courage and psychological skills in soccer performance are still uncovered. Therefore, purpose of this study was to research psychological skills of soccer players in relation to level of courage, individual and performance variables. Data were collected from 370 male soccer players aged 12 to 35 ( $M=17.04 \pm 3.91$  yrs; 305 amateur, 70 professional and 5 unstated). soccer players administered the "Sport Courage Scale-31" (SCS-31) and the "Soccer Psychological Skills Scale-16" (SPSS-16). Further CFA analyses of the SPSS-16 indicated good fit ( $\chi^2(380) = 2490.33$ ,  $p < .001$ , CFI = .98, AGFI = .94, RMSEA = .046, SRMR = .042) and Croanbach Reliability Coefficients (range between .0.68 and 0.81) with four factors (imagery, commitment, peaking under pressure, and coping with stress) and 12 items (each factor has three items) (SPSS-12). These scales (SCS-31 and SPSS-12) were administered to association football players with the personal information form to collect data. Collected data was analyzed by spearman correlations, various parametric and non-parametric tests, and revealed a number of significant ( $p < .05$ ) differences between courage scores of soccer players and their indicated psychological skills. Spearman correlation analyses indicated positive significant results between the SPSS-12 and the SCS-31 factors. The both scales are positively and significantly correlated ranging between .274 and .487. Results of SPSS-12 in relation to level of soccer courage factors revealed a number of significant differences. In general, soccer players with high points of total SCS-31 have significantly higher points of imagery, commitment, peaking under pressure, coping with stress than soccer players with low points of total SCS-31. More research is needed to have more conclusive results.

*Keywords: psychological skills, courage, soccer, individual variables, performance*

## **Psychological interventions to stabilise performance in standard situations in soccer**

***Jürgen Beckmann (Technical University of Munich, Germany)***

In modern football games are frequently decided through standard situations like a free kick, a corner, or a penalty shot. Because players are aware of the decisive role of their performance in these situations, they experience pressure which can result in failure, i.e. they choke under pressure. In a series of experimental studies an embodiment technique was successfully employed to eliminate choking in football penalty shooting as well as other sports (Beckmann, Gröpel & Ehrlenspiel, 2013). This embodiment technique consists of contracting the left hand before shooting (dynamic hand grip). Only players (German 3rd league and higher) in the experimental conditions with left hand clenching penalty shooting performance was unaffected by pressure (identical to base line performance) whereas in the condition with right hand clenching choking occurred. The neurophysiological mechanisms underlying the effects of this embodiment technique were clarified in an EEG study (Cross-Villasana et al., 2015). Current research addresses the effects of integrating the embodiment technique into a more encompassing pre-shot routine for standard situations, as well as a specification of conditions for optimal technique application (such as required duration of hand contraction; Gröpel & Beckmann, in press).

*Keywords: soccer, stabilise performance, standard situations, interventions*

## Relationship between courage and coping among soccer player in Kelantan

**Aizzuddin Bin Hidrus, Garry Kuan (Universiti Sains Malaysia), Erkut Konter (Dokuz Eylül Üniversitesi), Yee Cheng Kueh (Universiti Sains Malaysia)**

Psychological skills such as coping and courage are important components for athletes who compete at national or international level. The study aimed to examine the relationship between athletes coping skills and their courage in sport. Participants were 19 male soccer players from Kelantan State with their age mean age, 22 years old ( $SD = 2.0$ ). They volunteered and agreed to complete the questionnaires within 30 - 45 minutes. Two questionnaires used in the present study were, the Sport Courage Scale-31 (SCS-31; Konter & Ng, 2012) and Athletic Coping Skills Inventory-28 (ACSI-28; Smith, Schutz, Smoll, & Ptacek, 1995). SCS-31 consists of five subscales namely mastery/self-confidence, determination, assertiveness, venturesome, and self-sacrificial behaviour. ACSI-28 consists of goal setting and mental preparation, confidence and achievement motivation, coachability, concentration, coping with adversity, peaking under pressure, and freedom from worry. Data was analysed using SPSS version 22. All subscales are calculated and summed up. Due to the small sample size, Spearman's Correlation was chosen to determine the correlation coefficient ( $r$ ) between the subscales from SCS-31 and ACSI-28. The significant correlations ranged between 0.120 to 0.769, where the highest correlation showed between Determination (SCS-31) and Coping with Adversity (ACSI-28) with  $r = 0.769$ . Determination (SCS-31) and Confidence & Achievement Motivation (ACSI-28) also showing high correlation with  $r = 0.749$ . The present study revealed that there were significant relationships between sport courage and coping skills. Results also showed that athletes who had a higher level of courage could also have a higher ability to cope with stress. This study provides us information that sport courage, and coping skills are related, and can be considered as a pair of attributes for soccer sports.

*Keywords: sport psychology, sport courage, coping skills, correlation*

## Expert approaches to sport psychology consulting in high performing teams

**Anders Haugen Rønning, Henrik Gustafsson, Frank Abrahamsen (Norwegian School of Sport Sciences)**

As sport psychology develops and is recognized as an increasingly important part of sport performance, it is essential to understand how we can deliver effective and high quality support to athletes. Previously some experienced sport psychologists have offered their first-hand experiences of working with athletes, giving valuable insight into the real world of applied sport psychology. Most of this literature however, discuss the classical situation of working one-on-one with an athlete. Less information is published on the complex role of being a sport psychologist within a team context. For the present study, interviews were conducted with eight esteemed applied practitioners (5 men & 3 women, with experience from the Olympic Games and some of the best professional teams - in for example soccer), and they shared indispensable experiences from the inside of high performing teams in several sports. The information was gathered through semi-structured interviews, and a thematic analysis undertaken, based on the guidelines of Braun and Clark (2006). The participants discuss areas like confidentiality, the importance of offering something unique, authenticity, self-development, how to avoid fateful mistakes and the use of supervisors. Their stories are strengthened by their reflections about the role and delivery within teams, what kind of behaviour that is expected and different ways of solving this role. On this basis, an area like confidentiality will for example be discussed in regard to how it in some ways restrict the work of the consultant, but might also be his/her most valuable tool in professional team sport settings. The purpose of this presentation is therefore to depict valuable lessons and advice given by some of the most experienced and recognized sport psychologists in the area of team sport.

*Keywords: sport psychology consulting, professional development, team sport*

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## Application of mindfulness and acceptance approaches before and during the Olympics: A Scandinavian approach

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**Chair: Carsten Hvid Larsen (Team Denmark & University of Southern Denmark)**

Being an Olympian or winning a medal at the Olympics is often described as the ultimate goal and highlight of an athlete's career. Athletes often emphasize Olympic Games as a unique and peak experience, however by many athletes also described as a very stressful event (Pensgaard, 2008). Experiences from delivering sport psychology service at the Olympics (Henriksen, 2015) describe that the athletes are facing a range of stressors and events that they are rarely able to foresee and plan for. The pressure of the Olympic games is unlike anything that the athletes ever tried before (and difficult to prepare for in specific details) and often evoke new and difficult feelings and thoughts. The present symposium describes four different sport psychology interventions in Olympic level based on third-wave cognitive therapy methods such as acceptance and commitment therapy (ACT) and mindfulness (Gardner & Moore, 2007). In the first contribution from Sweden there will be a closer look on principles of the performance psychology services provided by the Swedish Olympic Committee (NOC) and provide an example of Cognitive Behavioral Training. The second contribution will illustrate key aspects of service delivery of the Danish elite sport institute (Team Denmark) and in-depth describe mindfulness training, functional behavioral analyses, accept strategies, formulation of personal values, and collaboration with coaches to develop game plans for the specific sailing courses in the bay of Rio during the Olympics. The third contribution from Denmark describes the service delivery for the Danish national swimming team at the Olympics and outlines an ACT intervention with an individual swimmer. The final and fourth contribution will address sport psychology consultants who work across the blurred lines between performance enhancement and clinical issues with elite athletes from an ACT approach at the Olympics.

*Keywords: Olympics, mindfulness, consulting, sport psychology services, elite sport*

## Psychological preparation in Swedish Olympic athletes: A Cognitive-Behavioral Training approach

**Henrik Gustafsson, Carolina Lundqvist (Karlstad University & Swedish Olympic Committee)**

In this presentation we will describe the underlying principles of the performance psychology services provided by the Swedish Olympic Committee (NOC). The Swedish NOC model is based on Cognitive Behavioral Therapy. However, when communicating with athletes and coaches we have call it Cognitive Behavioral Training, to avoid negative connotation and also since the main bulk of work involves behavior change and not therapy (CBT: Gustafsson & Lundqvist, 2016). A major part of the psychological preparation is to change dysfunctional performance related behaviors (e.g., avoiding certain anxiety provoking situations) into functional behaviors (e.g., follow the game plan or taking the penalty kick despite experiences of anxiety). CBT is based on two branches, cognitive therapy and behavioral therapy. A recent development in CBT is the so called "third wave", where the focus on changing emotions and thoughts are replaced with a more acceptance based approach. The third wave, including mindfulness and Acceptance and Commitment Therapy (ACT) have gained research support in anxiety research and have several useful aspects in sport settings. This includes helping athletes to accept strong emotions as well as staying focused without exerting efforts on avoiding negative or unwanted thoughts. Our work is also influenced by traditional sport psychology, yet incorporated in a CBT framework. A classification system adopted from Gardner and Moore (2006), including (a) performance related, (b) subclinical and (c) clinical issues guide the interventions and when referral is required. Lessons learned will also be described as well a future model for performance psychology provision in the Olympic context.

*Keywords: mindfulness, acceptance, interventions, Olympics*

## **In the eye of the hurricane. Helping a Danish sailor maintain present-moment focus and valued behavior during the turmoil of the 2016 Olympic Games**

**Kristoffer Henriksen (Team Denmark & University of Southern Denmark)**

“In the eye of a hurricane” was a metaphor used by a sailor during the 2016 Olympic Games. It described her intention to remain calm, present-moment focused and aware of her values, while at the same time a storm of media attention, results speculation, and social invitations was raging all around her. The present paper outlines my work with a sailor during the Games. Through her story, I will illustrate key aspects of the way the sport psychology team of the Danish elite sport institution (Team Denmark) aims to help athletes deliver top performance in the most important and stressful events. These aspects are aligned with third wave cognitive mindfulness and acceptance based approaches. The preparatory work included mindfulness training, functional behavioral analyses, accept strategies, formulation of personal values, and collaboration with the coach to develop game plans for the specific sailing courses in the bay of Rio. The sailing completion consisted of ten races over six days. During the games, daily sessions revolved around preparing for adversity. We formulated adversity scenarios and the sailor visualized of how she managed to deal with these scenarios in a value-based way while being mindful of the difficult emotions and thoughts that could potentially lure her into dysfunctional actions. In the end she was successful and won an Olympic medal. Danish athletes often spontaneously view mental strength as the eternal presence of self-confidence and a corresponding absence of negative thoughts and emotions. Cases such as the present one have led the Team Denmark sport psychology team to develop a different definition of mental strength as: “The ability to act in accordance with your values and game plan even when you are under pressure and face difficult thoughts and emotions”.

*Keywords: Rio, mindfulness, MAC approach, performance mindset, sailing, Olympic Games*

## **Going the distance: Service delivery for the Danish National swimming team during the Olympics**

**Carsten Hvid Larsen (Team Denmark & University of Southern Denmark)**

In this presentation I will outline the service delivery for the Danish National swimming team and provide an example of my work based on mindfulness and acceptance and commitment therapy (ACT) with an individual swimmer during the Olympics. Being part of the Olympics involves a range of stressors and distractions such as a tight packed swimming schedule (up to 12 starts across seven days), a lot of media attention, social media, others and own expectations. In my service delivery during the Olympics I tried to create an awareness of these stressors and distractions. On a normal day at the Olympics I had a short talk with the swimmer in the morning. I observed the swimmer during warm-up and performed mindfulness sessions before or after warm-up and before finals. In between preliminary races and finals, I performed short mindfulness sessions and body-scans to ensure restitution and relaxation before finals. Being successful as a swimmer at the Olympics is related to the degree to which a swimmer can accept the presence of negative thoughts, physiological arousal, emotions such as anxiety or anger, and remain engaged in the task, while behaving in accordance with his or her values (Henriksen, Diment, Hansen, & Larsen, 2016). Therefore it was my task to help swimmers to three key aspects: (a) teaching swimmers to open up, to accept, and to be willing to experience the full range of thoughts and emotions during a high pressure event; (b) teaching swimmers to mindfully engage in the present moment, including task-focused attention; and (c) helping swimmers to behave in accordance to personal values that describe how they would like to be as an athlete and help them engage in actions that display these values.

*Keywords: Olympics, mindfulness, consulting, sport psychology services, swimming*



## Applying ACT in the context of elite sports: a reflection on blurred lines between clinical issues and performance enhancement

**Göran Kenttä** (*The Swedish Sport Confederation & The Swedish School of Sport and Health Sciences*), **Karin Moesch** (*The Swedish Sport Confederation & Halmstad University*), **Andreas Claeson** (*The Swedish Sport Confederation*)

Being an athlete at international level is primarily about performance accomplishments, and sport psychology has traditionally focused on performance enhancement and clinical issues has received limited attention. However, mental health is becoming a greater concern in the context of elite sports (Baltzell, 2016; Gardner & Moore, 2006). Acceptance Commitment Therapy (ACT) is regarded as the third wave of Cognitive behavioural therapy (CBT) in clinical psychology (Hayes, 2004). Interestingly, ACT is becoming increasingly applied to the context of sports (Baltzell, 2016; Gardner & Moore, 2006). Basically, brief interventions of ACT can conceptually be described by three core pillars represented by open, aware and engaged (Strosahl, Robinson, & Gustavsson, 2012). Open is about the ability to accept uncomfortable sensations and distress without resistance and struggle. Consequently, when open, behaviour is shaped by direct results rather than rigid rules. Awareness is essentially the ability to experience the present moment and to take perspective on self and the story about self. Finally, engaged is the behaviour oriented dimension and is expressed by strong connection with values and the ability to sustain value-consistent actions. Moreover, value driven recovery behaviours may potentially enhance health and performance. Committed actions are specific behaviours that arise as “reflections” based upon values. Ultimately, athletes should be able to stay connected to valued driven behaviours, on purpose, in the present moment, and do it with full acceptance. This presentation will address sport psychology consultants who work across the blurred lines between performance enhancement and clinical issues with elite athletes with ACT-based interventions at the Olympics. Finally, the presentation will discuss some future directions with emphasise on preventive ACT-interventions applied to the elite sports.

*Keywords: Olympics, mindfulness, consulting, sport psychology services, elite sport*

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## Personality-trait-like individual differences and psychophysiology

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**Chair: Sylvain Laborde** (*German Sport University Cologne*)

This symposium will be located at the crossroads between personality psychology and psychophysiology. So far, there are only few studies investigating personality-trait-like individual differences (PTLID) together with psychophysiological variables in sports, a joint approach that would help to better understand performance under pressure. This symposium will therefore first endeavor to present, from both the athlete and the coach perspective, several PTLIDs relevant for performance. Three PTLIDs will be introduced (i.e., perfectionism, mental toughness, and emotional intelligence), together with their association to sport expertise. Second, the emotional intelligence of coaches will be discussed, together with its relationship with the perception and satisfaction of the athletes’ basic psychological needs. To introduce the psychophysiological part, a theoretical approach on cardiac vagal control, the activity of the parasympathetic nervous system contributing to cardiac regulation, will be presented, and we will detail how it can be combined to the study of PTLID. Further, a unique study linking PTLID and cardiac vagal control will be presented, showing how PTLID relate differently to cardiac vagal control according to pressure, illustrating the principle of trait activation depending on context. Finally, given the links existing between PTLIDs and psychophysiology, a breathing technique having the potential to influence cardiac vagal control will be introduced, which may serve as a basis for a psychophysiological intervention triggering PTLID changes.

*Keywords: personality, psychophysiology, traits, pressure, emotions, emotional intelligence*

## The contribution of coping related variables and vagal tone on dual dart throwing performance under pressure

**Emma Mosley (Southampton Solent University, UK), Sylvain Laborde (German Sport University Cologne), Emma Kavanagh (Bournemouth University, UK)**

The aims of this study were 1) to assess the predictive role of coping related variables (CRV) on vagal tone (derived from heart rate variability), and 2) investigate the influence of CRV (including vagal tone) on dual dart throwing performance under low pressure (LP) and high pressure (HP) conditions. Participants ( $n = 51$ ) completed the trait CRV questionnaires: Decision Specific Reinvestment Scale, Movement Specific Reinvestment Scale and Trait Emotional Intelligence Questionnaire. They competed in a dual dart throwing task under LP and HP. During the experiment vagal tone measurements were taken at baseline, task and recovery for 5 minutes. Self-reported ratings of stress were taken at the same time points via a visual analogue scale. After the dart throwing task, self-report measures of motivation, stress appraisal, attention, pressure and dart throwing experience were taken. Results indicated that baseline vagal tone had no predictors, task vagal tone was predicted by baseline vagal tone in both pressure conditions with the addition of a trait CRV in HP. Recovery vagal tone was predicted by baseline vagal tone in both pressure conditions with the addition of a trait CRV in HP. Reactivity from baseline to task was predicted by a trait CRV only in HP. Reactivity from task to recovery was predicted by a state CRV only in LP. Dual dart throwing performance was predicted by a combination of both CRV and vagal tone. Theoretically this study supports the notion that vagal tone during stress can be predicted by resting levels and demonstrates that vagal tone is a salient predictor of dart throwing performance. At the applied level practitioners need to consider the role of attention and vagal tone on aiming tasks under pressure. Overall the current research suggests that coping related variables and vagal tone influence dual dart throwing performance differently dependent on pressure condition.

*Keywords: pressure, performance, dual task*

## The relationship between coaches' emotional intelligence and basic need satisfaction in athletes

**Matt Watson, Jens Kleinert (German Sport University Cologne)**

Emotional intelligence (EI) is a potentially important factor within coaching effectiveness, although there is a paucity of related empirical evidence. From a basic needs theory perspective (Deci & Ryan), this study tested the hypotheses that coaches' EI is positively linked to the perception and satisfaction of their athletes' basic psychological needs. Coaches ( $N=16$ , Male = 68.8%; Mage =  $33 \pm 11$  yrs) and youth athletes ( $N=171$ , Male = 46.9%; Mage =  $15 \pm 1.5$  yrs) from 16 non-elite German sports teams (basketball  $n=3$ ; football  $n=5$ ; handball  $n=3$ ; and volleyball  $n=5$ ) took part in this cross-sectional study. The short form of the Trait Emotional Intelligence Questionnaire (TEIQue-SF) was used to assess coaches' EI. Athletes' need satisfaction and perceived autonomy support was assessed using the Contextual Basic Need Satisfaction questionnaire for training (CBANS) and the short form of the Sport Climate Questionnaire (SCQ), respectively. Through hierarchical linear modelling (HLM), coaches' EI self-control emerged as a significant positive predictor of the accuracy of the coaches' perception of athletes' competence satisfaction. Furthermore, coaches' EI well-being significantly related to athletes' perceived autonomy support. These findings suggest that EI has a role in effective coaching, although further research is warranted to clarify the intrapersonal and interpersonal mechanisms through which these results are realised.

*Keywords: emotional intelligence, athlete motivation, coaching effectiveness*



## The relationship between mental toughness, emotional intelligence, and perfectionism in elite, amateur and non-athletes

**Robert Vaughan (York St John University, UK), Sylvain Laborde (German Sport University Cologne), Isabelle Kennedy, Kate Fallon (York St John University, UK)**

The purpose of this study was twofold; first to assess the differences across elite, amateur and non-athletes on Personality Trait Like Individual Differences (PTLID), namely mental toughness, emotional intelligence, and perfectionism, and second to investigate the relationship between those three traits. In total, 622 participants aged between 18 and 35 years with a range of athletic expertise e.g. elite ( $n = 140$ ), amateur ( $n = 272$ ) and non-athletes ( $n = 209$ ) from various sports completed a battery of general questionnaires assessing mental toughness, trait emotional intelligence and multi-dimensional perfectionism. Overall, results indicated that elite athletes scored higher than non-athletes on all three factors. This pattern also indicated that non-athletes consistently scored lower than athletes (elite and amateur), with elite athletes also outscoring amateur athletes on self and other orientated perfectionism. Correlation analyses indicated a positive relationship between trait emotional intelligence and mental toughness with correlations between subscales ranging from  $r = .17$  to  $r = .65$ . On the other hand, results indicated a largely negative relationship between multi-dimensional perfectionism and trait emotional intelligence with correlations between subscales ranging from  $r = -.29$  to  $r = -.13$ , and similarly between multi-dimensional perfectionism and mental toughness with correlations between subscales ranging from  $r = -.35$  to  $r = .28$ . Athletes with higher levels of expertise reported higher PTLID scores which may in turn facilitate performance. This could be explained by the increased ability to control emotions and remain committed to achieving goals despite imposing high standards on oneself. These findings pave the way to future research investigating how these traits develop in athletes and influence performance.

*Keywords: mental toughness, emotional intelligence, perfectionism, elite athletes*

## Vagal tank theory: a functional approach to self-regulation resources, bridging the gap between neurophysiology, cognitive psychology, and social psychology

**Sylvain Laborde (German Sport University Cologne), Emma Mosley (Southampton Solent University, UK), Alina Mertgen (University of Luxembourg)**

The aim of this presentation is to set the stage for the vagal tank theory, showcasing a functional resource account for self-regulation. The vagal tank theory, building on neurophysiological, cognitive and social psychology approaches, will introduce a physiological indicator for self-regulation that has mainly been ignored from cognitive and social psychology, cardiac vagal control. Cardiac vagal control reflects the activity of the vagus nerve, the main nerve of the parasympathetic nervous system, involved in cardiac regulation. We propose cardiac vagal control to be an indicator of how efficiently self-regulatory resources are mobilized and used. Three systematic levels of cardiac vagal control analysis are suggested: resting, reactivity, and recovery. Based on this physiological indicator we derive the metaphor of the vagal tank, which can get depleted and replenished. Overall, the vagal tank theory will enable to integrate previous findings from different disciplines and to stimulate new research questions, predictions, and designs regarding self-regulation. At the applied level, the vagal tank theory will allow to understand the precise time course of action of factors influencing cardiac vagal control during resting, reactivity, and recovery situations. This knowledge can then be used to foster cardiac vagal control on a short-term and long-term basis.

*Keywords: heart rate variability, self-control, executive functions, vagal activity*

## Slow paced breathing: Does the rhythm (inhalation/exhalation ratio) matter?

**Martin Klämpfl, T. Hentschel (Department for Sport Science, University of Federal Armed Forces Munich)**

Slow paced breathing has beneficial effects on well-being, especially of persons with autonomic dysfunctions (e.g., Hasset et al., 2007). Cardiovascular resonance can be achieved by breathing in a frequency of six breaths per minute (Hirsh & Bishop, 1981). Although it is known that a prolonged exhalation period increases the activity of the parasympathetic system, no information on the most effective rhythm (inhalation/exhalation ratio) is available yet. The aim of the present study was to examine the acute effects of different rhythms in paced breathing sessions. In a repeated measures design, twenty-eight male students participated in an initial resting condition and subsequently performed four paced breathing conditions (rhythms: 50:50, 45:55, 40:60, 35:65) featuring six breaths per minute, lasting for five minutes each and being presented via a smartphone app. Both electrocardiography and subjective ratings about relaxation and practicability were recorded. The paced breathing sessions had positive significant effects on psychophysiological parameters compared to the resting condition. Rhythm only had a substantial effect on the subjective ratings about relaxation and practicability. Thus, the selection of one specific breathing rhythm does not seem to be essential for obtaining acute positive bodily effects through slow paced breathing, but it is relevant for aspects of practicability and subjective feelings of relaxation. Future studies are suggested to apply longer practice sessions over a longer period of time to test possible different chronic effects of breathing rhythm.

*Keywords: psychophysiology, HRV, breathing rhythm, paced breathing, breathing app*

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## Innovations in athlete career research: Young scholars' presentations and mentors' panel

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**Chair: Natalia Stambulova (Halmstad University, Halmstad, Sweden)**

Athlete career research in sport psychology has evolved dramatically during the last decade, with several new trends emerging and young scholars across the world interested in and contributing to its development. This symposium brings together three young scholars from different countries (who are approaching the end of their doctoral project or just recently completed the degree) and their research mentors with the twofold purpose: (a) to introduce several recent trends in athlete career research through presentations of the young scholars, and (b) to discuss the projects and professional development of young researchers through the mentors' panel. The organizer will begin with a brief overview of the recent and innovative trends in the athlete career topic (e.g., those derived from the cultural praxis of athletes' careers paradigm; Stambulova & Ryba, 2013) and the content of the symposium. Following this, the first presenter will share results of a qualitative study aimed at investigating student-athlete and staff members' perspectives of the challenges and support provided to British dual career athletes in their transition to university. The second presenter will share the experiences of creating an empirical career model of Swedish handball players based on the holistic athletic career model (Wylleman, Reints, & De Knop, 2013) and in-depth interviews with the players. The third presenter will challenge the existing career development models in terms of their one-sided interpretation of athletic career termination by approaching this issue from the existential and narrative psychology perspectives. The symposium will be concluded by a mentors' panel discussing the young scholars' projects, their mentorship experiences, and strategies to establish and maintain cross-generation professional links to ensure sustainable development of the athlete career topic in future.

*Keywords: athlete career development, research innovations, mentorship, professional development*

## Dual career transitions: The UK university student-athletes' and stakeholders' perceptions

**Emma Vickers, Robert Morris, David Tod, Martin Eubank (Liverpool John Moores University, Liverpool, England)**

Recent EU guidelines on dual careers of athletes (2012) were outlined to ensure optimal support for dual career (DC) athletes. Within these guidelines, national stakeholders have been encouraged to develop national DC guidelines adapted to their respective cultures, based on research exploring national DC systems. The current doctoral study aimed to understand the experiences of student-athletes' transitions to university within two UK universities. Its innovative aspect relates to exploring overlaps and divergences in student-athletes and stakeholders' perceptions of the DC transition in terms of the transition demands and social support. Data were collected from focus groups (n = 5) and interviews (n = 4) with student-athletes (n = 7), athlete support staff (n = 13) and academic staff (n = 3) and thematically analysed. Results revealed that student-athletes experienced the DC (i.e., education and sport) transition that coincided with their transition from adolescence to young adulthood. Stakeholders recognized many student-athletes' demands, including the difficulty of balancing club, university, and social life commitments, and changing priorities between the athlete and student role. In addition, student-athletes and stakeholders perceived that academic and athletic departments at the focal universities have no system of communication, leading to inconsistencies in the DC support. Data analysis also revealed divergences between student-athletes' and stakeholders' perspectives. Stakeholders believed that they provide support to facilitate the sport-education balance that is specifically tailored to the student-athletes' needs. Student-athletes, however, believed that there were occasions where the DC support did not facilitate their needs. These divergences may occur as a result of the different positions that student-athletes and stakeholders hold within the system. Based on the study, recommendations on how to optimise the DC support are provided.

*Keywords: dual career, student-athletes, sport, education, psychological development*

## From career initiation to discontinuation: an empirical career model of Swedish handball players

**Johan Ekengren, Natalia Stambulova (Halmstad University, Halmstad, Sweden)**

This doctoral project was inspired by a set of challenges articulated in the cultural praxis of athletes' careers paradigm (Stambulova & Ryba, 2013), and especially in regard of contextualizing career research and existing 'general' frameworks. Innovative aspects of this study consisted of: (a) exploring career experiences of Swedish handball players with foci on stages and transitions in their athletic and non-athletic development, and (b) consolidating the players' first-hand data into an empirical career model of Swedish handball players (further – the empirical model). The holistic athletic career model (Wylleman, Reints & De Knop, 2013) served as a prototype for the empirical model and was useful in structuring the players' career experiences. Eighteen elite Swedish handball players (retiring or just recently retired) took part in narrative type interviews about their whole careers with an interest in both athletic and non-athletic developments. Thematic analysis initially took a deductive turn to identify the handball career structure, and then the empirical data relevant to each stage/sub-stage were analysed inductively to identify themes describing players' career experiences at each stage. Finally, the themes were incorporated into the stage-like structure, and the empirical model was completed. The model describes careers of Swedish handball players as having four stages – initiation, development (with three sub-stages), mastery (with four sub-stages), and discontinuation. It also contains eight layers – athletic categorisation in terms of age, pathways of the Swedish Handball Federation, academic/vocational, psychological, psychosocial, and financial developments – all aligned with age markers and complemented by sets of themes describing players' stage-by-stage career experiences from the holistic perspective. Further in the project the empirical model will be used to create the 'whole career' psychological support system for Swedish handball players.

*Keywords: career experiences, cultural praxis, empirical model, handball, holistic athletic career model.*

## When is the “right” time to retire? An existential-narrative perspective on endings in athletic careers

**Noora J. Ronkainen (Shanghai Jiao Tong University, Shanghai, China; Liverpool John Moores University, Liverpool, UK), Tatiana V. Ryba (University of Jyväskylä, Jyväskylä, Finland)**

Recent scholarship has promoted cultural praxis of athletes’ careers as the third wave of career research which implies “reflexive situatedness of career projects in relevant socio-cultural and historical contexts” and “draws attention to diversity in career patterns and trajectories” (Stambulova & Ryba, 2014, p. 10). In the first author’s doctoral research, we employed a novel theoretical approach, an existential-narrative framework, to explore subjective careers of Finnish endurance athletes. The study sought to understand how these athletes construct narratives surrounding athletic retirement and explored the forms of resistance they develop towards negative cultural assumptions surrounding ageing athletes. Ten Finnish male endurance athletes, aged 25-62, were interviewed with the life story approach. By participating (or planning to participate) in competitive sport also several years after reaching their athletic peak, several athletes challenged the assumption that an athletic career has a normative end point. That is, their athletic practices and narrative constructions challenged modernist models of an athletic career, which are built on an implicit understanding of sport as a project of youth. Since the scholarship on athletic careers carries a prescriptive assumption of career termination when athletes’ physical performance starts to decline, there is a danger that our research practices work to legitimise the monological performance narratives of sport while alienating athletes whose experiences do not comply with these storylines. The findings are discussed in light of existential and narrative psychology, Nordic movement culture, and implications for applied practitioners working with mature athletes.

*Keywords: ageing athletes, career transitions, Nordic sport culture, athletic identity*

## Ensuring sustainable development of athlete career research: Mentors’ perspective

**David Tod (Liverpool John Moores University, Liverpool, England), Natalia Stambulova (Halmstad University, Halmstad, Sweden), Tatiana V. Ryba (University of Jyväskylä, Jyväskylä, Finland), Robert Morris (Liverpool John Moores University, Liverpool, England), Martin Eubank (Liverpool John Moores University, Liverpool, England)**

The panel will consist of four mentors led by a moderator (discussant). The panellists will be invited to elaborate on: (a) innovations in athlete career research in general, and particularly on the projects and presentations of the young scholars, (b) their mentorship experiences and how they help young scholars to navigate their careers, and (c) strategies on improving international collaboration and cross-generation professional links to ensure continuity and integrity in further development of the athlete career topic in sport psychology. The moderator will encourage discussion between the panellists and facilitate audience questions and feedback.

*Keywords: athlete career research, mentor-trainee experiences, professional reflections, professional development*



## Symposia Session 6. (10.30-12)

### Dual career and transitions: a Mediterranean perspective

**Chair: Cristina López de Subijana (Sport Sciences Faculty-Technical University of Madrid)**

The major idea of this symposium is to explore in deep the dual career and transitions in some Mediterranean countries like Lebanon, Eslovenia and Spain. We will have the chance to analysis some topic in each of those countries. First of all, from Spain, Elena Conde of the Catholic University of Murcia will describe the dual or triple career that 96 elite athletes of non Olympic sport have to face. Continuing in Spain, Jose Luis Chamorro from the European University of Madrid will show how 478 junior soccer players of elite clubs cope with the transition to senior level in terms of passion and behavioural regulation. Then, Aurelie Ledon from the University of Antonine, Lebanon, will present how the Young athletes in the Middle East take decisions about the sport career (moving or not to a high performance center, for example). She will show us the results of 60 semi directive interviews. Finally and to conclude Javier Ramos will present differences found at 447 ex-elite athletes at the retirement transitions among to dual career paths in Spain: the convergent and parallel models.

*Keywords: dual career, elite athletes, transitions, culture, mediterranean*

### Dual career of non-olympic athletes in Spain

**Elena Conde (Sport Sciences Faculty-Murcia Catholic University), Cristina López de Subijana (Sport Sciences Faculty-Technical University of Madrid)**

The goal of the present study was to explore the factors that could influence the dual career of high level athletes of non-Olympic modalities in Spain. A cross-sectional descriptive study was used, based on an ad hoc questionnaire. The sample was 96 high level athletes ( $25.1 \pm 8.1$  years-old) of non-Olympic modalities with  $13.2 \pm 6.7$  hours of training load per week. Regarding the studies in which they were enrolled, 33.7% of them were studying higher education studies while 23.2% did not study any type of courses. 41.1% of athletes worked at the same time as they were developing their career in the elite sport, being 61.1% full-time workers and 38.9% part-time workers. This fact should be taken into account because most of these athletes study, work and develop their sport career at the same time. It seems that they have a triple career. The difficulty for reconciling sports life and training, in a scale from 1 to 4, was high ( $3.4 \pm 0.6$ ). With respect to barriers to study, in a scale from 1 to 3, the high price of studies ( $2.5 \pm 0.8$ ) and the time management issues appeared ( $2.3 \pm 0.8$  for "I don't have time";  $2.3 \pm 0.8$  for "the study center is far away";  $2.3 \pm 0.6$  for "timetables are not flexible") in a higher degree. It was also remarkable how 56.2% of athletes did not receive information regarding the benefits mentioned in the Royal Decree 971/2007 of Elite athletes.

*Keywords: dual career, difficulties, elite athletes, non-olympic*

### Passion and behavioural regulation in the junior to senior transition

**José María López Chamorro (European University of Madrid), Miquel Torregrossa (Autonomous University of Barcelona), Tomás García-Calvo (Extremadura University), Juan Jose Pulido (Extremadura University)**

In the last decade, the concept of Dual Careers (DC) has gained importance and interest among researchers and political and sports organisations. However, athletes frequently prioritize their athletic career at the expense of academic achievement (Cosh & Tully, 2014). For this reason, the effort in the promotion of the DC from institutions political or federative and from others professional (i.e., sports psychologist, researchers) could lose powerful for those athletes or clubs focused on sport success if it separate athlete level

of academic/vocational level (Wylleman et al., 2013). This study aims to explore the relationship between psychological variables that have influence in athlete level, as passion and behavioural regulation, with the appreciation of future achievements in different life domains (i.e., sport and academic lives) in Spanish young elite football players. Participants were 478 soccer players, ranging in age from 16 to 19 years old ( $M = 17.45$ ;  $SD = .71$ ) belonging to the maximum Spanish under-18 division clubs. Bivariate correlations analyses showed that amotivation, controlled regulation and obsessive passion were negatively correlated with the appreciation of getting future achievements in academic life, whereas this relationship was positive regarding to harmonious passion. Regression analyses showed that amotivation negatively predicted the appreciation of future achievement in both life spheres, harmonious passion positively predicted also the appreciation of future achievement in both life spheres but, obsessive passion negatively predicted the appreciation of future achievement in academic life. Results suggests that behavioural regulation and passion could have influence in the decision of carrying out a DC. It will be discussed the implication that could have these results regarding to link athlete with academic levels.

*Keywords: transitions, professional sport, soccer, junior*

### Career transitions among high level young athletes: Elite access in Europe and Middle East

**Aurélie Ledon, Isabella Fren, Elie Alam, Léa Farhat (Sport Sciences Faculty-Antonine University-Lebanon)**

In the majority of sports, elite athletes frequently need to make decisions which involve their career and one of them concerns the choice of whether or not to integrate an elite sport training center. This is the case in Europe but it's not the same system in the Middle East. This entrance has multiple implications to which the athlete will have to adapt to himself/herself. The first question is to know which elements are susceptible to influence athletes' decisions. This study model takes into account four factors susceptible to influence this decision (i.e., model push-pull-antipush-antipull) (Schultz, Morton, & Wercherle, 1998): (1) elements of attraction (i.e., interests which offers new situation), (2) elements of incentive (i.e., elements of the current context which urge going towards something else), (3) elements of attachment (i.e., what can be lost in the change) and, (4) of the deterrents (i.e., costs and risks which occur in the new situation). The second question concerns the differences between Europe and Middle East in access to elite sport. Sixty semi directive interviews were held, focusing on the entrance to sports practices and processes influencing these choices.

*Keywords: decision-making, elite athletes, transition of career, Europe, Middle East*

### Analyzing in deep dual career models

**Javier Ramos, Cristina López de Subijana, Maribel Barriopedro, Carlos Muniesa (Sport Sciences Faculty-European University of Madrid)**

The aim of this study was to analyze if the academic level, the academic support and the degree of difficulties experienced after the sport retirement were different by the athletes following convergent and parallel dual career models (Pallarés et al., 2011). Four-hundred and forty-seven retired athletes fulfilled a 52 items questionnaire. The results showed that the academic level at retirement and at the moment of the study were independent of the model of Dual Career they took. However, the athletes that followed a parallel model achieved more frequently 2nd and 3rd level of higher education. Significant differences were found regarding the academic support received. Athletes following a convergent path benefited more of the 3-5% for accessing the university ( $\chi^2(3) = 9.2$ ;  $p = .027$ ), with changes of group of class ( $\chi^2(3) = 11.2$ ;  $p = .011$ ), in flexibility with the continuous evaluation of the courses ( $\chi^2(3) = 8.5$ ;  $p = .036$ ) and for moving their records from one study center to another ( $\chi^2(3) = 15.8$ ;  $p = .001$ ). Athletes that combined studies in a parallel model obtained more changes for exam dates due to competition ( $\chi^2(3) = 19.9$ ;  $p < .001$ ). Athletes enrolled in a parallel model perceived fewer difficulties at the retirement in respect of professional career ( $F_{3,411} = 4.6$ ;  $p = .004$ ) and economic affairs

( $F_{3,411}=6.6$ ;  $p<.001$ ). Despite achieving similar academic levels, athletes that followed parallel careers benefited less from academic support and experienced fewer difficulties after retirement.

**Funding:** This project was funded by the Research Advance Grant Program of the International Olympic Committee.

**Keywords:** *dual career, career paths, career models*

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## Individual differences, self-regulated learning, and practice-enhancement through a sport expertise lens

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**Chair:** *Bradley W. Young (University of Ottawa)*

Although self-regulation has been studied for decades in sport psychology, focus has been on self-regulatory skills for competitive readiness. Little work has attended to how self-regulation enhances the learning, training or deliberate practice of athletes (i.e., a practice-enhancement orientation). There is a need to understand whether individual differences variables for self-regulated learning (SRL) and the personal control of preparatory efforts relate to practice measures, and expertise levels, in athletes (Baker & Young, 2014; Tedesqui & Young, 2015; Toering & Jordet, 2015). This symposium synthesizes emerging data on this topic from various international research groups. First, Tedesqui and Young examine how different individual difference variables explain deliberate practice and commitment in North American athletes, documenting the unique associations of grit, self-control and conscientious characteristics. McCardle and colleagues examine whether SRL is being reliably and validly surveyed in the sport training domain. Drawing from emerging work in a pan-Canadian sample, they use psychometric analyses to note advances in an SRL survey, highlight remaining limitations, and provide a template for future confirmation. Weissensteiner et al. detail the deployment of an SRL instrument in the Australian system. They discuss whether scores for SRL subscales can reliably discriminate expertise levels and what this may mean for talent identification strategies. Toering, drawing upon her work in Scandinavian and Dutch samples, revisits the pragmatics of assessing SRL, real-world implications of SRL diagnostics, and problematizes whether prior efforts have faithfully examined self-regulation. Finally, Young and Baker integrate and discuss whether/how these results support key tenets of expert development frameworks, the implications for predictive validity on key criterion measures, and future considerations for measurement and application.

**Keywords:** *sport expertise development, individual differences, self-regulated learning, deliberate practice*

## Investigating the roles of self-control, conscientiousness, and grit on athletes' practice and commitment to their sport

**Rafael A.B. Tedesqui, Bradley W. Young (University of Ottawa)**

Self-Control (SC; Tangney et al., 2004), Conscientiousness (C; McCrae & Lockenhöff, 2010), and Grit (Duckworth et al., 2007) are dispositional characteristics consistently linked to achievement outside sport (e.g., Credé et al., 2016). Little research has investigated their role on athletes' expertise development (Tedesqui & Young, 2017; Toering & Jordet, 2015). We examined the role of SC, C, and Grit subscales for predicting athletes' engagement in practice amounts and commitment-related variables related to sport expertise. Participants included 293 athletes (135 female,  $M$ -age = 21.13,  $SD$  = 6.82;  $M$ -practice = 14.05 hr/week,  $SD$  = 8.04) who completed a survey comprising SC, C, and Grit subscales, and measures for engagement in deliberate practice, mandatory and optional practice, and thoughts about switching and quitting one's sport. For each dependent variable, we used backward hierarchical regressions to assess the relative prediction of personality subscales, controlling for age. Perseverance of Effort (Grit subscale;  $\beta_{PE}$  = .27, partial  $R^2$  = .04), Dutifulness (C subscale;  $\beta_{Dut}$  = -.25, partial  $R^2$  = .05), and Achievement Striving (C subscale;  $\beta_{Ach}$  = .16, partial  $R^2$  = .01) explained

deliberate practice ( $R^2 = .14$ ). Perseverance of Effort ( $\beta_{PE} = .27$ , partial  $R^2 = .06$ ) and Self-Discipline (SC subscale;  $\beta_{SCSD} = .19$ , partial  $R^2 = .03$ ) explained mandatory practice ( $R^2 = .14$ ). Achievement Striving ( $\beta_{Ach} = .18$ , partial  $R^2 = .02$ ) and Self-Discipline ( $\beta_{SCSD} = .18$ , partial  $R^2 = .02$ ) explained optional practice ( $R^2 = .10$ ). Consistency of Interests (Grit subscale) solely predicted switching ( $R^2 = .11$ ;  $\beta_{CI} = -.33$ ), and explained quitting ( $R^2 = .11$ ;  $\beta_{CI} = -.20$ , partial  $R^2 = .03$ ) along with Self-Discipline ( $\beta_{SCSD} = -.15$ , partial  $R^2 = .02$ ). These findings suggest that the investigated traits have differential roles in predicting athletes' sport expertise development, related to directing and sustaining efforts on developmental pursuits and focus on preparatory tasks.

*Keywords: self-control, conscientiousness, grit, personality, sport expertise development*

### Building on the SRL-SRS: Psychometric evaluation of measures of self-regulated learning in a sport practice context

**Lindsay McCardle (University of Ottawa, York University), Bradley W. Young, Rafael A.B. Tedeschi, Dora Bartulovic (University of Ottawa), Sharleen Hoar (Canadian Sport Institute - Pacific), Maxime Trempe (Bishop's University), Joseph Baker (York University)**

Considering self-regulated learning (SRL) as a correlate of quality practice and performance requires valid measurement of SRL. Toering et al. (2012) created the Self-Regulated Learning – Self-Report Scale (SRL-SRS) to measure SRL as a stable attribute in multiple domains. Bartulovic, Young, and Baker (2017) refined the scale to be specific to sport training, meeting recommendations SRL be context-dependent (Winne & Hadwin, 1998). We aimed to confirm the SRL-SRS for sport training and extend items to include conceptually-pertinent content previously omitted. From a pan-Canadian sample, 297 individual-sport athletes (age=13-59;48% female) completed 33 SRL-SRS for sport training items representing metacognitive (planning, self-monitoring, evaluation, reflection) and motivational (effort, self-efficacy) subscales, plus 15 new items (e.g., goal setting, concentration). Confirmatory factor analysis on these 33 SRL-SRS items showed acceptable model fit ( $CFI=.90$ ); subscale correlations were very high, particularly across metacognitive subscales ( $r=.80-.99$ ). Maximum shared variance (MSV) values (.44-.98) were concerning, with self-monitoring, evaluation and reflection converging. To develop a psychometrically and conceptually sound structure, we ran a series of exploratory factor analyses (EFA) on the SRL-SRS for sport training items, iteratively deleting and moving items, resulting in 24 items on 4 factors. To extend this model, we ran a series of EFA and exploratory structural equation modeling (ESEM) analyses to iteratively add new items, resulting in 32 items on 6 factors (planning, checking, reflecting and evaluating, self-efficacy, task perseverance, task concentration). ESEM model fit ( $CFI=.96$ ), subscale loadings (all  $>.38$ ) and subscale correlations were good (.29-.74), with convergent validity greatly improved ( $MSV=.32-.55$ ). We discuss this model as it relates to the evolution of Toering et al.'s original work, and next steps toward a reliable and valid instrument.

*Keywords: self-regulated learning, sport practice, measurement, survey*

### Measuring and facilitating athlete self-regulation within an Australian context

**Juanita R. Weissensteiner, Daniel Green, Courtney R. Porter (Australian Institute of Sport - Canberra), Clare MacMahon (Swinburne University)**

There is little doubt psychological factors and in particular self-regulation (Zimmerman, 1986) is central to not only an athlete enduring the developmental journey to an elite level (Mathews et al., 2012; Toohey et al., 2015) but also critical to associated learning and performance both in and out of sport (Jonker et al., 2010, 2011). Further enquiry is required to transpose these theoretical underpinnings into effective Talent Identification and Development (TID) strategies. To confirm the criticality of self-regulation within the Australian sporting context, the Self-Regulation of Learning Self-Report scale (SRL-SRS; Toering et al., 2012) was administered to over 1000 Australian athletes across the FTEM (Foundation, Talent, Elite & Mastery) Athlete

Development Pathway (Green & Weissensteiner, 2015; Gulbin et al., 2013; Weissensteiner, 2017). The results revealed that elite and mastery level athletes were indeed characterised by significantly higher levels of self-regulation compared to a recreational 'control' group. Interestingly however, the results also revealed a 'spike' specific to newly identified sporting talent and a 'drop' specific to athletes within the pre-elite development and transition to elite phases. Moreover, inclusion of a measure of social desirability, the Marlowe-Crowne Questionnaire (Crowne & Marlowe, 1960) within the SRL-SRS, revealed an association between self-reporting and social desirability, suggesting potential limits to administering psychological inventories in isolation to behavioural confirmation within the context of formalised TID initiatives. These learnings have directly informed current TID practice, including athlete profiling and feedback utilising these 'Australianised' sport-specific benchmarks and subsequent education and tailored interventions for both athletes and their coaches. These strategies will be showcased in this presentation along with potential future directions.

*Keywords: self-regulation; skill groups; talent identification and development; skill learning; athlete development pathways*

## Self-regulation, expertise development, and performance in sport: Are we really bridging the science-practice gap?

**Tynke Toering (Norwegian School of Sport Sciences)**

Self-regulation in the learning context refers to self-directed processes that enable individuals to transform their thoughts into performance skills. This means that individuals set and live up to their own standards for reaching a certain goal, they know how to meet these standards, and they undertake the necessary action. Self-regulation processes have been proposed to help people learn more effectively as opposed to immediately produce high levels of expertise (Zimmerman, 2006). They seem to help athletes become aware of what is required at several performance levels, which then sets the standards for their practice efforts (e.g., Cleary & Zimmerman, 2001; Jonker et al., 2010; Toering et al., 2009). Several talent development studies have indicated that self-regulation may be one of the factors facilitating the development of promising performers (e.g., Baker & Young, 2014). However, does the research sufficiently contribute to bridging the science-practice gap? The following three issues related to the previous question will be discussed. 1) What do questionnaire scores mean if they are not connected to "the real world"? For example, some of our own exploratory studies suggest that junior elite footballers do not yet fully understand the requirements of professional football and therefore believe they do better than they really do. 2) The use of some of the research-based tools meant to facilitate self-regulation can be questioned. For instance, one can ask whether obliging athletes to keep a training log goes hand in hand with the definition of self-regulation. In addition, is it enough that a coach asks questions instead of telling athletes what to do, to make them self-regulate? 3) Many measurement instruments for self-regulation and related concepts such as self-control and grit have been developed in average populations. It can be discussed whether these instruments sufficiently capture what these concepts mean to elite athletes.

*Keywords: self-regulated learning; sport talent development; research-based applied tools; measurement instruments*

## Where are we? Where do we go? Integrating and extending perspectives on key personality and self-regulatory variables for the enhancement of sport practice

**Bradley W. Young (University of Ottawa), Joseph Baker (York University)**

The last decade has seen resurgence in the study of psychological variables that might underpin successful sport performance. This symposium explores variables ranging from personality, self-control, and grit to elements of self-regulated learning (SRL). In this final presentation, we discuss the merits of merging

personality variables that assess ‘higher-level’ dispositions for hard work and consistency of interests with ‘lower-level’ variables for proficiencies/processes that are more proximally related to training tasks. We make the case that a synergistic understanding of these variables adds to dominant sport expertise development frameworks. Most expertise research investigates two empirical tenets, using variables of interest to (a) discriminate escalating skill groups, and (b) explain maximal variance in deliberate practice (Ericsson et al., 1993). We appraise the aforementioned presentations and other emerging research to demonstrate how well each of these tenets is supported, and to problematize how little research considers the quality of practice, instead focusing on variables that maximize practice amounts. Further, we discuss whether newfound understandings of SRL can help refine the operationalization of deliberate practice in sport. Finally, we appraise the evolution of self-report measures for the study of individual differences and SRL competencies, from their origins in non-sport domains with non-elite samples, to more recent instruments claiming to be specific to the sport training context and relevant to elite samples. Discussion focuses on what this evolution means for assessment, predictive validity and effect sizes, and the pragmatics of these instruments in applied diagnostic (talent identification) settings. We also consider the limits to these surveys and how future methods might capture the fullest range of SRL processes, including in situ examinations of athletes’ self-regulated practice efforts.

*Keywords: self-regulated learning; personality; sport expertise frameworks; talent identification; quality sport practice*

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### **Fighting the stereotypes: working in martial arts and combat sports**

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Chair: Anastasiya Khomutova (University of Brighton)

Work within combat sports (MMA, boxing, judo, etc.) has received comparatively little attention in the way of academic research or applied case studies within recent sport psychology literature, despite an abundance of attention within sport sociology and related fields (for instance, Sanchez Garcia and Spencer, 2013; Spencer, 2011; Woodward, 2007). With the recent emergence of a new, international and multi-disciplinary academic field dedicated to martial arts studies (see Bowman 2015), interest in the value of sport psychology research for understanding and making effective interventions into such practices is warranted. The potential contributions of scholars and practitioners in sport psychology can be said to centre on a number of key topics, such as supporting athletes and resolving ethical dilemmas of working in this domain (Lane, 2006; Schinke, 2007, 2014), exploring athletes’ narratives of the practice of cutting weight (Brito et al., 2012; Morton & Close, 2010), and understanding the processes associated with mental preparation for competitive fights (Jensen et al., 2013; Simpson & Wrisberg, 2013). This symposium aims to highlight the value of academic knowledge and applied experience in these thematic areas. The first presentation will focus on the reflections of a neophyte practitioner in sport psychology on a year spent with a local amateur boxing club, helping boxers of different gender and age categories to prepare for local and national competitions. The following study will discuss the journey of an Olympic judo athlete and the support that was given to her on the road to the Rio Olympic Games. The third presentation will focus on a key contemporary issue within combat sports, exploring the practice of weight cutting among Dutch judoka. Following that, the last presentation will discuss the pedagogical opportunities that arise when examining the moral boundaries that are constructed through and within martial arts and combat sports.

*Keywords: combat sports, boxing, judo, violence, mixed martial arts, reflective practice*

### **Reflections on a year working with a boxing club: fight or flight?**

**Anastasiya Khomutova (University of Brighton)**



This presentation will reflect on a year spent working with a local amateur boxing club as a volunteer performance psychologist. Although the importance of mental preparation in competitive boxing has been recognised by sport psychology scholars and practitioners (Cunningham & Turner, 2016; Schinke, 2015), entering boxing spaces can be quite difficult for 'outsiders', such as sport psychology professionals. Furthermore, neophyte practitioners in sport psychology often face additional obstacles when starting their careers and have to adjust their expectations of applied work based on their initial experiences in the field (Owton, Bond & Tod, 2014). Several such issues will be addressed in this presentation, including difficulties with entering this sport, working as a female in a predominantly male domain, and the importance (and difficulties) of establishing rapport and gaining trust from both the boxers and their coaches. These reflections will conclude with recommendations to the early career sport psychologist as well as to more experienced practitioners who are considering entering the world of boxing, including the importance of mentoring and supervision for junior practitioners, advantages of regular note-taking (or updating reflective diaries) (Moon, 2004), close work with coaching staff, and some ethical considerations, e.g. athletes' eating habits; friendship with clients (Heyman, 1990).

### **Elite Judoka athlete: Reflecting on psychological support leading up to Rio 2016**

**Claire Rossato (University of Greenwich)**

Some athletes and teams thrive in the Olympic arena and attain peak performances, while others with similar talent and preparation under-perform (Fletcher & Wagstaff, 2009). In addition, the application of mental skills in sports is linked with the development and maintenance of expert performance (Orlick, 2000). In particular several psychological variables have been linked with enhanced performance within martial arts, for example self-talk (Ferrai, 1999), concentration strategies (Williams & Elliott, 1999); anxiety control (Taylor, 1996) and imagery (Weinberg, Seabourne & Jackson, 1981). The purpose of this presentation is to examine and explore my experiences of working within combat sport leading up to the Rio 2016 Olympics. In this instance, professional judgment and decision making are important constructs to evaluate regarding the effectiveness of applied practice (Martindale & Collins, 2007). A Pre-Performance Routine (PPR) was adopted to help the athlete focus upon performance. The PPR included reframing (Meyers, Whelan & Murphy 1996) and self-talk interventions (Hardy, Gammage, & Hall, 2001). These were adopted in order to aid in improved performance (Mesagno, Marchant & Morris, 2008). Evaluation instruments such as a performance profile (Butler & Hardy, 1992) were adopted to assess the impact of psychological interventions alongside regular psychological consultations. Evaluating applied practice should exam quality of support, psychological skills and athlete's response to support and performance (Anderson, Miles, Mahoney & Robinson, 2002); these areas will be discussed throughout.

### **Making weight or making trouble? The extent and nature of weight cutting of Dutch competitive judokas**

**Karin de Bruin (Sportpsycholoog, University of Amsterdam, the Netherlands), Jessica Gal (Sportartsen, Amsterdam, the Netherlands), P.J. Beek (VU University Amsterdam, MOVE, the Netherlands)**

Weight-class sports are identified among the sport types at-risk for eating disorders (Sundgot-Borgen & Torstveit, 2004). Actual studies into this area seem to be an exception (Artioli et al., 2010; Franchini et al., 2012). More insight is needed into the extent and nature of weight making and the experienced antecedents and consequences. For this study, a questionnaire into weight making was developed and validated (de Bruin, Gal, & Beek, 2015) and afterwards completed by 461 Dutch elite and non-elite competitive men and women judokas over 12 years of age among all weight classes. In addition, interviews were held with 18 (former) elite judokas along with focus group sessions with parents, trainers, and sports staff. The results showed that weight

making is widely spread among Dutch judokas. The extent and nature of this weight cutting appears to differ between the level of competition, gender, age, and weight class. Some athletes felt stimulated by their club culture to start in time and train at their competition weight. Yet, gradually dieting is experienced as difficult. Perceived behavioural control and behavioural intention appeared to be significant factors in explaining the severity and aggressiveness of weight making. Long-lasting aggressive weight making seems to be accompanied by injuries and mental complaints, and could also negatively impact performance. Frequent weight cutting and its subsequent focus on weight, body and food, might even lead to eating disorder symptomatology in certain athletes. In conclusion, it takes a cultural U-turn to beat the current trouble making way of weight making with Ippon and go to a widespread healthier approach.

## Love fighting hate violence: Constructing moral boundaries in combat sports

**Alex Channon (University of Brighton)**

This theoretically-focused presentation will outline a symbolic interactionist (SI) reading of the manner in which practitioners of martial arts and combat sports (MACS) construct frameworks of meaning around their engagement in activities centring on fighting (Matthews and Channon 2016; Jackson-Jacobs 2013). It will argue that SI can significantly aid our understanding of aggression and violence in sport, although its uptake as a theoretical framework by sport psychology scholars has been limited despite a long-standing fascination with the topic in this field (Baird & McGannon 2009). By articulating how SI can be used in this manner, the presentation will argue for more cautious scholarly use of the term 'violence' with respect to MACS, particularly by attending to the consequences such language has for identity work among martial artists/combat athletes (Matthews and Channon 2016). Following this, the presentation will outline the Love Fighting Hate Violence campaign ([www.lfhv.org](http://www.lfhv.org)) – a developing, research-informed intervention program designed and implemented in line with SI principles, which seeks to build and support anti-violence advocacy within and among MACS practitioner communities. It will outline the construction of original pedagogical tools for delivering robust anti-violence education through MACS practice, based on participatory action research in collaboration with various partners, including experienced MACS instructors (n=6), NGB representatives from a variety of MACS disciplines (n=5), an international anti-violence charity, and an international sport-for-development program. The presentation will conclude by inviting critical engagement with the aims of this project and its theoretical underpinnings.

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## Can you compete? A BBC online intervention study. Research with reach, scientific value and real-world impact

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**Chair: Andy Lane (University of Wolverhampton)**

With an estimated 3 billion internet users worldwide, online research and practice has potential for wide reaching effects. In the present study, we worked with the British Broadcasting Corporation (BBC) Lab UK to develop and test an online task that incorporated interpersonal competition. Narrated by former Olympic gold medallist Michael Johnson, an excess of 100,000 participants were involved. The objective was to create pressure conditions so that participants would seek to regulate emotions as part of mental preparation. As use of online methods in sport psychology is relatively novel, this data has significance both practically and theoretically. The aim of the present symposium is to review the undertaking of online research in sport psychology and report findings from three studies produced from this data. First, given wide-ranging interest in emotion-performance relationships, we investigated differences between emotions that participants associated with best and worst performance, examining the potentially moderating effects of age and gender. Second, we investigated the utility of Lane and Terry's (2000) conceptual model. This model identifies

depression as a pivotal emotional state. We sought to test and extend the model by examining the influence of dejection on pre-competitive emotions, emotion regulation, psychological skills, effort, performance, beliefs, and performance. Third, we investigated the notion that interventions which require self-control could negatively affect performance through depleting cognitive resources. We selected imagery as an intervention requiring self-control. Specifically, we investigated imagery focused on the task, and imagery focused on achieving an outcome when compared to control and placebo group data. Our fourth presentation reviews the lessons learned from this process, and how our research has flourished as a consequence. We report how we extend this research into the area of emotional eating.

*Keywords: online, impact, interventions, emotion, mood, performance*

### **Emotions related to best and worst competitive performances: Effects of age and gender**

**Andy Lane, Andrew Friesen (University of Wolverhampton), Tracey Devonport (Sheffield University), Peter Totterdell (University of Wolverhampton)**

Successful performance has been associated with pleasant emotions and positive mental health whereas failure has associated with unpleasant emotions and negative mental health. Best and worst performances are defined in relative terms whereby success and failure is measured by whether or not someone achieves or fails to achieve her/his goal in a competitive setting. The present study examined differences in the intensity of emotions related to best and worst performance in a competition recalled from memory. Data were collected from an online competition where participants ( $n = 69,550$ ) recalled how they felt during their best and worst performance. With such a large sample, interpretation of results focused on the size of effect. Results from a repeated measures MANOVA revealed weak but significant 3-way and 2-way interaction effects between best-worst performance, age and gender, and so the nature of these differences was not emphasized. The largest effect size was found for best and worst performance (partial  $\eta^2 = .50$ ). Best performance were related to higher scores for feeling happy, excited, and energetic and lower scores for feeling anger and dejection, compared to worst performance. The difference between best and worst performance was much smaller for anxiety. Best performance associated with moderately intense anxiety and worst performance with high anxiety. Results revealed a weak main effect (partial  $\eta^2 = .08$ ) for gender whereby males reported higher anger and females reported higher anxiety in both best and worst competition. In conclusion, results show large differences in the emotional responses related to best and worst performance and revealed a small gender effect. Future research should investigate the effects of individual beliefs of the effects of emotions on performance.

*Keywords: emotions, mood, age, gender, regulation*

### **A test and extension of Lane and Terry's (2000) conceptual model of mood-performance relationships using a large internet sample**

**Andy Lane (University of Wolverhampton), Peter Terry (University of Southern Queensland)**

According to Lane and Terry (2000) depression is a key emotion that moderates the mood-performance relationship. The present study tested and extended Lane and Terry's (2000) conceptual model of mood-performance relationships using a large dataset from an online experiment. Participants ( $N = 73,537$ ) completed measures of trait emotion regulation, emotion regulation beliefs, regulation efficacy, use of psychological skills, and rated their anger, anxiety, dejection, excitement, energy, and happiness before completing a competitive concentration task against a virtual opponent. Post-competition, participants completed measures of perceived exerted effort exerted, beliefs about the quality of their mental preparation, and subjective performance. Results from a MANOVA showed that dejection associated with worse performance as individuals reporting no feelings of dejection performed 3.2% better. Dejection was related to

higher anxiety and anger scores and lower energy, excitement, and happiness scores. The proposed moderating effect of dejection was supported for the anxiety-performance relationship but not the anger-performance relationship. In participants who did not report feeling dejected, those who reported moderate or high anxiety outperformed those reporting low anxiety by about 1.6%. Overall, results showed partial support for Lane and Terry's model. In terms of extending the model, results showed dejection related with greater use of suppression, less frequent use of reappraisal and psychological skills, lower emotion regulation beliefs, and lower emotion regulation efficacy. Further, dejection related with greater effort during performance, beliefs that pre-competition emotions did not assist goal achievement, and low subjective performance. Future research is required to investigate the role of intense unwanted emotions in emotion regulation and performance.

*Keywords: self-regulation, affect, competition, mood, depression*

### **Imagery: An intervention to improve performance or an act of self-control that hinders performance?**

**Andy Lane, Tracey Devonport, Andrew Friesen (University of Wolverhampton), Peter Totterdell (Sheffield University)**

The strength model of self-control posits that repeated acts of self-control are related to poor performance. Traditional self-control studies are designed using sequential tasks with each task requiring self-control. Performing a psychological intervention such as imagery requires self-control in order to produce and hold an image. Imagery has been found to be effective among individuals with sufficient imagery skills. However, recent theory posits that performers can counter the effects of resource depletion from self-control. The present study investigated self-control using a sequential task design. The self-control task was an online imagery intervention intended to enhance performance on a competitive concentration game task. Participants were randomly allocated to one of four intervention groups: a) outcome imagery, b) instructional imagery, c) an active control group (placebo) who received encouragement only, and d) an inactive control group (inert) who received no treatment. ANOVA results from an online sample of 16,017 participants indicated that outcome imagery and placebo groups performed better on the concentration task, and reported more positive emotions than the inert control and instructional imagery groups. In summary, we found that an imagery intervention was associated with better performance in a subsequent competitive concentration game task, and did not therefore impair performance in line with proposals in the self-control literature. We propose that where an initial self-control task (such as imagery) affects emotion in a way that might be beneficial to completing the next task, the resources depleted by self-control are masked by resources activated from increased emotion intensity.

*Keywords: self-regulation, imagery, intervention, performance, motivation, emotions*

### **The promise of online interventions: From sports to the dining table**

**Andy Lane, Tracey Devonport, Andrew Friesen (University of Wolverhampton), Peter Terry (University of Southern Queensland), Peter Totterdell (University of Sheffield)**

An exciting development from the BBC project was the possibility of studying emotion regulation interventions and providing valuable feedback to other areas of human functioning. Specifically, we examined emotion regulation in the context of eating behaviours. The use of food as a means to regulate emotions, known as 'emotional eating', has been evidenced in both community (Thayer et al., 1994) and clinical populations (Stein et al., 2007). In the first of two systematic reviews we completed, negative mood, sadness, tension and instability of emotions were found to be antecedents of binge eating in an adult binge eating disordered-obese sample (Nicholls, Devonport, & Blake, 2016). In a second review, stress, depression, and

sadness consistently elicited increased food intake or poor nutritional food choices among normal and overweight adult populations (Devonport, Nicholls, & Fullerton, 2017). As emotional eating has been associated with a failure to maintain weight management goals in overweight and obese individuals (Elfhag & Rössner, 2005), interventions that target emotional eating are of interest to researchers and practitioners. Fairburn (2008) suggests that interventions targeting emotional eating might be focused on self-monitoring, proactive problem-solving, cognitive restructuring, mood acceptance, the use of any number of mood modulatory behaviours (e.g., exercising), or managing situational circumstances. Online interventions have the potential to empower individuals in managing behaviour change, and complements the objectives of weight management practitioners on occasions when face-to-face contact is not practical or possible. The purpose of the present paper is to offer an overview of the lessons learned from the use of online interventions in sports/performance contexts. In doing so, implications in developing online self-help intervention that addresses emotionally elicited eating will be discussed.

*Keywords: emotions, diet, food, regulation, obesity*

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## Interventions to alleviate choking under pressure and improve performance

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**Chair: Peter Gröpel (University of Vienna)**

Choking under pressure refers to performance decrements under pressure circumstances despite individual striving for superior performance. Research evidence suggests that this inferior performance depends on maladaptive attention and a dominant left-hemispheric activation. This symposium addresses interventions that may help improve attention and suppress the dominant left-hemispheric activation, ultimately ameliorating choking and improving performance. The interventions included are a pre-performance routine (PPR), hemisphere-specific priming, and neurofeedback training. A PPR is a set of cognitive and behavioral elements an athlete systematically engages in prior to performance execution, which helps to maintain task-related attention. Hemisphere-specific priming refers to the selective stimulation of the right brain hemisphere by clenching the left hand, which reduces the activity of the left hemisphere. Neurofeedback training is a non-invasive method to self-modify brain oscillations and hemispheric activity. Four papers on the effectiveness of these interventions are presented. Mesagno will discuss how both PPR and hemisphere-specific priming promote accuracy in tenpin bowling. Gröpel will explain how combining a PPR and hemisphere-specific priming can help improve competition performance of elite air pistol shooters. Wergin extended this line of research to beach volleyball, but found weaker effects, which indicates that the effectiveness of choking interventions may be moderated by the type of sport. Finally, Mirifar conducted a systematic review on the effectiveness of neurofeedback training for sport performance and found principally positive evidence. In sum, these papers indicate that PPR, hemisphere-specific priming, and neurofeedback training may promote athletes' performance under competition pressure. Implication for research and practice will be discussed.

*Keywords: interventions, performance, choking, neurofeedback*

## Primed to perform: Testing and comparing pre-performance routine interventions to alleviate choking in sport

**Christopher Mesagno (Federation University Australia)**

A pre-performance routine (PPR) is a set of cognitive and behavioral elements an athlete systematically engages in prior to performance execution, which helps to maintain task-related attention. To date, researchers have identified that extensive PPR development improves performance under pressure. Furthermore, hemisphere-specific priming have also shown beneficial effects on performance under pressure.

Researchers, however, have yet to compare whether hemisphere priming is as beneficial to sport performance as extensive PPRs. Thus, the purpose of this study was to determine whether hemispheric priming is a comparable PPR to an extensive PPR in improving tenpin bowling accuracy and in-game performance using real-world competition (i.e., bowling league scores). Forty-nine experienced league bowlers were randomly allocated into one of five intervention (or not) groups: PPR, hemisphere-specific priming, combined PPR and hemisphere-specific priming, temporal consistency, or control. Participants then took part in a low-pressure, 15-minute intervention development, and high-pressure phases with accuracy and in-game performance (league scores) being the dependent, performance variables. Performance accuracy indicated no significant Phase or Group main effect, but a significant interaction. Post hoc comparisons indicated that the PPR group improved performance from pre- to post-intervention phase, other intervention groups showed relatively stable performance, whereas the control group decreased bowling accuracy. Bowling league performance results indicated no significant main or interaction effects. From these results, extensive PPR development is the most effective routine for performance under pressure, with hemisphere-specific priming also having a positive effect on accuracy under pressure.

### Interventions to improve shooting performance in air pistol

**Peter Gröpel (University of Vienna)**

Two studies tested the effect of pre-performance routine (PPR) and hemisphere-specific priming on shooting performance among German air pistol shooters. In the experimental Study 1, skilled junior shooters (N = 34) took 30 shots under normal condition (i.e., pretest) followed by another 30 shots under time pressure conditions (i.e., posttest). Before the posttest, participants were randomly allocated into one of three intervention groups (PPR, hemisphere-specific priming, and combined PPR and hemisphere-specific priming) or control group. Participants in the intervention groups improved their shooting accuracy from pretest to posttest, with the combined PPR and hemisphere-specific priming group showing the highest improvement, whereas performance of the control group did not change. In the field Study 2, 14 elite shooters developed and trained individualized pre-performance routines combined with hemisphere-specific priming under supervision of a sport psychologist. Following the sport psychology consulting, participants significantly improved their competition performance compared to competition performance before the coaching. The present results indicate that PPR combined with hemisphere-specific priming is an effective field intervention, which will be discussed further.

### Choking interventions in beach volleyball

**Vanessa Wergin (Technical University of Munich)**

Prior researchers have suggested various interventions to alleviate choking under pressure, such as pre-performance routine (PPR) or hemisphere-specific priming, mainly for individual, self-paced sports. This study extended this line of research to team sports (e.g., beach volleyball). 53 skilled beach volleyball players were assigned to one of four groups, including three intervention groups (PPR, hemisphere-specific priming, and a combination of both), as well as one control group. Participants performed 10 serves, aiming at a target on the beach volleyball court, in a pressure-free pretest followed by another 10 serves in a posttest under pressure. To induce pressure, the posttest performance was video-recorded and participants were told that the recordings would be broadcasted in a German television documentary. Analyses of performance accuracy revealed no significant differences between the intervention groups and the control group. On a descriptive level, however, all intervention groups improved and the control group worsened performance, with non-significant results. These results indicate that the effectiveness of PPR and hemisphere-specific priming in team sports is not as high as in individual sports. The type of sport may thus moderate the effect that choking interventions has on



performance. An additional explanation may be that these interventions are especially effective for tasks based on accuracy, whereas a good beach volleyball serve is a combination of accuracy and speed of serve. Researchers may therefore focus on testing choking interventions in different types of sports and different sport tasks to determine their effectiveness.

## **Evidence for effects of neurofeedback training to improve sport performance: A systematic review**

***Arash Mirifar, Felix Ehrlenspiel, Jürgen Beckmann (Technical University of Munich)***

It has been argued that brain oscillation patterns have a pivotal role in sport performance. A good example is the relationship between alpha oscillatory activity and shooting performance: A successful shot execution is associated with enhanced activation of the right hemisphere, which is associated with visual-spatial processing, and, at the same time, decreased activation in the left temporal lobe (specifically in verbal-analytic areas), which is associated with suppression of irrelevant information. Neurofeedback training (NFT), as a non-invasive method, can be utilized for modifying human brain oscillations and developing skills for self-regulation of brain activity. Although NFT have been initially introduced and applied in clinical psychology, its applications are also common in sports in order to improve performance. This presentation will provide a systematic review of NFT effectiveness in sports. Using the preferred reporting items for systematic reviews and meta-analyses (PRISMA), 16 published studies were selected and evaluated. The results indicated that the majority (81%) of the studies reported that NFT effectively improves sport performance. Various protocols in various sport disciplines were tested and resulted in principally positive effects. However, the evaluated studies also showed substantial limitations in procedure and methodology. Therefore, it is still unknown whether NFT is an effective method to improve performance in sports. Shortcomings of these evaluated studies and implications for future research will be discussed.

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## **Physical activity, cognitive function and well-being**

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***Chair: Eduardo Cervello (University Miguel Hernández)***

The scientific community is showing great interest in the study of chronic and acute effects of physical exercise on cognitive function and psychological well-being (McMorris, 2016). There is currently a consensus about the positive effects of physical exercise on cognition (Chang et al., 2012) and well-being (Redd and Ones, 2006) and the study of dose-response relations in exercise is a current challenge in physical activity science (Curlik, and Shors, 2013). However, more studies are needed to understand the relations between intensities, durations and type of exercise and cognitive function and well-being (Harveson et al., 2016). To answer these questions, this symposium will present investigations that study these topics from different perspectives. In this symposium we will present; a) Two studies evaluating the effect of a set of sessions of physical activity with different intensity and type, on the stroop effect in older people. b) Studies that show that the epigenetic changes are related to a molecular response adaptive to physical exercise and stress, and the relationship of these changes on the preservation and maintenance of health. c) A review about the effectiveness of exercise for preventing and treating Alzheimer's disease (AD) and Mild Cognitive Impairment (MCI), with a special emphasis on the benefits of a specific exercise program for people with MCI. d) The preliminary results of a study analyzing the motives for adherence to a long term exercise program of people with MCI and mild AD, including methodological considerations for working with this population.

*Keywords: exercise, cognitive function, alzheimer, epigenetic changes, stroop*

## Exercise intensity and cognitive inhibitory function

**Diego Pastor Campos (Universidad Miguel Hernández de Elche)**

Aging population is increasing all over the world as a consequence of increased life expectancy (Fehlings et al. 2015). Aging is a biological process unstoppable for all humans, and produce during late life span an inevitable function decline along different physiological systems (Park & Yeo, 2013). This degenerative process is determined by genetic and environmental factors, with lifestyle as a key of the process (Park & Yeo, 2013). There are many studies in adults about the acute effect of exercise in cognition (Koutsandreu et al. 2016). In older people there are different studies relative to exercise, fitness and cognitive function (Voelcker-Rehage et al. 2016), but this studies are oriented to long time effects of exercise and there are few studies about acute effect of different physical exercise stimulus and cognition. This work studies the effects of different intensities and different kinds of physical exercise sessions over reaction time and inhibitory cognitive function measured with stroop test.

*Keywords: exercise, cognition, aging, stroop*

## Facilitators and barriers people with mild cognitive impairment to continuing with a physical activity programme

**Nuria Caus Pertegaz (University of Alicante)**

Older people with Mild Cognitive Impairment (MCI) or the onset of Alzheimer's disease (AI) are living with cognitive characteristics proper to normal ageing and dementia and also a possible precursor to dementia. In addition, they show different behaviour and personality changes as affective disorders and apathy. Though there exists increasing evidence that regular physical activity promotes physical, cognitive, and emotional health in people with MCI, it's still to be determined which characteristics that must fulfill the physical activity programmes for individuals who have cognitive challenges and specially, to obtain the adherence to these programmes. There is no doubt that physical activity programmes for individuals with MCI face many of the same challenges as those targeted to cognitively intact older adults, including participants' reluctance to start exercise, lack guidance about what exercise are appropriate for them, fear of injury, or lack of social support for participating in these programmes. In addition, these programmes also must foresee the cognitive obstacles that exist in the participation in these types of activities, such as learning new routines; the assimilation of the correct execution of the exercises; the spatial organisation of the activities and itineraries, etc. Four years after the implementation of a physical activity programme for individuals with MCI and AI at University of Alicante, such programme has been reviewed with a qualitative methodology, different design and didactic questions that they continue to attend the needs of an older person with deteriorating executive function. Questions that are especially relevant in the continuance of participation in the exercise programme.

*Keywords: mild cognitive impairment, adherence, physical activity programme*

## Physical activity, cognitive function and well-being

**Eduardo Cervello (University Miguel Hernandez)**

The scientific community is showing great interest in the study of chronic and acute effects of physical exercise on cognitive function and psychological well-being (McMorris, 2016). There is currently a consensus about the positive effects of physical exercise on cognition (Chang et al., 2012) and well-being (Redd and Ones, 2006) and the study of dose-response relations in exercise is a current challenge in physical activity science (Curlik, and Shors, 2013). However, more studies are needed to understand the relations between intensities, durations and type of exercise and cognitive function and well-being (Harveson et al., 2016). To answer these questions, this symposium will present investigations that study these topics from different perspectives. In

this symposium we will present; a) Two studies evaluating the effect of a set of sessions of physical activity with different intensity and type, on the stroop effect in older people. b) Studies that show that the epigenetic changes are related to a molecular response adaptive to physical exercise and stress, and the relationship of these changes on the preservation and maintenance of health. c) A review about the effectiveness of exercise for preventing and treating Alzheimer's disease (AD) and Mild Cognitive Impairment (MCI), with a special emphasis on the benefits of a specific exercise program for people with MCI. d) The preliminary results of a study analyzing the motives for adherence to a long term exercise program of people with MCI and mild AD, including methodological considerations for working with this population.

*Keywords: exercise, cognitive function, alzheimer, epigenetic changes, stroop*

## Epigenetics in health and neurosciences

**Mari Paz Quesada (IMIB/Arrixaca)**

At present we know the importance of lifestyle factors in our general well-being, both physical and mental health, as well as in addressing healthy aging. Although an organism have identical genetic code in all cells, each cell type presents its own gene expression pattern, depending on cell functionality, which is driven by a specific epigenetic signature. Specifically, epigenetics direct gene expression by modulating the access of the transcription machinery to the chromatin: DNA methylation and specific histone modifications have the role of compacting the chromatin by recruiting methyl binding proteins, while others modifications would open it. Even more, epigenetic factors are part of important processes in life as they are embryonic development, cell differentiation, imprinting, genomic stability, X chromosome silencing, aging,...It is shown that epigenetic machinery is aberrantly expressed in a big spectrum of different pathologies where epigenetic marks are not the appropriate for normal cell functioning: cancer, neurodegenerative, psychiatric, cardiovascular and immunology diseases, etc.. We have shown in Friedreich Ataxia (FRDA) aberrant expression of epigenetic elements as it is miR-132 and DNMT1. More and more studies show that epigenetic changes are also related to a molecular response adaptive to lifestyle factors such as stress, diet, physical exercise and psychologist state. For example it have been seen that whole genome methylation was decreased in skeletal muscle biopsies obtained from healthy sedentary men and women after acute exercise. How we live and think about the things we live, our perception, has much more impact in our health than it was thought long time before. Childhood abuse or maternal well-being and child health outcomes are now being studied down the look of epigenetics as mediators between the environment and the genome. More future research is needed to real understand what is happening in our mental and physical bodies.

*Keywords: DNA methylation, Friedreich Ataxia, mental and physical well-being*

## Exercise prescription and mechanisms mediating exercise benefits in people with Mild Cognitive Impairment and Alzheimer's disease

**Juan Tortosa-Martinez (University of Alicante)**

Exercise may improve memory and executive function, especially in older adults. There is a growing body of evidence showing that regular physical activity has protective effects against mild cognitive impairment (MCI), dementia, and Alzheimer's disease (AD). Furthermore, exercise programs have shown positive outcomes for people with AD and other dementias as well as for people with MCI. However, the most appropriate type, duration, frequency and intensity of exercise for this population are currently unknown. In parallel, the mechanisms of action of these positive effects are not fully clear either, but it has been recently suggested that it is possible that the benefits of exercise may be at least partially mediated by effects on the neuroendocrine stress system. In this communication, we will review the current knowledge about exercise prescription for MCI, AD and other dementias. A brief review about the possible mechanisms that mediate exercise benefits

will also be conducted, including some emerging evidence supporting the hypothesis of a relationship between exercise, stress and cognition in people with MCI.

*Keywords: Mild Cognitive Impairment, Alzheimer's disease, exercise prescription, memory, executive function*

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## **ID364. Adversity in the coach-athlete relationship: Power abuse and interpersonal conflict**

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***Chair: Svenja Wachsmuth (Loughborough University)***

The coach-athlete relationship is central for sport participation and an important component for performance success (Jowett & Shanmugam, 2016). A coach-athlete relationship that is characterized by mutual trust and respect, as well as commitment to and collaboration with each other enhances performance success while relationships that lack these characteristics may severely impair performance as well as wellbeing. Low-quality relationships have been associated with experiences of conflict, low self-esteem, depression, and burnout as well as controlling or negative coaching behaviours (e.g., Jowett, 2009; Jowett et al., in press). In recent years, special attention has been devoted to developing coaching environments that are effective and positive through coach-athlete interactions that foster athletes' basic psychological needs and allow them to grow and succeed. The objective of this symposium is to expand our understanding of negative interpersonal dynamics between coaches and athletes and to identify strategies that can be employed to support coaches and athletes to overcome and manage interactions and relationships that are negative and disruptive. Thus, the first presentation focusses on coaches' use of public shaming in an attempt to instil control and influence. Within the second study, the focus shifts towards the challenging impact of cultural diversity upon coach-athlete interactions, concluding with recommendations for fostering cultural awareness and positive coach-athlete relationships. The central role of high-quality relationships is highlighted in the third presentation. In this presentation, the links between high-quality coach-athlete relationships and athletes' motivation as well as wellbeing are explained through the satisfaction of the three basic needs across diverse cultures. The final study provides insights into the role of sport psychologists in promoting high-quality coach-athlete relationships while managing interpersonal challenges.

*Keywords: coaching, abuse, conflict, basic needs*

### **Public shaming of athletes by coaches**

***Gretchen Kerr, Ashley Stirling, Ellen MacPherson, Anthony Battaglia, Joseph Gurgis (University of Toronto)***

The significant power imbalance existing between a coach and athlete and the ways in which a coach's position of power and authority can be used to harm athletes have been well-documented. Examples of the ways in which coaches may use their power negatively include: sexual abuse (e.g. Brackenridge, 2001), emotional abuse (e.g. Stirling, 2013), disordered eating (e.g. Kerr et al., 2006) and controlling coaching behaviours (e.g. Mageau & Vallerand, 2003). Public shaming of athletes by coaches has received less attention in the sport-related literature and is another way in which power may be used in a harmful manner. Public shaming refers to the process in which an individual or group of individuals express contempt or disapproval towards another person as a result of that person's perceived deviation from a norm or expected behaviour (Cheung, 2014; Harris, 2009; Jacquet, 2015; Whitman, 1998). Athletes from a variety of sports have described public shaming experiences that include directives to engage in exercise for the purposes of punishment. In some instances, a team is forced to exercise as a result of one athlete's infraction; at other times, an individual athlete is singled out to engage in excessive exercise for a behavioural transgression, and on occasion, selected team members are directed to administer the exercise as punishment to their teammates. All of these experiences of engaging in excessive exercise as punishment reportedly occur in a public manner. Coaches

identify the use of such practices as effective ways to address poor performance and behavioural transgressions and to ensure compliance with team rules and expectations. In this presentation, various forms of public shaming will be addressed, as well as the reasons for its use, perceived effects on athletes, and implications for coach education.

*Keywords: emotional abuse, coaching, power*

### **‘My job is to make all the players play by my rules’: Coach-athlete relationships in culturally diverse teams**

**Anastasiya Khomutova (University of Brighton)**

During the last few decades ever more athletes and coaches have migrated from one country to another in order to establish or improve their sporting careers, which have led to a more diverse professional sport and a ‘cultural turn’ in sport psychology. Although some separate aspects of cultural diversity in sport have been extensively examined by scholars, this area still remains under-researched. While several recent studies in the area of cultural sport psychology have focused on the adaptation of immigrated athletes and difficulties they face in a new country, the phenomenon of inter-cultural coach-athlete relationships has not been explored in full. Earlier studies conducted in this area pointed to (among other factors) the prevalence of racial stereotyping in interracial coach-athlete relations; however, the majority of the studies took place in the Northern American context. This presentation will focus on the experiences of six basketball coaches in Europe who work with culturally diverse teams, and the main issues they had to overcome within the relationships with their athletes – both local and immigrated. These issues include navigating value differences between local and immigrated players; dealing with the formation of ethnic subgroups within the teams; and race as still a potential problematic factor within coach-athlete relationships. The presentation will conclude with the proposal of educational program for coaches working with culturally diverse athletes, focusing on cultural diversity awareness.

*Keywords: interracial coach athlete relationship, cultural diversity, cultural sport psychology*

### **Motivational processes in the coach-athlete relationship: A multi-cultural self-determination approach**

**James W. Adie (Coventry University), Sophia Jowett (Loughborough University), Kimberley J. Bartholomew (University of East Anglia), Sophie X. Yang (Sichuan University), Henrik Gustafsson (Karlstads Universitet), Alicia L. Jiménez (Universidad Autónoma de Madrid)**

In extending the motivational model of coach-athlete relationships (Mageau & Vallerand, 2003), the present study examined the cultural invariance of the following hypothesized model: perceived coach-athlete relationship quality > basic psychological need satisfaction > self-determined motivation > well-being among multi-national athletes. Employing a cross-sectional design, 756 elite athletes from five different nations (British, Chinese, Greek, Spanish, and Swedish) completed a questionnaire that measured the target variables. Multi-group SEM (EQS 6.2, Bentler, 2006) found the hypothesized model provided a satisfactory fit of the data:  $\chi^2(370) = 758.689$ ,  $p < 0.01$ ,  $R\text{-CFI} = .92$ ,  $SRMSR = .06$ ,  $RMSEA = .03$  (90% CI = .03-.04). Specifically, the results revealed that athletes who perceived a high quality relationship experienced heightened levels of basic need satisfaction regardless of cultural background. Need satisfaction positively predicted self-determined motivation, which, in turn, linked to enhanced well-being. Mediation analyses supported the indirect effects of need satisfaction and self-determined motivation within the model. The hypothesized model was found to be largely equivalent among the multi-national athletes. The results support the universal application of self-determination theory and the central role interpersonal relationships play in promoting well-being.

*Keywords: self-determination theory, wellbeing, cultural variance*

### **Sport psychologists' role in coach-athlete conflict**

***Svenja Wachsmuth, Sophia Jowett, Chris Harwood (Loughborough University)***

Sport psychologists (SPs) have been challenged with taking up diverse roles within various sport organisations. While mainly focusing on performance-enhancement, they are also expected to provide pastoral care and consider sport participants' wellbeing (Gamble et al., 2013). Additionally, SPs play a significant role in ensuring that coaches and athletes work in harmony (Rhind & Jowett, 2012), and in managing interpersonal issues such as conflict, misunderstandings and disagreements when they occur (Wachsmuth et al., 2016). The current study investigated the roles SPs perceive and the challenges they experience, as well as methods used to prevent and manage conflict within coach-athlete dyads. Semi-structured interviews were conducted with nine SPs who have been working as applied practitioner five to forty-three years. The interview schedule covered SPs' 1) background/philosophy, 2) approach to conflict, 3) challenges/barriers in managing conflict, and 4) recommendations for practitioners and researchers. Interviews were transcribed and a thematic analysis conducted. This presentation will focus on SPs' approaches to facilitate coach-athlete interactions on an individual and dyadic level. The interviewed sport psychologists reported to play an active role in shaping relationships between coaches and athletes, especially concerning the prevention and management of conflict and its consequences. While it was commonly agreed that conflict can and should not always be prevented, SPs agreed upon the significance of quality coach-athlete relationships and individuals' awareness for their importance. They emphasized the need to facilitate constructive conversations between coaches and athletes by supporting self-reflection, perspective taking and action planning on an individual level, as well as by guiding through common meetings. SPs emphasized the need to create a safe environment in which opinions and needs can freely be discussed without fearing negative consequences.

*Keywords: conflict management, communication, sport psychology practitioner*

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### **Culture, sport, mind and society**

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***Chair: Antonio M. Pérez-Flores (Universidad Pablo de Olavide)***

Sport generates social relations and is inextricably bound up with the creation of identities, fostering benefits through the creation of social capital. In a society where primary relations are becoming ever more fragile, sport is a major resource for creating and rebuilding primary affectional bonds, which are at the root of so much anxiety today. Sport meets the needs of individuals for socialisation, fostering micro-groups. It provides a balanced outlet for emotions, offering an ideal environment for developing intimate primary relationships based on affection and empathy. Sport, like social capital, is based on cooperation and trust, and can even be regarded as a public good. In addition, sport also provides an organisational structure for the public, that can be exploited by the community for other purposes. Sporting groups and associations meet the primary need of social actors to take part in sporting activities. But they also offer further benefits, such as the generation of relationships that extend beyond the strictly sporting, and that can develop into relations of trust that form part of the support network for the actors involved, providing them with multiple resources and benefits. Sport fosters relationships of mutual awareness and social cooperation. This makes it ideal terrain for building support networks based on relationships of trust, generating substantive psycho-social benefits associated with identity, mutual support and enhanced organisation of civil society.

*Keywords: sport, primary relations, secondary relations, social capital*



## Physical activity in relation to the self-esteem and social situation of the elderly

**Evaristo Barrera Algarín (Universidad Pablo de Olavide)**

This presentation examines some of the research carried out in southern Spain into the relationship between ongoing physical-sporting activity and the functional capacity of (non-institutionalised) elderly people, and their psycho-social profile, self-esteem and social situation. This was a joint study involving the Physical Education and Sports Department of the University of Seville, the Andalusia Centre for Development Biology at the Pablo de Olavide University-CSIC, CIBERER, the Carlos III Health Institute, and the Social Work and Social Policy Research Group (PAIDI Sej-452). Some of the data from the research has already been published. An experimental methodology was used to analyse a group of 8 physically-active subjects and a control group of 8 subjects with sedentary lifestyles. Using different scales, including VATAD and the Rosenberg scale, it is established that: Firstly, physical activity in the elderly correlates with higher levels of self-esteem. Pearson's correlation is significant in ,701 (bilateral significance ,005. N = 16). Secondly, physical activity in the elderly correlates with a better social situation. Pearson's correlation is significant in ,574 (bilateral significance ,040. N = 16). And Thirdly, physical activity in the elderly correlates with a 'Healthy Old Age' profile. Pearson's correlation is significant in ,556 (bilateral significance ,039. N = 16). The data also show us a better sociability and relationship with the environment, more community participation activities, more activities with friends, and more activities outside. This presentation focuses in particular on the highly positive assessment of fostering and spreading physical activity among the elderly, particularly given the ageing of the population that has been underway since the 1970s. This will benefit the public as a whole, both through its preventive capacity and because of reduced social and healthcare costs.

*Keywords: sports, physical activity, sociability, healthcare*

## Sports policy versus popular participation

**Alvaro Rodríguez Díaz (Universidad de Sevilla)**

Until the late 1980s, there were few sports policies in Spain, and the few that existed were weak. However, they were aimed at fostering and promoting sport in society against a backdrop of a population with little interest in taking part in physical activity. In the first decade of the 1978 regime, policies were implemented with strong social content, enhancing public facilities as sport was democratised, leading to a boom in sporting activity countrywide. The thrust of policy changed in the early 1990s, as the tenor of government economic policies changed from a social to a commercial approach. This greatly enhanced the focus on elite sports, to the detriment of sport for the masses, with construction of grand stadiums for sporting competitions, at the expense of basic, local facilities. This process also reveals a parallel contradiction between increased government investment in competitive sporting success, and a gradual increase in physical exercise among the public, as a form of recreation and for health reasons, rather than for competition. The data analysed is taken from indirect official sources, using historical series.

*Keywords: sport, primary relations, secondary relations, social capital*

## The relevance of social relationships in sport: Friends, family, classmates and individual sportspeople

**Antonio M. Pérez-Flores, Víctor M. Muñoz Sánchez (Universidad Pablo de Olavide)**

There is a huge quantity of research in the scientific literature on the impact of sport on public health. However, very little of this focuses on the social relations involved in sport. This presentation analyses the relevance of primary relations in the way that sport is configured. A longitudinal study of the main forms of primary relations in sport has been carried out, demonstrating the interrelationship of the objective and

subjective elements involved in taking part in sporting activity. This study is based on opinion surveys and specific studies relating to sport carried out by the CIS statistical institute from 1995 to 2014. The techniques used include: frequency analysis in the longitudinal study of social relations in sport; multiple correspondence analysis (MCA) to identify the factorial dimensions relating to the type of social relations established through sport (homogeneous-heterogeneous); and binary logistic regression analysis to identify the socio-demographic variables with the greatest explanatory impact on the various forms of primary relations involved in contemporary sport in Spain. The results give us two dimensions into which sporting activity is structured: a dimension defined by the type of social relations established in the sport (homogeneous-heterogeneous); and a second dimension defining the purpose of the sporting activity (instrumental-substantive). These dimensions lead in turn to three models of sport: sport for competition; sport for leisure; and sport for health and aesthetics. Each of these models is defined through its social value and the meaning of its practice. Sport is an important inter-relational resource in contemporary society, where individuals also meet their needs for socialisation, fostering micro-group relations structured around different degrees of normative supports. Sport provides people with a balanced outlet for their emotions, fostering an ideal environment for developing primary relations.

*Keywords: sport, primary relations, secondary relations, social capital*

### **Analysis of the commitment of amateur canoeists in team boats. Differences due to sex**

**Juan Gavala González (Universidad Pablo de Olavide)**

To analyse the commitment (individual performance) of amateur athletes (canoeists/kayakers or rowers) as part of a team, in relation to their sex. The sample comprised rowers and canoeists (kayaks and canoes) from two of the most important national feeder clubs for these sports (rowing and flatwater canoeing). The study featured a univariable, multivariate conditional, intra-subject design with repeated measurements. The method is quasi-experimental, as the subjects were not assigned randomly to the various experimental conditions. The most significant results are that the involvement of athletes in team boats does not depend so much on sex.

*Keywords: performance, sports psychology, canoeing, Ringelmann effect*

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### **Forming agents of change for enhancing positive practice of youth sport**

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**Chair: José Carlos Jaenes (Universidad Pablo de Olavide)**

Sport is an important contributor in the fields of education and social inclusion. However, sport is confronted with a number of threats from which young athletes need to be protected, such as violence, any kind of discrimination and intolerance and the manipulation of results. Psytool is an European project, funded by Erasmus+ Sport Programme, that aims to foster the relevance of Sport Psychology as a tool for training different Agents of Change -such as coaches, physical educators, referees, officials...- for recognizing potential dangerous situations and for reacting in the adequate way in the youth sport context. In the first communication of the symposium a brief overview of the design of the project and the theoretical background will be provided. In the second communication, the Psytool online educational platform to train a network of Agents of Change in youth sport will be described. Finally, the moderator of a panel discussion will encourage trainers and trainees of the Psytool educational platform to share experiences and challenges for further implementation of this educational platform.

\*This symposium was funded by the Erasmus+ project (Nº567199-EPP-1-2015-2-ES-SPO-SCP) "PsyTool: Sport as a strategic tool for prevention and training on grassroots sports"

*Keywords: sportpersonship, agents of change, violence, discrimination*

## Sport values: An European perspective

**Pedro Velázquez (ICSS)**

Even before sport became a competence of the EU in 2009, and with more intensity after that date, the European Commission has been working with EU Member States and sport organizations on sport issues of common EU interest and exchanging best practices in sport-related policies. The EU is also working with Member States and sport bodies to improve how sport is governed across Europe. This means tackling the big threats to sports such as violence, match-fixing, anti-doping, corruption and racism as well as encouraging sport organizations – from local teams to multinational federations – to embrace the principles of democracy, transparency, inclusiveness and accountability among others (2015-EU-Sportsheet) Activities related to sports are a growing social and economic phenomenon, which makes an important contribution to the European Union's strategic objectives of solidarity and prosperity. The 2011 Commission Communication entitled “Developing the European Dimension in Sport” already put the accent on the need to prevent and fight against violence and intolerance (Chapter 2.3). More specifically, it recognised that racism, violence and other forms of intolerance continue to pose a problem in European sports, including at the grassroots level, and called for increased cooperation among relevant stakeholders. The European Union Work Plan for Sport for the period 2014-2017 is based on the following three themes: a) Integrity of sport; b) The economic dimension of sport and c) Sport and society. Europe has demonstrated a special sensitivity in tackling this problem by offering the opportunity to study this phenomenon through European Projects, and creating programs to confront it. Therefore, it is absolutely necessary to create tools and educational programs to prevent and protect football practitioners, especially in grassroots football, from these harmful practices.

*Keywords: values, violence, intolerance, racism*

## PsyTool design and teorethical background

**Jaume Cruz (Universitat Autònoma de Barcelona), Alexandre Garcia-Mas (Universitat de les Illes Balears), Natalia Stambulova (Halmstad University), Fabio Lucidi (University of La Sapienza), Sara Márquez (University of León), Santiago Reyes (ONECO), Sidónio Serpa (University of Lisbon), José Carlos Jaenes (University Pablo de Olavide)**

PsyTool is a European project, funded by Erasmus+ Sport Programme, led by the Universidad Pablo de Olavide (Sevilla, Spain). It brings together 13 partners from Spain, Portugal, Italy, United Kingdom and Sweden, running from January 2016 to December 2017. PsyTool is based theoretically on the concept of youth development through the practice of sport in positive and safe environments. The central idea is that this type of practice leads to a psychological wellbeing in all areas of personal development of athletes. Through sport programs that are free of bullying; zero permissiveness towards substance use; low acceptance of gamemanship and cheating, and at the same time promoters of fair play and clean competition, young athletes are more likely to increase their psychological well-being while they practice the sport to their best level of capacity. One of the most important assets of PsyTool is the formation of Agents of Change as inductors of this well-being promoter environment, according to their different responsibilities, from the politics to grassroots coaching. The AoCs' selection, training and certification is one of the key points of this program. This so-called “targeted snowball” approach is expected to produce a spreading impact on the young athletes, which can be evaluated in the short and medium term, depending of the nature of the different AoCs. Coming from this design and theoretical background, this program –once the results have been analyzed- has to lead to a more ambitious development both in its scope and on the educational methods involved with.

*Keywords: sportpersonship, agents of change, gamesmanship, positive youth development*



## PsyTool Online Educational Platform—Using e-learning to develop a network of agents of change in youth sport

**Sergio Lara-Bercial (ICCE), Ricardo Porem (Sporting Club of Portugal), Juan Manuel Gamito (Sevilla Football Club), Pamela Lubowa (FARE), António Fernando Rosado (University of Lisbon)**

The majority of people involved in youth sport are volunteers. They already make sacrifices and cut corners in order to find time to dedicate to coaching, officiating or just ‘taxiing’ their children around to sessions and matches. Time to dedicate to their own development and education within the sport environment is a luxury. PsyTool recognises that and thus has created an e-learning opportunity for Agents of Change designed to offer guided, yet self-paced learning. Over 10 lessons, the online educational platform provides theoretical and practical knowledge on key issues such as how to spot and prevent aggression and violent behaviour, discrimination, match-fixing, doping and many other topics which threaten the integrity and power to do good of youth sport. It also contains information on tried and tested ways to make the youth sport experience a positive, memorable one for all children and young people. Each lesson contains a short theoretical background to the topic in question followed by case studies, suggested further reading and links to other online materials such as videos or presentations. Students on the platform have access to an ‘online teacher’ which will support their learning as well as to a community forum where they can raise questions and share their experiences with other students. The platform is functional across all types of digital devices and its materials are downloadable and operate under an open licence. Please visit us at [www.psytoolsport.eu](http://www.psytoolsport.eu)

*Keywords: sportpersonship, e-learning platform, psychological intervention, Agents of Change, doping, match-fixing*

## The PsyTool Educational Platform: Stakeholders’ Reflections on Experiences and Ideas for the Future

**Krister Hertting (Halmstad University), Francesc Xavier Ponseti (Universitat de les Illes Balears), Marta Borrueco (Universitat Autònoma de Barcelona), Miguel Sampaio (Sporting Club of Portugal), Roberto Baiocco (University of La Sapienza), Abel Nogueira (University of León)**

This presentation will be organized as a panel discussion involving trainers and trainees with experiences of the PsyTool educational platform. A moderator will encourage the panelists to elaborate upon: (a) the implementation and development process of the PsyTool educational platform, (b) experiences and reflections on the role of Agents of Change in promotion of fair youth sport in Europe, and (c) challenges and opportunities for further development and implementation of the PsyTool educational platform after the project is completed (e.g., European Network of Agents of Change for Youth Sport). The moderator will stimulate discussion between the panelists and also questions and feedback from the audience.

*Keywords: sportpersonship, e-learning platform, psychological intervention, agents of change*

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## Transnationalism, mobility, and acculturation in and through sport

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**Chair: Tatiana V. Ryba (University of Jyväskylä, Finland)**

The recent ISSP Position Stand on transnationalism, mobility, and acculturation in and through sport (Ryba, Schinke, Stambulova, & Elbe, 2017) brings to spotlight the historically unprecedented pace of internationalising sport industry and transnational movement of people in the last 20 years. Although academic literature in cultural sport psychology and praxis has been increasing, sport professionals and local organisations seem to give scant time and resources to stay abreast of complex social changes in global society and to the development of cultural competencies. This joint ISSP – FEPSAC symposium draws on the

forementioned position statement to facilitate intellectual mobility of sport and exercise professionals within rapidly changing sociocultural landscapes to produce knowledge that works for the benefit of destination/receiving communities, origins, and athletic migrants. In the first presentation, a transnational framework of migration will be introduced and an empirical model of cultural transition will be discussed. In the second presentation, Berry's acculturation model will be outlined followed by recent research of migrant-receiving environments in sports. The focus in the third presentation is on practical implications of critical acculturation research with immigrant athletes. In the final presentation, the key postulates of the 2017 ISSP Position Stand will be introduced and discussed.

*Keywords: migrant athletes, transnational mobility, cultural transition, critical acculturation, integration*

## Challenges and strategies to develop athletic migration research and practice

**Tatiana V. Ryba (University of Jyväskylä, Finland), Natalia Stambulova (Halmstad University, Sweden)**

Today's sport is "on the move" in a sense that athletes, coaches, sport psychology practitioners and other sporting people are internationally highly mobile. In response, there is a growing interest and the need for sport psychology researchers and practitioners to understand athletic migration processes and develop strategies to effectively help both migrants and hosts to mutually adjust in the shared context. The ISSP Position Stand on transnationalism, mobility, and acculturation in and through sport (Ryba et al., 2017) provides a set of aids to interested scholars. First, the authors clarify migration terminology (e.g., mobility and migration, cultural transition and acculturation, immigrant and transnational athletes) to facilitate international/intercultural collaboration that is inevitable when professionals want to study or help migrants. Second, cultural transition and acculturation frameworks with examples of high quality qualitative and quantitative research on migrants and hosts are introduced, and relevant methodological tips are provided. Third, the authors analyze different forms of mobile practice and highlight strategies used by experienced mobile practitioners as materials for the readers' cultural reflexivity. Finally, they outline major challenges and potential solutions to further develop athletic migration research and mobile practice. The authors suggest an idea of cultural praxis of athletic migration as an approach that blends analyses of migrants' destination and home environmental contexts, studying adaptation process of both migrants and hosts, and identifying strategies facilitating mutual adjustment, athletes' performance and well-being. Among practical recommendations the authors promote shared acculturation approaches, sharing experiences between mobile practitioners from different countries, education of applied sport psychology students on mobile practices and education of coaches aimed at helping them to become cultural leaders in

*Keywords: migration terminology, acculturation research, mobile practice, cultural praxis of athletic migration*

## Current research on acculturation through youth sport

**Anne-Marie Elbe (University of Copenhagen, Denmark), Antonis Hatzigeorgiadis (University of Thessaly, Greece), Eleftheria Morela (University of Copenhagen, Denmark; University of Thessaly, Greece), Xavier Sanchez (University of Cumbria, UK)**

Recent studies on the integrative role of sport for all have mainly utilized Berry's (1997) model which describes different acculturation strategies based on the interaction of individuals' (a) wish to maintain their cultural identity and (b) their desire to interact with other cultures. The studies indicate that youth participation in organized sport may be linked to behaviors favoring adaptive intercultural strategies for both migrant and host populations thereby promoting integration and multiculturalism. However, it becomes evident that the coach's behavior and how s/he structures the sport environment is decisive for whether desirable outcomes towards the goal of integration can be achieved. This presentation will briefly summarize recent quantitative studies investigating the topic of acculturation through youth sport in migrant and host

populations. In a second part, a new study conducted with youth athletes in Greece will be presented. Participants were 338 ( $13.61 \pm .95$  years of age) Greek athletes (167 girls) competing in individual and team sports. Participants completed measures of acculturation attitudes, motivational environment and prosocial skills. Analysis of structural models revealed that a motivational environment characterized by a mastery climate, supportive of the needs of autonomy, competence, and relatedness, could predict empathy and altruism, which in turn predicted acculturation attitudes favoring multiculturalism. The results of the present study provide useful evidence concerning the role of both a mastery-oriented, need supportive sport environment and prosocial skills such as empathy and altruism, in promoting intercultural relations and facilitating acculturation processes of migrants. In sum, the recent studies provide evidence on to how create and promote sport environments that are conducive for facilitating positive acculturation outcomes which is relevant for sport coaches and policy makers.

*Keywords: sport for all, integration, motivational climate, prosocial skills*

## Acculturation strategies for relocated elite athletes, their peers, and the integrated support team

**Robert J. Schinke, Odirin Oghene, Yang Ge, Thierry Middleton (Laurentian University, Canada)**

Elite athletes, be they national team or professional level performers, travel across international borders to augment living and training standards (Kontos, 2009). These athletes and those they train with undergo acculturation challenges, comprised of psychosocial adjustments in relation to one another. The people engaged in this process within the training environment would include newcomers, teammates, coaches, sport science providers, and administration; (see Schinke, Blodgett, McGannon, & Ge, 2016). Broader acculturation challenges are also encountered as newcomer athletes experience unfamiliar cultural norms in their receiving communities (Elbe, Hatzigeorgiadis, Morela, Ries, Kouli, & Sanchez, 2016) as they encounter peers, friends, and employers (Schinke, Blodgett, McGannon, Ge, Oghene, & Seanor, in press). We focus on how to develop an integrated approach to acculturation, where newcomer athletes and those they come into contact with engage in shared cultural learning, fostering deeper social ties. These strategies have been adopted in select Major League Baseball and National Hockey League Teams (see Battochio, Schinke, McGannon, Tenenbaum, Yukelson, & Crowder, 2013). However, shared acculturation strategies are seldom used in high performance sport environments. Our focus is on how to engage members from both training and living environments in acculturation, conducive of shared educational processes. We frame this presentation temporally to include (a) entry into a collaborative process from when each newcomer enters the training facility and seeks a new coach and community of friends, (b) onward to strategies that a culturally inclusive group might use to further shared understanding and belonging, such as the celebrating of cultural festivities, or learning an unfamiliar language and (c) cultural inclusiveness monitoring strategies for all concerned over several years to ensure diversity remains a central part of acclimation for all.

*Keywords: shared acculturation, criticality, holistic processes*

## Transnational mobility and cultural transition

**Tatiana V. Ryba (University of Jyväskylä, Finland), Natalia Stambulova (Halmstad University, Sweden), Noora J. Ronkainen (Shanghai Jiao Tong University, China; Liverpool John Moores University, UK)**

A growing number of sport participants migrate within and between nations for a variety of reasons, such as athletic career development, sport tourism, and international assignments. During 2013, the International Organisation for Migration (IOM) estimated that 214 million individuals were considered to be migrants, which is one in every 33 persons worldwide. This presentation builds on the ISSP Position Stand on transnationalism, mobility, and acculturation in and through sport (Ryba et al., 2017) to introduce a transnational conceptual



framework used in recent studies of athletic migrants' career and life transitions. First, migration terminology will be reviewed to facilitate the attendees' understanding of the experiential layers of athletes' experiences discussed in the presentations comprising this symposium. Next, we focus on a study of transnational elite athletes' careers to clarify the processes activated in cultural transition that produce psychosocial development through work, sport, and relationships in shifting cultural patterns of meaning. Having positioned the migrants' experiences in critical acculturation literature (Bhatia & Ram, 2009; Ryba et al., 2015; Schinke et al., 2016), we derived a temporal model of the cultural transition process consisting of three phases: pre-transition, acute acculturation, and sociocultural adaptation. The empirical model and three underlying mechanisms of cultural transition that assisted athletic career adaptability of transnational migrants will be discussed. We conclude with practical implications of this research for professionals working in the fields of career counseling and migrant support.

*Keywords: cultural transition model, acculturation, transnational athletes, migration*

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## Healthy behavior with quality sport

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**Chair: Jeanette López-Walle (Universidad Autónoma de Nuevo León, México)**

In Mexico, efforts have been made to allow professional and academic development in the sports psychology to increase. To this end, a REDDECA Thematic Network was created, financed by the National Council of Science and Technology of Mexico. Through different strategies, the increase in research has been observed in recent years, focusing on themes such as: the role of the teacher in the motivation and mental health of physical education students (Zamarripa, Castillo, Tomas, Tristán and Álvarez, 2016), interpersonal styles generated of the coach as predictors of the satisfaction of basic psychological needs and motivation in university athletes (Cantú-Berrueto, Castillo, López-Walle, Tristán and Balaguer, 2016), anxiety and moods (Alvarez, Cuevas, Lara and Gonzalez, 2015), as well as self-concept in physical activity (Álvarez, Cuevas, Lara and Gonzalez, 2015). Last, to abstractly express the development and future of research in the psychology of physical activity and sport in México (Reynaga, Góngora, López-Walle and Jiménez, 2016). With all of this, we have evidenced, the search for knowledge to promote healthy forms through the practice of quality sport in Mexico.

*Keywords: REDDECA, quality sport, healthy behavior, Mexico*

## Autonomy support, achievement goal orientations, psychological needs and satisfaction with life in Mexican athletes

**Dahiana Salazar-González, Lesly Castellanos (Universidad Autónoma de Nuevo León, México), Abril Cantú-Berrueto (Federación Mexicana de Fútbol Asociación, A.C., México), José Tristán, Jeanette López-Walle (Universidad Autónoma de Nuevo León, México)**

The self-determination theory (SDT, Deci y Ryan, 2000) postulates that coach behaviors have important consequences on psychological needs satisfaction and positive outcomes in athlete. Likewise, achievement goal theory (AGT, Ames 1992; Duda 1992, 1993; Nicholls 1980, 1989; Roberts 1984, 1992) postulates that the motivational climates that propitiate the task orientation, facilitate adaptive behaviors. The purpose of the present study was to test a model between the autonomy support generated by the coach, achievement goal orientations, basic psychological need satisfaction and satisfaction with life in university athletes. Participated two thousand seven hundred two university athletes (1,389 males, 1,313 females) from 15 different sports took part in the study. The participants were aged 16 - 28 years (Mage= 21.23, DT = 2.06), fulfilled the Spanish version of the Mexican context, Sport Climate Questionnaire, (SCQ); Task and Ego Orientation in Sport Questionnaire (TEOSQ); Intrinsic Motivation Inventory (IMI); Perceived Autonomy in Sport Scale (NAS);

Perceived Relatedness Scale Friends (NRSC); and Satisfaction with Life Scale (SWLS). The result of the model was satisfactory about index model fit, chi-square = 4666.70,  $gI = 1027$ , RMSEA = 0.4, NFI = 0.96, NNFI = 0.97, CFI = 0.97. The conclusion about this study is the importance of creating climates to support autonomy created by the coach as predictors of the orientation of the goals, satisfaction of needs and well-being in sport context for obtained the best psychology health mood in athletes.

**Keywords:** autonomy support, orientations goals, psychological needs, Mexican athletes

### **Decisional balance and self-determination like predictors of exercise enjoyment in a Mexican population**

*Jorge Zamarripa, María Marentes Castillo, Luis Rodenas, Maritza Delgado (Universidad Autónoma de Nuevo León, México)*

Making an important decision (e.g., exercising) involves a careful comparison of the pros and cons of such behavior. In this process called decisional balance, people decide to commit themselves when they perceive better the advantages than the disadvantages of physical exercise. Self-determination, for its part, involves the experience of having choices and the ability to choose. This last, has been related to desirable effects such as enjoyment and adherence to physical activity, therefore, decisional balance can be a variable that contributes to the prediction of greater enjoyment of physical activity and therefore of adherence. The purpose of the present study was to examine the predictive role of decisional balance and self-determination on exercise enjoyment in a sample of 530 people (48.2% males) between the ages of 11 and 76 ( $M = 33.22$ ;  $SD = 15.27$ ) from the metropolitan area of Monterrey (Mexico). The Decisional Balance Questionnaire, the BREQ-3 and the Physical Activity Enjoyment Scale were (administered, administrated, applied). We conducted a hierarchical regression analysis to predict enjoyment. The balance decisional was entered in step 1 and the self-determination in step 2. The results indicate that the decisional balance account for 27.3% of the variance ( $F=200.24$ ,  $p < .00$ ) of the enjoyment. In the step 2, the results indicated that the decisional balance and self-determination accounted for 40.8% of the variance ( $F=180.55$ ,  $p < .00$ ) of the enjoyment. In conclusion, the self-determination is a variable that contributes significantly to the prediction of decisional balance over the enjoyment of exercise.

**Keywords:** decisional balance, self-determination, enjoyment, Mexican, exercise

### **Impact of motivational climate created by parents on hardiness of young athletes**

*Rafael Peñaloza Gómez, María del Pilar Méndez Sánchez (Universidad Nacional Autónoma de México, México), José Carlos Jaenes Sánchez (Universidad Pablo de Olvide, España), Nancy Ponce Carbajal (Universidad Autónoma de Nuevo León, México)*

Hardiness is defined as a set of characteristics of the personality that is shown as an important resource of resistance against stressful situations, its conformed by three sub-dimensions: control, commitment and challenge; These components make it a construct of vital importance in the initiation and permanence of young people in sports practice. In the same way around the young people are different significant figures that test the characteristics of the personality mentioned above, influencing positively or negatively the way they face the situations of the sport. Parents, coaches and peers are the people that different studies have found as significant influences on young athletes, which is why the objective of the present study was to determine if the motivational climate created by the parents influences in some way the design of hardiness of college athletes. Participants included 150 youth from Mexico City who answered the Hardiness Questionnaire and the Parental Initiated Motivational Climate Questionnaire. Descriptive analyzes were performed for the sample and correlation and regression analyzes were performed to determine if there were influences on the motivational climate on hardiness, finally the findings are discussed and the results are interpreted.

**Keywords:** hardiness, motivational climate, parents, commitment

## Psychological factors, chronic diseases and physical activity in elderly people of Mexico and Spain

**Pedro Reynaga Estrada, Alejandra Yazmin Landeros Rubio (Universidad de Guadalajara, México), María Luisa Zagalaz Sánchez (Universidad de Jaén, España), Jeanette López-Walle (Universidad Autónoma de Nuevo León, México), Ivonne Michel Jiménez Ortega (Universidad de Guadalajara, México)**

The main objective of this research is to describe two groups of elderly people performing maintenance gymnastics in the city of Jaén, Spain (37 subjects) and Guadalajara, Mexico (18 subjects). The variables used for this research correspond to three dimensions. The first dimension is related to psychosocial factors, such as socio-demographic data and family environment, the second dimension with the pathologies and / or diseases presented by the participants, the third dimension with aspects of the practice of physical activity. Active aging is considered a process that seeks to take advantages at maximal the opportunities for physical, psychological and social well-being to improve the quality and life expectancy of older adults. The study was applied in both cities because Mexico and Spain share important characteristics among which the language is found, although with small variants and development of colloquialisms. For this purpose, a descriptive cross-sectional study was carried out, consisting of the observation of active elderly people, aged 55 to 85 years, using a sociodemographic questionnaire. Adaptations were only made between one version and another of the instruments. Among the most important results are certain psychosocial, sociodemographic and physical activity similarities between the two populations, finding that the main motivation of the people in this study is to conserve health and be distracted. Both groups resemble the marital status and sentimental situation (they have a partner). However, there were more differences in the prevalence of diseases, where diabetes is more frequent in the Mexican group (19.6%) than in Spain (5.6%), whereas hypertension has an inverse proportion of 11.8% And 44.4%, respectively. It is important to remark that neither group has suspended physical activity for more than 6 months.

**Keywords:** elderly adults, physical education and sport; psychosocial factors

## The role of self-efficacy as a promotive of a healthy behavior and the establishment of an active lifestyle in Mexican population

**Rossana de Fátima Cuevas Ferrera, Omar Benjamín Solís Briceño, Jesús Moo Estrella (Universidad Autónoma de Yucatán, México), Juan González Hernández (Universidad de Murcia, España)**

In Mexico, specifically in Yucatan, the self-efficacy has been investigated in the establishment of an active lifestyle and its relationship with other healthy behaviors. Participated 1,208 subjects with ages between 8 and 70 representing different age groups. In youth and adults was used and validated the Self-efficacy Scale for Physical Activity (Cabrera, et.al., 2011), and for children, the Self-Efficacy Scale for Physical Activity (Aedo and Avila, 2009) validated in Mexican child. It was found that the dimension of overcoming barriers is inadequate by presenting means below the expected levels for the different age groups, with differences in the type of barriers. The behaviors related to an active lifestyle, especially the level of physical activity was found in the category of insufficient for the different age groups, aspect that confirms the results published by the state and the national censuses, as for the percentage of inactivity and Sedentary lifestyle (ENSANUT, 2012, SSY, 2013, SEGEY, 2013, INEGI, 2014). In the child population, the studies had a pre-post design with an intervention based on the strengthening of self-efficacy, in both studies there were significant differences before and after the intervention in order to overcome the dimension of barriers. Regarding self-efficacy with other healthy behaviors in university students, we found a negative relation with the insomnia symptoms. Based on the results found and according to the literature and scientific documentation on the effect of self-efficacy on the

behavior and adoption of healthy behaviors (Alagarez, 2008, Balaguer, Escartí and Villamarín, 1995, Bandura 1977, 1982, 1989, 2001; Schwarzer and Reinhard, 1999), it is concluded that intervening in the Self-efficacy of the Yucatecan population is effective in promoting active lifestyle and other healthy behaviors.

*Keywords: self-efficacy, healthy behavior, Yucatan population*

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## Profile of competencies and accreditation in the professionalization of sport psychology

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**Chair: Enrique Cantón (Consejo General de la Psicología de España)**

From a conceptual point of view and its historical development, the Psychology of Sport has been and remains as a field of Applied Psychology. In this sense, although it counts on specific research in the area, in some cases as the means to learn about other human psychological aspects rather than an objective in itself, its applied facet has been the most characteristic, which leads us necessarily to contemplate its professional aspect. This Symposium involves specialists who are currently responsible for managing this field in Spain, and gathers some of the key elements of the situation; from the challenges we are facing, such as the need for supervision or the development of sub-areas of work, to the definition of professional competences and its formal accreditation.

*Keywords: applied psychology, accreditation, professional competences*

## Challenges of the professional practice in sport psychology

**Enrique Cantón (Consejo General de la Psicología de España)**

Although we can affirm that nowadays the Psychology of Sport is a differentiated and consolidated field of professional application of Psychology, it is also true that its development is not similar worldwide, founding huge differences among countries in terms of their own formative requirements, professional competences, degree of social establishment or professional regulation. Achieving a greater degree of harmonization is undoubtedly one of the clearest current challenges. If we focus on the Spanish case, as collected in a recent work (Cantón, 2016), finishing the formalization of the specialty in this field of application of Psychology is precisely a challenge. In this sense, important steps have been taken, beginning with the creation of the Division of Physical Activity and Sport Psychology (PACFD) in 2010 in the Council of Official Colleges of Psychology, and the approval of its professional accreditation in 2015. This process is trying to harmonize with our closest professional environment. On one side, the European Federation of Psychologists Associations (EFPA) counts with the Task Force in Sport Psychology, which is working on setting up the accreditation of professional profile of the specialty, and also delimiting its competences. Similarly, although slightly incipient is the development of this issue in Latin America, which has been facilitated by the creation in 2016 of the Ibero-American Division of Sports Psychology within the Ibero-American Federation of Associations of Psychology (FIAP) framework.

*Keywords: sport psychology in Spain, professional development, European and Iberoamerican sport psychology*

## Professional experience in sport psychology

**M<sup>a</sup> Dolores Gonzalez (Consejo General de la Psicología de España)**

This paper describes the situation of professional experience in our country. Since the first contributions by sport psychologists, education and research has advanced considerably, not so much in the professional field. In this sense, the Consejo General de Psicología has developed a professional profile of this area (COP, 1998) in

which the functions of a sport psychologist are presented (evaluation, planning and counseling, intervention, education and research). In that first document three professional areas were identified: performance sport, initiation sport and health and leisure sport. Two new areas were added later (COP, 2006): sports organizations and sport for special groups. New areas of professional intervention will open in the next few years. In line with other associations, the competencies that define the professional profile of sport psychologist have also been defined. Finally, greater legal recognition, interdisciplinary work with other sports professionals and improvements in working and salary conditions are some of the challenges which sport psychologists will have to face in the coming years.

*Keywords: professional intervention, education, professional functions*

## Professional perspectives of supervision in sports psychology

**Alexandre Garcia-Mas (Consejo General de la Psicología de España)**

The concept of mentoring is as old as the history of civilization (Meriam, 1983). Although there is no single or universal definition (Bloom, 2013) can be explained as “the relationship between an experienced (mentor) and less experienced (supervised) person in a specific field with the expressed purpose of promoting professional development for the protégé” (Schempp, Elliot, McCullick, Laplaca y Berger, 2016, p. 2). In the field of psychology of physical activity and sport, supervision is far from being implemented. In addition, although attempts have been made to structure it in undergraduate and postgraduate studies, it has been shown that their acceptance and level of utilization are much higher when referring to professional aspects of the sport psychologist (SP) (Allen, Eby, Poteet, Lentz and Lima, 2004; Foltz, Fisher, Denton, Campbell, Speight and Steinfeldt, 2014). Thus, as an example, the effectiveness of this supervision with coaches has been clearly demonstrated (Schempp, Elliot, McCullick, Laplaca and Berger, 2016). The current need to guarantee theoretical and practical training through the certification and / or accreditation of SP has opened up the possibility of integrating supervision within the various certification programs (as it occurs in EFPA and AASP). Therefore, it should be seriously considered in the accreditation in Sports Psychology by the CGE. This will involve the consideration of the professional profile and training of the supervisor, both for the active ones and with SP who have completed their active cycle and can extend their experience to their protégés in a recognized and regulated way (Barney, Andersen and Riggs, 1994). Finally, and according to the possible and desirable interconnection between different certifications worldwide, these mentors must be sensitive and trained in the cross-cultural consideration of both athletes and their psychosocial constraints (Schinke, Fisher, Kamphoff, Gould and Oglesby, 2016).

*Keywords: professional supervision, mentoring, accreditation*

## The accreditation of specialist in the area, and expert in sub-areas in sports psychology in Spain

**Alejo García-Naveira (Consejo General de la Psicología de España)**

In order to meet the growing demands of the society, nowadays a model of professional accreditation by areas of specialization, and sub-areas of work or intervention strategies, has been generated by the Official Association of Psychologists of Spain. To obtain the accreditation of specialist in one of the Professional Divisions of the General Council of Psychology in Spain (CGPE), such is the Sports Division, it is necessary to comply with several basic and indispensable requirements: to have a Bachelor's Degree in Psychology (or equivalent); to be registered in any of the existing areas; be up to date on the payment of the receipts, and not to be serving a deontological sanction. In addition, there are some specific requirements: to have a minimum of 400 hours of additional specialized training in each field of intervention (recognized by the CGPE), and to have at least four years of certified professional experience. The renewal of the accreditation is established in 200

training hours every four years. The professional experience indicates that the specific high level competences that a psychologist acquires in his work, may go beyond the ones established specialties. This fact is directly related to the changing demands of the labor market, due to the different areas of activity (high performance sports, sports organizations, etc.), and with the different psychological intervention strategies (psychoanalysis, cognitive-behavioral orientation, coaching, etc.). Therefore, there could be a subspecialty within the specialty, under the term "expert". We may conclude that it is necessary to respect this structure of training / accreditation for the better development of the sport psychologists' professional skills, as well as the need to establish what are the sub-specialties and their accreditation requirements (under the term "expert").

*Keywords: accreditation, specialization, professional experience*

## The psychologist of sport as a trainer (of psychological skills)

**Eugenio Pérez-Córdoba (Consejo General de la Psicología de España)**

There is a widespread belief that psychology is a profession, almost exclusively dedicated to performing psychological "therapies". In this paper we pretend to show that the psychologist is a trainer of psychological behaviors or abilities. Thus, the psychotherapist's work is often reduced to performing treatments to "cure" sick people, when, in fact, the function of "treatment" is not to "cure" abnormal behaviors, but rather to "change" behaviors to improve them. Does a coach do not "change" behaviors? In this sense, it can not only go from the "abnormal" to the "normal", but can go from "normal" to "better", sometimes "abnormal" because it is elite (concept to name people who belong to a select minority group), for example, by optimizing their psychological skills. And, just as there is a specific "technical skills" coach for each sport, or there is a coach or coach, there must be a behavior coach (or psychological skills), since it is customary for coaches or coaches require their athletes these behaviors without being trained. Thus, if they are asked for a certain resistance or power, they are first physically trained, if they are asked for a certain technical gesture, they also prepare themselves beforehand, but if they are required to control their anxiety or concentrate, they must do so without train (by magic or similar? Or is it an innate ability) In this way the psychologist uses "treatments" whose objective is not to "cure" but to "change" certain forms of behavior in a way that optimizes the performance of athletes, either to reach the elite or simply to improve their abilities and Psychological skills. And all this through a training, for which you need a coach or psychologist.

*Keywords: professional strategies, psychological skills, mental training*

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## Promoting positive youth development through sport: research to practice initiatives

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**Chair: Nicholas Holt (University of Alberta)**

Positive youth development (PYD) is a strength-based approach to development, whereby emphasis is placed on building young people's assets for them to thrive as productive members of society. Sport represents fertile grounds for youth to live experiences that lead to positive developmental outcomes. In recent years, a growing number of researchers have created research-to-practice partnerships with sport organizations to apply PYD research findings in the delivery of sport programs. The purpose of the current symposium is to provide examples of research to practice initiatives and how they have contributed to the promotion of PYD through sport. In the first presentation, Prof. Nicholas Holt will discuss the creation of PYD SportNET, a network dedicated to sharing evidence-based youth sport and PYD information to the sport community. In the second presentation, Dr. Martin Camiré will present his work on redesigning Golf Canada's two national youth development programs to embed within them a life skills curriculum. In the third presentation, Dr. Dany MacDonald and Dr. Leisha Strachan will share the initiatives developed as part of Project SCORE, an online



platform intended for coaches, parents, and athletes interested in promoting positive growth through sport. In the fourth presentation, Dr. Katherine Tamminen will share lessons learned in developing partnerships to implement evidence-based research into youth sport from a top-down level and a bottom-up approach. Prof. Chris Harwood will serve as the symposium speaker, given his considerable experience as an applied sport psychologist interested in fostering the psychosocial development of youth through sport.

*Keywords: youth, development, research-to-practice*

## **Bridging the research-to-practice gap in Canadian sport: The PYD SportNET Project**

**Nicholas Holt (University of Alberta)**

There is a research-to-practice gap when it comes to applying knowledge from sport research to the delivery of sport in Canada (Holt, 2016). To address this problem, we have conducted a three-phase research project. In the first phase, we conducted a systematic review of over 1,000 studies of positive youth development (PYD) through sport. A total of 62 articles were ultimately included in our analysis, and we presented a model of how to promote PYD through sport. In the second phase, which will be the focus of this presentation, we examined factors associated with the use of research evidence in sport organizations. Data were collected via individual semi-structured interviews with 21 representatives from Canadian National Sport Organizations and 46 Provincial Sport Organizations. Interviews were transcribed verbatim and subjected to an inductive thematic analysis. Facilitators of the use of research evidence were when organizations had a personal connection with a researcher or sport scientist and when research could be used to support policy or convince funders. Barriers to the use of research evidence were its perceived lack of relevance, along with a lack of capacity and awareness within organizations. Suggestions for communicating research more effectively were to write short summaries with a practical focus, use a range of digital and social media, and facilitate face-to-face interactions. Overall, results suggest that researchers should develop communication plans for their research, using multiple forms of media with specific messages targeted to particular stakeholders emphasizing the applied implications of findings. In the third phase, we are developing a range of shareable content resources that can be used by stakeholders in the sport community. We have created the PYD Sport Network ([positivesport.ca](http://positivesport.ca)) and through Twitter (@PYD SportNET) we share research information through infographics, retweets, and links.

*Keywords: sport, knowledge exchange, facilitators, barriers*

## **Integrating life skills into two youth development programs for golfers**

**Martin Camiré (University of Ottawa)**

Recent research conducted by Bean and Forneris (2016) suggests that sport programs intentionally structured to teach life skills are better suited to foster positive youth development outcomes, when compared to non-intentionally structured sport programs. In 2014, Golf Canada, the governing body and national sport organization for golf in Canada, undertook the process of creating its own life skills curriculum to be integrated in its programming for young golfers. The current presentation is intended to offer insights into the successful research to practice partnership that was created between researchers from the University of Ottawa and Golf Canada's Chief Sport Officer and his staff. The two parties worked together over the span of two years to create and integrate a life skills curriculum within Golf Canada's two national programs for young golfers: (a) Golf in Schools and (b) Future Links Learn to Play. Golf in Schools (<http://golfinschools.golfcanada.ca/>) was developed in 2009 to help school teachers plan and deliver physical education classes that facilitate the learning of golf-specific skills. Future Links (<https://www.cnfuturelinks.com/>), Canada's national junior golf development program since 1996, provides youth with the opportunity to learn the game of golf via affordable and accessible programming at their local golf club. The life skills curriculum integrated in both of these

programs consists of evidence-informed practical strategies that practitioners can readily use into their coaching practice to intentionally teach life skills through the sport of golf. The presentation is divided into three sections: (a) description of how the partnership was created, (b) explanation of how the life skills curriculum was developed, and (c) presentation of the lessons learned from establishing a successful partnership with a national sport organization.

*Keywords: golf, programming, youth, curriculum*

### Using parent feedback to improve an online PYD program

**Dany J. MacDonald, Sydney Stavert (University of Prince Edward Island), Leisha Strachan (University of Manitoba)**

It has been suggested that organized sport is an ideal venue to promote and incorporate positive youth development (PYD; Fraser-Thomas et al., 2005; Holt, 2016). Concurrent to this, it has been shown that adults have difficulties translating PYD into practice (McCallister et al., 2000). Based on these findings, researchers have developed instruments to assist with implementation of positive development into the sport environment. One such instrument is Project SCORE, which is an online program aimed at helping coaches implement the 4 Cs (confidence, competence, connection, and character) of PYD in sport. Recent research has shown that coaches who used Project SCORE reported success in incorporating aspects of PYD into their coaching and reported individual growth as coaches (Strachan et al., 2016). To expand the instrument, the site has developed a parent portal aimed at providing parents with information about maintaining a PYD-focused environment outside the immediate sport environment. However, the design and impact of the parent portal has yet to be studied. Therefore, this study investigated the parent portal to better understand parental perceptions of the instrument. Ten parents of youth sport participants (athletes aged between 12 and 17 years) were recruited as participants. Parents were asked to navigate the website and voice their thoughts about the information presented using a talk-aloud procedure (Yardley et al., 2010). Following this, participants were asked additional questions about the program. Preliminary analyses suggest that parents like the setup of the site, the information presented, and would welcome the instrument if it was made available through their local organization. To maintain effectiveness, parents suggested that information be constantly added to the site to ensure relevance. The results will be discussed in light of the recommendations, and information will be provided on how to best include Project SCORE within organizations.

*Keywords: online, 4Cs, coach, development*

### Developing partnerships to bridge the gap between research and practice in youth sport

**Katherine Tamminen (University of Toronto)**

There is a strong history of research on psychosocial development in youth sport, as well as a strong body of research focusing specifically on identifying ways to structure sport settings to promote positive developmental experiences for youth. However, researchers, practitioners, and administrators often cite a 'gap' between research and practice due to a variety of structural, organizational, and logistical constraints. The purpose of this presentation is to identify gaps and challenges in linking research and practice, followed by a discussion of strategies to overcome these challenges. Drawing on three case examples of youth sport research projects, this presentation will focus on the process of partnership development for carrying out research and improving knowledge translation of research findings. The first case example describes the development of partnerships with sport organizations and industry partners to conduct PYD research on the sport experiences of Canadian youth hockey athletes, parents, coaches, administrators, and referees. The second case example describes the development of partnerships with community sport organizations and highlights opportunities to deliver and assess the effectiveness of youth sport intervention programs. The third case highlights the

development of partnerships with municipal organizations for program evaluation and changes to municipal policies to promote access to sport opportunities among individuals living in low income. Drawing on these various forms of partnerships, this presentation will address (a) issues concerning funding, markers of achievement, and impact; (b) concerns about making cautious assertions versus bold claims regarding research findings; (c) issues of academic freedom and intellectual property; (d) timelines and time commitments; and (e) suggestions to capitalize on partnerships between researchers, industry, and community organizations to bridge the research-practice gap.

*Keywords: practice, challenges, sport, recreation*

## Symposia Session 7. (14.30-16)

### The role of psychology in working with Olympic and Paralympic athletes

***Chair: Paul Wylleman (Vrije Universiteit Brussel/Olympic Committee of the Netherlands (NOC\*NSF))***

The past decades have witnessed an increased involvement of psychology in the support provided to Olympic and Paralympic athletes and coaches. While this involvement has generally been focussed on the psychological preparation of Olympic athletes, a growing need has been detected for interventions focussed on mental health and psychological disorders. In order to ensure a structured system of support covering the spectrum 'performance enhancement to therapeutic treatment' requires an interdisciplinary approach bringing together, among other, sport, health and clinical psychology. During this symposium, experts will reflect on three major topics, namely (1) the challenges experienced when starting and continuing to work with Olympic and Paralympic athletes and coaches; (2) the competences perceived to be required to work with Olympic and Paralympic athletes and coaches; and (3) the lessons-learned and/or best practices related to working with Olympic and Paralympic athletes and coaches. The symposium will be concluded with reflections and recommendations on the education, professional involvement and continued professional development (CPD) of psychology-support providers in working with Olympic and Paralympic athletes and coaches, and on the role of psychology associations and Olympic organisations in ensuring a high quality of psychology-support. This symposium will include data relevant to the preparation and support before as well as during the 2016 Rio Olympic Games. During this symposium, the audience will be provided by the panel chair with an opportunity of interaction with the panellists (e.g., questions, remarks, feedback).

*Keywords: olympic athletes, paralympic athletes, psychology support, sport psychology, health psychology, clinical psychology*

### Is an onsite sport psychology service during the Olympic Games really necessary?

***Olle Anfelt (Sveriges Olympiska Kommitté, Sweden)***

During the 21st century we can see an increased number of Sport Psychologists onsite during the Olympic Games as well as during World Championships etc. During the 90's the SP service was mostly connected to preparations, the work together with the SP was done before the championship. Thus, it was up to the coach staff and the athletes to deal with the mental issues during the Championship, as self-confidence, motivation, focus, underperformance etc. At the same time we can see a general tendency that the number of persons around the athletes increases. The role of the headcoach has expanded. Today the coach staff and the support team in number can be as big as the number of athletes or more. This means new challenges for the headcoach and for everyone involved. Communication becomes central to coordinate all people involved. In Rio the number of athletes, in the Swedish Olympic Team, for the first time was fewer than the total number of

leaders, coaches, medical staff, administrative personal, SP's etc. In a more and more multidisciplinary context, what is the role of the Sport Psychologist and has the role changed the last ten to fifteen years? Is an onsite presence adding value or is there a risk of overstaffing the teams? The presentation will cover experiences and lessons learned from a sport psychology view presenting Swedish data from the last five summer games (Sydney to Rio).

*Keywords: Olympic Games, role, multidisciplinary, overstaffing*

## Relationship between the onsite collaboration with a performance psychologist and the occurrence of failure and success factors at the Olympics?

**Daniel Birrer (Swiss Federal Institute of Sports Magglingen / Department of Elite Performance, Switzerland)**

Competing successfully at the Olympics is an unrivalled challenge for athletes. To support athletes in this endeavor the number of nations, who support their athletes with onsite sport psychological services, is growing. However, some NOCs question the need for and the effectiveness of onsite consultancy. We have been able to show the need for onsite sport psychological services for performance, organizational and personal issues (Birrer, Wetzel, Schmid, & Morgan, 2012). Nevertheless, there is a lack of empiric evidence that onsite services are an added value. Therefore all Swiss participants of the Olympic Games 2016 were asked to complete a survey regarding their confrontation with different mental success and failure factors and its perceived effect on their performance. Athletes were grouped as to whether they worked onsite with a performance psychology specialist (onsite service users, OSU) or not (Non onsite service user, N-OSU). 28% stated to have consulted a sport psychology professional during the games. OSUs had a lower ratio of athletes with "confidence in the coach's abilities". However, this had a lower negative effect on their performance than in N-OSUs. Furthermore, OSUs had a higher ratio of athletes, who had "difficulties in recovering at the OG", had "sleep difficulties", had prepared "for unexpected events", were confronted with "high nervousness" and "safety worries". Although OSUs had a higher confrontation rate with these factors the effect on their performance was perceived as more positive or less negative compared with N-OSUs. Finally, there was no difference in the ratios between OSUs and N-OSUs regarding other factors, e.g. "confidence in a successful competition outcome". OSU's, however, perceived the impact of these factors generally as more performance facilitative than N-OSUs. To sum up athletes with an onsite collaboration with a performance psychology professional perceived success and failure factors as more facilitative.

*Keywords: effects of onsite services, competitive fail and success factors, Olympic athletes, performance psychology*

## The Canadian national boxing team's emergence and relapse in an Olympic cycle

**Robert J. Schinke (Laurentian University, Canada)**

The Canadian National Boxing Team held four cycles of successive Olympic medal results from 1984-1996 (Schinke, Stambulova, Trepanier, & Oghene, 2014). Thereafter, other teams developed and augmented their Olympic success and Canada declined first to a strong Pan-American and Commonwealth Games team to one that was virtually unrecognized in the world rankings (Schinke, 2009). From 2013-2016, with a new National Team staff, including the appointment of a mental performance consultant, the team returned to a strong international standard with medals in two consecutive world championships, three medals at the 2014 Commonwealth Games, and six medals and a second place team finish at the 2015 Pan-American Games, including three gold medals. Situated in a government funding context that was oriented toward Olympic success (Own the Podium), the team eventually underachieved at the 2016 Rio Olympics. Within this presentation, (a) the presenter engages reflexively in the reasons for this downturn in Olympic results (see Schinke, McGannon, Parham, & Lane, 2012; Terry, 2009), (b) what is being learned from the Rio Olympic

experience, (c) how the information is being used to strengthen his own services, and (d) what his services in the next Olympic cycle will look like. This knowledge is contrasted with what is known in the literature regarding competent Olympic mental performance consultant practices (see Gould & Maynard, 2009; Hodge & Hermansson, 2009; Wylleman, Reints, & Van Aken, 2012). Though Olympic teams are highly idiosyncratic, with unique national characteristics (see Si, Yu Li, & Chen, 2016), loose recommendations are considered for parallel national team contexts regarding how to develop a winning culture and staff accountability within the context of two successive Olympic cycles.

*Keywords: Olympic cycle, meta-transitions, boxing, major games competence*

## **The interdisciplinary support provided by sport, health and clinical psychologists to Olympic and Paralympic athletes and coaches of TeamNL**

**Paul Wylleman (Vrije Universiteit Brussel)**

The past decades have witnessed an increased involvement of psychologists in the support provided to Olympic athletes and coaches (Wylleman & Johnson, 2012). While generally focussed on the psychological preparation of Olympic athletes, a growing need has been detected for interventions focussed on mental health and psychological disorders (Gouttebauge, Jonkers, Moen, Verhagen, Wylleman, & Kerkhoffs, 2016). In order to ensure a structured system of support covering the spectrum 'performance enhancement to therapeutic treatment', the Netherlands Olympic Committee (NOC\*NSF) has, since the end of 2013, ensured the support of sport, health and clinical psychologists. Flanked by lifestyle coaches and psychiatrists, these psychologists are part of an interdisciplinary team consisting of 30 experts. This presentation will focus and provide data on the development and context of the provision of interdisciplinary psychology support provision to Dutch Olympic and Paralympic in the run up to the 2016 Rio Olympic Games. Recommendations will be formulated on the education and continued professional development (CPD) of psychologists and on the role of psychology associations (EFPA, FEPSAC) and Olympic organisations (EOC, NOC\*NSF) (Wylleman, Harwood, Elbe, Reints, & de Caluwé, 2009; Wylleman, Reints, & Van Aken, 2012).

*Keywords: interdisciplinary team, sport psychologist, health psychologist, clinical psychologist, Olympic athlete, Paralympic athlete*

## **Working with Paralympic Athletes.**

**Hardy Menkehorst (Mental Training and Coaching Centre, the Netherlands)**

In the last 10 to 20 years, the growth of interest in the psychology of Paralympic athletes is significant. Research is starting to support the value of psychological skills training and delivering services on site. Even though it is questioned if sport psychology services on site at the Olympic or Paralympic Games at are a successful contribution to enhance performance, we still must find an answer regarding the best practices at the Games as a sport psychologist. Little is known about these best practices at the Games as competition is going on. A lot of the Paralympic athletes, taking part in Paralympic competition, have suffered from a personal trauma, before the onset of their Paralympic career. Sport psychologist are not fully educated to deal with this group of athletes and often lack the experience of working with them under pressure. As the competitiveness is growing fast at the Paralympic level, gaining experience as a sport psychologist on site at the level of international competition is very important. National Paralympic Committees should therefore create ample opportunities for sport psychologists to have this experience and offer them possibilities to enlarge and build on their existing competencies, so they are able to serve this group of athletes even better. The education of sport psychologist should be re-evaluated to meet the challenges of these athletes.

*Key words: Experience on site, Paralympic athletes, education of sport psychologist, best practices on site*

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## Save the Dream Symposium: Runway to save your dream

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**Chair: Pedro Velazquez (ICSS - Save the Dream)**

Save the Dream is a global non-profit Movement of organisations, people and athletes who believe in the power of sport to build more fair and inclusive societies and are therefore committed to promote and protect its core values for the good of youth and future generations. The main objective of the Symposium is to inspire the audience of sport psychology academic and practitioners through the testimonial of outstanding athletes about how Sport Psychology can better promote and protect the core values of sport. The symposium will offer a chance to meet theory and practice. It will offer the opportunity to the audience of sport psychology academics and practitioners to have an open debate with athletes who have been in contact with sport psychology through their sporting career or who are themselves (or in their way to become) sport psychologists. The panel will be composed of four outstanding athletes led by Ms. Josefa Idem. As coordinator she will provide an insight about the members of the panel and will engage them to share their experiences and perspectives. The speakers, on the basis of their successful experience as athletes but also of their knowledge of the world of sport and bearing in mind how sport psychology could do more to help, will explore the following thematic blocks: obstacles to realize sport dreams (e.g.: politics, disability, economic hindrances, mainstream education, etc.), how to make the most of young athlete potential (e.g.: spotting will, spotting, promoting and safeguarding sport talent, and how to face sport threats such as doping, corruption, match fixing and abuses. The audience will be offered to interact with the athletes by asking questions and exchanging views

*Keywords: athletes, dreams, disability, obstacles, talent, threats, doping, corruption, abuses*

### Runway to save your dream

**Pedro Velazquez (ICSS - Save the Dream)**

Obstacles to become an elite successful athlete can be very diverse in nature and sport psychology can play a key role in overcoming them. First hand personal stories of outstanding athletes inspire sport psychology academic and practitioners but also athletes including potential elite athletes. Josefa Idem, Giusy Versace, Honey Thaljieh and Alhambra Nieves's testimonials and interaction with the audience will help to understand from her practical experience how Sport Psychology can better promote and protect the core values of sport. The symposium will offer a chance to meet theory and practice.

### Eight Olympic participations

**Josefa Idem**

Josefa Idem (born 23 September 1964 in Germany) is an Olympic Champion Italian sprint canoer who won Olympic bronze medals at Los Angeles 1984 and at Atlanta 1996, Olympic silver medal in Athens 2004 and in Beijing 2008 and Olympic gold in Sydney 2000. She has competed in eight Olympic participations from 1984 to 2012 and a fifth place in London 2012 at the age of 48 years. Besides she won 5 World titles, 10 European titles and two World Cups. Josefa is currently a member of the Italian Senate and is completing her bachelor in Psychology. Rich of her athletic and political outstanding experience she will provide the audience with a unique perspective about the obstacles young people face to make their sport dreams come true (e.g.: politics, disability, economic hindrances, mainstream education, etc.)



## The experience as a referee

### ***Alhambra Nieves***

Alhambra Nieves is a telecommunications engineer, rugby player and referee. She is the first Spanish woman to have refereed a Rugby World Cup and the first woman to be chosen as the best rugby referee in the world in 2016 at the World Rugby Awards. When she was a kid Alhambra she used to play soccer, tennis, basketball, volleyball and karate. While studying Telecommunications and playing rugby, he began a parallel career in 2006 as a referee that in just one decade has led him to be number one. As rugby player she played 11 seasons at the national level and 3 of them was selected to play with the Spanish national team. In 2013 she had to choose between continuing to compete or opting to become a referee. She is the only Spanish rugby referee with full dedication to this task. Alhambra will share with the audience her experience of becoming an agent of change promoting sport values from her unique position as international rugby referee.

## If you fall down, don't be afraid. Smile and stand up!

### ***Giusy Versace***

Giusy Versace is a leading Italian para-athlete and former European record-holder. The daughter of Alfredo Versace, cousin of Donatella Versace and Santo Versace, she worked in fashion, until she was involved in a serious accident in 2005. She is currently a rising athletics star in her native Italy, having won several national titles and broken a European record in the 100m (T43) in 2012. As well as an athlete, Giusy is President of 'Disability no Limits' - a national non-profit organisation that raises funds to secure high-tech aids for economically disadvantaged people with disabilities. Giusy is a proud to be a Save the Dream ambassador, devoted to protect true values of sport in the world. Though it's quite common to think that her name has preserved her from suffering, as many people living with the same condition, she too felt pain and worked very hard to build a brand new life following her accident. She will inspire the audience about how young people in similar situations can overcome their obstacles- If you fall down, don't be afraid. Smile and stand up! If you believe, you can go anywhere.

## How to overcome social restrictions and political barriers

### ***Honey Thaljieh***

Honey Thaljieh is the co-founder of women's football in Palestine, the first captain of the Palestinian national team, and the first Arab woman to obtain a FIFA Master and work at FIFA. Thaljieh defied all social restrictions and political barriers, and became a role model to women and girls throughout the Arab world. Today, Honey continues her efforts as ambassador and member of influential international organizations around the world to empower women and children through sports, and to promote equality and non-violence through football. As Corporate Communications Manager for FIFA, Honey designs and implements pro-social football programs around the world. As a woman devoted to develop sport in an occupied land Honey will inspire the audience through her own experience about how to overcome gender, cultural and political obstacles.

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## Values Symposium 2: Exploring youth sport values with sport-specific value questionnaires

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***Chair: Jean Whitehead (University of Brighton, Eastbourne, UK)***

Martin Lee pioneered the study and measurement of values in youth sport. This symposium focuses on results obtained with the Youth Sport Values Questionnaire (YSVQ: Lee, Whitehead, & Balchin, 2000) which identifies hierarchical youth sport value systems, and the Youth Sport Values Questionnaire-2 (YSVQ-2: Lee, Whitehead, Ntoumanis, Hatzigeorgiadis, 2008) which measures higher order moral, competence, and status values. Whitehead's introductory paper, summarises the development of these instruments in the UK by a range of qualitative and quantitative methods, and clarifies how they differ and how they relate to measures of the Schwartz model of human values (1992). Guinto-Adviento presents YSVQ data from an Asian nation in a survey of Filipinos (n=492). She discusses similarities and differences with the UK and the elevation of team cohesion in a collectivist society. Goggins demonstrates that 3 samples of youth sport participants show similar clusters on the basis of their YSVQ values, and that these clusters differ in their acceptance of cheating and gamesmanship and their attitude to keeping winning in proportion. Gürpınar outlines the development and testing of a Turkish version of the YSVQ-2, using the method of back translation, and evaluating content validity, linguistic equivalence in bi-lingual speakers, reliability, and factorial validity. Danioni & Barni adapted the YSVQ-2 to represent parents' sport socialization values and employed it with a measure of perceived motivational climate to predict antisocial behaviour to teammates and opponents in Italian adolescent team players. A new international youth sport value hierarchy, including data from 2 ISSP papers, will initiate discussion that will include consideration of further development and adaptation of these instruments for different populations, contexts, and research questions.

*Keywords: values, value systems, value structure, ethical attitudes, motivational climate, antisocial behaviour*

## Developing youth sport value questionnaires in the UK

**Jean Whitehead (University of Brighton, Eastbourne, UK)**

This paper summarises initial development and findings with two of Lee's questionnaires used by subsequent presenters. The Youth Sport Values Questionnaire (YSVQ: Lee, Whitehead & Balchin, 2000) was developed to identify youth sport value systems. For ecological validity, items were drawn directly from young football and tennis players who were interviewed in focus groups about moral dilemmas in their sport. Transcripts were analysed, 18 values were identified, and proxy items for each value were pilot tested. A survey of 500 competitors aged 12-15 years showed that enjoyment ranked highest in the youth sport value system, followed by personal achievement and a group of socio-moral values, with winning in the lowest position. Ratings and rankings showed high correlations across age, gender, sport type, and participation level. Studies by other researchers have shown high correlations across two decades, and across the values of high school pupils and their PE teachers. A Canadian study confirmed the value set to be comprehensive. Cross-cultural research across five nations showed consistency at the extremes of the hierarchy and cultural variations within. Youth sport rankings for achievement and winning were consistent with global rankings of adult life values but enjoyment ranks higher in youth sport than adult life. The Youth Sport Value Questionnaire-2 (YSVQ-2: Lee, Whitehead, Ntoumanis, & Hatzigeorgiadis, 2008) was developed to create multi-item scales for 3 selected higher order value types: moral, competence, and status values. Existing items were analysed, new ones were added, pilot-tested and analysed with CFA to determine the fit of each factor, and of the 3-factor model, and establish invariance across gender. These sport-specific values have been provisionally located within the Schwartz (1992) circumplex model of human values. There is a need to determine these relations empirically and develop measures of other higher order value types in sport.

*Keywords: values, value systems, value types, moral dilemmas*

## An examination of sport values among Filipino youth

**Maria Luisa Guinto-Adviento (University of the Philippines)**

This century has seen growing interest in the values of youth sport competitors. The Youth Sport Values Questionnaire (YSVQ; Lee, Whitehead & Balchin, 2000) was constructed to identify the value systems (value priorities) of young athletes. The UK value system showed enjoyment, personal achievement and some moral values ranked at the top of the hierarchy, with winning at the bottom. Consistency across subgroups was high, implying that the common experience of competitive sport would show consistent sport value systems across nations. The present study examined the YSVQ value hierarchies of 492 Filipino athletes aged 12 to 17 years. Participants were recruited on the basis of their involvement in competitive (varsity sport team or membership) or recreational (intramural participation or sport club membership) high school sport. The overall data had a high correlation with the UK youth value system ( $r=.73$ ,  $r_s=.75$ ). In both nations, the values of achievement, sportsmanship and enjoyment were within the top 4 values, while winning and conformity were among the bottom 2. Key differences in Filipinos were the promotion of team cohesion to a top-4 value and a demotion of tolerance to the bottom 3. Subgroup analyses showed high correlations (gender  $r=.85$ ,  $r_s=.82$ ; individual/team sport  $r=.86$ ,  $r_s=.89$ ; Christian/Muslim  $r=.87$ ,  $r_s=.89$ ). As a collectivist society, Filipinos emphasise communal rather than individual action or identity, hence the high ranking of team cohesion is expected. The low ranking of tolerance is discussed in relation to the item wording and to potential undermining of the efforts of individual players to achieve team goals. This study affirms the merit of the YSVQ for cross-cultural use. Filipinos understood the sport specific items in the original English version with minimal changes. The basic sport value system was shared, and the key differences appropriately featured Filipino culture.

*Keywords: values, value systems, youth sport, collectivist society, Filipinos*

### Value clusters and moral decision-making in youth sport

**Luke Goggins, Craig Williams (University of Exeter, UK), Paul Freeman (University of Essex, Colchester, UK)**

This study had three distinct aims. Firstly, to examine whether young athletes could be grouped based on differences in their sport values; secondly, to examine the composition of these different cluster profiles; and finally, to explore how these clusters differed in attitudes to moral decision making. Cluster analyses were conducted on three existing independent data sets (First sample,  $n = 1309$ , age  $M/SD = 14.24/1.60$ ; second sample,  $n = 491$ , age  $M/SD = 13.11/1.09$ ; third sample,  $n = 411$ , age  $M/SD = 14.02/1.63$ ). In each sample, participants completed the Youth Sport Values Questionnaire (YSVQ; Lee et al., 2000), with participants in the second and third sample also completing the Attitudes to Moral Decision Making Questionnaire (AMDYSQ; Lee et al., 2007). The purpose of the three analyses was to examine consistency in the cluster profiles. Chi-squared tests examined composition differences between clusters, with MANCOVAs testing differences between clusters on attitudes to moral decision making in the final two samples. The analyses found youth sport participants could be clustered based on sport value differences and these profiles were consistent across the three samples. There was always one cluster that placed more importance on sport values and generally comprised a higher proportion of males and individuals participating in a higher level of sport. Another cluster placed least importance on sport values and had the higher proportion of participants at the lower level of sport with the third cluster placing moderate importance on sport values. The clusters that placed more importance on sport values overall were less accepting of cheating and gamesmanship and more likely to keep winning in proportion than those participating in sport at a lower level. The findings provide some empirical support for the often-held view that sport participation can have a positive influence on a young person's moral character development.

*Keywords: values, value clusters, ethical attitudes, youth sport*

## Youth Sport Values Questionnaire-2 (YSVQ-2): A validity and reliability study in a Turkish sample

**Bahri Gürpınar, Serkan Toprak, Merve Ayvalli (Akdeniz University, Antalya, Turkey), Jean Whitehead (University of Brighton, Eastbourne, UK)**

The purpose of this study was to develop a Turkish Version of the Youth Sport Values Questionnaire-2 (YSVQ-2: Lee, Whitehead, Ntoumanis and Hatzigeorgiadis, 2008) and test its validity and reliability. The questionnaire has 13 items and measures moral, competence and status value types. Responses are on a 7 point scale, on which participants rate the importance of each item to them when competing. The Turkish version was developed with the back-translation method and the content validity was assessed by experts. For linguistic equivalence, people who spoke both English and Turkish completed both versions ( $r_s = .86$ ). It was administered to 292 athletes (101 girls, 191 boys) from 4 different type of sports (football, basketball, volleyball, tennis). The athletes were aged between 11-18 (mean  $14.05 \pm 1.92$  years). The mean sport experience was  $4.26 \pm 2.31$  years. Results showed good test-retest reliability ( $r_s = .89$ ). The Cronbach's alpha coefficient was .64 for the moral values subscale, .66 for the competence values subscale, and .79 for the status values subscale. The factorial validity of the YSVQ-2 was analyzed with confirmatory factor analysis. All T values exceeded 2.56 ( $p < 0.01$ ) and no item had an error variance greater than .90. Fit indices showed a good or excellent fit ( $\chi^2/df = 1.79$ ; RMSEA = .05; GFI = .94; AGFI = .92; SRMR = .06; CFI = .97; NNFI = .93). Mean scores of the subscales were as follows: competence values =  $4.30 \pm 0.71$ ; moral values =  $4.10 \pm 0.72$ ; status values =  $2.59 \pm 1.49$ . These data reflect the priorities found in some other nations. The findings confirm the three-factor structure of the Turkish version of the YSVQ-2. Overall, the results indicate that this is a reliable and valid instrument that can be used to assess the Turkish athletes' value types.

*Keywords: youth sport, values, value types, factorial validity, reliability, Turkey*

## Parents' sport socialization values and sport motivational climate as predictors of adolescents' antisocial behaviours during competitions

**Francesca Danioni (Catholic Univeristy, Milan, Italy), Daniela Barni (LUMSA University, Rome, Italy)**

Parents and coaches are important agents of socialization and play a key role in young athletes' sport experience (Weigand, Carr, Petherick, & Taylor, 2001). In particular, parents' and coaches' sport goals for children may influence young athletes' sport behaviour, such as prosocial and antisocial behaviours. This study, involving adolescent team sport players, aims to analyse whether and the extent to which perceived parents' sport socialization values, which are more abstract goals, and perceived motivational climate in sport, which are situational goals mainly fostered by coaches, influence young athletes' antisocial behaviour towards teammates and opponents during competitions. While parents' socialization values refer to those sport values (i.e., moral, competence, status) adolescents perceive their parents want them to endorse, the motivational climate is the situational goal structure of the sport environment fostered by significant others, mainly the coach, which is deemed task and/or ego involving. Italian adolescents team sport competitors ( $n=172$ , male=83, female=89; age  $m=15.41$ ,  $sd=1.73$ ) completed the Youth Sport Values Questionnaire-2 (Lee, Whitehead, Ntoumanis, & Hatzigeorgiadis, 2008) adapted to measure perceived parental socialization sport values, whereas the Perceived Motivational Climate in Sport Questionnaire-2 (Bortoli & Robazza, 2004) was used to assess adolescents' perceptions of the prominent motivational climate within their team. The Prosocial and Antisocial Behavior in Sport Scale (Kavussanu & Boardley, 2009) was used to assess adolescents' antisocial behaviour towards teammates and opponents. Multiple linear regression and relative weight analysis showed that a task-involving motivational climate negatively predicted antisocial behaviour towards teammates. Antisocial behaviours towards opponents were instead predicted by parents' socialization sport values, particularly mothers' status values. Expansions of the study will be discussed.

*Keywords: youth sport, values, motivational climate, prosocial behaviour, antisocial behaviour, Italy*

## Multiple identities of self-talk: From window into thought to performance-oriented mental training

**Chair: Alexander T. Latinjak (Euses - School of Sport and Health Sciences)**

In this symposium, we seek to outline the two major lines of research within the field of sport self-talk: research on athletes' automatic self-talk and research on self-talk interventions. Automatic self-talk are self-statements generated by the individual, either consciously or unconsciously, but without previous planning or training, while strategic self-talk refers to rational-proactive statements in interpersonally-designed and planned-in-advance interventions. This distinction will be exemplified in five studies that tackle state of the art research questions in each line of research. Study 1 focused on the distinction between spontaneous and goal-directed automatic self-talk, and their effect on outward emotional reactions (Fritsch, Hatzigeorgiadis, Latinjak, & Elbe). Study 2 focused solely on automatic goal-directed self-talk. The purpose of this study was to explore the goal-directed self-talk used by basketball players to cope with diverse competitive situations (Latinjak, Torregrossa, Cargol-Pugés, & Ramis). Studies three to five focused on self-talk interventions. Study 3 examined grammatical forms of strategic self-statements. Specifically, the effects of first- and non-first person self-talk on performance in endurance tasks were compared (Hardy & Thomas). Study 4 and Study 5 consisted of experiments on self-talk interventions in specific performance contexts. Study 4 examined the effects of self-talk on endurance performance in hot conditions (Comoutos, Bartura, Hatzigeorgiadis, Argiropoulos, & Flouris), whereas Study 5 focused on the effects of self-talk on task performance under conditions of external distraction in both laboratory and field settings (Hatzigeorgiadis, Galanis, Charachousi, Sanchez, & Comoutos). The discussion of the symposium will focus on the differences and overlaps between both types of self-talk, automatic and strategic, as well as on the unique and shared challenges both lines of research have to face in the close future.

*Keywords: cognitive processes, thoughts, emotions, attention, endurance exercise*

## The relationship between self-talk and outward emotional reactions

**Julian Fritsch (University of Thessaly & University of Copenhagen), Antonis Hatzigeorgiadis (University of Thessaly), Alexander T. Latinjak (EUSES - School of Sport and Health Sciences), Anne-Marie Elbe (University of Copenhagen)**

In the sport context, a recently introduced framework classifies athlete's automatic self-talk into goal-directed and spontaneous self-talk (Latinjak, Zourbanos, López-Ros, & Hatzigeorgiadis, 2014). While spontaneous self-talk was found to often involve emotionally charged statements such as the evaluation of a performance or the prediction of outcomes, a main identified function of goal-directed self-talk is to control emotional states. Recent studies (e.g., Furley, Moll, Memmert, 2015) highlight the impact of the behavioral component of an emotion (such as gestures, verbalizations, or facial expressions) on sport performance. Consequently, the main purpose of this study is to assess whether the self-talk framework can be used to distinguish between different forms of outward emotional reactions, which, in turn, influence sport performance. In a naturalistic video-assisted design, initial competitive tennis matches have been taped. Using the footage including the provision of context information (e.g., current score, previous points), the players have been asked to recall and write down their self-talk as accurately as possible in multiple situations. Those situations include lost points where (a) a negative outward emotional reaction or (b) no outward emotional reaction can be observed and, respectively, won points where (c) a positive outward emotional reaction or (d) no outward emotional reaction can be observed. All statements have been transcribed and recoded into single text units which will be deductively and independently categorized into the goal-directed/ undirected self-talk

framework by two raters with experience in the research field. Finally, quantitative analyses will be conducted to assess the relationship between outward emotional reactions and the type of self-talk.

*Keywords: emotions, goal-directed/ spontaneous thoughts, naturalistic design*

### Goal-directed self-talk in competitive situations in male basketball

**Alexander T. Latinjak (EUSES - School Of Sport And Health Sciences), Miquel Torregrossa, Manu Cargol-Pugés, Yago Ramis (Universitat Autònoma De Barcelona)**

In this study, we focused on goal-directed self-talk, a strategy that affects performance by the means of self-regulation, contrarily to strategic self-talk interventions, which aim at an externally driven change in athlete's thoughts. Goal-directed self-talk represents a controlled mental process deliberately employed towards solving a problem or making progress on a task. We specifically explored goal-directed self-talk used by basketball players to cope with diverse competitive situations: seconds before a game expected to be close, while clearly winning or clearly losing a game, and at the close of a tight game. Thirty-four male basketball players ( $M_{age} = 19.74$ ,  $SD = 2.93$ ) wrote up to three self-instructions they had used in these situations to self-regulate, solve a problem or make progress on a task. Content analyses indicated that athletes' goal-directed self-talk was predominantly future-oriented (I will win), creating activated states (Come on!) and regulating cognition and behaviour (Focus on the game). Exploring differences among situations, cross tabulation with Cramer's V statistic exposed a significant situation by self-talk function interaction (Cramer's  $V = .259$ ,  $p < .001$ ). Specifically, for seconds before the proportion of goal-directed self-talk aimed at controlling cognitive reactions and creating deactivated states (Calm down) was significantly high ( $sei = 2.7$  and  $sei = 2.3$ , respectively), whereas the proportion of goal-directed self-talk aimed at controlling deactivated states (Don't give up) was significantly low ( $sei = -2.4$ ). Additionally, the proportion of goal-directed self-talk aimed at controlling deactivated states was significantly high for while winning ( $sei = 4.0$ ). Overall, the results of this study underline the need for research on athletes' autonomous attempts to control themselves by be means of goal-directed self-talk, and inquire into the effects of these self-statements in a wide variety of situations.

*Keywords: cognitive processes, self-regulation, thoughts, sports*

### The effect of first-person versus non-first person self-talk on endurance performance

**James Hardy, Aled Thomas (Institute for the Psychology of Elite Performance (IPEP), Bangor University, Wales, UK)**

Despite self-talk being an effective intervention for a variety of motor tasks, research has mostly focused on the function and content of self-talk, rather than how it is said. Recent research has documented a positive effect of self-talk on endurance performance, offering support for the central role of perceived effort (cf., the psychobiological model of endurance performance). Some contemporary non-sport research has examined grammatical features of self-talk, identifying some aspects that aid self-regulation. In this study, we examined the effect of first-person (i.e., 'I') versus non-first person (i.e., 'You') self-talk on endurance performance, power output, and perceptions of effort in a 10km cycle time-trial (TT). Twelve healthy and active males ( $M = 22.20$  years,  $SD = 2.55$ ) carried out a 10km cycle TT on three separate visits; the first visit was a familiarisation trial followed by randomly counterbalanced 'I' or 'You' self-talk trials. Paired t-test revealed the endurance performance was significant faster in the non-first person versus the first-person condition ( $p < .05$ ). Two-factor ( $2 \times 10$ ) ANOVA results indicated that power output per km was also significantly higher in the non-first person condition ( $p < .05$ ) and despite working harder in the non-first person condition, there was no difference for perceived effort between the two self-talk conditions. Further research into the effects of both first-person and non-first person self-talk on sports tasks is needed. While these data are encouraging, they also flag the need to better understand how this performance effects materializes.



*Keywords: athletic performance, endurance exercises, thoughts*

### **Performance in the heat: A psychobiological approach to the effectiveness of self-talk**

**Nikos Comoutos, Khelifa Bartura, Antonis Hatzigeorgiadis, Christos Argiropoulos, Andreas Flouris (University of Thessaly)**

The use of self-talk has proven effective for enhancing endurance performance and the psychobiological model of endurance performance posits that these effects can be explained through a perceptual interpretation; in particular, suggesting that self-talk can reduce perceptions of exertions. Performing endurance tasks under conditions of heat enhance physiological and psychological stress, thus also perceived exertion. The purpose of this study was to test the predictions of the psychobiological model of endurance performance in hot condition through a self-talk intervention. Participants were 16 physically active adult males (mean age  $22.5 \pm 4.9$  years) who were randomly assigned into intervention and control groups. After a baseline VO<sub>2</sub> peak assessment, participants trained in two consecutive days on a cycling task, with participants of the intervention group using self-talk. Following a day of rest, participants were asked to complete a 30min cycling trial in a hot environment (35°C, 45% relative humidity), while maintaining a steady rate of moderate perceived exertion. Psychological and physiological measures were obtained during the trial. Participants of the intervention group produced greater power output during the final third of the trial. Respective results were recorded for oxygen consumption, whereas no significant differences were found for respiratory quotient, core, skin and muscle temperature, and thermal sensation and comfort. Overall, the findings suggest that the self-talk strategy seems to have compromised the aversive effects of the demanding environmental conditions, and provide support for the tenets of the psychobiological model of endurance performance.

*Keywords: cognition, extreme conditions, heat, oxygen consumption*

### **Self-talk can help countering the effects of distraction. Lab and field evidence**

**Antonis Hatzigeorgiadis, Evangelos Galanis, Fedra Charachousi (University of Thessaly), Xavier Sanchez (University of Cumbria), Nikos Comoutos (University of Thessaly)**

The effectiveness of self-talk strategies for performance enhancement in sport has received considerable support. A potential mechanism explaining the facilitating effects of self-talk is its attentional effects. The ability of athlete to focus attention to appropriate stimuli and remain focused in the face of distractions is an important asset for optimal sport performance. The purpose of this study was to explore the effectiveness of self-talk strategies on task performance under conditions of external distraction. To that end two experiments were conducted, one in the lab and one in the field. For the lab experiment participants were 28 sport science students (17 males, 11 females; mean age,  $21.33 \pm 1.44$ ) who were tested on a computer game requiring attention and fine execution, following a baseline assessment and a short training. For the field experiment participants were 28 female basketball players (mean age,  $20.96 \pm 4.51$ ) who were tested on free throw shooting, following a baseline assessment and a six-week intervention. In both experiments the final assessment took place under conditions of external distraction (non-continuous, sudden, loud noise). Analyses of covariance showed that in both experiments participants of the self-talk group performed better than participants of the control group. The results suggest that self-talk can counter the effects of distraction on performance, and provide indications that the attentional effects of self-talk is a viable mechanism explaining the facilitating effects of self-talk on performance.

*Keywords: cognition, self-instructions, athletes, attentional focus*

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## Sport psychology for and with coaches

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**Chair: Gloria Balague (UIC)**

The central figure in sport is the coach. Sport psychology skills, such as focusing, intensity regulation, and confidence are most highly impacted by the coach's behavior, who is in fact the main teacher. Sport psychology is most effective when implemented via the coach. That does not mean that sport psychology needs to tell coaches how to do their job. This symposium will explore several areas regarding the benefits of cooperating with coaches: 1) Learning what makes a great coach, how do great coaches reach and maintain high levels of success will allow us to clarify the information we should present to coaches' education programs. 2) Understanding the complexity of coaching in today's world, with the overabundance of information that bombards the athletes and must be filtered by the coach: What are the pressures felt by these coaches and how do they cope with them?. 3) Youth coaches working in elite academies must coach human development of their players as well as athletic development. How can we in sport psychology facilitate their work?. 4) Listening to the coaches' needs as the main assessment tool. What do coaches at different levels report as their main needs? If we listen to the information we will have the guide for our interventions. The presenters will describe specific situations and interventions, making recommendations for working for and with coaches.

*Keywords: performance enhancement, coaching, collaboration*

### The Philosophical and Psychological Development of a Coach: A Case Study

**Daniel Gould (Institute for the Study of Youth Sports, Michigan State University)**

Coaches play an important role in the psychological development and performance of their athletes (Gilbert & Cote, 2013). Sport psychology researchers have not examined the psychological, philosophical and philosophical-psychological development link in great coaches. This presentation reports on a case study of an outstanding wrestling coach, J Robinson, one of the most respected and successful NCAA wrestling coaches in the United States. Robinson's camps have been shown to foster short and long term psychological development in its youth participants (Driska, Gould, Pierce & Cowburn, in press; Pierce, Gould, Cowburn, & Driska, 2016). In-depth interviews at several points in time with Robinson were conducted, including one that took place 30 years before the time of the study. These were supplemented with interviews with camp staff and observations of the camp and Robinson's coaching at the camp. Results revealed that Robinson had a clearly defined philosophy, was very intentional in terms of developing mental skills, had a well-developed system for fostering mental skills development and had clear rationales that guided his coaching actions. His philosophy and approach to developing psychological skills in youth evolved over 35 years of implementing these camps and from Robinson's own life experiences. These included his family's work ethic, own sport participation including a devastating 4<sup>th</sup> place finish in the 1972 Olympics, his and other coaches, Army special forces training, significant others, reading about history and leadership and participation in psychological seminars. His ability to reflect on and grow from his experiences and his emotional intelligence seemed to be critical to his success. Implications for studying coach development and the psychology of coaching are provided.

*Keywords: expert coaches, coaching philosophy, psychological skill development*

## **Integrating the 5C's within coach-player relationship and performance-improvement plans in team sports**

**Chris Harwood (Loughborough University, UK), Karl Steptoe (University of Greenwich, UK)**

Early to mid-adolescence represent important phases in the development of a young athlete's ability to understand both the psychological demands of their sport and the relationship qualities that will help them to cope with transitions in competitive levels. In the context of academy youth soccer, for example, several psychosocial attributes and skills (e.g., Holt & Dunn, 2004; Toering et al., 2009) are proposed as enablers for players to successfully transition towards professional level employment. This development process, however, depends not only on players' actions but also on the players' support and relational systems. This element of the symposium will present an ongoing case example of integrating psychosocial concepts in a Premiership youth soccer academy, with a focus on how players and coaches are challenged to develop attributes that enable both performance and relational improvements. The underpinning principles of the 5C's model of practice (commitment, communication, concentration, control, confidence; Harwood, 2008; Harwood et al., 2015) will be shared prior to illustrating various systematic, developmental strategies that sport psychologists can apply to facilitate the psychosocial progress of players in tandem with coaching staff. Such work aims to enhance the quality and authenticity of coach-player relationships such that both parties are better able together within the environment of 'uncertainty' that often perpetuates such academies.

*Keywords: youth athlete development, coaching psychosocial development, coaches' education*

## **The unique role of coaches and their current evolution**

**Guillermo Perez Recio (Jefe de la Unidad de Deportes Centro de Alto Rendimiento Deportivo, Sant Cugat, Barcelona)**

The development of athletes is a phenomenon that occurs in a very specific social environment, which is also changing continuously. The coach is the one managing concrete stimuli, modulating much of the message that the environment emits towards the athletes. For many years now, the role of the coach has required increased knowledge, which includes not only the sporting aspects (technique, tactics, physiology, but also others, such as the personal development of athletes. The coach's role has increasingly become one of managing other supporting professionals. He/she has gone from being the sole-executor to being an integrated team manager. At the same time the difficulty of the coaches' job is rarely recognized, except in some professional sports, and this only occasionally. The lack of recognition occurs at the media level, but also in the economic or talent retention programs of clubs and federations. Despite both factors: hard work and low recognition, there are coaches who are systematically able to help their athletes achieve the greatest sporting success, or to get the young children in charge to enjoy and develop personally. Some coaches are motivated by the challenge: They are enthusiastic and committed, engaged in the challenge of training, enjoying doing it and achieving their goals, whatever they may be. Of course these are not the only ones. We will explore different types of coaches, and how this theme relates to the change in the role discussed above. This presentation will describe the above mentioned issues and emphasize the multiple areas of collaboration between sport psychology and coaching.

*Keywords: social pressures on coaches and athletes, successful coaches' strategies, sport psychology as support to coaches*

## **What can we learn from coaches? The most useful skill when working with coaches: listening**

**Cristina Fink (Philadelphia Union, HP Sports)**

This discussion will focus on the impact coaches have on athletes and the important role that psychologists can play while learning from coaches and supporting their role. Great coaches have a wealth of knowledge not only about their sport, but about the athletes they coach. There is a tendency in our field to inundate coaches with information. They already possess a great deal of knowledge and they need to be heard. We need to ask what they need and listen more before we offer what we can bring to the table. Coaches are examples of dedication, flexibility, adaptability and strength. At the highest level, they must be resilient and be able to withstand criticism by media, fans and owners. At the youth level, they need to understand and communicate effectively with parents and club directors. In the highest level of competition, coaches report having trouble sleeping and managing emotions (Fink et al 2003). Sport psychologists have a great opportunity to support the coach by listening and understanding their needs. The presentation will highlight the different needs of coaches at different levels and describe collaborative interventions between sport psychologists and coaches that match these needs.

*Keywords: coaches' needs, listening as an intervention, sport psychology and coaching*

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### Expatriation in sports: the experience of Brazil, Chile & Portugal

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**Chair: Regina Brandao (Sao Judas Tadeu University)**

**Abstract:** Due to the intense sport globalization the number of expatriate in sport is enormous. Despite this, little empirical research in the Sport Psychology field has focused on expatriation process of athletes and coaches. So, the aim of this symposium is to present international perspectives on the expatriation process. The development of national studies on expatriation demonstrates that research and observation of this fact in different cultures can shows us the influence of the singularities, ways of thinking and acting of each people on the perception and adaptation to the expatriation process. Four papers will be presented. The symposium organizer will briefly outline the meaning of expatriation, challenges and opportunities, success and failures, facilities or difficulties to adaptation to a new culture, psychological consequences, critical factors they might face to, and the cultural distance between countries that challenges the expatriation process. Then, the researches will explore, through in-depth interviews, how athletes and coaches from different countries dealt with the transition to play or work in another country. The first presentation will explore Brazilian top-level soccer players' extensive experiences on the expatriation process. Case studies and personal stories will illustrate this. The second presentation will focus, on a perspective of a Brazilian basketball player, the experiences he had when he went abroad to play. The third presenter will provide insights into expatriation process for athletes from Chile. Finally, the forth presentation will show what are the factors that Portuguese coaches perceive as the key aspects of their success on expatriation process as Portugal has approximately 400 soccer coaches on the 5 continents and is a country with about 11 million citizens.

*Keywords: expatriation, adjustment experience, elite athletes, transitions, culture, psychology*

### Expatriation in sports: the experience of Brazilian soccer players

**Regina Brandao (Sao Judas Tadeu University)**

Globalization and expatriation mark the contemporary soccer. On-going movement and mobility of players across continental, national, and regional boundaries are now an everyday experience. But unfortunately, there are very few empirical studies about the psychological consequences of the expatriation process and the reasons for maladjusted experiences. So, the purpose of this study was to explore Brazilian top-level soccer players' extensive experiences on the expatriation process. For those, 23 soccer players from the Brazilian National Team were evaluated. A qualitative research was proposed with a descriptive design using in-depth interviews as information collection technique and content analysis to data interpretation. Nine

themes emerged from these analysis, including: unreal expectations about the new country and/or club, need to adapt quickly to the new country, language and/or climate, play for a team of unknown players and coach, difficulties of adaptation in countries in wars and/or religious culture, appetite and sleep disorders, physical and emotional problems, problems in the target country that generate stress, racial and social discrimination, and coping with loneliness. Through these results was possible to conclude that the Brazilian's expatriate players face so many duels as the foreigners language domain was a weakness pointed by all; emotional problems such as sadness and depression dominated the feelings experienced by the players; they were not prepared for the expatriation process, and a great socio-cultural impact occurs in the elite Brazilian players at the time of the expatriation.

*Keywords: expatriation, adjustment experience, soccer players, transitions, culture, psychology*

### Expatriation in Sports: a case study of a Brazilian basketball player

**Marcelo Zanetti (Sao Judas Tadeu University)**

The expatriation of an athlete can represent reconnaissance for the work developed and the chance for professional and financial growth. However, such transition can also means a decrease in performance due to the difficulty of adapting to a new culture and customs. In this sense, the objective of this study was to analyze the expatriation process of a Brazilian male basketball player. As a research method, a structured questionnaire was sent to the athlete, consisting of 14 questions that dealt with different phases of the expatriation process. The data were treated through content analysis, following the assumptions of qualitative research. As a result, the athlete pointed out that the dream and the search for a better life situation were the drivers for his choice, which was facilitated by the support of an athlete from the destination country, a teammate in his last club in Brazil. Already, upon arriving in the country of destination, it was essential the support of the technical committee and countless Brazilians who played in their new club. Problems related to communication, meals, cultural differences, a hard routine of training and studies, laws and family distance were mentioned, which was mitigated by the presence of the girlfriend. As facilitators were mentioned: to have a good level in the language of the country, besides the obligation to take an intensive course of that language upon arrival, support from athletes from different parts of the world, participation in a program created by the university, local families "adopted" athletes during weekends and commemorative dates. In relation to its success abroad, the same attributed to the motivation to grow as a human being and athlete. Athlete expatriation programs may take such findings into account as a way to minimize the deleterious effects of this process on the athletic career.

*Keywords: expatriation, adjustment experience, elite athletes, transitions, culture, psychology*

### The expatriation in sport: the experience of Chilean athletes

**Regina Brandao, Marcelo Zanetti (Sao Judas Tadeu University), Alexi Ponce (High Performance Center, (CAR) Santiago, Chile)**

The globalization of the sport has allowed Chilean athletes to perform their activities in other countries. The present research investigated different aspects of the experience as expatriate athletes, specially their motivations to go and to live in a foreign country, the expectations they had to this respect, the type of support they had received, main difficulties they faced and who helped them in the process of adaptation. Athletes from hockey skate, handball, and field hockey were evaluated through in-depth interviews. The results showed that in general the main motivation to go abroad was to practice a sport at the professional level in professional leagues, where they could develop their performance in a better way, and thus they could contribute to the national teams of their respective sports. The support they had received comes first of all from their families who assumed the economic costs for the journey, and secondly for national teams that

assumed some costs. The main obstacles for adaptation were the loneliness and the concern if the family was in, but they do recognize that the clubs to which they arrived were concerned of generating appropriate environments to facilitate their adaptation. Another important theme emerged was the language, many of them choose Spain for play in order to avoid the necessity of an adaptation, but they said that if they had to go to a country of different language they will normally be prepared beforehand, learning English at least. In short they valued their experience as an expatriate athlete successfully.

*Keywords: expatriation, experience of adjustment, hockey skate, handball, field hockey*

### Expatriation in sports: Keys of Portuguese soccer coaches' success

**Regina Brandao, Marcelo Zanetti (Sao Judas Tadeu University), Alexi Ponce (High Performance Center, (CAR) Santiago, Chile), Pedro Almeida (ISPA, S.L. BENFICA, Lisbon, Portugal)**

Globalization in soccer has been a phenomenon for some decades now. However, in recent years the phenomenon has spread to Portuguese coaches, probably due to some initial successful cases and/or the skills showed by these coaches around the world. In fact at the moment Portugal has about 400 soccer coaches on the 5 continents and is a country with about 11 million citizens. This research project aims to analyze what are the factors that Portuguese coaches perceive as the key aspects of their success. To that end, a research project is under way that uses qualitative research with a descriptive design using in-depth interviews as information collection technique and content analysis to data interpretation. Until now, seven themes emerged from these analyzes, including: quick adaptation to the new country / club, teamwork (including easy adaptation in technical teams already formed), ease of learning the language of context or English, ability to cope with loneliness, ability to dialogue, soccer passion and technical knowledge of soccer coaching. With the preliminary results of this project we can foresee the importance of these in the preparation of Portuguese coaches (and who knows from other countries) to obtain their passport of success in the world of soccer.

*Keywords: sport, expatriation, adjustment experience, soccer coaches, psychology*

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### Supporting youth athletes' development in a dual career context

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**Chair: Tatiana V. Ryba (University of Jyväskylä, Finland)**

There is an increasing expectation that athletes successfully integrate their athletic careers with education, which will consequently promote their transition from sport into the labor market. Previous research findings suggest that committed participation in both athletic and academic domains is highly demanding and success in one pursuit often comes at the expense of the other (Christensen & Sorensen, 2009; O'Neill, Allen, & Calder, 2013; Ryba, Ronkainen, Selänne, 2015). Increased pressure associated with transitioning to elite sport and high school, moreover, may render adolescents vulnerable to anxiety, role confusion, and decreased wellbeing during this important transitional stage of development. The presentations comprising this symposium focus on various risk and resilience factors for youth athletes' successful integration of athletic and academic pursuits in Finland. First presentation is based on a follow-up mixed methods study of student-athletes' sport and school burnout during their first year in sport high school. Second presentation will examine the athletic and student identity profiles of the adolescent athletes at the beginning of their freshman year in high school. Third presentation will analyze one ice hockey club's culture to glean insights into the role of athletic environment in dual career support. Fourth presentation will discuss the impact of mothers' and fathers' parenting styles on youth athletes' psychological wellbeing in dual career contexts. By drawing on diverse methodological approaches, the above listed presentations elucidate the inter-contextual dynamics of youth athletes' development in sport, school and family. The studies' novel findings are expected to inspire timely interventions and career assistance for athletes in dual career environments.



*Keywords: dual career, student athletes, talent development, resilience*

## Development of sport and school burnout in elite student-athletes: a longitudinal mixed methods study

**Matilda Sorkkila, Tatiana V. Ryba, Harri Selänne, Kaisa Aunola (University of Jyväskylä, Finland)**

Adolescent elite athletes who pursue a sport career simultaneously with education might be at risk for sport and school burnout due to increasing pressure from two life domains (Sorkkila, Aunola, & Ryba, 2017; Ryba et al., 2016). However, no studies so far have investigated concurrent development of sport and school burnout using longitudinal data, and examined the predictors of burnout by using qualitative methods. The aim of the study was to investigate the development of sport and school burnout in talented and elite adolescent athletes by using an embedded mixed methods design and thus provide a more comprehensive understanding of the phenomenon. The participants were student athletes (NT1= 391; 51 % F; NT2 = 373; 52 % F) from six different sport high schools in Finland with an average age of 16 (SD = 0.17) who played on at least regional level and had been competing, on average, for 7 years (SD = 2.41). The participants filled in a set of questionnaires including the School Burnout Inventory (Salmela-Aro & Näätänen, 2005) and Sport Burnout Inventory (Sorkkila, Ryba, Aunola, Selänne, & Salmela-Aro, 2017) in the beginning of high school and six months later. Growth mixture modeling was conducted to investigate different burnout profiles based on the level and change of sport and school burnout symptoms, after which the profiles evident for 16 elite level athletes (10 females) were identified and their interviews were analyzed by using a thematic analysis. The results showed that four distinct burnout profiles of student-athletes existed. Seven interviewed elite athletes showed a non-risk profile, and nine showed a burnout risk profile. The two profiles were mainly differentiated by the level of social support and factors related to athlete adaptability and motivation. The results are useful for planning sustainable dual careers for adolescent elite athletes.

*Keywords: dual career, sport burnout, school burnout, mixed methods*

## Identity profiles of Finnish adolescent dual-career athletes

**Irina Watkins (Springfield College, USA), Laura Koivusalo (University of Turku, Finland), Kaisa Aunola (University of Jyväskylä, Finland), Raymond Bertram (University of Turku, Finland), Tatiana V. Ryba (University of Jyväskylä, Finland)**

The purpose of this study was to examine the student and athletic identity profiles of the student-athletes at the beginning of their high school career (Brewer, Van Raalte, & Linder, 1993; Lally & Kerr, 2005). Finnish student-athletes (N = 391; 51% female, 49% male, average age 16 years) who had recently started their studies at a sports academy completed the Athletic Identity Measurement Scale (AIMS; Brewer et al., 1993) and the Student Identity Measurement Scale (SIMS; Stambulova et al., 2015). Usable responses were received from 384 participants. Cluster analyses performed on the AIMS and SIMS revealed three groups: (a) a balanced identity group (n = 129, 34%), in which both athletic identity and student identity were high; (b) an unstructured identity group (n = 142, 37%), in which athletic and student identities were both low; and (c) athlete-focused identity group, (n = 113, 29%), in which athletic identity was high and student identity was low. Multinomial logistic regression analyses indicated several differences in the composition of the three groups in terms of gender,  $\chi^2(2) = 7.61, p < .05$ , sport,  $\chi^2(4) = 20.71, p < .001$ , and sport career goals,  $\chi^2(2) = 14.73, p < .01$ . Females were represented to a greater extent than males in the balanced identity group, whereas the opposite was the case in the athlete-focused identity group. Winter sport athletes were represented to a significantly greater extent in the athlete-focused identity group than in the balanced identity group. Participants with aspirations of being a professional athlete were represented to a greater extent in the athlete-focused identity group than in the balanced identity group. Implications of the different identity profiles for sport and academic

outcomes of dual-career athletes are discussed as well as possible interventions to prevent a too one-sided focus on athletic careers.

*Keywords: student athletes, athletic identity, student identity, person-centered approach*

### **Officially, school is first and hockey second: a Finnish ice hockey club's philosophy and coaching practices**

**Noora J. Ronkainen (Liverpool John Moores University, United Kingdom), Tatiana V. Ryba (University of Jyväskylä, Finland), Martin Littlewood (Liverpool John Moores University, United Kingdom), Harri Selänne (University of Jyväskylä, Finland)**

Coaches are key socialising agents in youth athletes' lives. Previous studies have explored their influence on sporting experiences, motivation, and life skills development (Bean & Forneris, 2016; Erickson & Côté, 2016; Keegan et al., 2009), but few studies have examined their views and practices surrounding athletes' dual career development. Research into organisational culture in football academies has suggested that clubs often have an official policy where education is encouraged, but the actual practices construct education as a potential hindrance to elite player development. Therefore, athletes may receive conflicting messages and experience a conflict in responding to different expectations from coaches, parents, and teachers. The present study explored an ice hockey club's culture in Finland to discern how this organisation engaged with dual career in policy and actual practices. The data collection included scrutinising documents (website and coaching materials) and semi-structured interviews with 10 male coaches aged 28-52. Eight participants were coaching junior teams aged 10-17, one was coaching a men's team, and one was the head of coaching in youth teams. Two interviewees were professional coaches, two were semi-professional, and six were amateur. The data were analysed with narrative analysis of content and form (Lieblich et al., 1998), where interviews and documents were first analysed as separate entities and then compared for their overall messages. Our findings suggest that supporting dual careers was a shared mission in the club which was manifest in official documents, organisational structure, and coaches' accounts. However, there were no clear strategies how coaches should bring this value into their work, and there were diverse practices surrounding dual career support. We conclude that coaches need more support in developing practice that includes consideration of dual careers, and it is vital to increase communication between sports clubs a

*Keywords: youth sport, ice hockey coaches, coaching philosophy, dual career environments*

### **The role of parenting styles in adolescent athletes' psychological well-being during the transition to upper secondary school**

**Kaisa Aunola, Matilda Sorkkila, Jaana Viljaranta (University of Eastern Finland, Finland), Tatiana V. Ryba (University of Jyväskylä, Finland)**

The aim of the study was to examine the role of mothers' and fathers' parenting styles regarding affection and psychological control in adolescent athletes' psychological well-being during the critical transition from compulsory school to upper secondary school. While the role of parenting styles in adolescents' well-being has been widely researched in psychology (Harter et al., 2003), little attention has been given to a subsample of adolescent athletes who are expected to successfully integrate their athletic careers with education. The participants of the present study were 391 student athletes (51% females; average age 16, SD = 0.17) from six different sport high schools in Finland who played on at least regional level and had been competing, on average, for 7 years (SD = 2.41). The symptoms of burnout of athletes were measured via the School Burnout (Salmela-Aro & Näätänen, 2005) and Sport Burnout (Sorkkila et al., 2017) Inventories at the beginning and at the end of the first grade of upper secondary school. Parenting styles were measured via the Finnish version (Aunola & Nurmi, 2004) of the Block's Child Rearing Practices Report (CRPR; Roberts, Block, & Block, 1984)

filled in by mothers ( $n = 258$ ; response rate 66%) and fathers ( $n = 191$ ; response rate 49%), separately, at the beginning of the school year. The results of latent change model demonstrated that maternal affection buffered against the increase of school burnout among athletes but only when not combined with simultaneous psychologically controlling mothering. Moreover, fathers' high level of affection was associated with a low level of sport burnout but only when not combined with psychologically controlling fathering. Because transition to upper secondary school is a challenging period for athletes, it is important to understand the role of parents as possible environmental resilience or risk factor in athletes' well-being during this period.

*Keywords: dual career transitions, adolescent athletes, parenting styles, burnout*

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## Holistic and ecological approaches in talent development: The role of the environment in athletes' careers and acquisition of expertise

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**Chair: Kristoffer Henriksen (University of Southern Denmark)**

Research on athletic talent has evolved from talent detection to talent development with both perspectives focusing on an individual athlete. This individual focus has been mirrored in the applied work of the sport psychology practitioner in youth competitive sport who has primarily focused on equipping individual athletes with the psychosocial skills required in a sport career. In contrast, the holistic ecological approach (HEA) to talent development in sport (Henriksen, Stambulova & Roessler, 2010) acknowledges the role of the overall environment in athletes' development. The HEA integrates the somewhat opposing talent discovery and development approaches by focusing on how an environment manages the balance between these two, and how this balance becomes a part of the environment's identity. Ecological perspectives on talent development hold rich insights for developing theories, research and applied practices that mirror the complexity of talent development in the real world. In terms of research, the HEA proposes a shift in research attention from the individual athletes to the broader developmental context in which they develop with a particular focus on successful athletic talent development environments. In terms of applied sport psychology, the HEA will stimulate practitioners to look beyond individual athletes and aim to include and optimize athletes' environment to support their development. In the present symposium, we will include a research and an applied focus. The first oral will introduce the HEA and give examples of research findings and applied cases. The second oral will present a specific successful environment in badminton. The third oral will introduce a dual career environment (golf and study) in Sweden. The fourth oral discusses the role of practice environments in the acquisition of expertise using Brazilian football as an example. The final oral looks the role of the sociocultural environment in athletes' career transitions.

*Keywords: talent development environment, expertise, contextually driven sport psychology, athletic careers*

## Creating optimal environments for talent development

**Kristoffer Henriksen, Louise Kamuk Storm, Carsten Hvid Larsen (University of Southern Denmark), Natalia Stambulova (University of Halmstad)**

The holistic ecological approach (HEA) to talent development in sport shifts researchers' attention from the individual athletes to the broader environment in which they develop. The HEA provides a theoretical grounding, ecologically inferred definitions of talent development, two working models, and methodological guidelines. The HEA highlights two interconnected ways of analyzing athletic talent development environments (ATDE). First, there is a focus on the structure of the environment, particularly the roles and cooperation of key persons. Second, there is a focus on the organizational culture of the team. A number of in-depth case studies of successful talent development environments in Scandinavia have shown that while each environment is unique, they also share a number of features. They are characterized by proximal role modeling; an integration

of efforts among the different agents (family, coaches, management etc.); inclusive training groups rather than early selection; a focus on long-term developmental rather than on early success, and a “strong and coherent” organizational culture. Moving from ecological research to ecologically informed practice, we add applied principles and provide an example of how these principles were used in developing a culture for goal directedness in a group of under-17 players in a football academy in Denmark. The case example demonstrates two main ideas: (1) a team’s organizational culture influences the athletes, or in popular terms the characteristics of culture become the character of the athletes; and (2) the coach plays a vital part in creating and maintaining a team culture. Together, the eight common features of successful ATDEs, the case examples, and the applied HEA principles can serve as a guide for practitioners aiming to improve talent development environments in sport.

*Keywords: contextually driven sport psychology, football, sport psychology practitioner, holistic ecological approach*

### **The Danish National Badminton Center: A successful talent development environment**

*Carsten Hvid Larsen, Louise Kamuk Storm, Kristoffer Henriksen (University of Southern Denmark)*

A specific shared feature of the successful environments is a strong and coherent organizational culture characterized by a close coherence between espoused and enacted values. Organizational culture of elite and talent development environments and sporting organizations exerts an important impact on athlete development and performance. Limited research attention has been paid to factors associated with optimal organizational functioning or excellence in sport (Wagstaff, Fletcher, & Hanton, 2012). This is problematic since factors such as organizational climate and culture have an impact on performance all the way to the Olympic level (Gould & Greenleaf, 2002; Gould & Quinan 2002) and Fletcher and Wagstaff (2009) asserts that a “twilight zone” exists regarding how individuals and the team interact with the broader organization. This study was organized as an explorative integrative and qualitatively oriented case study. Methods of data collection included interviewing coaches, young players, professional players, management, and also observations of daily life in the center to obtain systematic and detailed knowledge of the environment as it occurs in the real world. The environment was characterized by a strong relationship between players and a community of coaches and the performance director. A learning environment focused on developing intelligent, self aware and dedicated players. The environment had a strong organizational culture that was based on proximal role models, openness, collaboration despite being competitors and a learning community between players and coaches. These characteristics were perceived as essential for success in the environment and related to performance of the athletes.

*Keywords: elite sport, training environment, case study*

### **Holistic approach to understanding a dual career environment at a Swedish university**

*Lukas Linnér, Natalia Stambulova (University of Halmstad, Sweden), Kristoffer Henriksen (University of Southern Denmark)*

Dual career (DC; combination of sport and studies) research is traditionally focused on student-athletes’ developmental demands and coping resources. To support athletes’ talent development in combination with education, sport federations and universities (and others) co-create high performance centers or DC hubs. Research into these environments is limited. Inspired by the holistic ecological approach, and particularly by the athletic talent development environment model (Henriksen, 2010), we created the dual career development environment (DCDE) working model and then used this model to explore a ‘golf and study’ environment at a Swedish university. The DCDE model is structured into three levels (micro, meso, and macro) and three domains (study, sport, and private) taking into account societal institutions, sport and education systems. Data were collected through semi-structured interviews with nine university elite golf-students about

perceived support during their transition to, and first year within the environment, and with four stakeholders (e.g., coach, study director) to discover their perspective on the environment and the support they provided. Observations and documents collected from the environment web-page also supported the analysis. Key features of the investigated DCDE related mainly to the micro and meso levels and included: collaborative arrangements between sport and academic stakeholders aimed at facilitating the student-athletes' DCs, high quality coaching and facilities, stakeholders' shared focus on a 'whole person' including, for example, student-athletes' physical and psychological well-being. It was also found that the daily life of the student-athletes was concentrated around the campus gym as a place to meet and discuss various sport, study and personal life issues with each other and with their physical coach (also a university teacher). Further study is planned to target the macro level of the environment to advance these findings.

*Keywords: dual career, dual career development environment, holistic development, student-athlete, support*

## The micro-macro link in the study of sport expertise: An ecological dynamics approach

**Duarte Araújo (Universidade de Lisboa, Portugal)**

Individual, task and environmental constraints impinge on performance and learning during athlete development at different, concatenated, timescales (Davids, Gullich, Shuttleworth, Araújo, 2017). However, these timescales tend to proceed along distinct investigatory strands in sport sciences. These focus separately on: (i) the macro-structure of developmental participation histories (e.g., estimating time spent in deliberate practice or unstructured play during prolonged periods of development); and (ii), the contexts of the micro-structure of practice (e.g., analysis over shorter timescales on the constraints of the tasks undertaken and the performance goals achieved in each session). Here we consider how the development of an athlete, through sporting activity in practice and competitive performance, has both a macro- and a contextual micro-structure that needs to be analysed at these shorter and longer timescales. We exemplify this argument by profiling the role of practice environments using association football in Brazilian society as a task vehicle (Araújo et al., 2010). We also refer to a project that is about to start which follows the study of Gullich (2016) in Germany. This project aims to assess developmental participation of Portuguese elite athletes that participated in the Olympic games. Our focus is on the communalities and contrasts between those who achieved a medal or an Olympic diploma, and those who did not. We match athletes by sport, age and gender, and analyse the volume of organized (coach-led) practice/training in their respective main sport and in other sports through childhood, adolescence and adulthood and also involvement in non-organised (peer-led) sport activity. An ecological dynamics approach has the potential to integrate these different timescales of analysis (differing in granularity and time) for expertise development in sport.

*Keywords: expertise acquisition, football, brazil, practice, play*

## Understanding the role of the sociocultural environment during the transition from talent development to performance environment

**Christopher Wagstaff (University of Portsmouth, UK), Phoebe Sanders (St Mary's University Twickenham, UK)**

Much of the research on talent development has focused on the promotion of individual's competencies, with comparatively less attention being devoted to the environments in which talent develops. This presentation will provide an overview of a study that explored the role of the sociocultural environment during athletes' transition between the academy and senior team within a professional sport organization. Six first-year senior athletes who had transitioned from the club's talent development academy and five coaches (all male) were recruited from an elite rugby union organization. Data were collected using semi-structured interviews over the course of a season, with each participant providing multiple interviews. The findings highlighted salient sociocultural themes aligned with athletes' challenges navigating entry into the senior team

culture and managing coaches' impressions. That is, the athletes' perceptions of the senior team's implicit emotion rules and their collective role as newcomers prompted the use of short-term emotion management and covert information-seeking strategies that appeared to compromise their long-term relationship-building and performance development. The findings have potential to inform talent development theory and practice. Specifically, it would appear that successful transition from academy to senior teams is dependent on meeting the demands posed by successfully navigating a new - and at times unwelcoming - sociocultural environment whilst demonstrating satisfactory personal development.

*Keywords: career transition, sport organization, emotion regulation, socialization, impression management, rugby*

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## Coping, resilience and personal growth following a sport injury

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**Chair: Victor Rubio (Universidad Autónoma Madrid)**

Severe sport injury is probably the most challenging issue an athlete has to face. It not only imperils the sport career but may also have consequences in health, educational, occupational, and financial facets of athlete's and stakeholder's lives even resulting in long-term effects. Research from clinical, health and trauma fields have emphasized the role of coping, resilience and personal growth in tackling with severe conditions but only recently the sport psychology field included the analysis of such factors, considering whether the way an athlete copes with such situation buffer negative consequences, promote personal adjustment and even improve health and recovery outcomes. The current symposium reviews these aspects from several points of view. Firstly, Prof. Wiese-Bjornstal and her colleagues analyze the role of religiosity and spirituality of athletes and other physically active individuals in coping with the health challenges of sport injuries and how such beliefs are related to some other psychological variables. Secondly, Prof. Johnson and Dr. Ivarsson review the role of resilience in promoting the key aspects of a successful rehab process, namely goal setting for the rehabilitation, beliefs in treatment efficacy and quality of social support, as well as how resilient behavior can be triggered. Thirdly, Prof. Rubio and his colleagues present a new comprehensive model of perceived benefits and personal growth following a sport injury to be used as framework for studying the role of positive aspects facing severe adversities. Fourthly, Prof. Podlog and his colleagues examine the relevance of the key components of the Organismic Valuing Theory of Growth through Adversity in understanding posttraumatic growth and how parasport experiences were reported to be a mechanism through which growth was facilitated. Finally, Dr. Appaneal gives an example of the work with athletes sustaining severe injuries that psychologist can carry out in a multidisciplinary team.

*Keywords: sport injury, coping, resilience, personal growth*

## Exploring religiosity and spirituality in coping with sport injuries

**Diane M. Wiese-Bjornstal, Kristin N. Wood, Andrew C. White, Amanda J. Wambach (University of Minnesota, Twin Cities, USA), Victor Rubio (Universidad Autonoma Madrid, Spain)**

An extensive body of literature in psychology and medicine supports that religiosity/spirituality (R/S) contributes to effective coping with health challenges via cognitive, emotional, and behavioral mechanisms such as hope and optimism, stress management, social ties, and healthy lifestyles (Koenig, 2013). The purpose of this study was to explore the roles of R/S among athletes and other physically active individuals coping with the health challenges of sport injuries. A concurrent mixed methods research design using an online retrospective survey methodology incorporated quantitative measures of R/S, locus of health control for sport injury, and coping with sport injury as well as qualitative open-ended questions about the ways in which R/S affected and was affected by coping with sport injury challenges. Participants included 49 physically active



adults who reported experiencing sport injuries, among whom 37 self-identified an R/S affiliation (e.g., Christian, Muslim), and 12 indicated no R/S affiliation (e.g., atheist, agnostic). Quantitative results among R/S respondents showed a significant correlation between religious commitment and God locus of health control for sport injury (GLHC-SI). GLHC-SI was significantly correlated with two adaptive ways of coping: positive religious coping with sport injuries and active coping with sport injuries (AC-SI). Analyses of variance results examining differences between R/S and no R/S individuals showed that no R/S individuals rated themselves significantly higher on internal locus of health control for sport injuries, while R/S individuals rated themselves significantly higher on GLHC-SI and AC-SI. A thematic analysis of the open-ended responses regarding how R/S affected coping with sport injuries found six themes: prayer, others' prayer, God's plan, faith promoted positivity, negative spiritual coping, and no effect. Thematic analysis of responses regarding how sport injuries affected R/S resulted in five theme

*Keywords: sport injury, coping, religiosity*

## Loving the challenge: Resilience in sport injury rehabilitation

**Urban Johnson, Andreas Ivarsson (Halmstad University, Sweden)**

Individuals who experience a sport injury often face challenges to adapting to this situation. Factors associated with more successful rehabilitation after injury, in sports such as football and rugby are formulation of a goal setting plan for the rehabilitation, belief in the efficacy of treatment, and high quality social support. A central concept, characterizing those who adopt successfully during injury rehabilitation is resilience, which is a dynamic capability that helps people strive to reach their goals. The purpose of this presentation is to discuss different dimensions of resilience recognized as qualities that are important for positive experiences and that, together with adaptive behaviors during rehabilitation. A second purpose is to highlight practical implications to facilitate resilient behavior. In a systematic review of the psychological factors associated with returning to sport following injury (Wierike et al 2013) positive psychological responses, including high levels of motivation and confidence, were associated with a greater likelihood of returning to the athletes' pre-injury levels of participation. In a study by Johnson et al (2016), three core themes were identified, representing psychosocial factors that female elite-soccer players perceived helped them to cope successfully with rehabilitation after a knee-injury. These were: (I) constructive communication and rich interaction with significant others; (II) strong belief in the importance and efficacy of one's own actions; and (III) the ability to set reasonable goals. The medical team has an important mission to maintain constructive communication and rich interaction throughout the entire rehabilitation period in order to enhance self-cultivation and meaning among injured athlete. Also, the medical team should aim to help the players increase their self-efficacy by acknowledging and reinforcing progress in the rehabilitation process. This will ultimately support athlete to love the chal

*Keywords: resilience, sport injury, rehabilitation, practical recommendations*

## Developing a model of perceived benefits and personal growth following a sport injury

**Victor Rubio (Universidad Autonoma Madrid), Alessandro Quartiroli (University of Wisconsin-La Crosse, Usa), José Manuel Hernández (Universidad Autonoma Madrid, Spain), María Oliva Marquez (Universidad Autonoma Madrid, Spain), Aurelio Olmedilla (Universidad de Murcia, Spain)**

Injury is a wide negative consequence of practicing sport, affecting athletes regardless categories, modalities, gender... Sport injury is a situation that might threat sport career but also which has an economic, occupational or academic, and physical and mental health impact. In fact, negative emotional responses are common responses athletes present. Emotional responses facing a sport injury are crucial in the rehab process in so far such responses would affect on treatment compliance, would provoke early sport retirement as well as might affect people's quality of life. Nonetheless, there are people able to absorb the shock, to find positive

aspects from the experiences they have lived, becoming stronger. Last years, several pieces of work tried to describe such perceived benefits. However, each one made its own proposal of categorization and there is a lack of a comprehensive model. The purpose of this study is to establish a model of perceived benefits and personal growth following a sport injury which could lay at the basis of future research on the field. Initially a DELPHI method (Dalkey & Helmer, 1963) with a group of 25 worldwide experts, either from and applied or research perspective, was used. After three rounds, DELPHI produced a list of 49 statements panelists agreed on their relevance regarding what a severe injured athlete might appraise as positive aspects following a sport injury. Afterwards, a thematic analysis (Boyatzis, 1998) over the final list of 49 statements was carried out by 4 raters who produced a set of five themes: Improving athlete's social life, Personal growth, Sport-related benefits, Getting social support and recognition, and Health-related benefits. The model has been qualitatively tested with a group of athletes and former athletes who were interviewed. Future research will develop a questionnaire for assessing perceived benefits and personal growth following a sport injury.

*Keywords: sport injury, perceived benefits, personal growth*

### Understanding posttraumatic growth among para sport athletes with an acquired disability

**Chris Hammer, Leslie Podlog (University Of Utah, USA), Ross Wadey (St. Mary's University, UK), Nick Galli (University Of Utah, USA), Anjali Forber-Pratt (Vanderbilt University, USA), Maria Newton (University Of Utah, USA)**

Despite the deleterious consequences often associated with acquiring a physical disability, some individuals report positive experiences, such as greater appreciation for life, strengthened social relationships, and enhanced life meanings (Chun & Lee, 2008; Crawford et al., 2014). Such findings indicate the potential for growth in spite of the traumatic event. The purpose of the present study was to examine the relevance of key components of Organismic Valuing Theory of Growth through Adversity (OVT) in understanding posttraumatic growth (PTG) amongst para sport athletes who acquired a disability. Semi-structured interviews informed by OVT tenets were conducted with 14 elite paratriathletes (8 male, 6 female). In order to increase the likelihood that participants had experienced PTG, a short form of the Posttraumatic Growth Inventory was completed prior to interview participation. Interview data were analyzed using directed content analysis. Although the initial response to disability was largely negative, para sport experiences were reported to be a mechanism through which growth was facilitated. In particular, participants suggested that social, competence, empowerment, and identity development processes were instrumental in facilitating PTG. Individual differences in growth experiences were also identified. Analysis revealed themes largely consistent with the main tenets of OVT, supporting its utility in understanding response to a traumatic event and subsequent growth. These findings also suggest that para sport may be an efficacious means for promoting PTG, especially for individuals with severe initial reactions to their disability. Lastly, findings suggest that fostering perceptions of competence, autonomy, and social connection may promote PTG.

*Keywords: acquired disability, organismic valuing theory, physical activity, trauma*

### My dream job: Sport psychology as part of a multidisciplinary injury rehabilitation support team

**Renee N. Appaneal (Australian Institute of Sport, Australia)**

A collaborative and aligned rehabilitation support team is essential in identifying and responding to the complex issues that come into play throughout an athlete's recovery from injury. Through case examples, this presentation illustrates the integration of psychology within a multidisciplinary rehabilitation team at a national sport institute. The Australian Institute of Sport (AIS) Athlete Rehabilitation Centre (ARC) was established to

ensure that Australia's top athletes facing significant injury/illness challenges have access to best practice, providing intensive and integrated rehabilitation services to expedite return to competition. Two athlete cases will be shared that illustrate the varied roles and approaches to psychology support within the ARC. The first case involved an athlete who was referred 3 months post ACL reconstruction and had not achieved expected milestones. Presenting concerns included the athlete's high anxiety and poor quality of life. Psychology intervention included education of injury anxiety and development of adaptive coping responses through direct contact with the athlete, and regular consultation with their ARC support team. The second case involved an athlete referred immediately following a severe injury that occurred during an international competition. Presenting concerns included progressing a highly-motivated and driven athlete through increasingly complex and unpredictable sport-specific and competition-related challenges that involved high-risk situations (high speeds, unpredictable environments, etc.). For each case, psychology intervention goals and observed outcomes will be presented as they evolved over time and recovery phases. Themes evident in both cases highlight the varied role and flexible approach to service delivery required when working in high performance sport, and the need to balance what is best for the person against individual and organizational pressure to return to sport.

*Keywords: multidisciplinary sport science teams, sport injury, rehabilitation, return to sport*

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## Antecedents and mechanisms of self-control in athletic contexts

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**Chair: Ian Taylor (Loughborough University)**

Self-control refers to the purposeful inhibition of an instantly gratifying action or impulse (Milyavskaya & Inzlicht, 2016). Models of self-control have been used to demonstrate the importance of self-control for many sport-related phenomena, however, less attention has been paid to potential causes of self-control failure or success and explanations why self-control influences athletic performance. This symposium comprises five studies with these research questions as two complementary themes. The first three presentations explore the role of basic psychological needs satisfaction and frustration, as defined by self-determination theory (Ryan & Deci, 2017), in determining self-control. In the first presentation, lack of self-control is examined as a potential psychological need substitute which may explain associations between autonomy frustration and disordered eating in athletes. The second presentation adds new insight by investigating whether typical 'ego depletion' effects (i.e., reductions in self-regulatory performance following initial exertion; Maranges & Baumeister, 2016) are exacerbated in psychologically controlling contexts. Presentation three describes the effects of priming autonomy need frustration and satisfaction, rather than a contextual manipulation, on persistence and physical activity intentions. The final two studies explore mechanisms that may explain effects of self-control exertion. The fourth presentation describes a study investigating the effect of manipulating controlled versus autonomous motivation during a typical sequential self-control task experiment. In addition, physiological stress responses during the experiment are examined. The final presentation explains why initial acts of self-control can be detrimental to subsequent physical performance by exploring perceptions of pain. Taken together, novel evidence of self-control mechanisms is presented which may challenge dominant models of self-control within sport psychology.

*Keywords: self-control, ego-depletion, self-determination*

## Self-control and fear of negative evaluation as contradictory mechanisms explaining the relationship between autonomy frustration and disordered eating

**Ian Taylor (Loughborough University)**

Diminished autonomy has been recognised as a driving force behind many maladaptive processes and suboptimal human functioning. We investigated two contradictory mechanisms which may elaborate on this motivational process in the context of disordered eating. We speculated that autonomy frustration would be associated with lower controlled eating, and this would be explained by a lack of self-control. Paradoxically, autonomy frustration would also be associated with greater controlled eating and this relationship would be explained by elevated fear of negative evaluation. Employing a prospective design, 145 competitive athletes (mean age 20; 99 females) reported their autonomy frustration, fear of negative evaluation, and lack of self-control. One week later they completed measures of controlled eating. Structural equation modelling demonstrated that the hypothesised model fit the data: SRMR = .08; CFI = .94; RMSEA = .07 (90% CI = .05-.09). Autonomy frustration was associated with a lack of self-control ( $\beta = .27$ ,  $p = .003$ ) which subsequently predicted lower controlled eating ( $\beta = -.47$   $p < .001$ ). Contrastingly, autonomy frustration was associated with greater fear of negative evaluation ( $\beta = .40$   $p < .001$ ) which subsequently predicted greater controlled eating ( $\beta = .25$   $p = .015$ ). Bootstrapped indirect effects confirmed our hypothesised processes ( $b = .04$ , 95% CI = .01 – .10 and  $b = -.05$ , 95% CI = -.15 – -.01, respectively). The results provide initial evidence for a dual process model that describes the complexities of dysfunctional eating behaviour. Frustration of athletes' autonomy may lead to inadequate self-control and low control during eating. On the other hand autonomy frustration may also lead to fear of negative evaluations and high control during eating.

### Motivational antecedents and physiological responses during sequential self-control tasks

**Richard Steel, Nicolette Bishop, Ian Taylor (Loughborough University)**

Considerable evidence suggests that self-control wanes over consecutive tasks (i.e., the 'ego-depletion' effect). Utilising a self-determination theory perspective, this study examined whether manipulating participants' motivation would influence the extent of ego-depletion and acute stress responses (i.e., cortisol) during the process. A single blind, randomised experimental design incorporating two motivational conditions (autonomous/controlled regulation) was employed. Participants ( $N=39$ ) performed two sequential self-control challenges under these manipulated conditions; an incongruent Stroop task followed by a physical endurance task (a wall sit). Cortisol was measured using saliva samples taken at baseline and after the wall sit. Controlling for motivational orientation and baseline cortisol where appropriate, analyses of covariance tests revealed that participants in the controlled regulation condition persisted longer during the physical task (159.68 vs. 122.34s,  $p=.06$ ), but experienced a greater cortisol response (7.09 vs. 5.44nmol/L,  $p=.03$ ), relative to the autonomous regulation condition. Results suggest motivational effects on self-control exertion, although the effect was contrary to the expected direction. However, increased performance also coincided with increased cortisol response, suggesting participants may have paid an increased psycho-physiological cost for their increased performance.

### The effects of priming autonomy frustration and satisfaction on self-control and subsequent physical activity intentions

**Stephen Murphy, Ian Taylor (Loughborough University)**

The ability to effectively use self-control is considered essential for good physical and psychological health. While some evidence suggests experiencing autonomy may elicit improvements in self-control ability, more recent findings conflict with this view. This study investigated the association further by employing a novel approach, whereby autonomy satisfaction and autonomy frustration were primed, and their effects on self-control and physical activity intentions assessed. A double-blind, between-subject experimental design was employed. Fifty-eight participants were randomised to either Autonomy satisfaction ( $n=20$ ), Autonomy frustration ( $n=19$ ), or Neutral ( $n=19$ ) prime conditions using a scrambled-sentence test. Participants then

attempted an impossible geometric tracing task that requires self-control and stated their physical activity intentions. One-way ANOVA revealed differences in time taken to give up on the impossible task across the three groups ( $p=0.079$ ,  $\eta^2=0.09$ ). Post-hoc analysis revealed the Neutral condition spent more time on the tracing task than participants in the Autonomy satisfaction (28.6 vs. 21.6min,  $p=0.046$ ,  $d=0.63$ ) and Autonomy frustration (28.6 vs. 21.8min,  $p=0.055$ ,  $d=0.70$ ) conditions. No differences were found for physical activity intentions ( $p=0.58$ ,  $\eta^2=0.02$ ). Priming participants to feel autonomy satisfaction or frustration may elicit reductions in self-control. Potentially different processes may explain these somewhat unexpected findings. The implications for the lack of effect of self-control failures on subsequent intentions towards physical activity will also be explored.

### **Emotion regulation, motivation and performance: The impact of a controlling intervention on a cycling time trial in ego depleted individuals**

**Christopher Wagstaff, Rebecca Larner, Samantha Meredith (University of Portsmouth)**

This presentation will provide an overview of a study that examined the impact of a controlling motivation intervention on a maximal 10km cycling time trial in ego-depleted individuals. Using a randomized, blinded, counterbalanced, repeated measures design, twenty competitive cyclists completed a control condition, depletion-only condition (i.e., no motivational intervention), and a depletion-controlling condition (i.e., participants received a controlling motivation intervention). The findings indicated that emotion-related ego depletion led to significant decrements in cycling time trial performance in the two experimental conditions when compared to a control condition. Moreover, these performance decrements were greater when participants were exposed to the controlling-motivation intervention, indicating that such behaviors might exacerbate the debilitating effect of self-regulatory efforts during sport performance. The results will be discussed in line with theoretical and applied implications for sport. In particular, the potential of integrating self-determination theory and models of self-control will be described.

### **Prior self-control exertion and perceptions of pain during a physically demanding task**

**Ruth Boat (Coventry University), Ian Taylor (Loughborough University)**

Exertion of self-control has been associated with impaired performance on subsequent physical tasks also requiring self-control. However, it remains unknown why this occurs. This study explored whether prior self-control exertion reduces subsequent persistence on a physically demanding task that requires self-regulation. Furthermore, the study examined whether any observed performance decrements could be explained by changes in perceptions of pain. In a within-subject design, sixty-three individuals completed an easy (congruent) Stroop task or a difficult (incongruent) Stroop task that required self-control. Participants were then required to remain in a physically demanding posture (i.e., a 'wall-sit') until voluntary exhaustion. Throughout the physical task, participants' perception of pain was recorded as well as time to exhaustion. Results revealed that participants quit the wall-sit sooner in the self-control experimental condition ( $M = 130.16$ ,  $SE = 8.90$ ), compared to the non-self-control condition ( $M = 147.31$ ,  $SE = 9.27$ ),  $t(61) = -2.79$ ,  $p = .01$ ,  $r = .30$ . Furthermore, when participants completed the difficult Stroop task, they perceived greater pain ( $M = 6.68$ ,  $SE = .32$ ) relative to when they completed the easy Stroop task ( $M = 6.19$ ,  $SE = .36$ ),  $F(1,44) = 8.38$ ,  $p = .01$ ,  $\eta^2 = .16$ . Initial exertion of self-control can significantly reduce subsequent performance in a physical task. Perceptions of pain may be an important attentional mechanism explaining why self-control use interferes with subsequent persistence during physically effortful tasks.

## Development and validation of the physical activity and leisure motivation scale for youth (PALMS-Y)

**Chair: Liang Hu (Zhejiang University)**

Recognition of the key role physical activity (PA) plays in physical health and psychological wellbeing has continued to grow. Although people around the world are encouraged and advised to undertake regular PA, many individuals of all ages find it difficult to initiate or maintain participation in organized sport and recreational PA. Motivation appears to play a key role in long-term PA involvement. Thus, reliably and validly measuring motives for participating in PA is critical to understanding how motivation relates to PA participation, so that effective intervention strategies can be adopted to increase population participation rates. Morris and Rogers (2004) developed the Physical Activity and Leisure Motivation Scale (PALMS) for this purpose and from it Hu et al. (2015) initiated development of a youth version, PALMS-Y. In this symposium, four presentations reflect current work on PALMS-Y. First, Liang Hu and colleagues elaborate on their earlier report of the development and validation of PALMS-Y among Chinese adolescents, with greater emphasis on relationships of PALMS-Y to other aspects of motivation and behaviour. Next, Yee Cheng Kueh and colleagues discuss their study examining invariance of the Malay version of PALMS-Y across gender, addressing the important question of whether the scale measures the same motives in different groups. Then, Emine Çağlar and colleagues describe their research on the construct validity and reliability of the Turkish version of PALMS-Y, extending application of the new measure into another culture. Finally, Abdullah Nurzulaikha and colleagues report on a study of the relationship between motives for participation in PA and the actual amount of PA undertaken by Malaysian Chinese secondary students. Interestingly, this study uses the Mandarin version of PALMS-Y developed in China with a Malaysian sample. Presentations in this symposium illuminate the potential global use of PALMS-Y as a tool to promote PA among adolescents.

*Keywords: PALMS-Y, motives for participating in PA, reliability, validity, invariance*

## Development and validation of a youth version of the Physical Activity and Leisure Motivation Scale (PALMS-Y)

**Liang Hu (Zhejiang University), Tony Morris, Jiaying Lu**

The aim of this study was to examine the psychometric properties of a youth version of the Physical Activity and Leisure Motivation Scale (PALMS). The 40-item adult version of the PALMS comprises eight 5-item sub-scales each reflecting a motive for participation in physical activity. Based on pilot studies in multiple countries, we excluded one of the eight motive sub-scales of the PALMS, namely others' expectations, which mainly comprises items referring to adult behaviours. The 35-item Chinese version was then examined for its psychometric properties in two study phases. In Study 1, participants were 232 7th grade students (age=13.33±0.52 yrs) recruited through schools in Hangzhou, China. Internal consistency of the seven PALMS sub-scales ( $\alpha$ s=0.79-0.92) and total scale ( $\alpha$ =0.96) was good. In exploratory factor analysis (EFA), we identified seven factors with an eigenvalue greater than 1. These factors corresponded to the seven PALMS sub-scales. By examining item-factor correlations and deleted-item alpha coefficients, we identified the weakest item in each factor. We removed these items, producing seven 4-item sub-scales for the 28-item final version of the PALMS for youth, termed the PALMS-Y. In Study 2, The 28-item PALMS-Y was tested in 434 Chinese youth (age=15.12±1.74 yrs), and we found that the 7-factor model represented a parsimonious interpretation of the data ( $\chi^2/df=3.06$ ,  $p<.001$ ; CFI=.98, RMSEA=.07, SRMR=.05). In addition, the PALMS-Y demonstrated good internal consistencies for sub-scales ( $\alpha$ s=0.82-0.93) and total scale ( $\alpha$ =0.95), as well as satisfactory convergent and discriminant validity, reliability, and factor structure. We encourage researchers to examine the PALMS-Y in different countries and languages.



*Keywords: motives for participation in physical activity, Physical Activity and Leisure Motivation Scale, Physical Activity and Leisure Motivation Scale for Youth, reliability, validity*

## Measuring the motives for physical activity of adolescents: invariance of the Malay version of the Physical Activity and Leisure Motivation Scale for Youth across Gender

**Yee Cheng Kueh (Universiti Sains Malaysia), Abdullah Nurzulaikha, Garry Kuan, Tony Morris**

Measurement equivalence is often assumed across comparison groups, a pervasive problem related to many self-report instruments. The aim of this study was to examine gender invariance on the Malay version of the Physical Activity and Leisure Motivation Scale for Youth (PALMS-Y-M; Abdullah, Kueh, Kuan, Morris, & Naing, 2016). The PALMS-Y-M was previously validated using confirmatory factor analysis (CFA; Abdullah et al., 2016). The results confirmed the validity of PALMS-Y-M with acceptable fit indices. Seven-hundred-and-eighty-three secondary school students (female = 57.3%, male = 42.7%) with mean age 14 years ( $SD=0.9$ ) from Kota Bharu, Malaysia, volunteered to participate in this study and completed the PALMS-Y-M, consisting of 28 items with seven subscales. The measurement invariance test was carried out through Mplus 7.3. Measurement invariance was tested for three different levels. The configural invariance model (CIM) was established first, then the metric invariance model (MIM; factor loading) and the scalar invariance model (SIM; item intercept) were compared with CIM. Evidence of invariance between the models was based on change in  $CFI < .01$  and  $RMSEA < .015$ . The measurement models for CIM ( $CFI=.918$ ,  $TLI=.906$ ,  $RMSEA=.049$ ,  $SRMR=.052$ ), MIM ( $CFI=.917$ ,  $TLI=.907$ ,  $RMSEA=.049$ ,  $SRMR=.056$ ) and SIM ( $CFI=.907$ ,  $TLI=.900$ ,  $RMSEA=.051$ ,  $SRMR=.063$ ) fit the data well. Change in RMSEA did not exceed the recommended value. CFI change did exceed the recommended cut off by the minimal value of .001 when comparing SIM with CIM. When invariance of both factor loadings and item intercepts holds in PALMS-Y-M, underlying factors consisting of different motives for participating in PA can be meaningfully compared across gender. Motives for participating in PA are important in maintaining PA participation among adolescents. Accurate and valid measurement across comparison groups is crucial for research integrity.

*Keywords: PALMS-Y-M, physical activity, motivation*

## Construct validity and reliability of the Turkish version of Physical Activity and Leisure Motivation Scale-Youth

**Emine Çağlar (Hacettepe University), Murat Uygurtas, Tony Morris**

The purpose of this study was to test the validity and reliability of the Turkish version of the Physical Activity and Leisure Motivation Scale-Youth (PALMS-Y) developed by Hu et al. (2015). Participants were 288 adolescents ( $M_{age} = 14.35$ ,  $SD = 1.35$  years), 144 females and 144 males. We administered a Personal Information Form and the Turkish version of PALMS-Y to all participants in a classroom setting. PALMS-Y consists of seven subscales with 28 items. These subscales are Enjoyment, Mastery, Psychological Condition, Physical Condition, Appearance, Affiliation, and Competition/Ego. We conducted confirmatory factor analysis (CFA) to test construct validity of the Turkish version of PALMS-Y and calculated Cronbach alpha coefficients to determine reliabilities of the sub-scales. The hypothesized model consisted of 28 observed variables and seven latent variables. The hypothesized model resulted in good fit indices ( $\chi^2/df = 1.99$ ,  $RMSEA = 0.059$ ,  $SRMR = 0.06$ ,  $NFI = 0.92$ ,  $NNFI = 0.95$  and  $CFI = 0.96$ ). But CFA indicated that the error variance of Item 1 was 0.94 and its factor loading was 0.24 ( $R^2 = 0.05$ ,  $t = 3.90$ ). We reconducted CFA after removing Item 1 from the model. We obtained marginally improved fit indices ( $\chi^2/df = 1.95$ ,  $RMSEA = 0.058$ ,  $SRMR = 0.06$ ,  $NFI = 0.93$ ,  $NNFI = 0.96$  and  $CFI = 0.96$ ). These findings showed that the Turkish version of PALMS-Y had similar factor structure to the original scale's 7-factor structure. Internal consistency coefficients of the Turkish version of PALMS-Y subscales ranged from .62 (Mastery) to .85 (Appearance). It can be concluded that the Turkish version of

PALMS-Y is a valid and reliable instrument to measure motives for participation in physical activity among Turkish adolescents.

*Keywords: physical activity and leisure motivation, PALMS, validity, reliability*

## **The relationship between motives of participation in physical activity and the amount of physical activity among Malaysian Chinese secondary students**

**Abdullah Nurzulaikha (Universiti Sains Malaysia), Garry Kuan, Yee Cheng Kueh, Tony Morris**

Engaging in regular physical activity (PA) has become a worldwide issue in the prevention of many major chronic diseases. PA is associated with reduced risk of premature death. It is important to increase students' chance to engage in PA by triggering their motivation. The purpose of the study was to examine the relationship between motives for participating in PA and the amount of PA that students undertake. Participants were 303 Chinese, secondary school students (female=44.9%, male=54.1%) with mean age of 13.55 (SD=0.57) from Kota Bharu, Kelantan. The students, aged 13-17 years old, volunteered and completed three measures, consisting of a demographic information form, the Godin Leisure-Time Exercise Questionnaire (Godin & Shephard, 1997) and the Physical Activity and Leisure Motivation Scale for Youth Chinese version (PALMS-Y-C; Hu, Morris, Lu, Zhu, Zhang, & Chen, 2015). The Godin is a self-reported assessment on leisure-time PA, expressed in weekly frequencies of strenuous, moderate, and mild activities. The PALMS-Y-C consists of seven subscales each measuring a motive for participating in PA. We used SPSS to calculate Pearson Correlation Coefficients ( $r$ ) to examine whether there were relationships between motives for participation in PA and amount of PA students undertook. Results showed that there were significant positive correlations between motives of enjoyment, mastery, competition/ego, and physiological condition and amount of PA, ranging from,  $r=.16$  to  $r=.28$ . Findings from the present study showed some insight on how to promote PA to Malaysian Chinese secondary age students by enhancing their motives to participate in PA. The results also provided information that could help teachers, health educators, health policy makers, and parents in promoting exercise and PA among secondary school students. By demonstrating a link between motives for participating in PA, measured by PALMS-Y-C, this study also supports the construct validity of that measure.

*Keywords: physical activity, motivation, Godin, PALMS-Y-C*

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## **Mindfulness, mental training and sports excellence**

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**Chair: Jitendra Mohan (Panjab University, Chandigarh India)**

Sports performance has been promoted, propagated and rewarded since time immemorial for its excellence. It has occupied the core themes of the Olympics. Excellence is not only about winning, but also making progress against personal goals, as reflected in the Olympic motto, "Citius — Altius — Fortius," which means "faster — higher — stronger." It is also a state of mind and a behavior that results from a healthy combination of a strong body, mind and will (Soltis, 2012). It is one of the most vibrant and visible field of human excellence in terms of open techniques and hidden strategies. The spirit of Olympics and Internationalism has heightened the role of the Sport Psychologists and Mental Trainers in delivering the ultimate performance of an athlete. The coach, the physiotherapist, diet expert, sport scientists and parents work in consonance to prepare the 'performer' to excel---himself and others. The world and Olympic records are created by 'raising the bar'. Many believe it is a remarkable laboratory -the individual or the team- to produce verifiable, measurable and visible evidence. The interaction and exchange of ideas and findings of the experts leads to enhancement and reinforcement of the basic and applied psychological strategies assisting the athletes to reach their optimum. The emerging theme seems to establish excellence as a way of life and not as a mere strategy. The present symposium involving experts like Lars-Eric Unestahl, Meena Sehgal, Anuradha

Solanki and Zahra Jafari aims to create a platform for sharing of research and training. The performance of Olympic champions highlights managing stress, crisis and endless pursuit of excellence. The main objectives are: 1. Sharing principles and recent applications in the field of mental training, yoga, mindfulness and strategic interventions. 2. Developing network among sports psychologists from different countries. 3. Extending research horizons in sport specific situations.

*Keywords: mindfulness, mental toughness, mental training, excellence, peak performance*

## Managing stress through physical exercise: Indigenous methods

**Meena Sehgal (Professor of Psychology, Panjab University, Chandigarh, India)**

Health is one of the major concerns today. Statistics have revealed that spending on health care in India had been an estimated five percent of gross domestic product (GDP) in 2013 and remained at that level through 2016. However, total health care spending in local-currency terms has been projected to rise at an annual rate of over 12 percent, from an estimated \$96.3 billion in 2013 to \$195.7 billion in 2018 (Deloitte, 2015). This rapid growth rate reflects high inflation and has been driven by increasing public and private expenditures on health. The major cause, however, being the changing face of death. Chronic diseases are the main causes of mortality and morbidity. Their prevalence has multiplied because of sedentary, inactive, stressful life style of people. Efforts to control and reduce the incidence of these diseases bring one to focus on modifying sedentary life style and reduce stress. Research has moreover shown that indigenous methods like yoga, transcendental meditation and mindfulness based stress reduction have been pertinent in promoting health. These techniques use traditional insights and teachings, but incorporate them into a more eclectic presentation rather than actually directly teaching meditation or other practices and in this way are seen to promote self efficacy alongside self awareness and extending human potential in the sport setting.

*Keywords: stress, yoga, life style, meditation*

## Mindfulness, mental training and sports excellence

**Jitendra Mohan (Panjab University, Chandigarh, India)**

Sports performance has been promoted, propagated and rewarded since time immemorial for its excellence. It has occupied the core themes of the Olympics. Excellence is not only about winning, but also making progress against personal goals, as reflected in the Olympic motto, "Citius — Altius — Fortius," which means "faster — higher — stronger." It is also a state of mind and a behavior that results from a healthy combination of a strong body, mind and will (Soltis, 2012). It is one of the most vibrant and visible field of human excellence in terms of open techniques and hidden strategies. The spirit of Olympics and Internationalism has heightened the role of the Sport Psychologists and Mental Trainers in delivering the ultimate performance of an athlete. The coach, the physiotherapist, diet expert, sport scientists and parents work in consonance to prepare the 'performer' to excel---himself and others. The world and Olympic records are created by 'raising the bar'. Many believe it is a remarkable laboratory -the individual or the team- to produce verifiable, measurable and visible evidence. The interaction and exchange of ideas and findings of the experts leads to enhancement and reinforcement of the basic and applied psychological strategies assisting the athletes to reach their optimum. The emerging theme seems to establish excellence as a way of life and not as a mere strategy. The present symposium involving experts like Lars-Eric Unestahl, Meena Sehgal, Anuradha Solanki and Zahra Jafari aims to create a platform for sharing of research and training. The performance of Olympic champions highlights managing stress, crisis and endless pursuit of excellence. The main objectives are: 1. Sharing principles and recent applications in the field of mental training, yoga, mindfulness and strategic interventions. 2. Developing network among sports psychologists from different countries. 3. Extending research horizons in sport specific situations.

*Keywords: mindfulness, mental toughness, mental training, excellence, peak performance*

## Performance failure appraisal, optimism and coping among athletes

**Zahra Jafari (Research Scholar, Department of Psychology, Panjab University, Chandigarh, India)**

The improvement in sports performance is linked with using failure as a tool. The present study examined Performance Failure Appraisal, Optimism and coping among athletes. The sample included 200 players in the age range of 20-35 years (50 individual female, 50 individual male, 50 team sports female and 50 team sports male athletes). The tests used were the Performance Failure Appraisal Inventory, The Life Orientation Test - Revised and Coping strategies inventory. F- ratio for Performance failure appraisal on group was found to be significant and for gender and interaction effect was found insignificant. Optimism on gender was found to be significant and for group and interaction effect was found to be insignificant. F-ratios for engagement coping on gender and interaction effect were found to be significant and for group was found insignificant. F-ratio for disengagement coping was also found to be insignificant for group and gender and interaction effect emerged significant. The results have implications for specificity in training. F- ratio for optimism on gender were found to be significant and for interaction effect was found to be insignificant. F-ratios for engagement coping on gender and interaction effect were found to be significant. F-ratio for disengagement coping was also found to be significant. The results have implications for specificity in training.

*Keywords: performance failure appraisal, optimism, coping, athletes, gender differences*

## Sports psychology in performance enhancement of elite sportspersons

**Anuradha Solanky (Psychologist, Sports Authority of India, New Delhi, India)**

Every top sportsperson knows that best performance comes from their mind as much their body. As Sport Psychologists, we are involved in monitoring the psychological parameters (Profiling), handle competitive pressure, provide counseling, mental training and Biofeedback training. Psycho – education sessions help athletes to understand the importance and relevance of psychological skills in arousal management, concentration training and communication skills. Mental skills training aims at helping athletes overcome pressure, improving confidence and focus, mentally prepare for competition, and develop game routines and strategies for effective performance. Athletes with the requisite “Mental toughness” are more likely to be successful. Sports psychologists assess, manage and teach athletes, teams, coaches and families how to develop strategies and skills to cope with the variety of mind – related areas of sport.

## The excellence training model excellence in sport and life

**Lars-Eric Uneståhl (Örebro University and Scandinavian International University, Sweden)**

Excellence: The term “Excellence” stands for Greatness, superiority, outstanding, something extraordinary, the very best and is related both to the training goal and to the training quality. Excellence Training: Excellence Training is related both to the training goal and to the training quality. The term is often used as a substitute for “Mental Training”, e.g.: The International Society for Mental Training & Excellence (ISMTE) or World Congress- Mental Training & Excellence The practical programs for Mental Training for Excellence are based on research about Mind-Body relations, Alternative States of Consciousness and the effects of long-term and systematic Training of Mental processes, Attitudes and Skills. Applications of the Excellence Training: The first area of application was Sport, where practical training programs were designed, developed and evaluated in cooperation with Swedish National and Olympic teams during the 1970’s. From the Sport area Mental Training spread to most areas of Society (School, Work, Business, Leadership, Health, etc.) during the rest of the 20th century and up till today it has been used by around 2.5 million Swedish. Among other countries can be

mention Iraq, where the government in North Iraq has initiated a project called: “Mental Training for Peace – from Inner- to Outer Peace”.

*Keywords: excellence, mental training, attitudes, skills*

## Friday July 14th

### Symposia Session 8. (8-9.30)

#### Brain and cognition - New tools to improve performance

**Chair: Cornelia Frank (Neurocognition and Action/ CITEC, Bielefeld University)**

Human motor performance, rooted in the profoundness of biological evolution, has matured to a point where it can profit from technical systems. Recent research on brain activity, neurofeedback or cognitive representation not only helps to understand the cognitive background of action and interaction in sport. It also provides a basis for building artificial cognitive systems being able to interact with humans in an intuitive way and to acquire new skills by learning from the user. In this context, it is clearly advantageous for intelligent technical system such as glasses or a virtual coach to know how cognitive representation or brain activity patterns are formed, stabilized and adapted in daily actions. This knowledge enables a technical system to address the individual's current level of learning and performance, and to shape instructions in order to optimize learning processes and maximize performance. In this symposium, we describe techniques that enrich the physical environment of athletes, such as virtual and augmented realities. Frank et al. present the Intelligent Coaching Space, a system in which the motor learning process is augmented by a virtual mirror and coach providing individualized instructions and feedback. Tsung-Min Hung et al. discuss brain-related, EEG based technologies in sport for psychophysiological monitoring helping to improve the cognitive and psychophysiological processes of athletes, and serving as diagnostic and training tools. Essig et al. introduce new developments in the area of cognitive glasses being able to provide an individualized and user-centered feedback in the context of work, sport and rehabilitation. Vogel et al. present a system that combines computer-based feedback systems with cognitive methods to improve communication and education in rehabilitation settings. The symposium concludes with a discussion of the ethical and practical implications of technological advancements for sport and sport psychologists.

*Keywords: brain, cognition, augmented reality, brain-computer-interfaces, neurofeedback, cognitive interaction technology*

#### Intelligent coaching space – Motor learning and coaching in virtual reality

**Cornelia Frank (Neurocognition and Action/ CITEC, Bielefeld University), Felix Huelsmann (Computer Graphics/ CITEC, Bielefeld University), Iwan de Kok (Social Cognitive Systems/ CITEC, Bielefeld University), Stefan Kopp (Social Cognitive Systems/ CITEC, Bielefeld University), Mario Botsch (Computer Graphics/ CITEC, Bielefeld University), Thomas Schack (Neurocognition and Action/ CITEC, Bielefeld University)**

Effective motor skill learning requires sensorimotor learning based on appropriate multimodal feedback. The Intelligent Coaching Space (ICSPACE) is a virtual coaching environment, developed to augment the learning process with different kinds of coaching strategies for different types of sport tasks. Virtual reality (VR) is highly controllable and therefore allows to systematically manipulate variables and to create new types of interactions as compared to a real-world setting. Here, we provide insights into the current status of the ICSPACE and details on a line of feedback experiments conducted on this platform. The ICSPACE platform as an immersive, closed loop virtual reality environment allows for multilevel analysis of motor action and individualized, adaptive, and expertise-dependent coaching. In a first (nonverbal) feedback study, we were interested in the impact of different types of augmented visual feedback during observational practice of the squat. Novices were assigned to one of three groups, an 'own avatar' group, and two 'own avatar plus ghost'



groups. Whilst executing the squat, participants in the 'own avatar' group observed their own avatar performing in a virtual mirror. Participants in the 'own avatar plus ghost' groups observed also the avatar of a skilled person, superimposed on their own avatar, performing a correct squat (front or side). Participants were tested prior to and after the acquisition phase as well as after a retention interval of one day. Results showed a trend for the 'own avatar plus ghost' groups to outperform the 'own avatar' group in several biomechanical and cognitive parameters. In a second (verbal) feedback study, we introduced a conversational virtual coach, providing verbal, adaptive feedback in addition, and compared this to verbal, non-adaptive feedback provided during the learning process. Based on these results, potential benefits of VR environments for future research in coaching science will be discussed.

*Keywords: virtual coaching, multimodal feedback, observational learning, cognitive interaction technology*

### The effects of SMR/theta ratio neurofeedback training on golf putting performance

**Tsung-Ming Hung (National Taiwan Normal University), Yi-Ting Chang (National Taiwan Normal University), Ming-Yang Cheng (Neurocognition and Action, Bielefeld University/ CITEC), Chung-Ju Huang (University of Taipei)**

The purpose of this study was to investigate the effect of sensorimotor rhythm (SMR)/theta ratio training on putting performance in golf experts. Previous studies have suggested that neurofeedback training (NFT) has a facilitative effect on sports performance. However, whether SMR/theta ratio is an effective training target for improving sports performance, the retention effect of NFT training, and NFT results in corresponding brain oscillation remain to be determined. Seven expert golfers were recruited and randomly assigned to either a NFT or a pseudo-training group. Participants from both groups received 10 sessions of either NFT aimed at increasing the SMR while decreasing the theta power at the vertex electrode, or pseudo trainings after the golf putting pre-test. Retention tests were administered seven days after the post-test. Putting score and SMR/theta ratio were the dependent measures. The results showed that the NFT improved putting performance (pre-test 33.3, post-test 44, retention 40.6). Moreover, SMR/theta ratios were increased after 10 sessions of SMR/theta NFT (pre-test 0.37, post-test 0.75, retention 0.67) while the pseudo training didn't alter the putting performance and SMR/theta ratios. Further analysis of the SMR/theta ratio showed that the change of SMR/theta ratio mainly come from the increased SMR power than reduced theta. Higher SMR power has been associated with lower activation of the sensorimotor cortex and thus leads to less interference from somatosensory processing, which is conducive to golf putting performance for expert golfers. Future studies may look into the different roles of the SMR and theta in the understanding of brain electrical oscillation and optimal performance in elite athletes.

*Keywords: neurofeedback training, precision sports, sensory motor rhythm*

### The superglasses - cognitive technologies as task assisting devices for sport and rehabilitation

**Kai Essig (Neurocognition and Action/ CITEC, Bielefeld University), Benjamin Streng (Neurocognition and Action/ CITEC, Bielefeld University), Thomas Schack (Neurocognition and Action/ CITEC, Bielefeld University)**

Recently, new technologies have significantly altered the progression of sporting achievements. Sport technology is particularly suitable for recording, analyzing and optimizing athletic performances. In this talk we will first introduce our intelligent ADAMAAS (Adaptive and Mobile Action Assistance System) glasses and then show how it can be applied to sport psychology, coaching, education and rehabilitation. ADAMAAS combines techniques from memory research, eye tracking and vital parameter measurement (such as pulse or heart rate), object and action recognition (Computer Vision), as well as Augmented Reality (AR) with modern diagnostics and corrective intervention techniques. The system is able to identify problems in actual action

processes, to react when mistakes are made, as well as to display situation and context dependent assistance in textual, visual or avatar based format superimposed on a transparent virtual plane in users' field of view. It captures mental representation structures using a special splitting procedure and subsequent hierarchical clustering of actions (structural dimensional analysis motoric method (SDA-M; Schack, 2012)). The ADAMAAS system is then able to identify user-specific problems in task execution by comparing their mental representation structures to predefined feasible sequences of action steps. If action steps which must be executed consecutively (according to the feasible workflow or action sequences) are unassociated in users' long-term memory, the transition between those steps is expected to be error-prone. Based on this information, the current visual focus, and task-related objects detected in the environment, the system provides adequate feedback, i.e. by displaying helpful hints and illustrations regarding the pending action via AR. Finally, we will discuss examples for situation specific action assistance in sport, rehabilitation and personal training (such as golf, basketball, and assembling a bird house).

*Keywords: assistive systems, individualized feedback, mental representation structures, diagnostic and rehabilitation*

### **Adaptive cognitive training – a smart terminal to enhance performance**

**Ludwig Vogel (Neurocognition and Action/ CITEC, Bielefeld University), Thomas Schack (Neurocognition and Action/ CITEC, Bielefeld University)**

Technical systems that monitor analyze cognitive skills were developed to improve performance in sport. To enhance technical training in sport, we used state of the art cognitive diagnostic created a smart terminal that is able to support motor learning on an individual level in sport as well as in rehabilitation. To fulfill skills with a specific purpose, cognitive representations should be organized task-dependent in a goal oriented manner (Schack & Mechsner, 2006). However, when it comes to technical training, athletes work at specific movement problems. Occasionally, they fail consistently, not because of their physical skills, but due to their defective representation of the movement. With the smart terminal we detect the cognitive representation problems with the structure dimensional analysis of mental representation (Schack, 2012). Based on this diagnostic the terminal provides individual feedback for technical training. The systems gives instructions to optimize learning processes in written form and prospective in form of a virtual agent. Keeping in line with the dynamic assessment approach, the representation can be analyzed again after the intervention to adjust the training. In this way the smart terminal can also be used as an evaluation tool of the training process that supports the communication and between coaches and athletes. Finally, we will discuss the application of the smart terminal in sport and rehabilitation and will deduce practical implications.

*Keywords: mental representation, technical training, diagnostic and rehabilitation*

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## **The Use of high-technologies in research and for performance enhancement**

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**Chair: Gershon Tenenbaum (Florida State University)**

Five presentations, which explore the research and applications of high technologies in sport and police, comprise this symposium. The first presentation explores the central and peripheral psychophysiological mechanisms underlying the notion of team mental models (TMM). The aim is to capture the underlying mechanisms of actions which are shared by team members for the use of team performance enhancement. The second study is devoted to the use of video technologies aimed at enhancing the perceptual-cognitive skills (PCS), which precede response-selection and action execution. An overview of approaches designed for developing meaningful video methods to track and train players' PCS is presented. Similarly, in the third presentation, the authors introduce research on the use of stroboscopic visual technology along with

Dynavision attention enhancement technologies and their use for performance enhancement practices. In this vein, the forth presentation pertains to studying and enhancing gaze behaviors using eye-tracking devices installed on wearable glasses with at least two mounted cameras. The technology allows measuring the quiet-eye and post-quiet eye behaviors in situ. These are later contrasted with performance to determine the individual zone of optimal functioning. The last presentation is devoted to simulation technologies incorporating special attention video software (Neurotracker® system) used to enhance law-enforcement officers' anticipation to better decide on the line of action and minimize error (actions) occurrence. New prospects are explored to increase the usefulness and trustfulness of these technologies in emulating real-life situations. Together, the five presentations shade light on the recent technologies used in sport and safety domains for research and training purposes.

*Keywords: technology, vision, simulations, decision-making*

### Neuro-psychophysiological monitoring of team processes

**Edson Filho (University of Central Lancashire), Jean Rettig (Florida State University), Gershon Tenenbaum (Florida State University)**

The purpose of this presentation is to review and discuss a plethora of research findings on how bio- and neuro-feedback technology can be used to monitor central (i.e., brain) and peripheral physiological markers (e.g., heart rate, skin conductance, respiration rate) of team processes, particularly team coordination and team mental models. To this extent, recent research on applied psychology has used bio-neurofeedback technology to examine neuro-psychophysiological markers underlying the notion of team coordination and team mental models (Filho, Bertollo, Robazza, & Comani, 2015). Accordingly, we present experimental evidence that optimal coordination and performance in interactive tasks depends on shared (integrative) and complementary (segregative) neural networks (Filho et al., 2016). In addition to discussing central markers of team coordination and team mental models, we present evidence that peripheral physiological responses (i.e., heart rate and respiration rate) are also markers of shared and complementary mental models. More specifically, we present research findings suggesting that intra-team physiological rhythms are linked to team processes and predictive of performance in myriad interactive motor tasks, including cooperative juggling, duet music playing, and group singing. We conclude by discussing how bio- and neurofeedback technology can be used to advance neuro-psychophysiological frameworks in performance, sport and exercise psychology.

*Keywords: psychophysiology, team processes*

### Using video based technology to enhance perceptual-cognitive skills across sports

**Itay Basevitch (Anglia Ruskin University), Claire Rossato (Middlesex University), Gershon Tenenbaum (Florida State University)**

Extant research examining Perceptual-Cognitive Skills (PCS) used video based technology (Mann et al, 2007). Most of the research has focused on exploring skill level differences in the ability to anticipate, generate options and make a decision during scenarios of developing plays (Ward et al., 2008). Furthermore, studies have also investigated the underlying mechanisms (e.g., gaze behavior, memory/knowledge base) that provide experts the ability to perform consistently and successfully (Davids, Renshaw & Glazier, 2005). However, the transfer of knowledge gained from the research domain to the applied domain has been limited. Thus, there is a need to develop reliable and valid perceptual-cognitive measurement tools and training methods. We provide an overview of approaches for developing meaningful methods to use video-based technology to track and train players' PCS. The approach is based on a longitudinal two-stage series of projects in which video based measurement and training methods are assessed across a series of sports (e.g., cricket, football, soccer, judo). In the first stage various measurement methods (e.g., varying the video content – spatial and temporal

occlusion, and the response method – pen and paper, full body movement) are explored for identifying the most reliable and valid tool. The second stage is based on findings from the first stage. The most reliable measurement tool is used to track improvement over time and to identify the best PCS training method (e.g., implicit and explicit). Additionally, the use of (a) a real-world performance task, (b) coaches' evaluation of development, and (d) self-evaluation of development, are explored. The overall aim is to develop video-based technology to improve PCS and subsequently performance.

*Keywords: perception, cognition*

## Eye-tracking technology for the study and applications of expert athletic performance

**Camilo Sáenz-Moncaleano (Florida State University), Gershon Tenenbaum (Florida State University)**

Eye-tracking devices consist of wearable glasses with at least two mounted cameras. One camera records pupil movement, while the other camera records the performance environment. Hence, by integrating information from the two cameras, quantitative data relating to gaze behaviors can be collected and processed. A third camera is often added and simultaneously measures the physical movements of the performer; allowing analysis of eye movements during specific phases of the sport task (Vickers, 2007). With the use of this technology, gaze behaviors have been studied throughout numerous sports such as tennis, football, and golf (Mann et al., 2007). Eye-tracking technology has been used to measure gaze behavior using both visual search of sport videos (e.g., Williams, Davids & Williams, 1999), and in situ, as the athlete physically performs the task in a natural environment (e.g., Vickers, 1992, 1996, Vine & Wilson, 2011). This technology was used studies which revealed the advantage experts enjoy in attending to and processing of relevant environmental cues (Mann et al., 2007). Specifically, the technology allowed to explore the visual search behaviors which result in more efficient, quicker, and accurate anticipatory decision-making and response execution (Goulet, Bard & Fleury, 1989; Mann et al., 2007; Tenenbaum, 2010, 2013). In this presentation I demonstrate how to use gaze technology in practice, and how to further advance skill proficiency by tailoring gaze behaviors to optimal performance.

*Keywords: eye-tracking, performance*

## Visual perception technology for improving decision making and anticipation

**Nataniel Boiangin (Florida State University), Heather Gatten (Florida State University), Jean-Charles Lebeau (Florida State University), Gershon Tenenbaum (Florida State University)**

Being able to “read the game” is a crucial component of skilled performance in sports (Mann, Williams, Ward, & Janelle, 2007). The ability to gaze and attend to relevant cues in the playing environment is the initial process which determines the accuracy and swiftness of a decision, and consequently, the final action (Tenenbaum, 2013; Williams et al., 1999). Specifically, visual attention plays a central role in anticipating upcoming events, particularly under high-speed and uncertain conditions. As such, visual skills are perceived as a key component in the decision-making process (Savelsbergh, Williams, Van der Kamp, & Ward, 2002; Williams & Ward, 2003). In this presentation, we describe two technologies to enhance visual attention, and in turn, improve the athlete's sport related decision-making: (1) Nike Vapor Strobe Glasses, and (2) DynavisionD2. The first study aimed at exploring the effects of a single stroboscopic (i.e., intermittent glimpses of the environment) training session on anticipating tennis serve return direction. Results revealed that stroboscopic training significantly improved response accuracy but not reaction time. The second study implemented a similar design protocol with intermediate college athletes, however, the DynavisionD2 was used to train and enhance peripheral vision and reaction time. The Dynavision D2 is a visuomotor training apparatus used to enhance visual attention, peripheral vision, reaction time, and executive function skills (Klavara, Gaskovski, & Forsyth, 1994). Participants were randomly assigned to either the Dynavision or control group. The study's

results will be reported upon data completion. Results from these studies are discussed in relation to the current literature in the domain. We provide our experiences with the aforementioned technologies in our private consultation sessions with athletes.

*Keywords: visual technologies, anticipation, DM*

## Technology for improving decision making during critical law enforcement incidents

**Roy Bedard (Florida State University), Gershon Tenenbaum (Florida State University)**

The effect of law enforcement training with video scenario plus special attention software (e.g., Neurotracker® system) on anticipation and decision-making is discussed in this presentation. For well over two decade advances in technology have been used to determine the most effective method to improve a learner's perceptual-cognitive skills and to provide an empirical basis for training human performance. For instance, it has been shown that high level athletes demonstrate greater performance in game play after being trained for several weeks in 3-dimensional multiple object tracking (3D-MOT) (Romeas, Guldner & Faubert, 2012). Our interest is in special-operations law enforcement officers who, like athletes, depend upon rapid processing of multiple bits of information in a changing environment to anticipate future actions that influence performance. Like athletes, they must be skilled in modulating attention to relevant environmental cues in order to decipher threats in the environment and plan for counter-measures. At present, a favored methodology used for training perceptual-cognitive skills in high-risk police work is scenario-based training; a technique that applies actual representations of real-world events that unfold in real time. This training method can be done in live or video presentation. Human performance increases when participants recognize visual cues, monitor them closely, anticipate upcoming events, and act upon those expectations by selectively choosing the best decision among several competing alternatives (Tenenbaum & Bar-Eli, 1993). The presentation focuses on the ascendant values of visual control, namely anticipation and decision-making, when incorporating scenarios with NeuroTracker® System.

*Keywords: simulated environment, neurotracker*

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## Sounds, and sweet airs that give delight and hurt not: How can we make the exercise experience more pleasant?

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**Chair: Costas Karageorghis (Brunel University London)**

It is arguable that popular cognitivist theories have proven largely ineffectual in addressing the tide of sedentariness, obesity, and type 2 diabetes that has afflicted people in the developed world. The health-related problems associated with physical inactivity are currently a source of grave concern to national governments. Is there anything meaningful that exercise psychology can offer to stem the tide? On the whole, Joe and Josephine Public have some cursory knowledge of the health benefits of physical activity, how to set personal goals, and even how to structure a basic exercise routine. There is, however, a non-rational aspect to people's physical activity behaviours. Despite the overwhelmingly positive evidence concerning physical activity participation that people routinely deliberate, the majority remain insufficiently active. What if exercise psychologists were to focus on making the exercise experience more pleasant? Would that begin to address the "public health time bomb" that is often mentioned by senior health professionals? This symposium will provide four complementary papers that serve to question the continued propagation of cognitivism as a dominant paradigm. The first paper, presented by Panteleimon Ekkekakis, will detail the paradigmatic shift and salient underlying mechanisms. The second paper, delivered by Florence Kinnafick, will examine how the physical environment—manipulated by use of video images—can influence the experience of high-intensity exercise among insufficiently active adults. The third paper, presented by Leighton Jones, will expound the

efficacy of virtual reality; a technique that promotes greater attentional dissociation than in commonly used forms of distraction during exercise (e.g., music-video). The fourth paper, delivered by Costas Karageorghis, will illustrate how exercise and health practitioners might adopt a theory-based approach in the use of music-related interventions to enhance the exercise experience.

*Keywords: affect, environmental factors, dissociation, hedonism, pleasure, virtual reality*

## **Preparing exercise psychology for its post-cognitivist future: Re-establishing the role of affect within dual-process models of human behaviour**

**Panteleimon Ekkekakis (Iowa State University)**

Since its emergence in the late 1960s, research in exercise psychology has been conducted in accordance with the dominant paradigm in psychology, namely cognitivism. Consequently, exercise and physical activity have been approached through information-processing theories. Such theories postulate that behaviour change occurs when the computational system within the human mind is provided with adequate, correct, comprehensible, and compellingly presented data (e.g., regarding capabilities, autonomy, sources of social support). The theories rest on the assumptions that (a) humans consistently act to maximise benefits to their self-interests (e.g., lengthen their lifespan, enhance their wellbeing) and (b) process data rationally (e.g., reliably do what is beneficial and avoid what is harmful). The relevant literature was searched through computerised databases and extensive cross-referencing. The search revealed that neither the theories themselves nor their underlying assumptions have been questioned. Likewise, there have been no efforts to develop theories focusing specifically on exercise and physical activity as phenomena that are distinct from other types of health or social behaviour. At this point, exercise psychology is approaching a Kuhnian "crisis." Cognitivist theories have been found to account for limited portions of behavioural variance and most theory-based interventions have proven ineffective in changing behaviour. New, dual-process theoretical frameworks must recognise that behaviour often results from non-rational, non-deliberative processes. In particular, the influential role of past affective experiences in human behaviour should be acknowledged. Accordingly, researchers must redirect their energies and resources towards developing and testing methods that can improve the affective experience of exercise and physical activity for individuals across the lifespan and all levels of physical ability.

*Keywords: affect, cognitivism, exercise, hedonism, paradigm shift*

## **Can the physical environment influence affect during high-intensity exercise? A multistudy investigation**

**Florence Kinnafick (Loughborough University)**

Immersion in the natural environment can enhance feelings of pleasure for physically inactive adults who exercise at a moderate intensity (Kinnafick & Thøgersen-Ntoumani, 2014). Negative changes in affect occur at high or supra-threshold exercise intensities (Dual-Mode Theory: Ekkekakis, 2003). It is currently unknown whether the physical environment can ameliorate the deleterious effects of high-intensity exercise on affect. Study 1 aimed to examine the influence of the physical environment during a high-intensity interval training (HIIT) intervention. Eighteen insufficiently active participants (male = 12, female = 9; Mage = 40.3 years, SD = 4.5 years) were interviewed and perceptions of barriers to and facilitators of intervention adherence were explored. Using a within-subjects design, Study 2 investigated the effects of natural vs. urban environments and high-intensity exercise on affect. Twenty-one insufficiently active adults (Mage = 22.5 years, SD = 4.5 years) were exposed to six conditions. Participants cycled for either 4 min of continuous exercise (> 80% HRmax), 8 x 30-s sprints (> 90% HRmax), or sat for 4 min while watching video clips of a natural or urban environment. Measures of affect (PANAS) were administered pre-exercise, immediately post-exercise, and following a 10-min





recovery. In Study 1, inductive thematic analysis indicated that temperature and the physical condition of the exercise studio negatively influenced participants' comfort and motivation to engage in exercise. The Study 2 analysis (RM ANOVA) indicated that high-intensity exercise increased negative affect ( $p = 0.008$ ), and reduced positive affect ( $p = 0.002$ ). Engaging in HIIT resulted in lower levels of negative affect when participants were exposed to the natural environment ( $p = .036$ ). When insufficiently active adults choose to engage in high-intensity exercise, it is important to consider their physical environment with a view to ameliorating affective decline.

*Keywords: affect, exercise, HIIT, inactivity, physical activity, physical environment*

## Is deeper better? Psychological effects of immersive technology during exercise

**Leighton Jones (Sheffield Hallam University)**

The acute affective responses to exercise play a seminal role in determining exercise adherence (Rhodes & Kates, 2015). Accordingly, there is a need for easily implementable, evidence-based strategies that can enhance the exercise experience. Technology is now ubiquitous in health facilities and used to distract, motivate and entertain exercisers (e.g., mp3 players and activity trackers). Emerging technologies such as virtual reality (VR) offer additional applications during exercise. In particular, examination of novel affect-enhancing strategies are warranted with overweight individuals who report more negative responses to exercise than their normal-weight counterparts (Ekkekakis et al., 2016). The present study sought to examine the effects of immersive technology (VR headset) during a 15-min bout of recumbent cycling. Eighteen participants (Mage = 34.9 years, SD = 10.3 years; MBMI = 27.5 kg/m<sup>2</sup>, SD = 3.5 kg/m<sup>2</sup>) comprising 14 women and 4 men engaged in three bouts of exercise at an intensity proximal to ventilatory threshold. Each participant was administered a control (no music-videos) and two experimental conditions (low immersion: music videos on TV and heard via wall-mounted speakers; high immersion: music videos on a VR headset and heard via headphones). Participants responded to the Feeling Scale, Felt Arousal Scale, a state attention item, and Physical Activity Enjoyment Scale. Results indicate that the experimental conditions elicited greater pleasure ( $p < .001$ ), a more dissociative attentional focus ( $p < .001$ ), and higher enjoyment ( $p < .001$ ) when compared to control, but did not differ from each other. The results support previous research examining the role of music-videos in enhancing the exercise experience (e.g., Hutchinson et al., 2017) and indicate that highly immersive technologies such as VR headsets might not confer additional benefits during exercise when used to deliver music-videos.

*Keywords: affect, cycling, dissociation, enjoyment, overweight, virtual reality*

## Enhancing the exercise experience through music-related interventions: A heuristic theory-based approach

**Costas Karageorghis (Brunel University London)**

From the very dawn of human civilization, ancient cultures sought to combine sounds in such a way that they influenced the human psyche. Given the recent advances in digital technologies, music applications have rapidly become de rigueur in the exercise and health domain. Ergonomically-designed personal listening devices are considered by exercisers to be as essential as their running shoes, and music programmes are routinely streamed into public gymnasias by use of complex algorithms. The purpose of this applied presentation will be to explore the structured and systematic use of music as a means by which to improve the exercise experience and thus, ultimately, to promote greater adherence. A new theoretical model (Karageorghis, 2016) that is heuristic in nature will serve as the lodestar for a series of music-related applications. The applications will be illustrated by examples from the presenter's applied work with the music and exercise industry. In terms of underlying structure, music-related interventions can be applied in three

main ways: pre-task, in-task, and post-task. Music can be used pre-task as a tool with which to manipulate psychological state; most often as a mild stimulant. It can be used in-task, either synchronously or asynchronously, with the synchronous application holding particular benefits in terms of prolonging endurance-type performance. The post-task application of music is still at a nascent stage in research terms; nonetheless, initial evidence shows some positive signs in terms of how music can expedite recovery processes following highly demanding workouts. The presentation will be of interest to exercise and health practitioners searching for innovative and evidence-based ways with which to exploit the power of sound in their professional endeavours. The content will serve to underscore the central thrust of the symposium concerning a proposed paradigmatic shift in exercise psychology from cognitivism to hedonism.

*Keywords: affect, entrainment, exercise, perceived exertion, pleasure, rhythmicity*

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## Psychological intervention in football: from initiation to elite

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**Chair: Joaquín Dosil (University of Vigo)**

In this Symposium, different models of intervention with players, trainers and teams will be presented from the different categories in the Spanish Football League. We will begin with the work performed in the Brave League Cup, addressed to football players from initiation categories, in which aspects such as fair play and football as an educational weapon in collaboration with parents will be considered positively; we will continue with the psychological intervention carried out in the UD Llagostera's initiation categories, to end up with the work developed with the Celta de Vigo Football Club, both in initiation and elite categories. Strategies to train psychological game situations in football and the specific role of the physical trainer in the specific pitch task will be also presented. In conclusion, the symposium will show the educational values provided by football, the participation of the sports psychologist in two professional teams and the specific strategies that are offered from psychology in training and competition.

*Keywords: football, initiation, elite, league, sports psychologist*

## The consistent construction of the sporting context. Opportunities to facilitate personality development of young athletes

**Juan González Hernández (University of Murcia)**

When speaking of the values transmitted by the sport, it is understood that contribute to growth as a person and which are elements of teaching and learning easily and are accepted by all those responsible for this transmission. Values that are perfectly instructives and present in a sporting context, and would be able to allow through the enormous social influence generated by the sport. The reality sometimes shows that this situation occurs in very few cases, the need to generate responsibility to try that sport contexts be places of learning and growth for people living in them, thus becoming opportunities for healthy growth for the people. The experience of the "Brave League", with the collaboration of teams in the Vega Baja del Segura (Alicante), in which it is intended that, through competition in sporting values, sports behaviors develop in athletes, parents and clubs soccer. For this, the collaboration and participation of family and clubs as models of behavior that are to their children where reference to the fulfillment of simple rules, will have their impact on the "Fair Play ranking", parallel to the sport, which involves achieving awards and trophies at the end of the season. With the objectives of learn through experience, gradual adaptation proposals through workshops, seminars, workshops and training in the field of psychosocial skills, information campaigns pursued in three phases: - awareness; children / participants as, acquire much more important things to win football games, that surely will accompany them for the rest of their lives; -learning and establishment; children become examples of civility,

respect and sportsmanship, and consolidation; maintenance of sports development behaviors and values that affect psychological well-being and basic aspects of personality in the young football player.

*Keywords: young, sport context, values*

## Creation of the sports psychology department in the football academia of a Spanish club

**Anna Viñolas, Ruben Bravo (Libredon UPCD-Cataluña)**

It presents the phases followed in the creation of the Sports Psychology Department in the football academia of 3th Spanish Football Club Division (Unió Esportiva Llagostera Costa Brava) by the UPCD (Psychology and Sports Coaching Group) during the 2016-17 season. The project was carried out by two sports psychologists, with internship students of University of Girona. The Department pursues two main goals. On the one hand, increase team sports performance as well as the development of personal skills and club values. The integration of different psychological techniques such as sports coaching was the method, combining punctual and regular actions throughout the season. The methodology includes the following main activities: monthly trainings for coaches, divided in 2 groups (7-soccer and 11-soccer); biweekly monitoring of 11-soccer (10 teams); weekly supervision of 2nd team; 2 hours of weekly attention of players; and a coaching process with each 11-soccer coach (6 sessions, every two months). The trainings had been about topics like team building, goal setting, communication and management of training, coaching techniques and individualized player's feedback, etc. The field follow-up started with an observation of all the teams, focusing in communication style. Later the teams were assigned to a psychologist who was the responsible of this supervision. We had worked in aspects leaded in the trainings and player's communication, team personality definition (values, strengths and improvement areas), etc. At the level of individual attention, the demand was mainly focused on the management of pressure and demotivation for lack of minutes. The coaching sessions with coaches have addressed aspects detected in the observations made in the training sessions related with leadership. Globally, the season was highly valorized because of the great acceptance of the new Department by all the members of the club, as well as the contribution made in both objectives pursued.

## Strategies to train psychological game situations in football

**Santiago Rivera Matiz (Centro Excelentia), Juan Martín Tassi (Club Estudiantes de la Plata), Miguel Morilla (Universidad Pablo de Olavide)**

This paper intends to propose strategies to teach football players how to deal with psychological situations in football. These situations consist of a set of variables that occur before and during a game where the thoughts and emotions that players experience affect the skills required in order to be able to manage the demands of the game; whose goal is to increase tactical efficiency (Rivera, 2016). This are trained through group talk sessions in the changing room or training activities in the field. In the second case, a transversal methodology is followed with a greater accentuation on the mental variables, integrating in the same task specific objectives for the performance components: technical, tactical, conditional and psychological (Morilla, Rivera & Tassi, 2017). The design of training tasks arises from the specific demands that players face in each game situation (Morilla & Rivera, 2014). These needs are conditioned by their mental workload (DiDomenico & Nussbaum, 2008), and is both cognitive and emotional (Cárdenas, Conde-González & Perales, 2015). Once these factors are taken into account, the training of psychological game situations is carried out through the manipulation of specific parameters (Morilla & Rivera, 2014, Morilla et al., 2017): 1) motivation type; 2) type of attention focus, according to stimuli quantity and quality; 3) the amount of uncertainty as a stress factor; 4) the number of possible decisions and their complexity; 4) the adjustment of the activation level; and 5) the opening or closing of communication channels. All these factors have to be approached from the psychology of football,

whose objective is none other than to facilitate the players' adaptation to technical-tactical goals or the game model (Rivera, 2016).

*Keywords: game situations, psychology of football, game model, psychological skills, methodology*

### **Training methodology in football accentuated in psychological variables: the role of the physical trainer in the specific pitch tasks**

**Juan Martín Tassi (Club Estudiantes de la Plata), Santiago Rivera Matiz (Centro Excelentia), Miguel Morilla (Universidad Pablo de Olavide)**

What strategies do sports coaches use to develop footballers' psychological skills in a systematic and planned way? Based on the question raised, this work attempts to expand some action guidelines for coaches, physical trainers and sports psychologists do in the pitch to improve individual and collective behaviour associated with performance; all from the psychical trainer's role. In order to integrate the psychological contents to the specific pitch work planning; identification of players' mental resources and principles of the game are taken into account, besides the other main performance components (i.e. tactical, technical, and conditional). All these are linked to three main aspects needed to develop training activities: the pedagogical, psychological, and methodological tasks' principles. Furthermore, based on specific situations that developed through training sessions and competitions, the search for developing psychological variables associated with the principles or the game model is explored (García Calvo, Candela, González, Ponce & Pulido, 2015). Thus, modified situations are favoured (García López, Sánchez & Serra Olivares, 2011) through provocation rules that figure or benefit emergence of individual and collective behaviours in order to improve performance. Moreover, psychological and social-affective needs are identified through observation, all which, together with the goals and integrated work contents, figure the possibility to accentuate the mental contents present in the different game situations faced during the season (Morilla, Rivera & Tassi, 2017).

*Keywords: methodology, game model, behaviour, psychological skills, performance, football*

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## **Flow in sport: Relationships and measurement**

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**Chair: Stefan Koehn (Liverpool Hope University, England, UK)**

Developed more than 40 years ago by Csikszentmihalyi (1975) in the context of challenging and highly skilled behaviours, the concept of flow has attracted a growing interest in the context of sport and exercise. Flow is a subjective experience that occurs in situations where the challenge is high and individuals have the skills to meet it. Flow involves total immersion in the activity, associated with clear goals and a sense of confidence and control. Flow is a highly enjoyable state, so individuals are keen to experience it again. Thus, they develop high intrinsic motivation for the activity. Although individuals in flow are so absorbed in the task that they are not concerned about their performance, they often produce outstanding performance. The promotion of intrinsic motivation to train and compete and the peak performance often associated with flow make it a desirable experience to nurture among athletes, as well as exercisers. To enhance the experience of flow it is important to understand its relationship to a range of personal, social, and contextual variables. In this symposium, presenters describe research conducted to understand these relationships. Stefan Koehn and colleagues consider the impact of coaching behaviours on flow experiences in competitive sports. Then, Ali Yıldız, and colleagues describe a study examining the relationship between self-presentation and flow among exercise participants. Next, Nektarios Stavrou and colleagues report on research examining the relationship between psychological needs, motivation, and flow in sport. Calmeiro and colleagues assess appraisals, emotions and reinvestment as antecedents of flow, and, finally, Erez Mosek and colleagues discuss their research on whether a concept of team flow state exists independent of the well-established construct of

individual flow state, resulting in the presentation of a measure of team flow state in sport. Tony Morris will lead audience discussion.

*Keywords: flow state, coaching behaviour, self-presentation, psychological needs, team flow*

### The impact of coaching behaviours on flow experiences in competitive sports

**Stefan Koehn (Liverpool Hope University, School of Health Sciences, England, UK), Nektarios Stavrou (Faculty of Physical Education and Sport Science, National & Kapodistrian University of Athens, Greece & National Sport Research Institute, Olympic Athletic Center of Athens, Athens, Greece), Janet Young (Institute of Sport, Exercise & Active Living, Victoria University, Melbourne)**

At an elite level coaches work very closely with athletes to improve competition performance. Kimiecik and Stein (1992) proposed a flow model, suggesting that coach behaviour is one of the main situational variables affecting flow. Recently, Koehn and Diaz-Ocejo (2016) showed that an individualised imagery intervention, based on coaches' and athletes' information, substantially increased athletes' flow states. The aim of this study was the examination of the impact of coaching behaviour on athletes' flow experience in competition. This study, based on cross-sectional design, included 234 participants (149 male, 85 female; mean age = 21.66 years, SD = 4.90; mean competition experience = 9.25 years, SD = 4.43; working with current coach on average 31.73 months, SD = 33.72). Participants completed scales on perceived autonomy support, the Coach Athlete Relationship Questionnaire (CART-Q meta perspective; Jowett, 2009), the Controlling Coach Behavior Scale (CCBS; Bartholomew, Ntoumanis, & Thøgersen-Ntouman, 2010), the Coaching Behavior Scale for Sport (CBS-S; Côté, Yardley, Hay, Sedgwick, & Baker, 1999), and the Dispositional Flow Scale-2 (DFS-2; Jackson & Eklund, 2002). Correlation coefficients showed no significant associations between the CCBS and flow. Multiple regression analysis with three variables showed that the CART-Q ( $\beta = .27$ ;  $p < .01$ ) and the CBS-S ( $\beta = .23$ ;  $p < .10$ ) significantly predicted flow in competition. The results indicate that the coach-athlete relationship facilitates flow through specific behaviors reflecting closeness, commitment, and complementarity. Developing competition strategies, using goal setting or mental preparation have also been found to facilitate flow in competition. The assessment of flow experiences and coaching behavior provide some helpful information for coaches working with competitive athletes, as well as practitioners, for instance sport psychologist whose daily work involves interactions with coaches and athletes.

*Keywords: coaching, competition, flow experience*

### The relationship between self-presentation and flow among exercise participants

**Ali Yildiz, Hülya Asçi (Marmara University, Faculty of Sport Sciences, Istanbul, Turkey), Emine Çağlar (Hacettepe University, Faculty of Sport Sciences, Ankara, Turkey)**

In this study, we focused on goal-directed self-talk, a strategy that affects performance by the means of self-regulation, contrarily to strategic self-talk interventions, which aim at an externally driven change in athlete's thoughts. Goal-directed self-talk represents a controlled mental process deliberately employed towards solving a problem or making progress on a task. We specifically explored goal-directed self-talk used by basketball players to cope with diverse competitive situations: seconds before a game expected to be close, while clearly winning or clearly losing a game, and at the close of a tight game. Thirty-four male basketball players (Mage = 19.74, SD = 2.93) wrote up to three self-instructions they had used in these situations to self-regulate, solve a problem or make progress on a task. Content analyses indicated that athletes' goal-directed self-talk was predominantly future-oriented (I will win), creating activated states (Come on!) and regulating cognition and behaviour (Focus on the game). Exploring differences among situations, cross tabulation with Cramer's V statistic exposed a significant situation by self-talk function interaction (Cramer's V = .259,  $p < .001$ ). Specifically, for seconds before the proportion of goal-directed self-talk aimed at controlling cognitive reactions

and creating deactivated states (Calm down) was significantly high ( $sei = 2.7$  and  $sei = 2.3$ , respectively), whereas the proportion of goal-directed self-talk aimed at controlling deactivated states (Don't give up) was significantly low ( $sei = -2.4$ ). Additionally, the proportion of goal-directed self-talk aimed at controlling deactivated states was significantly high for while winning ( $sei = 4.0$ ). Overall, the results of this study underline the need for research on athletes' autonomous attempts to control themselves by means of goal-directed self-talk, and inquire into the effects of these self-statements in a wide variety of situations.

*Keywords: self-presentation, flow, exercise*

### Examining the relationship between psychological needs, motivation and flow experience in sport

**Nektarios Stavrou (Faculty of Physical Education and Sport Science, National & Kapodistrian University of Athens, Greece & National Sport Research Institute, Olympic Athletic Center of Athens, Athens, Greece), Stefan Koehn (Liverpool Hope University, School of Health Sciences, England, UK), Maria Psychountaki (Faculty of Physical Education and Sport Science, National & Kapodistrian University of Athens, Greece)**

The concept of flow refers to a positive subjective mental state that athletes experience when they are totally involved in an activity. Self-determination theory supports the existence of three psychological needs (competence, autonomy, relatedness) the fulfilment of which leads to positive motivational outcomes and performance. The purpose of this study was to examine the link between flow experience and athletes' basic psychological needs and motivation. Three-hundred-and-forty-two athletes (211 males, 131 females), from 12 to 39 years old, volunteered to participate in the study. The athletes completed the Flow State Scale-2, the Basic Psychological Needs in Exercise Scale, the Sport Motivation Scale-2, and two 11-point scales measuring challenge and skills of the athletes, based on how they usually felt during competition. The instruments revealed acceptable reliability and validity values. Positive correlations appeared between basic psychological needs factors and flow experience, with the competence factor indicating higher values. In addition, intrinsic types of motivation showed positive correlations with flow experience, whereas extrinsic motivation and amotivation revealed null and negative correlations, respectively. Regarding the flow orthogonal model (low vs high challenge–skills), athletes in the flow and relaxation quadrants indicated higher intrinsic motivation and psychological needs satisfaction, compared to athletes in the anxiety and apathy quadrants. Results indicated that intrinsically-motivated athletes experienced more positive characteristics than extrinsically or non-motivated ones, whereas basic psychological needs satisfaction (mainly competence) was important in the quality of their sport experience. The combined examination of flow and motivation regarding athletes' emotional experience during competition can provide useful information that might be beneficial for coaches, sport psychology practitioners, and athletes' performance.

*Keywords: Psychological needs, motivation, amotivation, flow experience*

### Cognitive appraisals, emotions and reinvestment as antecedents of flow states in athletes

**Luis Calmeiro (Abertay University, Dundee, UK), Stefan Koehn (Liverpool Hope University, School of Health Sciences, England, UK), Mariana Kaiseler (Leeds Beckett University, Leeds, UK)**

Competitive stress can either hamper athletes' ability to perform or enhance their performance by energising them in face of optimal challenges. Appraising situations as challenges is critical for the development of the conditions favourable to the occurrence of flow. The purpose of this paper is to test a model that predicts athletes' flow states based on the interaction between cognition and emotions. In classroom settings, 178 student-athletes (M age = 19.61 years, SD = 1.73; 31% females) completed a battery of tests to measure threat and challenge cognitive appraisals, emotions, decision-reinvestment and decision-rumination, and dispositional flow. Path analysis indicated that all variables explained 23% of flow's variance, with challenge



( $\beta = .24$ ), threat ( $\beta = -.16$ ), positive emotions ( $\beta = .16$ ) and rumination ( $\beta = -.19$ ) as significant predictors of flow. Indirect paths to flow were also found mainly from challenge and threat through positive emotions ( $\beta = .37$  and  $\beta = -.17$ , respectively), and decision-rumination ( $\beta = -.16$  and  $\beta = .32$ , respectively); hence, positive emotions ( $\beta = .16$ ) and decision rumination ( $\beta = -.19$ ) also predicted flow. Results illustrate how flow is associated with a combination of emotional states and cognitive processes. Flow is the product of how athletes appraise the competitive situations, which will influence their emotional states and the way they process information during competition. It is suggested that developing challenge and positive emotions, and not merely the reduction of threat and negative emotions, is vital for the experience of flow. Moreover, rumination suggests a workload of cognitive resources that undermines flow. Decision-reinvestment was associated with negative emotions but did not predict flow. Reinvestment might have been interpreted as a resource for athletes to correct some aspect of the decision making process.

*Keywords: appraisals, emotions, flow, path analysis*

### Is Team Flow State Equivalent to Individual Flow State?

**Erez Mosek, Tony Morris, Anthony Watt (Institute of Sport, Exercise & Active Living, Victoria University, Melbourne & College of Education, Victoria University, Melbourne)**

Interest in flow has grown substantially in sport psychology, alongside the mainstream development of positive psychology. Flow is considered to be a subjective experience of individuals, but some researchers have proposed that individuals can perceive a state of flow within teams. Early studies in team flow employed the individual Flow State Scale (FSS; Jackson & Marsh, 1996) modified to refer to individuals' experience of teams' flow state. We argue this begs the question whether team flow should be based on the individual flow model. To examine this, we interviewed high-level, team-sport athletes, coaches, and sport psychologists, who reported seven themes corresponding to individual flow dimensions, but also reported seven team flow specific themes. We developed a 56-item measure, the Team Flow State Inventory (TFSI; Mosek et al., 2013) comprising four items per theme. Face validity of the inventory was examined by five experts in the flow field. To improve factor structure and the receptiveness of the measure one item was deleted from each subscale. We tested reliability of the 14 subscales, finding that all subscales had acceptable reliability between  $\alpha = .69$  and  $\alpha = .87$ . Using confirmatory factor analysis (CFA), we found a good fit, following minor modifications of the model ( $\chi^2/df = 2.31$ ; CFI = .92; TLI = .90; RMSEA = .06). We examined discriminant criterion validity by correlating the 14 subscales of TFSI with the nine subscales of FSS-2 and found that TFSI subscales were independent of individual flow state dimensions. We found TFSI subscales were independent of subscales of similar group concepts in the Group Environment Questionnaire (GEQ; Carron et al., 1985) and the Collective Efficacy Questionnaire for Sports (CEQS; Short et al., 2005). Preliminary validation suggests that the TFSI measures elements of team flow state that are distinguishable from individual flow. Given the potential of team flow, the TFSI warrants further validation in diverse team contexts.

*Keywords: flow state, individual flow, team flow, reliability, validity*

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### Phenomenology, social psychology and psychobiology: contributions and emotional aspects from different areas to researches in sport psychology

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**Chair: Thabata Castelo Branco Telles (FFCLRP (University of São Paulo)/ ABRAPESP)**

This symposium aims to discuss contributions from different areas to researches in sport psychology, specially those from phenomenology, social psychology and psychobiology. The first one is a branch of philosophy and has been increasingly used in sport psychology in order to comprehend the lived experience of the athletes, understanding the phenomena in exercise and sports fields from their essential aspects. In

addition, the second - social psychology - is known by its concerns related to the social aspects in psychological processes, which also includes work conditions and the environment where the practitioners are. Finally, the contributions of psychobiology highlight the role of emotions and mood states as a predispositional condition to the athlete's behavior and performance. The emotion is comprehended here not only in psychobiological studies but also in the other researches, once aspects such as violence and motricity are intertwined with emotional aspects. Yet, social psychology contributions remind the difficulty for the sport psychology to help managing emotions when the environment seems hostile to the athletes. Showing these different discussions, this symposium enhances the issues related to an inter-disciplinary research in sport and exercise. Possible relations with philosophy, psychology, sociology and biology fields are presented in this symposium and we hope this could motivate and continue other inter-disciplinary approaches in sport and exercise studies.

*Keywords: phenomenology, social psychology, psychobiology, sport psychology*

### **Are combat sport and MMA violently experienced? A phenomenological analysis of fighting and Extreme Combat Experiences**

***Cristiano Roque Antunes Barreira (University of Sao Paulo)***

So far, there is not a phenomenological conceptualization of fighting at the core of martial arts and combat sports. Although not essential, fighting is described as a derivation, simulacra, or metaphor of violent conflicts. This description gap makes fighting a phenomenon of secondary relevance, without its proper dignity. The first goal of this research is to discover the fighting dignity in its pureness. Once Mixed Martial Art (MMA) has been pointed out as a violent combat Sport modality, the second goal is to explore how practitioners live the so-called Extreme Combat Experiences (ECE), an aim that includes looking for understanding if violence is inherent to fighters' perception. Methodologically, classical phenomenology is applied to grasp the essence of fighting. Interviews in depth, using suspensive listening, were performed with ten Brazilian men and women, MMA professional fighters, with different general backgrounds, searching for their ECE. Results show distinctions among physical combat forms, which include not only fighting, but also struggles (street fighting or brawls), duels, self-defence, and some forms of play. Fighting was mostly understood by its correlative ethical aspect, namely, the mutual availability of the fighters involved, as well as the motivation of physically overcoming the opponent, while avoiding being overcome. Whether fighting is dominated by a different motivation, like hostility, for example, it becomes another phenomenon, such as struggle or duel. ECE of MMA's practitioners, however, can be emotionally dominated by the loss of self-control, humiliation, willing of punishing, shame, peaks of hostility, victimization, disrespect, sorrows, angry. Practitioners battle against such experiences, although pushing themselves to their limits, where the boundaries between self-control maintenance and loss are ambiguous. The interviewed MMA practitioners experience violence in its career: to avoid it they search for self-control.

*Keywords: combat sports, phenomenology, violence*

### **How the body moves: understanding movement in sport and exercise through a phenomenological perspective**

***Thabata Castelo Branco Telles (FFCLRP (University of São Paulo)/ ABRAPESP), Cristiano Roque Antunes Barreira (EEFERP-FFCLRP (University of São Paulo)/ ABRAPESP)***

This work consists in a phenomenological study, based on the concept of body. Through this perspective, it aims to understand how the body moves. This presents a possible contribution to human motricity studies, specially in exercise and sport psychology. The phenomenological tradition is consisted by the notion of intentionality, which means that each act is organized by a relation between the consciousness and the object. However, this cannot be understood only as a mental process, but also a corporeal one. Then, each body act is

related to an object. Aside from the concept of body, it is also important to develop the perspectives of (1) movement, always in relation to time and space, and (2) intercorporeality, regarding to the role of otherness in human motricity processes. Which means, an athlete, for example, does not make a random movement; it is always related to something (or someone) in an established time and space. The body moves motivated by some perceived contours in the environment. It perceives and it reacts towards them. This brief description includes the mood states which influence the general sense of the movement. It is important to highlight that using a phenomenological perspective in sports requires an understanding based on pre-reflexive acts. It consists in a reflection about the unreflecting, once in sports and exercise the body is moving almost all the time, with a few time to think.

*Keywords: corporeality, phenomenology, motricity, intercorporeality*

### Invisibility and precariousness in the work of MMA athletes

**Juliana Camilo (PUC-SP/ABRAPESP), Rodrigo de Vasconcellos Pieri**

The performance of mixed martial arts fighters (MMA) points to an invisibility of their work and a precariousness of daily life confronted by them, hiding the innumerable risks of their function. For this reason, the objective of this research was to investigate how are the working conditions to which these athletes are submitted. They all live in Brazil, enacting in national and international leagues. The research was carried out in three phases: a) collection of information in documentary materials, mainly the Brazilian legislations; b) survey of the athletes who competed, in Brazil, in the year of 2016, in the main mapper events called Sherdog and, c) interview with five competitors this year to answer a questionnaire about their working conditions, with open and closed questions. The results of this study show the general situation of the working conditions of these fighters in Brazil. Although the fighters seem to like their work and identify opportunities for their growth in the modality, it is undeniable the precariousness to which they are involved, producing psychological suffering, physical illness, in addition to social and economic difficulties, such as: lack of a safe space for their training; lack of minimum health care; insufficient and unpredictable remuneration and invisibility of their work to Brazilian legislation.

*Keywords: combat sports, social psychology, psychodynamics of work, sport psychology*

### Mood states as a predispositional condition and its relations with behavior, performance and time

**Ricardo Marinho de Mello de Picoli (FFCLRP (University of São Paulo)/ ABRAPESP), José Lino Oliveira Bueno (FFCLRP (University of São Paulo))**

Studies about emotions in a sport context must focus on the description of complex emotional states which allow to show individual and group differences and the influencing main factors which contribute to the occurrence of these differences. By the way, it is important to follow-up variations and alterations of an emotional profile, pointed out by representative emotional states in sports situations. To the exam these representative emotional states (i.e. mood states), it is necessary that there be appropriate evaluation instruments applicable in sports contexts and that support the analysis to reach the objectives outlined in the studies on the influence of the mood states on athletes. Engelmann (1986) proposed an instrument (Present Mood States List) to evaluate those states and it has been used in a variety of studies in a sport context. The aim of this presentation is to show the amount of studies conducted by the research group “Estados subjetivos, emoções e esporte” at Laboratório de Processos Associativos, Controle Temporal e Memória da Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto (USP), through the supervision of Prof. Dr. José Lino Oliveira Bueno. These studies focus on the exam of present mood states in high-performance athletes by the application of the Present List of Mood States (Engelmann, 1986). Studies have been developed with volleyball,

futsal, football and soccer athletes, including the description of the in-competition time course of mood states and the relation of the mood states with the stage of the competition, technical performance, gender, position, in-field behaviors, motivational aspects and leadership. Results have shown that mood states works as a predispositional condition influencing the athletes' behavior and performance.

*Keywords: mood states, sport psychology, psychobiology*

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## **Excellence in sports and academics**

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**Chair: Jitendra Mohan (Panjab University, Chandigarh, India)**

Excellence has been a well documented in India. In the past, mentors (gurus) helped disciples attain the pinnacle of expertise and trained them both physically and mentally. Training being imparted was based on the knowledge, experience and excellence of the gurus. On the one hand Dronacharya and Arjuna can never be forgotten as being the perfect example of creditable coaching and the ultimate success. In contrast Eklavya shows the motivation, the grit and the will to learn, so very essential for any sport (Mohan, 2015). The face of academics has changed over time. In the yester years, education was form learning to earning. In this world of industrialization and globalization, education has become highly commercial and academic excellence has gained through tough competitions (Woolfolk, 2001). Working with toppers in academics and sports, Shooters, Tennis Players, Young Footballers and college athletes the research group found that Personality, Internal Motivation, Anxiety reduction play an important role. The present symposium involving Jitendra Mohan, Puja Kakkar, Guneet Inder Jit Kaur, Akanksha Tripathi and Shruti Shourie aims to develop a dialogue to emphasize the fact the sport performance can be enhanced with appropriate personality interventions and coaching techniques.

*Keywords: excellence, sport, academics, achievement, passion*

## **A study of emotional intelligence and coping with stress among young tennis players**

**Puja Kakkar (Antioch University Seattle, U.S.A.)**

Young players confront stress as much as adult players. It becomes very significant for the coach and the parent to help them to cope with it successfully. The Emotional Intelligence training makes them handle it better. In this study two groups of young players (25 each) were included. The experimental group was given training of Emotional Intelligence for two weeks. The impact of Emotional Intelligence training proved to be helpful in coping with stress and for enhancing performance. The results and their implication will be discussed to develop strategies for enhancing performance of young players.

*Keywords: stress, emotional intelligence, performance enhancement*

## **Excellence in sports and academics**

**Dr. Guneet Inder Jit Kaur.(Assistant Professor, Department of Psychology, Jain University, Bangalore, India)**

Excellence has been a well documented in India. In the past, mentors (gurus) helped disciples attain the pinnacle of expertise and trained them both physically and mentally. Training being imparted was based on the knowledge, experience and excellence of the gurus. On the one hand Dronacharya and Arjuna can never be forgotten as being the perfect example of creditable coaching and the ultimate success. In contrast Eklavya shows the motivation, the grit and the will to learn, so very essential for any sport (Mohan, 2015). The face of academics has changed over time. In the yester years, education was form learning to earning. In this world of industrialization and globalization, education has become highly commercial and academic excellence has

gained through tough competitions (Woolfolk, 2001). Working with toppers in academics and sports, Shooters, Tennis Players, Young Footballers and college athletes the research group found that Personality, Internal Motivation, Anxiety reduction play an important role. The present symposium involving Jitendra Mohan, Puja Kakkar, Guneet Inder Jit Kaur, Akanksha Tripathi and Shruti Shourie aims to develop a dialogue to emphasize the fact the sport performance can be enhanced with appropriate personality interventions and coaching techniques.

*Keywords: excellence, sport, academics, achievement, passion*

## **Mental toughness, mindfulness, psychological skills and sportsmanship among Indian competitive athletes**

**Dr. Akanksha Tripathi. (M.C.M.D.A.V. College, Sector- 36, Chandigarh, India)**

The concept of mental toughness and mindfulness has gained profound attention from sport psychologists attempting to understand the underpinnings of success in various sports. Their role has been documented as imperative in the use of various psychological strategies and sportsmanship of athletes in competition. Role of Mindfulness in sports performances have received paramount importance in the field, with mindfulness based interventions evolving as crucial to peak performances in sports. The present investigation will focus on tracing the relationship between mental toughness, mindfulness, psychological skills and sportsmanship orientation among 100 female athletes from various sports, competing at State and National level residing in and around the city of Chandigarh, India. To make an assessment on the said variables, Mindful Attention Awareness Scale (Brown & Ryan, 2003) will be used to measure mindfulness, Tests of performance strategies scale will be used to measure psychological skills namely goal setting, relaxation, activation, imagery, self-talk, attentional control, emotional control, and automaticity. Multidimensional Sportspersonship Orientation Scale (Stornes & Bru, 2002) will be used to measure five different sportsmanship orientations. Athletic Coping Skills Inventory by Smith and his colleagues (1995) will be used as a measure of mental toughness which contains the 7 subscales of coping with adversity, peaking under pressure, goal setting/mental preparation, concentration, freedom from worry, confidence and achievement motivation, and coachability. Findings of the investigation will be discussed henceforth.

*Keywords: mental toughness, mindfulness, psychological skills, athletes*

## **Psychological skills training program for rifle and pistol shooters to enhance their performance levels**

**Dr. Shruti Shourie, (D.A.V. College, Sector- 10, Chandigarh, India)**

All battles are won or lost in mind. In all competitive sports, mental skills along with sports related talent give the sportspersons an edge above the others. Shooting is a mental game, where acquisition of mental skills becomes an imperative in order to achieve higher. Shooters report a lot of mental fluctuations during important competitions. The present investigation was designed to study the effect of Psychological Skills Training (PST) among 30 pistol and rifle shooters, in the age range of 17 to 28 years, whereby 15 shooters each were randomly assigned to experimental (PST) group and control group. The subjects in experimental group were given PST for 10 months which involved training the shooters of experimental group in strategies for arousal regulation and stress management, goal setting, time management, changing negative thought patterns into positive, increasing attention and vigilance, enhancing commitment and motivation and increasing self-confidence. The study involves a pre-post experimental design. Standardized measures and tests of study variables (positive and negative mental states, motivation, emotional intelligence, generalized self-expectancy for success, self-esteem, self-efficacy, self-actualization, attention, stress, arousal, anxiety and depression) were administered to rifle and pistol shooters to obtain their comprehensive profiles before and

after PST. Analysis of data, using paired t test, indicated that the experimental group improved in comparison to the control groups and the critical role PST plays in helping the shooters tame their mental energy in the direction of enhancement of their performance.

*Keywords: psychological skills training, shooting, sport performance*

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## Self-determination theory: New applications and processes of change

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**Chair: Christopher M. Spray (Loughborough University)**

Self-determination theory (SDT) has been employed in a range of sport and physical activity contexts to help understand motivational processes. Building on this research agenda, the first half of this symposium focuses on basic psychological needs to help understand novel contexts for physical activity promotion and performance. In the first presentation, qualitative data will be described that sheds light on how community gardens can represent a novel setting to promote physical activity, healthy diets and well-being. Extracts from participant interviews also reveal the significance of 'community needs' for individual health. Although appropriate physical activity has numerous benefits, physically demanding occupations may represent a setting where negative experiences may be prolific. The second presentation explores this idea in more detail by studying psychological needs satisfaction and frustration within English operational firefighters. Multiple regression analyses are used to illustrate how to prevent stress and depression in physically strenuous performance environments. The symposium moves forward in the second half to study neglected processes of change in SDT-based motivational constructs. Within the third presentation a reciprocal effects model exploring repeated-measures data obtained from young children will be described. By doing so, some assumptions associated with SDT-based physical activity interventions are questioned. Staying with children as the focus, the final presentation examines change in amotivation within physical education over an academic year. The results of this work reveal interesting differences in peer and teacher influences on children's lack of motivation for physical education. Overall, the topics presented in the symposium aim to inspire original thinking in applications of SDT by identifying new contexts and mechanisms for physical activity promotion.

*Keywords: motivation, self-determination theory, health and well-being, physical activity*

## Sowing the seeds: Exploring the potential role of community gardens in promoting individual and community needs and well-being

**Eleanor Quested, Cecilie Thøgersen-Ntoumani, Hannah Uren, Sarah J. Hardcastle (Curtin University), Richard M. Ryan (Australian Catholic University)**

Community gardens have been associated with a number of positive outcomes, including community and individual health and well-being. This study applied self-determination theory as a framework to explore the social-psychological characteristics that may determine the role of community gardens in promoting and sustaining need satisfaction and well-being among individuals. The potential role of community gardens as a platform to promote health behaviours such as physical activity and healthy eating were also explored. Semi-structured face-to-face interviews were conducted with five community garden managers and ten aspiring community gardeners. Data were analyzed via a framework approach to thematic analysis. Findings support eudaimonic perspectives of well-being and the proposition that satisfaction of community level needs may be the precursor to communities and individuals experiencing well-being, as a function of community gardens. Findings have implications for how community-based interventions could be optimized via targeted integration of theories of motivation and perspectives of well-being.



## Extinguishing the stress from firefighting: Psychological need satisfaction and frustration uniquely predict stress and depression in English operational firefighters

**Peter C. Rouse, Philip Turner, Andrew Siddall, Martyn Standage, James L.J. Bilzon (University of Bath)**

Firefighting is a physically active and demanding vocation that is accompanied by stress and compromised mental wellbeing. Understanding the mechanisms that may contribute to, or provide protection against, these negative vocational consequences is important for the health and wellbeing of members of this emergency service. Operational firefighters (N = 2236; 91% male; M age = 42.16 ± 7.8) completed an online questionnaire assessing psychological need satisfaction, stress and depression. Multiple hierarchical regression analyses tested the role of need satisfaction and frustration in predicting stress and depression among firefighters. Results revealed satisfaction of the needs for autonomy, competence and relatedness negatively predicted stress, explaining 16% of the variance. Frustration of the needs explained an additional 14% of the variance. Positive and significant relationships were observed for the frustration of autonomy, competence and relatedness. With regard to depression, autonomy, competence and relatedness need satisfaction were all significant negative predictors, explaining 28% variance. On the other hand, autonomy, competence and relatedness frustration positively predicted depression explaining an additional 11% variance. Consonant with the tenets of SDT, basic need satisfaction and frustration make unique and significant contributions to the stress and depressive symptoms experienced by firefighters. Satisfaction of the basic psychological needs, in particularly autonomy, is associated with a buffering against stress and depression. In contrast, when firefighters perceived their needs to be frustrated at work, increases in stress and depression are associated. These results indicate that fostering need satisfaction as well as minimising need frustration could help extinguish stress and depression in this physically demanding vocation. Future research should identify the antecedents of firefighters' perceptions of need satisfaction and frustration.

## Reciprocal effects of motivation in physical education and self-reported physical activity

**Ian Taylor (Loughborough University)**

Children's motivation towards Physical Education (PE) classes has been highlighted as an important mechanism for the development of healthy physical activity behaviour. The present study scrutinized this statement by testing whether self-reported school and leisure-time physical activity have a reciprocal relationship with PE-based motivational regulations described by self-determination theory. Participants were 635 11- and 12-year-old school children from the United Kingdom. A cross-lagged longitudinal design over two time points was employed. Study hypotheses were analyzed using latent factor reciprocal effects models. Temporal invariance of study measures was supported. Data revealed positive relationships between both types of physical activity and subsequent changes in autonomous motivation in PE. However, there was no evidence that autonomous motivation in PE predicted changes in physical activity. No relationships were observed in either direction involving introjected regulation. Theoretically agreeable associations between external regulation and changes in physical activity were observed, but no reverse relationships. Both types of physical activity behavior were negatively associated with changes in amotivation in PE, but contrary to predictions, amotivation in PE was positively associated with changes in leisure-time physical activity. Physical activity behaviour may help children internalize reasons for partaking in PE and foster self-determination. However, the widespread theory that self-determined PE motives can sustain and promote physical activity behaviour was not convincingly demonstrated.

## Antecedents of change in amotivation toward physical education across a school year

**Christopher M. Spray, Rachel M. Jackson-Kersey (Loughborough University)**



Relatively little research has sought to examine the development of multifaceted amotivation in Physical Education (PE) over time. Thus, the present study examined change in dimensions of amotivation across a number of different activities over a school year in PE, and assessed the predictive utility of students' perceptions of teachers' psychological need support and peer motivational climate in accounting for change. Data were collected across six consecutive units of work during one academic year. Units of work consisted of gymnastics, netball, dance, swimming, tennis, and athletics. A total of 61 female students (M age = 11.5 years, SD = 0.86) from an independent secondary school in south-east England completed a questionnaire at the end of each activity. One-way repeated measures ANOVAs revealed that students felt more deficient in their ability and effort beliefs and valued the task less in gymnastics compared to other activities. Multilevel modelling analyses showed that all three types of perceived need support from the teacher negatively predicted student deficiency in effort beliefs and unappealing task characteristics at the start of the study. Over time, perceived competence support negatively predicted insufficient task value and unappealing task characteristics, whereas perceived autonomy support negatively predicted deficiency in ability beliefs and insufficient task value. With respect to perceived peer climate, emphasis on peer improvement negatively predicted deficiency in effort beliefs, insufficient task value and unappealing task characteristics over the course of the year. Overall, these findings point toward the importance of perceived teacher need support and peer task-involving climate in helping to prevent the development of facets of amotivation in PE.

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## Advances in psychology applied to adapted physical activity and sport

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**Chair: Jordi Segura (Universitat Ramon Llull)**

Inclusion in sport is over. The importance of applying sport psychology to the adapted physical activity and sport is increasing. In this symposium we propose to make a review over these topics, starting with the presentation of five research and intervention projects. The presentations approach different areas of psychological and psychosocial knowledge: physical activity, quality in Paralympics sport services, quality of life of handicapped athletes, Athlete's Self-Concept and Coaching behavior. However, we also refer several kinds of disabilities: physical handicaps, mental diseases, intellectual disability and visual disabilities. The symposium meets two goals: to offer advances in psychology applied to adapted physical activities and sport, and to allow a group discussion between the speakers and the audience, in order to explore new perspectives for the next years. The speakers embrace different experiences in the sport field and in the applied research of adapted physical activity and sport, coming from different universities of several regions and countries: Maria Carbó, Joan Guardia & Climent Giné (Universitat Ramon Llull; Universitat de Barcelona). Physical activity, Intellectual disability and Quality of life. Félix Guillén & Ángela Urrea (University of Las Palmas de Gran Canaria, Spain; University Institution of Envigado, Colombia). The Physical Self-Concept in colombian athletes with Visual disabilities. Marit Sørensen & Frank Abrahamsen (The Norwegian School of Sport Sciences, Oslo). Quality in sport psychology services for paralympic athletes: what is required, and why? M. Evangelina Tribolo & M. Luisa Gennari (Università Cattolica del Sacro Cuore, Milan). Mental disease and Sport. Jordi Segura & Marian Arévalo (Universitat Ramon Llull, Barcelona). Coaching behavior and leadership psychological skills with physical disabled athletes.

*Keywords: disabilities, paralympic athletes, coaching behavior, psychological topics, quality of life, psychology services*

## Physical activity, intellectual disability and quality of life

**Maria Carbó-Carreté (Universitat Ramon Llull), Joan Guàrdia-Olmos (Universitat de Barcelona), Climent Giné-Giné (Universitat Ramon Llull)**

We present a study in order to identify what impact of the practice of physical activity and sport on the quality of life of people with intellectual disabilities. An Spanish adaptation of the Personal Outcome Scale (van Loon et al., 2008; Carbó-Carreté, & Giné, 2016) is used. 529 adult people with intellectual disability, 462 members of their family and 522 reference professionals were interviewed. Results offers useful knowledge about how to identify the support needs and how to design and implement the strategies for facilitating a person's physical activity, for increase quality of life in adults with intellectual disability, in their community.

*Keywords: quality of life, intellectual disability*

## The Physical Self-Concept in Colombian athletes with visual disabilities

**Félix Guillén (University of Las Palmas de Gran Canaria, Spain), Ángela Urrea (University Institution of Envigado, Colombia)**

The self-concept is one of the most relevant aspects for the personal well-being, therefore, many behavioral aspects are related to this variable, including sports, which found the beneficial effect that produces on this activity in several studies (Alferman and Stoll, 2000; Moreno, Cervelló and Moreno, 2008). In the same way, found the special relevance during adolescence because of important cognitive, physical and social changes occurring at this stage (Harter, 2012). Physical self-concept undergoes a course of evolutionary development internally differentiated in various domains (Goñi, Ruiz de Azúa and Rodríguez, 2004) including gender, age, the frequency and the type of sport or (Goñi, Ruiz de Azúa and Rodríguez, 2004) body mass index. The exposed above, arises the interest to investigate this variable in 210 Colombian athletes with visual impairment, between 18 and 62 years who were given the scale of physical self-concept (PSPP) (Fox and Corbin, 1989). The results allowed to check on practiced sport (individual, team and chess), significant differences in the subscales of physical condition ( $F = 13.141$ ;  $p < .000$ ); Appearance ( $F = 4.813$ ;  $p < .009$ ) and perceived competence ( $F = 3.704$ ;  $p < .026$ ). Similarly found significant differences in terms of the type of deficiency (total or partial) in three items. The data suggest that interventions can be generated with athletes who are team sports to strengthen or empower physical self-concept. As regards the type of deficiency, can act with those who have total disability, as the Hare and Hare (1977) the self-concept of the participants with visual impairments could be adversely affected because they cannot fully experience a situation, given his visual impairment, in addition to not having a point of comparison with other subjects.

*Keywords: physical self-concept, visual disability*

## Quality in sport psychology services for paralympic athletes: what is required, and why?

**Marit Sørensen, Frank Abrahamsen (Norwegian School of Sport Sciences)**

Compared to sport psychology literature on elite athletes participating in the Olympic Games, the literature on service delivery to disability sport athletes participating in Paralympic Games may be considered sparse, even if it has received growing attention in recent years. Building on existing literature, some empirical data from the Paralympic winter games in 2010, and the broad experience of the second author as the consultant for the Norwegian athletes of several Paralympic Games (2006, 2008, 2010, 2012), the presenters will share some ideas to consider in order to find answers to the question in the title. Some of the experiences with Paralympic athletes are related to the professionalism of both the athletes and their staff; generally, the Paralympic athletes are very similar to Olympic athletes. Some important differences do exist however. Often Paralympians are well prepared for external distractions as they happen frequently (i.e. lost/damaged personal equipment during travel/flights). Sometimes the support staff is well-versed with Paralympic athletes, but need extra training to be prepared for the "big" game, as Paralympic Games are often a lot more cumbersome than

they are used to (i.e. media training, doping tests, and Paralympic team issues). To conclude we will present briefly the outline of the new Norwegian coach education with a specialisation in disability sport.

*Keywords: psychology services, paralympic athletes*

## Mental disease and sport

**M.Evangelina Tribolo, M.Luisa Gennari (Università Cattolica del Sacro Cuore, Milano)**

According to the World Health Organisation (Action Plan 2013-2020) mental illness affects up to 25% of the European population every year. In 1978 the Italian government passed a law (Legge Basaglia180), resulting in the closure of all mental health institutions and replacing them with public mental health services with the aim of reintegrating patients back into the community. The value of sport as a mechanism to aid psycho-physical wellbeing and social inclusion has always been well known. Notwithstanding this, there has been a scarcity of scientific literature, in terms of solid theories to prove it. This report intends to present data collected during the SportivaMente project which monitored and evaluated people with psychological disabilities who were under the care of, or associated with, the Mental Health Services in the territory of Milan. The project's objective involved facilitating both psycho-physical wellbeing and social inclusion through three specific sporting activities as therapeutic and rehabilitative "instruments", namely; gymnastics, swimming and football. The purpose of the research was to evaluate a sample group of 55 of 71 participants (40 males and 15 females with a median age of 39) as well as to conduct interviews and group discussions involving the health workers and sports instructors. The evaluation of the participants was judged using three indicators: socialisation, motor skills, and emotional management. The instruments used to collect data at different stages and involving all parties were, presentation grids, observation grids, interviews, self-reporting questionnaires and group discussions. This report presents the principal outcomes of the project summarised in the following three forms: Determination of an hypothesis detailing the intervention for persons with mental health issues via sport. Definition of an hypothesis detailing the participating evaluation of all involved parties for such an intervention. Development.

*Keywords: sport, mental disease, social inclusion, psycho-physical wellbeing*

## Psychological abilities and skills in coaches of disabled athletes

**Jordi Segura, Marian Arevalo (Universitat Ramon Llull)**

The coach's role is important for training athletes and in some sports it is also important for the competition, especially in team sports. The psychological profiles of the handicapped athletes may vary depending on the type of disability. Coaches need to adapt themselves to the necessities of their athletes (Segura, 2016). We present the results of two investigations about the psychological skills of the coaches of handicapped athletes. In the first study we compare the motivation, commitment and values of coaches and swimmers of the paralympic swimming (Arévalo, 2017). It has been interviewed 23 coaches and 77 Spanish swimmers that have answered the questionnaires about values (CVS of Schwartz y Bilsky, 1990), sport motivation questionnaires (SSM of Pelletier et al., 1995; MPAM-R of Ryan et al., 1997) and the commitment to sport (SCQ of Scanlan et al., 1993). The results show that the age influences the differences in commitment and reasons for participation, the type of motivational orientation and the scales of the values of both groups. Therefore, as the age of the swimmers increases there is more difference in the sport commitment. For the second study (Segura, 2017), which has been created from a role perspective, has been used a qualitative method. Up to seven different high performance technicians have been interviewed: wheelchair sports, blind sports, cerebral palsy and mental disability. The purpose of this study has been to identify the psychological needs of their athletes and the abilities of leadership that they may think their athletes need. The results show that the coaches must have the same abilities of leadership than the rest of coaches, along with other

complementary skills in order to be able to help handicapped athletes: emotional management, communication, group relationships and conflict resolution, as well as knowledge about the psychological characteristics of the disabilities.

*Keywords: coaching abilities, motivation, commitment, disabled athletes*

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## The psychological approach to school physical education and competitive sports in a Korean perspective

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**Chair: Jin Hwang (ChonBuk National University)**

It is well known that physical education and sports are one of the most critical area not only to set up pedagogical model, but also to improve performance capabilities. However, the specific contents of the academic approach have not been fully understood. In this regard, a large number of Korean studies have indicated that teachers and coaches' behavior and athletes' personality are significantly associated with various psychological variables. Although much information on physical education and sports and its related psychological factors has been frequently published in the Western countries, the same level of studies carried out in Korea is limited. Recently, an increasing effort has been paid to aim at identifying the broad range of psychological variables of physical education and sports in Korea. The current symposium tries to introduce various research outcomes carried out by different research area. Therefore, I am sure that this symposium will be a very meaningful academic bridge to connect Korean and Western scholars.

*Keywords: Korean, school physical activity, athletic behavior, sport psychology*

## A cross-validity of the athletic identity measurement scale for Korean athletes

**Jung Gil Park (Seowon University)**

The purpose of the current study was to examine the psychometric properties of the Korean version of the Athletic Identity Measurement Scale (KAIMS). The 21-item KAIMS for Korean athletes assesses five dimensions: self-identity, social identity, exclusivity, positive affectivity, and negative affectivity. Participants were 574 adolescents and collegiate athletes (409 males, 165 females), ranging in age from 13 to 23 ( $M=17.42$  years). The analyses proceeded in two phases. First, structural equation modeling was used to test the proposed measurement model in sample 1. Second, multi-group analysis across grades (adolescents vs collegiate athletes) was used to cross-validate the final model. Confirmatory factor analysis using SPSS 21 supported the 5-factor structure ( $\chi^2=1248.15$ ,  $df=179$ ,  $Q=6.97$ ,  $TLI=.913$ ,  $CFI=.944$ ,  $RMSEA=.076$ ). This model demonstrated tight cross-validity in a separate sample of adolescents and collegiate athletes. Invariance of the scale between adolescent and collegiate athletes was not supported ( $\chi^2=35.70$ ,  $df=16$ ,  $p=.003$ ). Properties for future evaluations of the KAIMS include examining the invariance of the model in other population and extending evidence for the reliability and validity of score interpretation.

*Keywords: athletic identity, scale development*

## Relationship between parent interaction and athletic identity among badminton players

**Jihyun Sung (Korea National Sport University), Seunghyun Hwang (Korea Institute of Sport Science)**

The purpose of this study was to investigate how athletic identity of badminton players is developed by interaction with their parents, depending on the parents' Badminton background (i. e., former badminton players). To examine the relationship, the data on athletic identity, perceived interaction with their parents, and demographics was collected from 249 high-school, college and semi-pro Badminton players registered in

Korea Badminton Association in 2016. In results, there is a significant difference in athletic identity. Higher status players had a high level of athletic identity, however parent interaction showed no significance by the players' performance level. Second, parent interaction and athletic identity in badminton family was higher than parent without Badminton background. Third, we found that parent interaction significantly affected social identity development. Family love was a significant contributor of the social identity in Badminton family, while overall support and parental obsession were higher contributors in the other group who had no badminton family. In the significant relationship between parent interaction and negative emotion, communication significantly influenced uniqueness in Badminton family, while family love and parental obsession influenced in the other group. Also, we found a significantly relationship between parental interaction and athletic identity development. General support and parental obsession in Badminton family, and family love and general support in the other group affected the identity development. These results imply that parent support and interaction are key factors of athletic development.

*Keywords: badminton, parent interaction, athletic identity, badminton player family*

### **The cross-cultural understanding on counterfactual thinking between korean and chinese elite swimmers**

***Jin Hwang, Chen Gong, Seung-Hun Kim (ChonBuk National University), Bin Seo (NorthEast Dianli University), Hai-Feng Guo (Henan University of Science and Technology)***

The purpose of this study was to investigate the following questions: First of all, what is the awareness of the function of counterfactual thinking to elite swimming athletes in Korea and China, respectively? Second, Is there any difference in the counterfactual thinking between them? The semi-structured in-depth interviews were conducted with 4 Korean and 4 Chinese 18-to-24-year-old elite swimming athletes. The interviews were recorded and transcribed. Transcripts of the interviews were analyzed inductively using qualitative content analysis based on the Patton(2000). Study 1 results are as follows. Both nations' swimmers regarded counterfactual thinking as a multidimensional regret emotion and all athletes' counterfactual thinking appeared to be a complex interaction of cognitive strategy and emotional satisfaction from failure experience. All swimmers used more up-ward counterfactual thinking than down-ward counterfactual thinking. Study 2 results are as follows. First, Chinese swimmers showed a tendency to be satisfied with the competition result. Second, both nations' swimmers stated that they mostly regret in the practice and competition situations. Third, while Korean swimmers showed ego-oriented upward counterfactual thinking after the competition (e.g. "If only I had practiced more before the competition) and expressed more complaints about coach's strategy, personnel allotment, Chinese swimmers examined themselves and tried to feel satisfaction rather than regretting about the bad result. The result of this study is expected to give the intervention strategy for applying to Korean and Chinese Sports Teams.

*Keywords: Korean, Chinese, elite swimmers, counterfactual thinking*

### **The effect of coach-player interaction on sport passion among badminton players**

***Dongkeun Lee, Duksun Chang (Korea National Sport University), Seunghyun Hwang (Korea Institute of Sport Science)***

This study examined the relationship between coach-player interaction and sport passion among badminton players. A questionnaire on coach-player interaction, sport passion, and demographics was administered to 461 badminton players at various level. For data analysis, t-test, one-way ANOVA, correlation analysis and regression analysis were performed using SPSS 20.0. First, compared to female players, males showed significantly higher in know-how and communication in coach-player interaction, and flow and vitality in sport passion. High school players were significantly higher than college and semi-pro players in know-how,



communication, and belief in coach-player interaction, while sport passion was not found by players' playing level. According to training type, systematic training style showed higher in know-how, communication, belief, encouragement, and technical instruction in coach-player interaction, and commitment and flow in sport passion. In addition to the group difference, Commitment in sport passion was found as a significant contributor of encouragement, belief, and communication. Vitality had a significant influence on communication, know-how, belief, and technical instruction in coach-player interaction. These results imply that coach-player interaction plays a key role in developing sport passion of elite players.

*Keywords: coach-player interaction, sport passion, badminton players*

## **The relationship between teaching and emotions in physical education lesson from the perspective of elementary school teachers**

***Seang-leol Yoo (Gyeongin National University of Education)***

The research was aimed to investigate how physical education teachers think about emotions in their students, including their beliefs about emotions and what they see as the most influential factors in students' successful performance in their physical education lesson. Twenty elementary school physical education teachers (9 female and 11 male) participated in the study and were asked about the relationship between teaching and emotions in their physical education lesson. Their mean teaching experience was 11.86 year (+4.05). In-depth interview, focus group interview, and review of literature were employed to get data. Five other teachers who did not participate in the main research were asked about the same questions to validate the data found in the research. This data matched to the research results found in this research. Data were analyzed thematically by two researchers. Seven emerging statements emerged: (1) Emotions are critically important in most behaviors in physical education class; (2) Emotions are cornerstone in building and sustaining relationships with others; (3) Positive and negative emotions contribute to academic performance in physical education class; (4) Students' self-confidence and task values are deeply related to emotions; (5) Teachers can help students to regulate emotions using relaxation, reappraisal, competence development, and situational change; (6) Teacher's instruction style and emotions have relationship to students' emotions and motivation; (7) Different achievement goals contribute to students' emotions. Physical education teachers can make use of students' varying emotional reactions by identifying the specific tasks and situations that result in them enjoying lessons and help students build their capacity for experiencing positive emotions.

*Keywords: emotions, physical education, self-confidence, achievement goals*

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## **The role of sport psychologists in football academies**

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***Chair: Raimundo de las Heras (C.E.Constància)***

Nowadays there are a lot of Sport Psychologists working in football academies, through our work we complement tactical, technical and physical abilities that athletes develop in their training sessions and matches. Even though each psychology department has different possibilities the final goals are the same: develop values in young athletes (Torregrosa y Lee, 2000), to improve mental skills, optimize performance, develop talent (Larsen, Alfermann, y Christensen, 2012), perceive three basic needs and prevent people from giving up the sport (Deci y Ryan, 2000). To get these goals in academies the sport psychologist usually works directly with players but especially indirectly with coaches and parents because their influence on athletes is enormous (Sousa, Cruz, Torregosa, Vilches y Viladrich, 2006; Smith y Smoll, 2009) In this symposium we will talk about the way to improve mental skills in football during a match or a training session using the model of Soxna Evergrande football academy. How to introduce values in a game model as Levante U.D. does. How the Sport Psychology department at C.E.Constància works with parent and coaches. What are the most important

resources used at R.C.D. Espanyol during an interview with a coach or an athlete. And the importance of developing talent program at A.C.Bilbao.

*Keywords: sport psychologist, football academies, values, performance, awareness, developing talent, parents, coaches, players*

## Cultural integration of Chinese football players in Spain

**Marta Soler (Soxna Evergrande football academy)**

In 2014, the biggest football school in the world, called Evergrande Football School which is situated in Guangzhou (China) decided to work in an ambitious Project with an Spanish company called Soxna. This work is based in the experience but considering scientific studies like this one from (Stanvulova, 2009) that explain the development of the players in a context of sport, academic and cultural domains. The participants are 75 players from all the parts of China, between 13 and 16 years old who are living in Spain for 3 years. The methodology consist on an individual interview with several pictures about different circumstances of their daily life: different food, new language, living far away from home, school, residence, matches, coaches... This way I could detect the more interesting areas for them and the ones where they have more difficulties. After that we talk all together the coaches and the office boss to work through the best way to help them to get used to the new life. The intervention is about exchanging knowledge about their culture so they do also tell us about their festivities, habits and customs. They learn how to cook Spanish food, and how to make spanish friends. But one of the most important things is that they learn how to play spanish football. in the way that coming from an individual and hierarchical civilization is very difficult to learn how to play a team sport like football. The results at the time of two years Project is that the two teams that have played the national Chinese tournament have achieved sub champion position.

*Keywords: ambitious project, mental skills, cultural integration, football*

## Learning football through creating a game model based on values

**David Llopis (Levante U.D.)**

This communication will try to base at theoretical-practical level that the psychological skills of footballers during a match are affected positively or negatively by the game model developed by the team, depending on whether or not that model connects with their values. The values that connect the team are their values and represent the identity that the team wants to transmit. Thus, the closer the model of equipment to the values that the team wants to move the more connected the player will find the game. The methodology that is being used in the LEVANTE UD Football Academy will be presented to bring the game model closer to the identity chosen by each team, through the values that identify each team. In this study participated sixty under 13s players belonging to four football teams of the LEVANTE U.D. Football Academy as well as their coaches. The results show that values can be developed on a football team by connecting them to the game model. From this experience, some important implications for the development of values in sport are described.

*Keywords: psychological skills, values, identity, game model, team*

## Working with the pillars in C.E.Constància

**Raimundo de las Heras Coll (C.E.Constància)**

The environment in the football academies is made up of three main groups: coaches, parents and players. We work with each of these groups separately or together to go in the same direction. We can't forget that sport alone doesn't teach anything specific because it depends on the different people who are involved.

Coaches and parents are the pillars of this process and in this communication we will explain how we try to improve their awareness of their role in the teaching of values and in the emotional management of the children in competitions and in their daily lives. The way to do this is different for each group and we use different methods but the final goal is the same: to improve the psychological wellbeing, optimize performance and prevent people from giving up the sport. Apart from this, working with players individually is useful and how to decide which players to work with is important in our case because we can't work individually with everybody. The results show that the work with parents and coaches is a way to develop psychological aspects in the football academies. In addition this approach has promoted the acceptance of the figure of sport psychologist in the club, this Sport Psychology Department exists since 2003 working each season. (Villalonga, Garcia Mas, de las Heras, Buceta y Smith, 2015)

*Keywords: football academies, coaches, parents, players, awareness*

## The interview as a tool to work

**Jaume Sabaté (R.C.D.Espanyol)**

In R.C.D. Espanyol one of the principal functions the Psychology department has is working with coaches and athletes. The goal of this kind of interventions is to improve the performance. Usually coaches or athletes hope that a Sport Psychologist can solve their problems. If we don't satisfy these expectations they can lose their confidence in our job and with us. What can we do to show that we are the right people to help them? When we talk about psychology work with coaches and athletes we are focused in the techniques that we use, but not always the problem is what the person do. We should try that coaches and players discover how to solve the situation for themselves. The interview can be a good tool to teach them these resources. However, what is important to be successful in this kind of interviews?

*Keywords: the interview as a tool to work*

## When we talk about developing talent, what are we talking about?

**Maria Ruiz (Athletic Club de Bilbao)**

One of the most difficult tasks as coaches is to help players to grow both professionally and personally, because: 1. When we go to work in a high performance club where the focus is the development of talent, we can not start thinking that with our experience as players or as coaches that is enough. Developing talent compels me to go beyond my competence. It demands much more than what we know. 2. The development of talent is something unfinished. If we feel experts in condition we are limiting the development of the player. Because then I will be working from the idea that I know everything and therefore I'll teach you. 3. Developing talent is a collective task. Sometimes, there is a coach or a director who has a long-term vision to develop players. However, the development of talent is something deeper, is a macro encompassing reflection in within organization. 4. In the development of talent there are no shortcuts, it is a long and mostly through self journey. If you want a real change, we must choose the hard way. Because there are no shortcuts in this trip, this is refer to magic solutions, motivational videos, slogans, quickfix solutions... Often this involves the transformation of the culture of a football club and it first go through personal transformation. Regarding environment changes, we should first start changing ourselves. What it really develops the potential of people is Interaction, in this case the interaction between Players and Coaches. And that means, that the more development the coach has the higher quality interactions with the players will take place. Because within this interaction is where learning emerges. The power of coaches is held on their knowledge, in the efficiency on their relationships and on their taking mature actions in the training session and competition.

*Keywords: coaches, players, developing talent, collective task*

## Symposia Session 9. (10.30-12)

### Psychological intervention with parents and coaches of young athletes

**Chair: Fernando Gimeno Marco (Zaragoza University)**

The characteristics and consequences study in parents and coaches interaction, as well as the appropriate psychological interventions to improve this interaction, has been one of the Sport Psychology research lines that has undergone a significant development in the last decades. This symposium presents several studies about motivation, expectations and perceptions of parents and coaches, their consequences on young athletes such as sport drop out, as well as interventions aimed to prevent risk behaviors in young athletes (e.g. antisocial and unsportsmanlike behaviors, drug use) through their coaches and parents as prevention agents.

*Keywords: coaches, parents, young athletes, motivation, expectations, risk behaviors, sport drop out*

### Drug use and unsportsmanlike behaviors integrated prevention with young athletes through coaches and parents

**Fernando Gimeno Marco (Zaragoza University), Héctor Gutiérrez (San Jorge University), Alfredo Sáenz (País Vasco University), David Lacambra (Aragon Tennis Federation), Patricia Villanueva (Sport psychologist), María Jiménez (Sport psychologist), Carlos Peñarrubia (Zaragoza University), Óscar Saura (Sport psychologist), Milagros Ezquerro (La Coruña University)**

Tobacco and use drugs in young athletes is an important health problem and it's associated with antisocial behavior, particularly with unsportsmanlike and violent behavior. For this reason, the study of their prevalence and the "integrated prevention" of these risk behaviors with the involvement of coaches and parents it's of particular importance. Participants were 171 coaches from soccer teams grassroots (players between 14 and 17 years old), with at least the coach basic certification and one year of experience. All of them completed a survey informing about their experience with athletes who used drugs. 50% had in their team athletes who used drugs; and of this group, 38% took some action to prevent drug use. 7% of athletes who used drugs their coaches reported that they also had antisocial and unsportsmanlike behavior. The prevention strategies used by this group of coaches emphasize communication with athletes parents', and another direct actions with the athletes who used drugs and the team. This study show the important contribution of coaches to the risk behaviors prevention with young people (drug consumption and unsportsmanlike behavior), but also the need to train with them social skills to manage the interaction between athletes and their parents.

### Influence of parents and coaches in developing comprehensive youth athletes

**Montserrat Vallejo (Sport psychologist)**

Many young athletes fail to develop their full potential by the absence of proper planning of your progression as athletes and as people. This lack of foresight leads us to find cases of young talents who pointed a promising future and who leave early, not by lack of qualities but because their sports or family environment has not been able to provide the stability needed to properly address every stage of the learning process necessary in the infant sport of competition. These athletes, are doomed to premature abandonment, being the main cause the continuous excessive demand for sports or family environment, focused primarily on objectives of short-term outcome, without better planning or vision of the future that the here and the now, to remain among the best in its category, regardless of priority aspects such as adequate learning skills or emotional stability, that allows them to have a good psychological functioning. This excessive and inadequate demand by the sports or family environment, causes that young athletes should feel unable to properly handle

the stress inherent in the competition, to receive an evaluation focused exclusively on the results achieved, preventing them from developing the perception of control needed to be able to assimilate the victories and defeats in a balanced and constructive. In this work we review the latest research carried out, exposing the reasons causing the premature abandonment in young athletes and the intervention that we must carry out to prevent and avoid such abandonment.

*Keywords: sport children, abandonment, parents, trainers, objectives, psychological intervention*

### Perception about the parents of young athletes: Results of a survey

**José María Buceta, Andrés López, M<sup>a</sup> Carmen Pérez-Llantada (UNED University), Cristina Fink (Mexican Olympic Committee), Montserrat Vallejo (Sport psychologist)**

With the aim of obtaining information about the perception that we have of the parents of young athletes, it conducted a survey between the months of February and April 2014. After a first pilot trial, involving 212 people with training in sports psychology, were drawn up the final versions of the survey in English and Spanish. Both versions were accessible via the internet, and were disseminated through social networks and e-mail. Those interested answered online of way anonymous. The survey included 31 statements related to the behavior of the parents of young athletes and their environment, with four answer options to express the degree of agreement/disagreement with each one of them. The statements were grouped into six categories: support parents to athletes, information/expectations of parents, communication/cooperation of parents with coaches and others, emotional Parental Control, parents pressure their athletic children, comparison between fathers and mothers, The total sample was of 1506 people composed by: parents of athletes (553), coaches (481), psychologists of sport (101), productivity (67) sports, umpires (63), spectators (37) and others (239). Is made an analysis in each an of the categories describing is the results for each an of them.

*Keywords: young sportsmen, parents of athletes, sport psychology*

### Study on the motivation of the parents of athletes

**José María Buceta), Andrés López, M<sup>a</sup> Carmen Pérez-Llantada (UNED University), Montserrat Vallejo (Sport psychologist), Margarita Cerviño (Sport psychologist)**

What are the reasons why the parents want their children to practice sport? Surely there is more than one; and it is very likely that the main reason why go changing depending on the circumstances which are present throughout the sporting career of the boys at each time. In order to better understand these reasons, we elaborate a questionnaire of motivation that in Spain and Mexico, completed mothers and fathers of young athletes whose only connection with the sport was that. Parents of athletes who also develop features such as managers, coaches, referees, sport psychologists or other they did not participate. 259 of young sportsmen, of which 166 are mothers (64%) and 93 parents participated in the study (35%) with a mean age of 42,75 years. The questionnaire consists of 35 items. Parents must respond to the statement "what motivates my son does sport is..." indicating their degree of motivation by using a scale of 0 to 10. The items are grouped into seven categories of reasons: enjoyment of the son, health/safety, personal growth, socialization, sporting success, share with the ego of the father and the son. Data analysis compared the average scores of participants depending on the different variables considered: parents; Spain / Mexico; They have made sport/not have made sport; the son is girl/boy; 9anos/10-14años/15/18 years; individual Sport / Sport Group; level sporting son, according to the parents appreciation, low/medium/high. The results confirm that the motivation of the parents of young athletes is a fundamental factor to allow these to do sport.

*Keywords: young athletes, parents of athletes, motivation, psychology of sport*

## The importance of expectations in training stages of athletes

**Ícía Eraña (European University)**

Despite advances in the last 30 years in sport psychology training, when we are working in the training stages of an athlete, there is still great confusion about the purpose and the way of applying psychology. Every time you start before to practice sports, being the parents who decide many aspects and those that accompany the competitions. In team sports, the coach makes many decisions and it is not always oriented towards the integral development of each player. In individual sports, the development of a player is not only to plan training for the development of physical or technical characteristics, but to have a good orientation towards competition, respect the times, adjust expectations and communicate and team work with parents as well as with the players. That is, to favor a social and emotional context that supports the load that the competition entails, as well as guarantee a good development of psychological abilities, that they serve, besides for his sport race for the rest of his life. This, when one of the goals of the technician is to keep that job, is very complex. Hence, the application of psychology in the beginning and formation must be more focused on preventing and guaranteeing a good development context rather than intervening on a specific variable, which is most often conditioned by the context itself Of the player. Taking into account the results of previous studies on grounds for abandonment (Cervelló, 2002); The importance of the perception of personal ability in the onset of burnout (Gould and Weinberg, 1996); The impact of having realistic expectations about one's own performance and a good social and family context (Raedeke, Lunney and Venables, 2002).

*Keywords: expectations, self- steem, burnout*

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## Applications of football psychology: proposals and experiences

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**Chair: Santiago Rivera Matiz (Centro Excelentia)**

This symposium will introduce different proposals and experiences in the application of football psychology. The first work will address the coaches' role as trainers of people, which will deepen their ability to transmit confidence, self-motivate, identify their weaknesses and be a good trainer. The second work will address the role of the physical trainer when training psychological skills through field tasks, and offers proposals to form integrated players. The third will revolve around the creation of the sports psychology department in a professional club, and shares the experiences and challenges it faces in the academy and the professional team interventions. The fourth paper presents the psychological work carried out on a women's team and will comment the details of the intervention, such as the psychological variables trained, the particularities of the context and the difficulties faced. Finally, the last work will deepen the concept and effective application of coaches' leadership, taking into account the predominant models in sports psychology and the author's experience working with coaches of all competitive levels. In short, this symposium will offer different points of view on how to apply football psychology in different contexts, in addition to the challenges that each of them meant for the authors.

*Keywords: football psychology, psychological training, coach, physical trainer, leadership, female football*

## Personal strengths of football coaches: how to shape the integral trainer

**Santiago Rivera Matiz (Centro Excelentia)**

The paper addresses the factors which relate to the development of the potential of the coach as one integral to training footballers, through the use of positive psychology (Seligman, 2000). These are weaknesses identification, credibility development, training of individuals and selfmotivation (Rivera, 2016). It is going to be explained who we understand that is the coach and integral trainer, which should be its goals and the difficulties that he finds to avoid putting his personal interests before of those that benefit the players and



teams. Likewise, the aspects that compose each personal strength and the most relevant demographic characteristics associated with them will be detailed. Finally, suggestions on how to help to develop football coaches' personal strengths are provided.

*Keywords: sports psychology, football coach, weaknesses identification, credibility development, training of individuals, selfmotivation*

## **Development of psychological skills in specific game situations: analysis of technical performance in young players' competition**

**Juan Martín Tassi (Club Estudiantes de la Plata)**

The objective of this work is the propose how can the physical trainer use game situations during training sessions in order to incorporate psychological objectives and contents associated to individual and collective performance. The search for new training tools from the coaches along with the training and the demands of high performance, poses a complexity in young soccer players' training. It supports and develops at the same time, questions under a glance that takes into account the importance of the psychological and social characteristics for the improvement in personal training and sports performance (Garcia, Marcos, Sánchez, Jiménez & Cervelló, 2008). This demands, in turn, training and commitment from coaches and physical trainers in the recognition of contexts linked to the game from the psychological point of view. Record it under the glance associated with the integrated psychological development in relation to the game situations, will favour the development of strategies to be implemented during specific field-specific training tasks (Morilla y Gómez, 2009). Which are the tools that coaches and physical trainers have in both the management of psychological situations and the integrated planning? The association and development of psychological skills in relation to game situations will have objectives on the design such as: 1) attention and concentration trained through situations in tight spaces with the manipulation of the number of companions, type of opposition, modification of rules and the use of the ball; 2) aggressiveness and competitiveness through reduced situations, in numeric equality and short performance spaces; and 3) extrinsic and intrinsic motivation through situations of competition in tasks (result indicators). Within this framework we will analyse if the training of the psychological abilities through the integrated methodology improves the technical performance of young players during the competition.

*Keywords: competition, performance, psychological skills, game situations*

## **Experiences in the sports psychology department of a professional football club in Colombia**

**David Mora, Edwin Lopez (Azul y Blanco Millonarios F.C.)**

When the psychology department was created, since 2016 in Millonarios FC, a psychological intervention plan was established with the professional team and the academy. The importance of strengthening player's psychological skills consist in that they will learn how to face different transitions in their sport's career. This allows them to establish a life project, answer properly to situations of soccer environment and context (p.e. Anxiety, stress, decision making, attention, motivation). In order to structure the psychological skills training program, the club's history, goals, values and game identity were considered as well as player's needs. For the professional team intervention is made developing a sports record for each player, then identifying if the intervention needs to be immediate assistance or if it will consist of an improvement of psychological tools. With the assistance, first we listen, analyze, identify the needs, feedback and monitor behavioral improvement. In the improvement process, first the psychologist, player or coach identifies a flaw, then analysis and training is made, and finally come monitoring process. On the other hand, in the academy teams, the intervention program involves players, their parents and coaches, With players first a sports record is made, then individual

and group needs are identified and finally training workshops are taught to enrich their psychological development. This turns out into a better performance on the field. Along with parents, through workshops, information is given in order to orientate them in their kid's upbringing as athletes; with coaches an advice is made in skills, behaviors, leadership and finally tools are provided to improve their training method. All these interventions create an environment which develops players in an integral way. The main goal is to make the psychologist role a fundamental figure in players and coaches development and performance.

*Keywords: Azul y Blanco Millonarios F.C., intervention, diagnosis, academy teams, psychological training, football players*

## **Main psychological variables trained in a female heterogeneous soccer team in adverse conditions**

**Galatea Cristaldi (SOLCPAD)**

The presentation is based on work done with a female soccer team belonging to the Womens Major League from the State of Mexico. In order to improve performance, the following variables were worked (Weinberg & Gould, 2007): 1) Team cohesion; 2) Communication between players and coach; 3) Coach Leadership; 4) Individual skills and abilities in handling emotions; 5) Role differentiation; and 6) Injuries. Within professional soccer economic driven motivation is an undeniable fact and must be considered when working with a team. In the case of female soccer, where economic benefits do not exist or are low, motivation has to be focused on an individual basis, in order to efficiently work with such a team. The low support received by female soccer, a male influenced sport, (Roffe & Jozami, 2010) had been just one of the problems that we had to deal with. Adverse conditions consisted of: 1) no fix and own place to train; 2) players having to pay for the field to train; 3) long distances to train field and matches; 4) players between 13 and 30 years old; 5) personal relationships (couples and parents within team members); 6) different nationalities and languages; 7) high rotation of players within the team; and 8) problems and inconstancy train all together and individual situations with dysfunctional family environment. According to needs detected and taking into account competences schedules, season's goals, characteristics of players, time and facilities available, it was decided to work once a month with the team for 1 year and carry out 1 session weekly during two months before the National Competence (i.e. a total of 18 sessions). The sessions took place before and after matches and were focused on teamwork and individual players' coach's or staff's situations. A team with these heterogeneous natural forces the sport psychologist to have a high capacity of adaptation (Dosil & Garcés de Los Fayos, 2008) necessary to ensure efficiency at work.

*Keywords: female football, heterogeneous, psychological variables, adversity*

## **Leadership in regards to soccer coaches: performance optimization model**

**Marcelo Roffé (SOLCPAD)**

There are a number of theories and approaches to describe the leader (Roffé & Riccardi, 2016). It is someone who guides, drives, motivates and communicates, he holds both empathy and firmness and based on the previous possesses followers; and soccer holds a special place among all sports, as it is considered the "king of sports", where a large number of individuals want to make a living of it, either as a player and/or elite trainers, but few actually achieve this. Following the theory of Bass (1985), we will work with 3 leadership approaches, the transformational, the transactional and the laissez faire. We will also include emotional intelligence (Goleman 1995) as a superior quality of every leader and the multidimensional model from Chelladurai (1980). We will choose the transformational dimension and the inspirational subdimension where the leader motivates towards achieving teams' goals. A session with the trainer/leader seeks to especially develop new ways to motivate. The methodology of this intervention it's focused on the preparation of the

competition and consists of: 1) chose key words or concepts for the game according to the strategy and speech chosen; 2) select one or more videos that promote the understanding of these key words for the pre-party session and 3) write poster with texts chosen together with the leader or selected by himself to consolidate the message. They are placed in rooms, in common places and in the dressing room prior to the competition. From that perspective and relying on a 22-year experience acquired in youth, junior and professional football, as well as elite level with teams, we will analyze observations and will look at a case that illustrates this view. We will do so both for trainers and for the teams' captains, as well as the choice and legitimacy of these on behalf of the trainer. The case we will relate to "trainers that fail as reference", seen on "forming the leader of a team" from Roffé & Riccardi (2016).

*Keywords: football, leadership, style, coach, sport psychology*

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## **Re/building sport psychology through localized approaches: An ISSP Symposium in memory of Bola Ikulayo (1948-2016)**

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**Chair: Tatiana V. Ryba (University of Jyväskylä, Finland)**

This symposium is organized to honor the outstanding contribution of Professor Philomena Bolaji (Bola) Ikulayo to international sport psychology and the ISSP. For many, Bola was an iconic figure who transgressed numerous gender, racial, geo-political, and other boundaries by repeatedly becoming first in her class. She founded the Sports Psychology Association of Nigeria and became its first president in 1985, organized the master's level course of sport psychology at the University of Lagos, became the first female chair of the Nigerian Sports Associations and the first African sport psychologist accredited at 1988 and 2000 Olympic Games. Bola was active in many international scientific and professional organizations, including serving 20 years on the ISSP Managing Council. Grounded in Bola's visionary spirit, the presentations comprising this symposium aim to perpetuate her legacy of re/building sport psychological science that aligns with local histories, values, and cultural practices. The first speaker is a former student of Prof Ikulayo, who will discuss the use of African indigenous dance in psychological support of Nigerian female athletes. The second presenter will provide a brief overview of Latvian sport psychology and drawing on her applied work with the football national team, will share insights of rebuilding sport psychology practices in the new context of an independent state that regained its sovereignty in 1991. The third presenter will introduce his collaborative research on pre-game rituals in Ghana, which is inspired by Bola's pioneering work on psychological aspects of African ritualistic cultural practices. The fourth speaker will present the educational aspects of sport psychology in Ukraine and continuous efforts of delivering quality psychological support to athletes and teams in current political climate. Our concluding discussion will draw on all four presentations to exemplify the importance of developing one's unique localized practices.

*Keywords: ISSP history, cultural sport psychology, cultural praxis, emerging practices*

## **African indigenous dance as an alternative management of emotional disorders among Nigerian female athletes**

**Athanasius Nwanegbo Amasiatu (University of Port Harcourt, Nigeria), Okonkwor Oby (Nnamdi Azikiwe University, Nigeria)**

Bates (1988) has defined psychological disorders as physical, mental, chemical reactions to certain negative circumstance that frighten, excite, confuse, endanger or irritate the body system of individuals' behaviour. The Nigerian negative disposition towards women in competitive sport coupled with unique problems of power uncertainty, inflation, dwindling economy, insecurity, tribal and religious conflicts appear to promote emotional problems. Nigerian women in sport had faced enormous challenges, which pose many

psychological problems on female athletes. Four common psychological disorders (stress, anxiety, depression and phobia) are identified in this presentation. Alternative application of African indigenous dances has been proposed for the management of these disorders as discussed in this paper. Earlier trials of this approach with Nigerian athletes have been found to be successful. The main purpose of this paper is to identify specific causes of the psychological disorders among Nigerian female athletes and propose the use of African indigenous dance as a technique to managing the disorders. Recommendations were made towards implementation of this approach.

*Keywords: African indigenous dance, female athletes, mental health, Nigeria*

## **Sport psychology in Latvia: A scientist-practitioner perspective**

***Irina Simonenkova (Private practice, Riga, Latvia)***

The year 1991 when Latvia regained its independence, was also the year of establishment of national psychological science. In 2004, the Latvian Association of Sport Psychologists was founded to unite people studying sport psychology. In the initial six years, the Association regularly organized educational seminars for psychologists, members of sport federations, trainers and athletes of various sports, and invited experts from the ex-USSR countries and also from Finland and Sweden. Latvian football clubs and the National Football Federation demonstrated a particular interest towards sport psychology. Under the UEFA and FIFA support, sport psychologists were engaged in educating and licensing Latvian football coaches. From 2006 to 2013, the National Football team employed a permanent full-time sport psychologist. Latvian sport psychologists mainly apply methods and practices that combine European (Western) and Russian (Soviet) approaches. The key difference between these approaches lies in the interpretation of the sports psychologist's function in the team structure; namely, the latter approach emphasized the importance of psychological follow-up service in sport, while the former one – psychological intervention. The rationale for combining these two approaches is prompted by reality; some sports continue to use the Soviet training system for athlete preparation, as there is an obvious lack of Latvian sources in sport psychology, and adapted diagnostic tests and questionnaires. Drawing on my experience working with athletes and coaches of a Latvian Higher League football team, I will provide an overview of Latvian sport psychology over 25 years and also try to identify some factors that hinder its development. Nevertheless, professional commitment of sport psychologists, a strong interest showed by parents of young athletes, and the advent of a new generation of coaches and athletes give grounds for much optimism about the future of Latvian sports psychology.

*Keywords: sport psychology, professional practice, Russian and European approaches*

## **Integrating pre-game rituals and pre-performance routines in a culture-specific context: Implications for sport psychology consultancy**

***John Elvis Hagan Jnr, Thomas Schack (Bielefeld University, Germany)***

Common unorthodox pre-game rituals are prevalent in sports, especially football, in Ghana and other Sub-Saharan states. Literature on how to draw valuable insights from these superstitious rituals to optimize sport performance is sparse. This presentation highlights the conceptual differences between pre-game rituals and pre-performance routines based on scientific descriptions, empirical studies, and particular field observations. We then present the determinants and theoretical underpinnings of these ritualistic behaviors. The main aspect of our presentation focuses on the manifestations of pre-game rituals in different forms during preparatory phases prior to competitive fixtures. We conclude by revealing how sport psychology consultancy could tap into some of these unique ritualistic cultural practices by incorporating them as part of formalized pre-performance routines. Additionally, suggestions are made regarding possible future research using an intervention approach to empirically test the functions and efficacy of these localized practices.

*Keywords: superstition, rituals, routines, 'Jama', efficacy, Ghana*

## Educational aspects of sport psychology in Ukraine

**Georg Lozhkin (State Scientific-Research Institute of Sport, Ukraine), Andriy Kolosov (State Scientific-Research Institute of Sport, Ukraine)**

Applied sports psychology is one of the leading spheres of the psychological science due to its direct influence on athletes' mind. The immediate and deep connection of psychological research with practice allows sports psychologists to maintain keen interest in their work. At the same time, it becomes more and more clear that because contemporary sport is so intense, it is extremely difficult to sustain performance without serious study of athletes' psychic functions and psychological qualities, virtues, and personalities. The specialized preparation of sports psychologists in Ukraine began in 1994 at the National University of Physical Education and Sports. To specialize in sport psychology, students with the bachelor degree can apply to the master's program, after which the most successful ones continue their scientific activity at the postgraduate level. Up to now more than 150 specialists have been prepared. One of the most successful approaches to the preparation of sports psychologists was the involvement of world class athletes in the research, permitting a summary of their sports experience by means of psychology. Moreover, these athletes (e.g., Valeriy Borzov, Sergey Bubka, Vitaliy Klitschko, Vladimir Klitschko, and Oksana Omel'ianchik) conducted their doctoral research at the department too. The next important task of sport psychology development is to create state certification standards for coach-psychologists, establish the practice of licensing certified persons to assure quality psychological support for athletes, and to provide the systematic organization and management of various aspects of psychological support and preparation of qualified sportsmen and sportswomen.

*Keywords: applied psychology, masters degree, post-graduate, coach-psychologist*

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## Updating the state of the art of the Caribbean and South American sport psychology

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**Chair: Marcelo Roffé (SOLCPAD)**

The present symposium shares the path Sport Psychology has taken since its first steps in Latin America, mainly in the case of Cuba, Argentina, Mexico and Chile: to date, highlighting the institutions, associations and people who contributed to the development of said field. Future challenges and prospects are being posed. It includes the history of the relationship between the psychology of sport and football soccer, specifically in Argentina and Mexico. PSYCHOLOGY AND FOOTBALL IN ARGENTINA: HISTORY OF A COMPLEX RELATIONSHIP Marcelo Roffé key Words. Story, soccer, Argentina, development HISTORY OF SPORTS PSYCHOLOGY IN MEXICO: FROM THE FIELD TO THE LABORATORY Claudia Rivas Key words: History, sport psychology, Mexico, development, 4 decades. HISTORY OF SPORT PSYCHOLOGY IN CUBA Francisco Enrique García Ucha Key Words. 35 years, Cuba, psychologists, interventions, athletes, coaches, competitions. HISTORY OF SPORT PSYCHOLOGY IN ARGENTINA Lic. Raúl Barrios Key Words. Sport, Psychology, university, curriculum, sports, psychologist, Argentina UPDATING THE STATE OF THE ART OF THE CARIBBEAN AND SOUTH AMERICAN SPORT PSYCHOLOGY Paula Ortiz M. Key Words. Chile, psychologist practices, university, curriculums, story

*Keywords: sport, psychology, Southamerica, story, present, future, challenge*

## Psychology and football in Argentina: History of a complex relationship

**Marcelo Roffé (SOLCPAD)**

The insertion of the psychologist in Argentina was not. The development of sports psychology had an irregular growth during many years, accelerating notably for the last few decades. To understand this process, we have to keep in mind, among other factors, the socio-economic factor and the roots and progress of the country in psychology. It's also important to highlight that this discipline has been developed in this South American nation almost exclusively by psychologist, without marked influences of other sport sciences like physical education, kinesiology, human movement, motor development, as it occurs in other countries (Lopez García y Garcés de Los Fayos, 2002; Weinberg y Gould, 1999). So, an investigation in 2005 estimated that it's the country with most psychologists in the whole world, with a relationship of a psychologist on every 649 habitants (Alonso, 2005), and with a strong tradition for football, counting as one of the cities of the world with more stadiums for more than ten thousand people (36 stadiums). In this study, we'll analyze the why's and will make a recount of the most important works, made in the last 25 years on this sport until we get to the actual situational diagnosis, showing the slow but efficient progress on the work field on youth football as well as professional football, regardless of the observed deficits in the football-psychology relationship.

*Keywords: history, soccer, youth, professionals, Argentina, development*

## History of sport psychology in Cuba

**Marcelo Roffé (SOLCPAD), Claudia Rivas (ISSP, SOLCPAD, AMPDYAF), Francisco Garcia Ucha (SOLCPAD)**

Sports psychology comes to Cuba in 1960, as one of the first in Latinamerica with the exception of Brasil. It starts on the graduate school of physical education "Manuel Fajardo", and later on the institute of sports medicine. It had the collaboration of socialist countries. It emerged with other sport sciences in the effort of developing and consolidating the Cuban sports movement as an additional force that contributes to ensure the educational process on the athlete, and results of the training and the competition. For more than 35 years, Cuban psychologists have participated with athletes and coaches in international and national competitions. The contributions are on the development of a model of psychological preparation for the competitions, the application of the historic and cultural focus, the results of research on motivation, emotions, self-worth, mental training, tactical thinking, use of the experimental method, precaution on the transition to retirement of the athlete, psychological rehabilitation of injuries, psychological intervention on teams, efficiency on the job of the multidisciplinary team. It contributes to the development of the specialty on more than ten countries.

*Keywords: 35 years, Cuba, psychologists, interventions, athletes, coaches, competitions*

## History of sports psychology in Mexico: From the field to the laboratory

**Marcelo Roffé (SOLCPAD), Claudia Rivas (ISSP, SOLCPAD, AMPDYAF)**

"Those who do not know their past are condemned to repeat it" (Espinosa). For good or for bad, history defines us, it sets a course, knowing the past leads us to new horizons, learning from the successes and mistakes made in that past. As in many Latin American countries – and most of the world - the history of Sport Psychology is very recent, which allows us to get to know the actors that step by step and sometimes in a tumult, have managed to consolidate this branch of psychology in our lands. In Mexico since the late 60's attempts were made to apply principles of psychology (general and clinical) in the sports field, specifically in soccer, being until 1973 with the participation of Dr. Octavio Rivas and René Sánchez Sinencio in the Club of the first division of Pumas of the UNAM when a formal, structured and documented work in this area is achieved. A brief tour is going to be given, of the various stages of this history that begins from the psychology of applied sports, in the field of sports, to the present moment with a better balance between research, training and the development of specialization and master programs, to the current fieldwork of Mexican sports psychologists in virtually all sports. A descriptive and anecdotal method that shows these stages their successes and the



learning they have left will be used. Four decades of psychological work in our country will be presented, as well as the current challenges.

*Keywords: history, sport psychology, Mexico, development, 4 decades*

## History of sport psychology in Argentina

**Raul Barrios (SOLCPAD)**

Sports Psychology in Argentina has developed a lot in the last 20 years, both in the insertion of Sports Psychologists in the professional field as in training spaces. Right now, we are many the psychologists that are found working, whether it is in on diverse sports academies or giving counseling to individual athletes. From the institutional field, The football clubs are the ones with bigger demand; as, to the individual counseling, there is not a sport of preference, though we could say that tennis and football are the sports in more need of a psychologist. The insertion is given in both high performance and amateur athletes. As to spaces of training, there are two institutions that are lighthouses: The faculty of Psychology at the University of Buenos Aires, and APDA, Association of Psychology of Argentine Sports, this one with more of 20 years dedicated to the training of Psychologist specialised in sports. At the Faculty of Psychology, the subject of Sports Psychology, is part of the curriculum of the Bachelor Degree in Psychology with 25 years of existence. In the Faculty of Psychology, the subject of Sport Psychology, is part of the degree curriculum of the career in Psychology as an elective subject, as in the Universities of Palermo, Belgrano, and Maimonides. In the University of Flores, the subject (of Sport Psychology) is mandatory in the Psychology Degree. A certification course has been held in Mendoza with the support of APDA in 2013. Regarding other specialties, it is good to underline that the course of Sport Management of the University of Tres de Febrero, the course to be a soccer coach of the Association of Technicians of the Argentine Football Futbol (ATFA) and the soccer specialty for Argentine Footballers (APEFFA) have this subject as mandatory, as well as the annual specialty of the Argentine Sports Traumatology Association (AATD) and the specialty.

*Keywords: Sport, Psychology, university, curriculum, sports, psychologist, Argentina*

## Updating the state of the art of sport psychology in Chile

**Paula Ortiz (SOLCPAD)**

In the last 18 years, Chile has had an exponential quantitative increase of sports psychologists, mainly dedicated to the practice, and also a qualitative improvement in the level of specialization. In 1999, 9 psychologists were working in a formal way, and already in 2004, 50 professionals were registered. At the level of work performed in high performance, in the High Performance Center, there are three psychologists in a stable way, and the Chilean Olympic Committee has counted on psychologists as important part of the teaching staff in training courses for the regional training centers as federations and trainers of different sports. The Ministry of Sport was created in 2013 with the objective of promoting public policies in relation to the development and maintenance of sport at the level of performance, recreation, school and athlete's career. At the formal training level, it is not until 2004 that the first course of university specialization in Sports Psychology is created at the University Diego Portales together with the University of the Balearic Islands of Spain and the following year the first person graduates. Currently, Chile has two programs of Magister (Central University and Bernardo O'higgins University), one post and three graduates. At the organizational level, there are two separate associations in terms of vision and personal proposals: The Chilean Association of Sports Psychology and the Chilean Society of Sports Psychology. As for research, there is no record with all sports psychology publications in scientific journals, which constitutes a challenge and a work proposal. There isn't a formal register of professionals working in the area and in which sports, or those who work and who are really trained for it. It would be very interesting to know from history, which of our outstanding athletes have had

psychological support formally and as part of their training. This becomes an important task to be undertaken, both for responsible

*Keywords: Chile, psychologist practices, university, curriculums, story*

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## **Global efforts in developing credentialing systems for sport and exercise psychologists: Four organizational perspectives (AASP, FEPSAC, EFPA, and ISSP)**

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***Chair: Artur Poczwadowski (University of Denver, USA)***

As the field of professional practice in sport, exercise, and performance psychology grows, the issues of education, training, and supervision are continually being addressed. Similarly, with the greater public awareness of and need for sport psychology services, professionals and organizations around the world are carefully developing credentialing systems. In this symposium, The European Federation of Sport Psychology (FEPSAC), the Association for Applied Sport Psychology (AASP), the European Federation of Psychologists' Associations (EFPA), and the International Society of Sport Psychology (ISSP) will be detailing their respective efforts in establishing sound, inclusive, and rigorous credentials of international scope. The first presenter will discuss the processes and tentative outcomes of FEPSAC's initiatives to introduce a new certification system in Europe. For example, a clear delineation between competencies to consult on performance versus mental health issues is one of the cornerstones of their model. Next, two AASP representatives will be focusing on the first exam-based certification, which is a shift from a portfolio credentialing that the organization had in place for the past 25 years. The third presentation will address the most recent developments in credentialing sport psychologists in Europe through EFPA and their recommendations for specialty-focused education and undergoing a supervision in the specialty-focused practice. Finally, the fourth presenter will offer a summary of ISSP's progress in developing an international registry that is meant to facilitate development of sport psychology around the world, especially in regions and countries that have a clear need for it. The symposium will close with an exchange of mutually supporting observations and points of constructive criticism, that will be facilitated by a discussant's opening remarks and monitoring of the conversation flow.

*Keywords: certification, accreditation, international trends*

## **The FEPSAC certification for specialists in applied sport psychology**

***Karin Moesch (Swedish Sports Confederation, Halmstad University, FEPSAC), Anne-Marie Elbe (University of Copenhagen, FEPSAC)***

A main goal of the currently elected Managing Council of the European Federation of Sport Psychology (FEPSAC) is to establish certification guidelines for specialists in applied sport psychology. These guidelines are to define the minimum standard for practitioners in the field of sport psychology - who can have an initial qualification background in either psychology or sport science - that must be met to qualify for professional independent practice in the field of applied sport psychology. This certified practitioner should be able to plan, execute and evaluate sport psychology counselling for mentally healthy athletes who aim to enhance and optimize performance and wellbeing. This excludes work with athletes who suffer from mental health problems, whilst being aware that the line between performance enhancement and mental health issues is not an obvious one (see Roberts, Faull & Tod, 2016). Up until now the members of the FEPSAC MC have analyzed and evaluated the certification systems of different European countries and discussed the topic with individuals and organizations with expertise in certification and education in applied sport psychology. Based on the outcome of these discussions, the MC put forward criteria that need to be met by practitioners in order to be able to receive the FEPSAC certification. These criteria relate to four areas, namely: (a) higher education qualification; (b) specialization in sport psychology; (c) supervised applied practice; and (d) commitment to

European and FEPSAC values. During the presentation we will outline these four areas in more detail and further describe the progress FEPSAC has made with regard to implementing its certification system. The goal is to have the certification system running by 2019 preceded by a pilot phase in 2018.

*Keywords: certification, accreditation, international trends*

### **AASP certification: The critical move to an exam-based credential**

**Jack Watson (West Virginia University, USA), Angus Mugford (Toronto Blue Jays, Canada)**

The Association for Applied Sport Psychology (AASP) first developed and implemented its certification program (Certified Consultant – Association for Applied Sport Psychology; CC-AASP) in 1992. Since that time, over 600 individuals have been certified using a portfolio review and 400 hours of mentored practice to determine an individual's readiness to work as a performance enhancement consultant in sport, exercise and performance psychology. In 2011, AASP President Jack Lesyk constituted the Future of Certification Ad Hoc Committee and charged it to review the current certification program and make recommendations for modifications and improvements. One of the most important recommendations was a move to meet the accreditation standards of the National Commission for Certifying Agencies (NCCA), requiring the development of an exam that all individuals wishing to become or remain certified would need to pass. Over the past two years, an exam as well as initial eligibility and recertification requirements have been created and a new certification program will be formally rolled out in October 2017. While this new certification will initially be focused on the practice of sport psychology in North America, a future goal would be to extend this certification program internationally. The purpose of this presentation is to provide an overview of the development and implementation of AASP's new certification program, while also discussing the perceived impact on the practice of applied sport psychology.

*Keywords: certification, accreditation, international trends*

### **EuroPsy: European accreditation for professional sport psychologists**

**Enrique Cantón (University of Valencia, Spanish General Council of Professional Psychologists, Sports Division Coordinator), Alexandre Garcia-Mas (University of the Balearic Islands, Spanish General Council of Professional Psychologists)**

The European Federation of Psychologists' Associations (EFPA) builds a credentialing system for the professional psychologist certification and accreditation based on the EuroPsy concept, which is the European qualification standard for practicing psychologists. EuroPsy supplements national standards and helps the public to identify whether a psychologist can be considered competent to practice in a particular area of psychology. This presentation will focus on summarizing the major objectives and principles that have guided this process. Since as early as 2010, EuroPsy has awarded credentials to psychologists who meet a list of educational and professional requirements. Specifically, the Areas of Practice well defined within the EuroPsy standards are: (a) clinical and health psychology, (b) industrial and organizational psychology, and (c) educational psychology. Sport psychology (SP) as another Area of Practice is well expected to be included in 2017. By following additional specialty-focused education and undergoing a supervision in the specialty-focused practice, a psychologist can become qualified as specialist in the designated area. Currently, the types of specialist expertise recognized by EuroPsy are psychotherapy and industrial and organizational psychology. Regarding the EuroPsy certification, there are three main foundations for being accredited as a professional in the SP area: (a) formation, (b) regulated practice, and (c) supervision. What needs to be noted is that besides the EuroPsy regulation, there are big differences among the participating countries regarding the enforcement capabilities for the EuroPsy regulation.

*Keywords: certification, accreditation, international trends*

## ISSP progress in introducing international credentialing: Processes, challenges, and emerging solutions

**Artur Poczwadowski (University of Denver, USA), Gangyan Si (Hong Kong Institute of Education, Hong Kong)**

One aspect of the mission of International Society of Sport Psychology (ISSP) involves professional practice: "The Society exists to: ... (c) improve the quality of research and professional practice in sport psychology." In applied sport psychology (ASP), there are only national and regional certifications; and yet, the zeitgeist is one of internationalization, unification, and collaboration. It is envisioned that ISSP Certification (ISSP-C) or ISSP Registry (ISSP-R) will respond to increased international mobility of both sporting clients and consultants. ISSP-C/R aims at adding to the visibility and credibility of the profession internationally and augmenting the professional standards; thus, ultimately enhancing the experience of those receiving sport psychology services around the world. The focus is to support those countries, in which ASP is at a developing stage in pursuing higher professional standards. This presentation outlines details of a 4-year collective effort to establish internationally recognized credentials defining the minimum standard of sport psychology practice. A non-statutory system (either certification or registry) was considered to avoid many inter-nation issues and due to the limits of ISSP resources. Second, the goal was not to develop one global system, but rather a system of relatively balanced criteria that reflect the needs of the different regions of the world. Third, it was more practical and feasible for ISSP to focus only on sport psychology consultant/practitioner area, with the goal to include exercise psychology in a later future. After considering credentialing models in 13 countries and one regional organization, proposals of minimum criteria in the areas of degrees earned, fields of specialization, amount of applied work, amount of supervised practice, and continued education were formulated. This presentation will detail the emerging proposals to be piloted, tested and refined in the next six years.

*Keywords: certification, accreditation, international trends*

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## Sport Performance enhancement through various psycho-physiological and psycho-motor training

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**Chair: Jayashree Acharya (Lakshmibai National Institute of Physical Education, Gwalior)**

Basically there are three "domains" of learning – cognitive, affective and psychomotor, each of which is organised as a series of levels or pre-requisites. Psychomotor learning is one of the three domains, or broad categories, of educational behaviors. It is based on manual or physical skills, and includes fine and gross motor dexterity, coordination, and movement. The focus is on physical and kinesthetic forms of learning. Where as in psycho-physiology it is the integration of mind and body for the effective preparation of training and performance strategies of athletes. The purpose of the symposium is highlighting the various training modalities to improve upon performance through various psycho-physiological and psycho-motor training. To achieve this objective number of research in various areas were integrated and explored to measure cognitive, affective and psycho-motor tasks by applying advance equipment and training modalities with the help of Vienna test system (VTS), sensobalance, EMG and quick board. The research undertaken were: to compare the coordinative and proprioceptive abilities between hockey players and footballers; analysis of selected physiological variables on psychomotor functioning of athletes under stress; assessing cognitive power and heart rate against selected quick board drill for athletes; an investigation of muscle activation while performing fine motor task among badminton players and finally the effects of psychological training on performance of track and field athletes. Research and applications of this kind of sciences of sports help us to understand the movement physiology of the human body and thought processes, thus emphasizing on psycho-physiological phenomenon. The results of all the studies indicated an integration of mind and body for achieving excellence in performance. The finding will be discussed by each group of presenters.

*Keywords: psycho-physiology, psycho-motor, training , VTS*

### **An investigation of muscle activation while performing fine motor task among badminton players**

**Anshuman Mishra, Jayashree Acharya, Jaiprakash Bhukar, Nibu R Krishna (Lakshmibai National Institute of Physical Education, Gwalior)**

Muscle activation is a result of the effort of muscle but the relationship between EMG activity and effort is only qualitative (De Luca, 1997). EMG enables us to record muscular activity, and it is often advisable to carry out a synchronized cinematic measurement. The objective of the study was to investigate between the fine motor task and muscle activation of the groups of muscles (brachioradialis and wrist flexors) among badminton players. Ten players in the age group of 18 to 24 years with a mean & SD of  $20.5 \pm 1.84$  were tested on photo electric rotary pursuit for fine motor task, where the motor speeds were fixed to 30 revolutions per minute (RPM) for 60 seconds. Procomp Infiniti –two channels C & D was used for measuring muscle activation of the muscles groups while performing the task. The mean and SD of muscle activation while performing fine motor task in brachioradialis and wrist flexors of the participants were  $35.86 \pm 3.2$   $\mu$ V microvolts and  $20 \pm 4.47$  microvolts. The obtained t (18 df) value was 9.122,  $p = .000$ . A statistically significant difference 0.86 (95% CI, 12.21 to 19.51) was found. The mean and SD of the time on target; time off target and number of target hits were  $40.88 \pm 5.61$ ;  $18.22 \pm 5.09$  and  $63.2 \pm 10.65$  respectively. Pearson's product moment correlation indicated strong negative correlation between the time on target & time off target, ( $r = -0.824$ ) and strong positive correlation between number of target hits and time off target ( $r = -0.719$ ). The results may be owing to the fact fine motor task requires less than the absolute maximum available for the muscle activation, hence the performance on that task will be independent.

*Keywords: EMG (Electromyography), photoelectric rotary pursuit, badminton*

### **Analysis of selected physiological variables on psychomotor functioning of athletes under stress**

**Nibu R Krishna (Lakshmibai National Institute of Physical Education, Gwalior), Ashutosh Acharya (Government College of Physical Education, Bhubaneswar, Odisha), Vivek Pandey, Jayashree Acharya (Lakshmibai National Institute of Physical Education, Gwalior)**

Cognitive psychology emphasizes on the study of internal processes associated with processing information leading to task mastery. Psychomotor performance skills typically include production of motor actions and recognition of environmental conditions that trigger actions. The present experiment was to compare the selected physiological variables (heart rate, respiratory rate) prior to and after administering determination test (Form S-5) of 11 minutes with three subset in reaction mode (DT-number of correct stimuli, number of incorrect stimuli) as a measure of stress tolerance with the help of Vienna Test System (VTS). Fifteen male athletes were selected at random in the age group ranging from 18 to 24 with a mean & SD of  $21.47 \pm 1.45$  years. A paired-samples t-test was applied to determine mean difference of heart and respiratory rate. The mean and SD of pre observation of heart and respiratory rate of the participants were  $69.4 \pm 3.09$  beats/minute and  $17 \pm 1.93$  breaths/minute. The mean and SD of post observation of heart and respiratory rate of the participants were  $101.47 \pm 6.16$  beats/minute and  $26.2 \pm 3.19$  breaths/minute. The obtained t(14df) value of 30.189,  $p < .0005$ ,  $d = 7.80$  for heart rate and for respiratory was 18.78,  $p < .0005$ ,  $d = 4.84$ . There is a statistically significant increase of 1.06 (95% CI, 29.788 to 34.345) for heart rate and 0.49 (95% CI, 8.15 to 10.25) for respiratory rate was noted. Further Pearson's product moment correlation was applied to find the relationship between pre & post mean differences of heart rate and breathing rate along with the

determination test scores that was found insignificant. The present finding may be owing to the reason that the level of sensory stress is different for respondents with differing reaction speeds as per the test criteria.

**Keywords:** determination test, VTS, Heart rate, Respiratory rate

### Comparison of coordinative and proprioceptive abilities among selected team games

**Gayatri Pandey, Vivek Pandey, Dilip Kumar Dureha (Lakshmibai National Institute of Physical Education, Gwalior), Ashutosh Acharya (Government College of Physical Education, Bhubaneswar , Odisha)**

Dynamic balance is one of the greatest physical predictors of athletic success which is measured by proprioception and coordination (BMS 1.0, 2008). Balance exercises facilitate proprioception pathways under competitive circumstances effectively (Hanney, 2000) and possibly reduce the time between neural stimuli and muscular response (Zachazewski et al., 1996). This research compares the coordinative and proprioceptive abilities of hockey and football players. Thirty randomly selected male (15 each), age ranged between 17 to 23 years with a mean & SD of  $20 \pm 1.15$  years acted as subjects. Foot eye coordination and proprioception were assessed by using the sensbalance software v2 system where the subjects were asked for controlled and precise movement along the front-back & left-right axis and in proprioception, test was conducted in two parts (to move to a target point with visual feedback & without visual feedback). Hand-eye coordination was assessed by Vienna test system (Test form S1- 10 minutes). The two sample t-test was applied and level of significance is set at 0.05. The mean and SD of hockey and football players on foot-eye coordination were  $6.89 \pm 1.80$  &  $4.03 \pm 1.20$ ; on proprioception  $8.16 \pm 3.54$  &  $8.95 \pm 5.43$  and on hand-eye coordination were  $27.53 \pm 7.22$  &  $19.20 \pm 2.84$  respectively. The obtained t value in foot-eye coordination and hand-eye coordination is 5.10 and 3.71, which is greater than the required value of 1.70 at 0.05 (28 df), thus signifying the difference between hockey and football players. No significant difference was observed in the factor of proprioception  $t_{0.05}(28) = (.470)$ . The above findings clearly indicate that the footballers were better on foot-eye coordination where as hockey players had an upperhand in hand-eye coordination. Proprioception as an ability is required by both the sport group athlete thus signifying the requirement of the nature of sport.

**Keywords:** coordinative ability, proprioceptive ability, team games

### Effects of psychological training on performance of track and field athletes

**Jaiprakash Bhukar, Indu Bora (Lakshmibai National Institute of Physical Education, Gwalior), Shailaja Mohan (Lakshmibai National College of Physical Education, Trivandrum), Gayatri Pandey (Lakshmibai National Institute of Physical Education, Gwalior)**

Mental skills training have been recognized as an effective method to enhance the psychological component of physical movement, (Driskell, Copper, & Moran, 1994; Feltz & Landers, 1983). Mainly mental skill training has developed from the necessity of the athlete to learn more about their individual mental life to allow a degree of control in coordinating effective movement through various psychological states of performance (Martens, 1987; Rushall, 1992). The present experiment was conducted to find out the effect of a mental skill training program on the performance of four track & field athletes. Hardy and Nelson's mental skills Questionnaire (1996) that has six sub factors i.e imagery ability, mental preparation, self confidence, anxiety management, concentration ability and relaxation ability was adopted as a measure during baseline (pre-training phase) and after treatment (post-training phase). Along with the mental skills, their performance was recorded. The study was of single subject design. During the intervention phase of 8 weeks, training module of mental skill program with the help of vienna test system (VTS) in the parameter of sustained attention (DAUF), visual pursuit (LVT), visual memory (VISGED) & determination test (DAUF) was specifically designed for each athlete. It was observed that all the athletes had improvement in their mental skill scores in comparison to pre-treatment phase. Mental skills training techniques can be grouped into two basic categories,



that is cognitive and somatic methods. In the present experiment stress was given to cognitive method to enhance the mental development of the athlete. Detail discussion with regard to each athlete will be presented during the symposium.

**Keywords:** mental skill training, goal setting, imagery, baseline phase, treatment phase

### Testing of cognitive power and heart rate against selected quick board drill for athletes

**Jayashree Acharya (Lakshmibai National Institute of Physical Education,Gwalior), Shailaja Mohan (Lakshmibai National College of Physical Education,Trivandrum), Indu Bora, Anshuman Mishra (Lakshmibai National Institute of Physical Education, Gwalior)**

One of the most formidable tasks for the brain of an athlete during a play is to perceive and integrate complex moving patterns while allocating attentional resources in different key areas. Athletes integrate the information over variable visual field areas. The movements of the players and the object of play can be extremely unpredictable. Reviews suggest that measures for cognitive performance is lacking in literature. The objective of the study was to test the visual memory and heart rate before and after taking the Quick board drill. Twelve male athletes were selected at random, the age ranging between 20 to 24 years (mean  $\pm$  SD: 18.42  $\pm$  1.38). Vienna Test System was used for measuring visual memory (S1 test form –screening type for 15 minutes duration) and heart rate was recorded prior to and after administering X-Hop quick board reaction drill. The pre and post data of visual memory; number of items worked & heart rate are 0.89  $\pm$  0.45, 16.5  $\pm$  2.65 & 70.17  $\pm$  3.21 and 1.23  $\pm$  .64, 13.67  $\pm$  2.30 & 138.58  $\pm$  2.07 respectively. The paired t-test for visual memory; number of items worked and heart rate is 3.72; 5.45 and 92.05 at t (11df),  $p < 0.05$  that is statistically significant. The mean of parameter VISGED  $\theta$  (respondent's visual short term memory) showed improvement from 90th to 95th percentile. The finding reveals that X-hop drill had a significant effect on the cognitive faculty and heart rate, but further no correlations were found between the difference of pre-post visual memory variables and difference of heart rate. The visuospatial memory includes visual perception of spatial relationships among objects and it depends on the research designs. Howsoever, the present findings suggest that cardiovascular exercise improves visuospatial short-term memory which is in consonance with findings of Roig et al., (2013).

**Keywords:** X-hop drill, visual memory ability, heart rate

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### Psychosocial processes in competitive and interactive sports

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**Chair: Erkut Konter (Dokuz Eylül University)**

This symposium represents contemporary research examples in recreational and competitive sports with mostly open motor skills (soccer, futsal, volleyball, handball, water polo, and table tennis). Each study seeks to uncover particular psychosocial processes (e.g., courage, leadership, psychological preparation, mental practice, achievement motivation, and performance anxiety). Study one examined sport courage with a validated scale including 5 subscales (mastery, determination, assertiveness, venturesome and sacrifice behavior) in relation to personal (age, education, BMI), social (income) and performance (participation level) variables with a survey method. This study indicated a number of significant differences. Study two investigated athletes' leadership of Brazilian college teams (basketball, volleyball, handball and futsal) according to leadership styles and personal characteristics with a sociogram method. The results showed that the Brazilian university leaders were characterized by the style of motivational and social leadership. Only 30% of the leaders were the captains in their teams. Study three took an applied perspective related to psychological preparation of the Croatian national water polo Olympic team which won a silver medal in Rio Games. The psychological preparation process was organized on different levels including team-building as well

as working with athletes, coaches, and other related experts within the team. Study four investigated the effect of mental and physical practice on learning motor skills in volleyball with an experimental method. The results revealed that by 12 weeks of mental practice and physical practice was an effective technique to improve performance in volleyball. Study five examined motivational profiles and performance anxiety in recreational and competitive table tennis. The findings suggested five motivational profiles that were related to performance anxiety and competition levels in table tennis.

*Keywords: courage, leadership, achievement motivation, mental practice, psychological preparation, performance anxiety*

## Courage profile of female soccer players in relation to individual, social and performance variables

**Erkut Konter (Dokuz Eylül University)**

There is almost no research related to courage in female soccer although soccer is regarded the most popular sport in the world. Therefore, the purpose of this study was to investigate the courage profile of female soccer players in relation to individual, social and performance variables. Data were collected from 210 female soccer players aged 12 to 27 ( $M=17.97 \pm 3.34$  yrs.). Female soccer players were administered the "Sport Courage Scale-31" (SCS-31) including 5 subscales (mastery, determination, assertiveness, venturesome and sacrifice behavior) with good validity and reliability scores (Konter & Ng, 2012) and the personal information form to collect data. Collected data was analyzed by Spearman correlations, various parametric and non-parametric tests, and revealed a number of significant ( $p<.05$ ) differences. Spearman correlation analyses indicated significant results between the SCS-31 factors and measured individual (age, education, body mass index), social (family income) and performance (level of participation, being selected and non-selected national team) variables. Results of the SCS-31 in relation to indicated variables revealed a number of significant differences. For example, extroverted female soccer players have significantly higher points of mastery, determination, assertiveness and total SCS-31 scores than introverted female soccer players. In addition, non-substitute female soccer players have significantly higher points of mastery than substitute female soccer players. Moreover, a number of significant differences were found that related sport courage factors and family income, religious beliefs, learning preference, playing positions and injury. More research is needed to have more certain results.

*Keywords: courage, females, soccer, individual variables, social variables, performance*

## Characteristics of athletes leadership of college sports teams in Brazil

**Victor Cavallari Souza, José Lino Oliveira Bueno (University of São Paulo - Brazil)**

The study of athletes leadership brought another perspective which was historically focused on the role of the coach in team's members. Recent studies showed that the leadership exercised by athletes is relevant to understanding the dynamics of the sports team, process of group cohesion, satisfaction and team performance. The aim of the present study is to characterize the athletes' leadership of Brazilian college teams, according to leadership styles and personal characteristics. The study included 30 men's and women's teams of basketball, volleyball, handball and futsal of the University of São Paulo, totaling 364 athletes. During the team's training, the researcher applied a Sociogram questionnaire adapted to identify the team leader, resulting in two groups, 14 women and 16 men. Attached to the Sociogram questionnaire, participants were asked to answer some questions about their involvement with the sport and with the university. After this stage, field observations were conducted during the training sessions. Furthermore, the researcher recorded with a camera the behaviors of the leaders during competition games on university campus. The results showed that, regardless of gender, the Brazilian university leaders are characterized by the style of

motivational and social leadership. Only 30% of the leaders were the captains of the teams, which confirms data from the literature. In addition, 90% of the leaders were in their third or fourth year of graduation, which shows that college experience is relevant to building leadership in the group. No relationship was observed between the position of the athletes and the leadership for any modality, which shows that social interactions are determinants for this process.

*Keywords: athlete leadership, college athletes, basketball, volleyball, handball and futsal*

## **Process or outcome: How to make a balance? Psychological preparation of the Rio Olympics water polo silver medalists**

***Renata Baric (University of Zagreb)***

Elite athletes dedicate several years preparing themselves for highest-level competition as Olympic Games, where nuances are crucial and everybody are trying to neutralise all factors that could, besides training, influence the final results. Psychological preparation helps elite athletes to optimize their performance. The aim is to present sport psychology interventions provided to Croatian national water polo team, former Olympic champions, during 3-months, before the Rio Games. Psychological preparation process was organised in eight 3 to 5 days cycles during preparation period, firstly with wider selection, and progressively with less players. Initially, detailed evaluation of team and each player was conducted. According to the results obtained psychological preparation process was organised on three levels with an important framework – to keep their focus on process instead on desired results only that was not an easy task due to previous Olympic results they wanted to confirm again. The first level included team-building program following 4 CO model: commitment, cooperation, cohesiveness, concentration. Second level included individual work with athletes, primarily oriented toward arousal regulation techniques by learning relaxation, breathing exercises and biofeedback, but also to individual issues. On third level sport psychologist worked intensively with a coach and whole expert team within individual consultations, workshops and daily meetings. Some psychological techniques were practiced on the pool, during or after training (concentration and relaxation exercise), implemented into conditioning or regular training sessions. Permanent team-work on training and competition goals and disciplined use of certain key words by all participant helped to keep the focus on process. Good collaboration with the coach and his will to change himself according to initial evaluation, and significant increment of group cohesion forcefully helped the process.

*Keywords: psychological preparation, olympic games, team building, individual consultancy, arousal regulation, waterpolo*

## **Effect of mental and physical practice on learning motor skills in volleyball**

***Pothula Madhusudan Reddy (Physical Director National Institute of Technology Warangal, India)***

The comparative effect of mental and physical practice on learning motor skills of volleyball was studied by carrying out experiments with randomly selected men subjects. They were divided into three equal groups of 30 each named as group of mental practice, physical practice and control group. The subjects were administered mental practice and physical practice for duration of 30 minutes over a period of 12 weeks. The AAPHER volleyball skill test was selected as criterion variable to test the skills ability of subjects for the experiment. Mental practice and physical practice methods were found to be significantly better in improving learning motor skills i.e., volleying, serving, passing, and setup in comparison to control group. The effect of mental practice and physical practice methods on the learning rate in the motor skills of volleyball at periodic interval of first 2 weeks of duration of an experiment revealed that there was no significant improvement in any of the skill mentioned above due to mental practice, physical practice and control group. However significant improvement was found in all the skills performance due to mental practice and physical practice

methods, from 4th week onwards. The findings revealed that there was no periodic significant improvement in volleying and serving due to mental practice method between the 4th week and 6th week, 6th week and 8th week, 8th week and 10th week, and 10th week and 12th week. However, periodic significant improvement was noticed in passing and setup skills due to mental practice method between the above mentioned training phases. The findings also revealed that there was no significant improvement in learning of motor skills of volleyball neither over a period of 12 weeks duration nor at a periodic interval of 2 weeks duration in the case of control group. The 12 weeks of mental practice and physical practice was effective method to improve performance and learning rate in motor skills of volleyball.

*Keywords: mental practice, physical practice, volleyball, motor skills*

## **Motivational profiles and anxiety in table tennis players: Differences across competition levels**

***Tsz Lun (Alan) Chu (University of North Texas, Texas, USA)***

Motivational profiles, based on self-determination theory (Deci & Ryan, 1985), are useful heuristics that predict psychosocial outcomes among athletes. Although motivational profiles have been recently studied in table tennis players, the investigations were limited to elite young athletes in Europe (Martinent & Decret, 2015; Martinent et al., 2014). More research across genders, ages, cultures, and competition levels are needed in order to understand the potential differences in motivational profiles among different groups. In addition, sport anxiety (i.e., somatic anxiety, worry, and concentration disruption) is an important psychosocial outcome of sport performance to study, which is related to motivation. The primary purpose of this study was to examine the motivational profiles and their frequency across competition levels (from recreational to international). The secondary purpose was to examine the relationships between motivational profiles and anxiety by competition level. Participants are 200 table tennis players, most of which are from the United States and China, with a small number from Canada, an European country, or an Asian country (other than China). They completed validated questionnaires that assess motivation for table tennis, sport trait anxiety, competition levels, as well as demographic information. A hierarchical cluster analysis was used to examine the motivational profiles in the sample. Inspection of the agglomeration schedule and dendrogram suggested a five-cluster solution, namely, “high autonomous motivation” (32.5%), “balanced motivation” (27%), “low intrinsic motivation” (18.5%), “low extrinsic motivation” (16%), and “high controlled motivation” (5%). These profiles demonstrated relatively positive profiles in the majority of the table tennis players. The associations of the profiles with anxiety and competition levels will be discussed in detail in the symposium. The findings reveal the importance of considering competition levels.

*Keywords: table tennis, achievement motivation, performance anxiety, competition level*

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## **Critical perspectives on exercise is medicine**

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***Chair: Toni Williams (Leeds Beckett University)***

Based on extensive research on the relationship between exercise and health, exercise as a form of medicine is a powerful concept of growing popularity within healthcare, academia and policy. Proponents of this exercise is medicine movement, frame exercise and physical activity as a panacea for a variety of health issues and duly call upon individuals to take responsibility for their health becoming more active. This symposium adopts a critical perspective towards the theory and practice underpinning the exercise is medicine concept. We bring together a series of cutting edge presentations that draw upon extensive research across various clinical populations; including people with rheumatoid arthritis, spinal cord injury, depression and youth who have experienced trauma. This symposium will address two main concerns related to exercise as a

form of medicine. First, we argue for a more nuanced approach to exercise promotion and prescription for health and well-being across different populations. Through rigorous analysis of participant experiences, we will highlight potential negative side effects of exercise as medicine and identify how for some people exercise can be an unobtainable commodity. Second, we will emphasize the need for critical appraisal of the research used to guide evidence-based medicine and physical activity recommendations for clinical populations. Methods drawn upon to appraise the research will include the systematic review and meta-synthesis of qualitative research and meta-analysis of randomized controlled trials. The symposium will conclude by offering academics, interventionists and health care professionals alternative reflective and ethical strategies to promote and prescribe exercise and critically appraise research.

*Keywords: exercise is medicine, clinical populations, evidence-based medicine, critical appraisal, theory, practice*

### **Dances with wolves: If exercise becomes medicine, how might the medicines respond?**

**Panteleimon Ekkekakis (Iowa State University)**

In the past quarter-century, Evidence-Based Medicine (EBM) has become the backbone of medical education and the framework upon which the development of clinical practice guidelines is based. Within the EBM model, randomized controlled trials (RCTs) and meta-analyses of RCTs are recognized as the main types of research evidence. In an idealized EBM scenario, for exercise to be introduced in clinical practice for the treatment of a particular disease, three steps would be required: 1) multiple, high-quality RCTs should be summarized in a meta-analysis, 2) guideline development panels should appraise the evidence and conclude that the inclusion of exercise in clinical guidelines is warranted, 3) the guidelines must be disseminated to medical practitioners, who should implement them. Although steps 1) and 2) have been completed for several diseases, implementation remains limited, in apparent violation of EBM. The processes contributing to this phenomenon remain poorly understood. The presentation will focus on lessons learned from the introduction of physical activity as a treatment option for subthreshold, mild, and moderate depression within the National Health Service (UK). As with other diseases, in the case of depression, a (mostly) non-commercialized option was introduced in a market always dominated by commercial, for-profit options. Given the economic ramifications, it is reasonable to expect tension but the exact manifestations of this tension have not been studied. Evidence will be presented illustrating efforts to 1) corrupt the evidence base by introducing biased RCTs and meta-analyses in the medical literature, 2) utilize the mass media to create doubt and confusion among medical practitioners and the public about the strength of the evidence. The presentation will conclude by emphasizing the need for exercise science curricula to sensitize students to the reality of bias in medical research and prepare them to critically appraise RCTs and meta-analyses.

*Keywords: evidence-based medicine, randomized controlled trials, meta-analysis, depression, bias, critical appraisal*

### **Exercise is medicine: Extending the metaphor to include biomedical ethics**

**Anthony Papathomas, Emily Hunt (Loughborough University), Brett Smith (University of Birmingham), Toni Williams (Leeds Beckett University)**

The term “exercise is medicine” has attracted criticism for its imperfect correspondence to pharmaceutical understandings of what medicine is. Notwithstanding these critiques, accepting that exercise does possess medicinal qualities actually presents new and as yet unconsidered problems. If exercise has a role to play in the treatment and management of chronic ill health, its use must be held to the same ethical standards as traditional medical practices. Yet, few exercise interventions incorporate due ethical consideration in a medical sense. As part of a broader program of ongoing collaborative research, we collected semi-structured interviews on the physical activity experiences of participants from a variety of clinical populations.

Participant perspectives were deductively analysed according to Beauchamp and Childress' (1979) 4 pillars of biomedical ethics: a) respect for autonomy, b) non-maleficence; c) beneficence; and d) justice. Participants described exercise experiences that fulfilled each of the four ethical pillars. In contrast, some participants told stories about exercise that contravened biomedical ethical obligations. Further, the complexity of chronic illness dictates that although an ethical pillar is fulfilled in one time and context, it may not be fulfilled in another time and context; non-maleficence can quickly become maleficence. In conclusion, exercise is mostly good and good for most; but not always and not for all. Letting go of dogma in favor of more nuanced, reflective, and ethically scrutinized forms of exercise promotion may lead to more efficacious, person-sensitive interventions. If exercise is medicine, there is a case for both academics and interventionists to reflect on how we might begin to prescribe it in an ethical way. The 4 pillars model, in conjunction with alternative ethical positions, may support ethically minded exercise psychology.

*Keywords: medical ethics, physical activity, clinical populations*

## **Experiences and perceptions of sport and movement-based activities for those enduring trauma during their youth: A systematic review and meta-study**

**William Massey (Concordia University Wisconsin), Toni Williams (Leeds Beckett University), Alexis Geiger (Concordia University Wisconsin)**

Proponents of the exercise as medicine movement often focus on the positive affects exercise can have on both physical and mental health outcomes. However, one overlooked area pertains to the role of sport and movement based therapies for individuals who experience trauma. Current evidence of effective therapies for trauma survivors remains inconclusive for both sport based therapies (Lawrence et al., 2010) and various psychological treatments (Gillies et al., 2016). Given the inconclusive nature of experimental evidence, it is necessary to understand the complexities of utilizing sport and/or movement based therapies from the perspectives of trauma survivors themselves. The purpose of this study was to conduct a qualitative meta-study to examine the extant literature exploring the experience of trauma survivors in sport and movement based activities. A comprehensive search of 10 health and social science databases (e.g., SCOPUS, Web of Science, PsychInfo, SPORTDiscuss) yielded 7,247 records. After titles and abstracts were screened 28 articles were included. Additionally, 17 journals were manually searched from 2000-2017 and content experts were contacted for papers. This resulted in an additional 24 studies. Two authors independently screened the full text of each article, resulting in a final sample of 13 studies. Meta-study methodology was drawn upon to systematically analyze the final studies. Meta-theory involved the critical exploration of theoretical frameworks and paradigmatic assumptions. Meta-method comprised a critical examination of research design, methodology and method. Meta-data analysis included a critical interpretation of the analysis and findings of each study. Lastly, the synthesis stage brings the analysis together to offer new interpretations and identify implications for future qualitative research. Findings are discussed in relation to the potential opportunities and pitfalls when utilizing sport based interventions with trauma survivors.

*Keywords: Youth, trauma, sport, qualitative research, meta-study*

## **The exercise is medicine narrative: When alternative stories matter**

**Toni Williams (Leeds Beckett University), Brett Smith (University of Birmingham), Anthony Papathomas (Loughborough University)**

The exercise is medicine narrative tells a story of improved health and well-being through continued engagement in physical activity (Papathomas et al., 2015). Following serious chronic injury and illness, the exercise is medicine narrative depicts an idealistic approach whereby participants are exercising for ailment relief, health maintenance and illness prevention. Linked to a powerful long-term commitment to living an



active lifestyle, the exercise is medicine narrative is the meta-narrative within rehabilitation and community settings. The aim of this study was to critically explore the storied experiences of physical activity participation for people following spinal cord injury (SCI). Data was collected through semi-structured interviews and participant observation with 10 clients with SCI, and 5 trainers, during an intensive exercise program known as activity-based rehabilitation. Following a thematic narrative analysis, three central themes were constructed. These were: 1) exercise beyond medicine 2) exercise as a commodity and 3) exercise for pleasure. Taken together, these themes illustrate how the exercise is medicine narrative depicts an overly romantic story of exercise participation. For example, when medicine is perceived as the art and science of healing, stories of exercise participation can speak of cure, and restitution, rather than health and well-being. Furthermore, exercise can become a commodity for people with SCI, one which some can purchase, while others cannot. Lastly, the exercise is medicine narrative – with a focus on the medicinal benefits of exercise – may not motivate those who want to exercise simply for pleasure. Thus, healthcare professionals, academics and policy makers need to take a more critical approach to exercise promotion by addressing possible adverse consequences and barriers to exercise. Furthermore alternative stories of exercise should be promoted if others are to ‘buy in’ to a physically active lifestyle.

*Keywords: narrative, spinal cord injury, physical activity, rehabilitation, community*

## The negative side effects of exercise as medicine: Understanding the patient experience

**Melissa Day (University of Chichester)**

Exercise is hailed as ‘the long sought after drug needed to prevent chronic disease and extend life’(Sallis, 2015, p.23). Yet while exercise undoubtedly plays a valuable role in the prevention and management of a range of conditions, the negative side effects of this ‘drug’ have not been well considered. Instead, exercise has often been uncritically promoted and prescribed, without detailed consideration of patients’ experience. While the psychosocial and environmental barriers to exercise in range of health populations have been well deliberated(Hefferon et al., 2013), we often neglect to consider the difficulties of participation. Consequently this talk focuses on the patient experience of participating in exercise as a form of medicine, drawing from interviews with populations who have suffered physical trauma (e.g.elderly fallers, amputees, cardiac patients). Each of these participant groups had been recommended exercise as part of their recovery, with most taking part in hospital exercise rehabilitation. During individual interviews participants were asked to reflect on their exercise experiences. While all participants described the valuable role played by exercise in the recovery process, they also highlighted that participation itself could act as a catalyst for negative experiences. Participant descriptions highlighted how commonly reported strategies for coping with trauma (comparison processes, self-blame and responsibility, meaning making) could be experienced negatively in the exercise environment. Further, descriptions also revealed how the medical model underpinning exercise as medicine encouraged participants to view successful rehabilitation as a return to pre-trauma baseline rather than considering how they may continue to improve beyond their previous levels of functioning. To conclude, we should be wary of uncritically promoting exercise and should better prepare for the potential negative patient experiences brought about by this popular ‘drug’.

*Keywords: patient experience, exercise, physical trauma, coping, cardiac rehabilitation*

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## Identifying personal and contextual motivational factors to change behaviour in different performance settings

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**Chair: Nikos Ntoumanis (Curtin University)**

We present five papers that illustrate different ways in which motivational factors, both personal and situational, have been targeted in efforts to understand and/or change behaviour engagement in different performance settings. The first presentation outlines two projects (including a large cluster RCT) examining the role of coach motivational strategies in predicting indices of athletes' motivation, willingness to dope, and doping use in Australia, Greece, and the UK. The second presentation outlines provides qualitative evidence of the appeal of professional sport (Australian Football League) as a setting to engage overweight and obese fans in a weight loss programme. It will also present a pilot study, which builds upon these findings to train community coaches in motivational communication strategies that can effectively motivate AFL fans during the programme. The third presentation will present qualitative and quantitative evidence of what older adults perceive to be ideal peer leader characteristics. Such peer leaders will then be trained in effective communication strategies to act as walking ambassadors in a motivationally embellished walking intervention (clustered RCT) in residents of retirement villages in Australia. The fourth presentation discusses motivational mediators of a digital intervention tool aiming to promote self-determined exercise motivation in Swedish adults. The fifth presentation discusses the stressor experiences over a 10-week period in a sample of infantry personnel from an Australian Army unit who were preparing for deployment. A variety of factors including motivational (proactive goal regulation) are tested as mediators of some of the effect of stressor exposure on work engagement in this longitudinal survey. The five studies provide diverse methodological evidence (RCTs, surveys, interviews) from diverse populations with regard to the role of motivation in explaining behavioral engagement, adherence, and physical/mental health.

*Keywords: motivation, physical activity, interventions, weight management, goal regulation, doping*

### **Coach interpersonal styles of communication and athletes' willingness to dope: Cross-cultural evidence**

**Nikos Ntoumanis (Curtin University), Vassilis Barkoukis (Aristotle University of Thessaloniki), Susan H. Backhouse (Leeds Beckett University), Amy Dyer (Curtin University), Laurie Patterson, Lisa Whitaker (Leeds Beckett University), George Pavlidis, Stella Kaffe (Aristotle University of Thessaloniki)**

The first comprehensive meta-analysis of psycho-social predictors and outcomes of doping in sport by Ntoumanis et al. (2014) revealed that very few studies in this area were interventions. Those that did exist were athlete-centered, yielded only small changes in attitudes towards and intentions to engage in doping, and had no effect on doping behavior. Surprisingly, there is no published intervention study in the doping literature that has trained coaches to promote an anti-doping motivational environment by focusing on their behaviors and how they communicate with their athletes. Drawing from self-determination theory (Deci & Ryan, 2000), we present the results of two projects examining the role of coach interpersonal styles of communication in predicting indices of athletes' motivation, willingness to dope, and doping use. The first project was a longitudinal study of 205 Greek athletes from the beginning to the latter part of a sport season. The findings from a structural equation modeling analysis showed that perceptions of controlling coaching communication style were positive indirect predictors of continued doping use across the season via psychological need frustration, moral disengagement for doping, and endorsement of cheating. The second study comprises a large clustered randomized control trial currently taking place in Australia, the UK and Greece. This is a coach-focused intervention aiming to increase coaches' need supportive communication styles, reduce controlling communication styles, and foster coaches' efficacy to discuss anti-doping matters (targeted age 14-18 years). The primary outcome of this trial is athletes' willingness to take substances that might be prohibited. We will test the effects of the intervention over 12 weeks and at a 3-month follow-up. In the symposium, we will present preliminary findings from this project; data collection is currently on-going.

*Keywords: coach motivational strategies, doping, cross-cultural*

## **Aussie-FIT: Evidence of the need for and appeal of the Australian version of the Football Fans in Training (FFIT) Program for overweight and obese Aussie Rules Football (AFL) Fans**

***Eleanor Quested (Curtin University), Kate Hunt, Cindy Gray, Sally Wyke (Glasgow University), Suzanne Robinson, Deborah Kerr (Curtin University), Philip Morgan (University of Newcastle, NSW), Robert Newton (Edith Cowan University)***

Obesity is the second highest contributor to burden of disease in Australia. Men aged over 45 are particularly at risk with 79.4% being overweight or obese. Most men in Australia, however, lead inactive, sedentary lifestyles with low levels of physical activity (PA). Moreover, Australian males are more likely than females to eat a diet that is unhealthy and likely to lead to weight gain. Professional sports settings have been shown to act as a powerful 'hook' to engage men in health behavior change programs. There is a substantial evidence base supporting the feasibility, sustainability, and cost-effectiveness of the innovative 'Football Fans in Training' (FFIT) program, delivered by community coaches in professional UK football (soccer) clubs. FFIT participants made long term (12 months) improvements to their weight, PA, diet, alcohol consumption, and psychological health. The primary aim of our multi-method study was to explore whether our Australian version of FFIT (Aussie-FIT), was appealing to overweight and obese male Australian Football League (AFL) fans. AFL fans (N=151) aged 35 – 65, (49.41±8.74) completed an online survey and a subsample participated in individual interviews. Of those surveyed, 74.2% were overweight or obese, 53% were insufficiently active (mins of PA per week < 150 of somewhat hard - very hard PA), and 64.9% were seriously considering trying to lose weight in the next 6 months. After viewing an informational video about FFIT, 90.5% indicated they thought this program would appeal to AFL fans. In conclusion, the AFL is a viable and attractive setting in which to engage overweight and obese men. Findings have informed the development and further customization of the Aussie-FIT program, which is now being tested in a pilot and feasibility study among fans of AFL clubs in Western Australia in preparation for a nationwide RCT.

*Keywords: weight management, intervention*

## **In search of key attributes of peer leaders for the promotion of physical activity in older adults**

***Marlene Kritz, Cecilie Thøgersen-Ntoumani, Barbara Mullan, Burton Elissa, Keith D Hill (Curtin University), Ester Cerin (Australian Catholic University), Stuart Biddle (Victoria University)***

The Residents in Action Trial (RiAT) is a 16-week RCT which aims to evaluate a proof-of-concept motivationally embellished walking intervention designed to increase walking, reduce sitting and improve mental health in older adults living in retirement villages in Western Australia. The intervention involves training physically active residents to motivationally support their less active peers to increase walking, reduce sitting and improve mental health. In this preliminary stage, the aim is to determine what older adults, differing in their physical activity engagement, perceive to be ideal peer leader characteristics. A mixed methods concurrent triangulation design was used to identify key attributes of effective older peer leaders as perceived by participants differing in their physical activity engagement and leadership experience. Participants (N=60; M age (SD) = 73.86 (6.71) were recruited from retirement villages and existing walking groups in Perth. They were inactive individuals interested in joining RiAT, physically active residents interested in the peer leader role, and individuals who had already served as walk peer leaders or had taken part in other walking programs. Semi-structured interviews were conducted and thematically analyzed to identify ideal peer leader attributes for walking groups. Questionnaires measured motivation to walk, ideal peer leader traits (experienced and prospective participants), motivation to volunteer, leadership traits, and physical activity. In addition all participants wore an ActivPal over a 7-day period to allow for an objective assessment of physical activity. Data are currently being analysed and will be presented at the conference. The findings are expected to advance

knowledge about relevant characteristics of an effective older peer leader and will be used to guide peer leader recruitment for the RiaT. In our presentation we will also provide an overview of the other aspects of the trial.

*Keywords: walking, intervention, mental health, peer leaders*

### **Occupational stressors and work engagement in a sample of Australian army personnel: The role of mental toughness, stressor appraisals and proactive goal regulation**

***Daniel Gucciardi (Curtin University), Monique Crane (Macquarie University), Philip Temby (4Land Division, Defence Science and Technology Group, Australia)***

Occupational stressors are commonplace within modern work and organisational landscapes. Within military settings, occupational stressors typically occur across three broad environments, namely garrison, training and deployment. To date, a considerable body of work has focused on the influence of deployment-related stressors on various psychological, behavioural and social outcomes. However, less attention has been devoted to understanding the antecedents and consequences of occupational stressors that occur within normal duties in garrison and training environments. We addressed this gap in knowledge in the current study by taking a longitudinal approach to understand the dynamics of stressor experiences over a 10-week period among a sample of infantry personnel from an Australian Regular Army unit who were preparing for deployment (some for the first time). In total, 70 participants (24.85 years of age + 5.95; 4.87 years served + 5.35) completed 2 or more weekly assessments and were therefore included as part of our main analyses. We found that participants' experiences of occupational stressors fluctuated within individuals over time and across situations. In terms of mediational pathways, mental toughness but not stressor appraisals and proactive goal regulation explained some of the effect of stressor exposure on work engagement. Specifically, mental toughness suppressed the direct effect of stressor exposure on work engagement. Mental toughness is a concept that resonates with individuals who are interested in high performance; as such, interventions that are marketed and targeted as 'mental toughness development' could be used as a hook to enhance buy-in from military personnel, and complement existing programs such as BattleSMART and Mental Fitness.

*Keywords: goal regulation, resilience, stress, motivation*

### **Zooming in on the effects –psychological need satisfaction mediates the effects of a digital exercise intervention on motivational regulations and exercise behavior**

***Karin Weman Josefsson, Urban Johnson (Halmstad University), Magnus Lindwall (University of Gothenburg)***

Examination of the mediating mechanisms within the self-determination theory process model will provide deeper insight in the mechanisms of motivational regulations and psychological need satisfaction. Optimally, such studies should also include examination of action theory links and conceptual theory links to consider theory capacity (Cerin & MacKinnon, 2009). We studied 318 participants (aged 23-67 years) included in a controlled trial testing a digital intervention tool aiming to promote self-determined exercise motivation using 3 wave measurement over the course of 6 weeks. The participants (279 women and 40 men) were randomized into experimental and control group and completed a web-based test battery with the SDT-related measures (Psychological needs in exercise scale, Behavioral regulations in exercise scale -2, and Leisure time exercise questionnaire) at baseline, post intervention (3 weeks) and follow up (6 weeks). Mediation analyses were conducted using the SPSS macro Process by Hayes (2013). Results showed indirect effects of psychological need satisfaction regarding the effect of the intervention on motivation and exercise behavior at follow up measures. In the group of participants exposed to the intervention, higher levels of autonomy need satisfaction at follow-up predicted lower levels of amotivation and external regulation. In these models we found positive significant action theory links and negative conceptual theory links, showing the intervention to impact autonomy in positive direction, while higher autonomy need satisfaction in turn decreased controlled

motivation and amotivation. Higher scores of autonomy need satisfaction at follow-up also predicted higher scores of identified regulation, intrinsic regulation and autonomous motivation. Lower levels of amotivation were linked with higher levels of total exercise. In sum, the results reflect expectations from a self-determination theory perspective and are in favor of intervention efficacy.

*Keywords: psychological need satisfaction, exercise behavior*

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## **Fool's gold: Expert perception of deceptive motion**

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***Chair: Robin Jackson (Loughborough University)***

An effective sidestep, feint, or step-over can create an opportunity to alter the outcome of competitive encounters. Although much research has been conducted on anticipation skill and the use of advance information, it is only recently that researchers have started to systematically examine expertise effects in perceiving deceptive motion. This symposium brings together some of the researchers who have led research in this area. They will draw on their research findings to give an insight into recent methodological, conceptual, and technological advances. Robin Jackson will open by using evidence from soccer step-overs to consider the nature of the expert advantage and the visual information used to discriminate between non-deceptive and deceptive moves. He will argue that to fully understand expert performance it is critical to distinguish between susceptibility to deception and performers' ability to resolve deceptive motion as it unfolds. Rouwen Cañal-Bruland will argue that interactive competitive encounters can be likened to dancing a waltz, and that the concept of embodied simulation has the potential to drive theoretical development of deception detection, one that includes emotional and cognitive processes. José Navia will then discuss the importance of examining timing, using evidence from his research on temporal calibration in soccer goalkeepers' responses to deceptive and non-deceptive penalty kicks. Cathy Craig will round off the symposium by sharing her experience of using virtual reality to study coupled perception/action responses in soccer and rugby, and discussing the insights gained from in-depth analysis of player movements.

*Keywords: deception, anticipation, decision making, expertise, virtual reality*

## **Expert perception of deceptive motion: three fundamental questions**

***Robin Jackson (Loughborough University)***

An extensive body of research has consistently shown that high-skilled performers are able to anticipate the actions of their opponent(s) better than their less-skilled counterparts. A potential disadvantage of being highly attuned to early visual information is that it leaves performers vulnerable to deception (Jackson, Warren & Abernethy, 2006). In this presentation I argue that, to fully understand deception, we need to make a conceptual distinction between performers' susceptibility to deception and their ability to resolve deception as the movement unfolds. In discussing this, I will address three fundamental questions in the study of deception in sport: (1) Are experts less deceived than low-skilled performers? (2) Are experts better at 'resolving' deceptive motion? (3) Are experts more attuned to global (rather than local) information? Using analysis of performance data in temporal and spatial occlusion studies of soccer step-overs, combined with self-report and confidence data, I argue that susceptibility to deception may be driven by local information while the ability to resolve deception may be underpinned by global information.

*Keywords: perception, deception, anticipation, expertise*

## Embodied Simulation in Deception Detection

**Rouwen Cañal-Bruland (Friedrich-Schiller-University Jena)**

In many social contexts, recognizing deceptive actions is of great practical importance, be it the referee in sport recognizing a dive or someone identifying the deceitful actions of a pickpocket. This is particularly relevant for manifold situations in sports. Despite the accumulating evidence for the ability of humans to identify deceptive intentions based on kinematic cues, a comprehensive theoretical framework of deception detection has not been established yet. This does not only limit our current theoretical understanding of deception detection, but it does also mean that there is no theoretical framework at hand that provides us with testable hypotheses which may finally help researchers to systematically examine deception detection in sports and other social contexts. By contrast, for pro-social, cooperative human interactions, often referred to as joint actions such as dancing a waltz, such an encompassing theoretical account is available based on the concept of embodied simulation. In a nutshell, embodied simulation is frequently construed as the interplay between perception and action, but at the same time it incorporates interactions with emotional and cognitive processes. In this talk, I will outline why I think the concept of embodied simulation is a promising steppingstone to develop an overarching, embodied theory of deception detection. I will argue that it is imperative to integrate and jointly scrutinize motor, perceptual, cognitive and emotional processes to improve our understanding of deception detection, and, in particular, to understand how the distinct processes interact and what their contributions to the successful detection of deceptive intentions are. In my talk I will present first theoretical ideas that will hopefully allow to generate testable hypotheses. Ideally, these hypotheses may then help to systematically examine deception detection with the aim to finally develop a comprehensive embodied theory of deception detection.

*Keywords: perception, action, cognition, emotion, deception, embodiment*

## The role of deception in the temporal calibration of constrained actions

**José Navia (Technic University of Madrid)**

Temporal calibration during the execution of constrained tasks refers to the ability to scale the timing of the action to the actual spatiotemporal demands, based on both perceptual information and current action capabilities. In this work we focus on the effect of deception on the reliability and availability of information to-be-perceived over the interpersonal interaction in constrained actions. Hiding and deceiving can hinder and disrupt the potential relationship the opponent would establish between kinematic movements and the final outcome of the action. Hence, at first glance, one might expect that players would perform better under non-deceptive behaviors of their opponents. However, recent research points towards a more elaborate explanation of success regarding temporal calibration and information. For instance, Navia, Dicks, van der Kamp and Ruiz (2017) did not find any effect of deception in success or timing among expert goalkeepers. However, participants showed an apparent disruption on temporal calibration under different time constraints when facing non-deceptive and deceptive penalties. Along these lines, other have argued for different calibration rates according to the availability of relevant information. For example, as biomechanical laws dictate, deceptive movements cannot be maintained indefinitely, so the temporal shift in optical information reliability regarding kinematic movements becomes crucial in relation to the timing of the response. This new approach for studying deception will be discussed in terms of its value for explaining outwardly unconventional behaviors as acting outside the safe temporal margins or disturbance in calibration under different time constraints..

*Keywords: anticipation, spatiotemporal demands, sport*



## My eyes are deceiving me: How virtual reality technology can help us understand the effects of deception on players' decision-making in sport

**Cathy Craig (Queen's University Belfast)**

Deception is widely used in sport to gain a competitive advantage over an opponent. Deception can take many forms such as a player putting spin on a ball to make it fly unpredictably or controlling the movement of their body to signal false intentions to their opponent. To properly understand deception in sport it is important to use a methodology that can adequately and accurately recreate the perceptual information that contains the deceptive event. Furthermore, it needs to allow us to measure and understand how this information influences a player's decisions about when and how to act. In this talk I will show how immersive, interactive virtual reality technology can offer an exciting new way of studying deception in sport where the perception/action cycle is preserved (Craig, 2014). The versatility of this technology means it can be easily applied to many different sports. Using two different examples that show how ball spin in soccer (Dessing and Craig, 2010) and deceptive player movement in rugby (Brault et al, 2012) can be realistically represented, I will show how these types of deception influence players' decisions about action. I will also show how an in-depth analysis of player movement as the deceptive event unfolds provides valuable insight into expert/novice differences (Craig & Watson, 2011).

*Keywords: virtual reality, deception, soccer, rugby, expertise, decision-making*

## Symposia Session 10. (15.30-17)

### The role of sport and exercise psychology journals in the development of scientific and professional field

**Chair: Victor Rubio (Universidad Autónoma Madrid)**

Since 1965, when ISSP 1st World Congress took place, to present, the field of sport and exercise psychology has expanded in scope, in terms of representativeness, professionals involved, and reputation. Both cause and consequence are the publication of a number of scientific and professional journals having sport as exercise psychology as leading or complementary subject. These journals have contributed to the growth, dissemination and benchmarking of the field. This round table includes editors of some of these journals: Journal of Applied Sport Psychology (JASP, born in 1989); Revista de Psicología del Deporte/Journal of Sport Psychology (RPD/JSP, founded in 1992); Psychology of Sport and Exercise (PSE, starting in 2000), International Journal of Sport and Exercise Psychology (IJSEP, inaugural issue in 2003), Sport, Exercise and Performance Psychology (SEPP, coming out in 2012), and is aimed at discussing the following topics: From submitted original to published or rejected manuscripts (Are all accepted submissions good and all rejected bad papers? How can authors increase success, how can journals improve papers' quality?) Journal impact, paper impact and professional practice (Is scientific literature useful beyond its scholarly purpose? Research and applied psychology, parallel paths?) Social responsibility of scientific journals (Can scientific journals promote good/bad science? Is transparency and replicability an unsolved matter?) Capacity building (how can the journals in our field augment global standards, beyond developed countries). The future of scientific journals (Is there room enough for so many journals?)

*Keywords: psychology of sport and exercise journals*

**Presenters: Stephen Mellalieu (JASP), Victor Rubio (RPD/JSP), Bernd Strauss and Nikos Ntoumanis (PSE), Robert J. Schinke and Athanasios G. Papaioannou (IJSEP), Maria Kavussanu (SE&PP)**

**Moderator: Alexandre Garcia-Mas**

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## Psychological interventions in high performance: case studies

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**Chair: Enrique Aguayo (Sociedad Chilena de Psicología del Deporte)**

Four case studies of psychology applied to high-performance sport are presented. Cases were selected from the athletes who worked with the authors, including athletics, archery, water skiing, soccer, grass hockey and table tennis. Case 1 (Aguayo, E.) The psychological conditions in which athletes obtained world and olympic medals, the case of disruptive actions by a leader and an external attribution case of the coach in explaining the defeat, involving the sports psychologist are described. Case 2. (Larenas, C.) Two athletes who participated in Rio 2016, were submitted to a cardiac coherence training program, observing an improvement in stress control. Case 3. (Planella, V.) The coach's coach, is a unique case study unfolding conditions that influenced coach's focused reflection as optimal preparation for women's junior world championship competition. Case 4. (Carrascosa, J.) Learning to Compete, teaches emotional skills to players ages 7-18. Coaches should use certain emotional skills to generate the appropriate climate for players to achieve the indicated learning, exercising the psychologist a role of facilitator of the process. In these sports psychology applications, we studied variables such as: pre competitive and competitive stress, coherence and cardiac breathing, emotional climate, training of coaches and leadership. Various methodologies were used, such as experiential learning, skills learning, biofeedback and cognitive training. The roles of psychologists ranged from delivering structured instruction to being facilitators of learning, training psychological skills in coaches and athletes to achieve effective learning. Performance improvement was observed, as well as the presence of unforeseen situations, which negatively affected the attention of some athletes and coaches. Both successful and unsuccessful interventions are presented, in order to learn from them and consider proper handling in future interventions.

*Keywords: high performance, cardiac coherence, disruptive intervention, emotional competencies, multimodal strategies, stress management*

## Psychological intervention programs in high performance sports, some problems to consider

**Enrique Aguayo (Chilean Society of Sport Psychology)**

It is usual to observe that high levels of pre competitive and/or competitive stress are attributed to athletes performing less than expected, according to the tests performed in the training sessions. The purpose of this case study is to describe some examples of situations observed when working with high performance athletes, defined as athletes competing for international medals. It is analyzed from the perspective of the cognitive-behavioral approach (Butler, Chapman, Forman & Beck, 2006), understanding that the beliefs that athletes have as well as their emotional experiences have important relationship with their behavior when competing. The cases have been intentionally selected in order to show relevant situations that deserve to be analyzed from the perspective of the sport psychology, as they are part of the reality that sports psychologists can face when intervening in the highly competitive sports. Some of the cases studied were 6 athletes who won Olympic and / or World medals under a very high pressure level (skeet shooting, tennis, archery and water ski); others includes sports officials who intervened to damage the public image of the coach and players in a football selection, and an gymnastics coach who made a negative and public assessment of the intervention of the sports psychologist, attributing the responsibility of not having achieved the sports goal. It is concluded that when planning a psychological intervention program for high performance athletes, the presence of

unforeseen and / or disturbing situations, both internal and external, should be considered as a relevant factor and that appropriate measures should be taken to achieve the objectives of performance.

*Keywords: pre-competitive stress, sports performance, disruptive intervention, causal attribution*

## **Use of cardiac coherence to improve respiration effectiveness as a technique for stress management in high performance**

***Claudia Larenas (Chilean Society of Sport Psychology)***

The objective of this case study was to verify the effectiveness of cardiac coherence monitoring in the management of competitive stress. We worked with two athletes, women's athletics and high-performance table tennis, who competed at the Olympic and Paralympic Games in Rio de Janeiro in 2016, respectively. Both were submitted to EMWAVE Pro (HeartMath) cardiac coherence equipment for 2 months to train breathing. Prior to training, the Spanish version of the RESTQ-76 (González-Boto, 2007) questionnaire was administered. In post-training evaluation, with the same questionnaire, it was observed that the athletes reacted very positively to the intervention. Thanks to the software that helped to use the device, it was observed how their response to stress was and how they could improve it. After this experience, it can be pointed out that the breathing training used to improve cardiac coherence and its evaluation seems to be an effective technique for stress management, where each athlete must develop a specific work program according to the objectives and their personal characteristics. More research is needed to clarify the variables that operate in the use of this technique. Thus, it is possible to contribute with tools for the management of competitive stress, a fundamental aspect in the sport performance as shown by the innumerable investigations about this subject (e.g., Olmedilla, Rubio, Ortega & García-Mas, 2016; Valmet, 2011).

*Keywords: stress management, cardiac coherence, breathing, instrument, competence*

## **The coach's coach: a case study unfolding conditions that influenced coach's optimal improvement**

***M. Verónica Planella (Chilean Society of Sport Psychology)***

Coaches are diligent in planning and implementation strategies when preparing athletes (Partington & Cushion, 2013). However, it is unclear how deliberate coaches are in implementing strategies that would help them prepare and monitoring their own coaching performance. Thus far, evidence has demonstrated that typically a coach trusts primary experience for professional preparation and relies on the "art of coaching" for managing their coaching practice (Cushion, Armour, & Jones, 2003). In line with Martens (1997) understanding that effective coaches can translate experience into knowledge through a process of focused reflection and informed by Gilbert and Trudel's (2001) model of experiential learning, this case study examined how applying reflective conversation influenced a coach's quality preparation. Specifically, this case study adopted a life-story approach (Bathmaker & Harnett, 2010), questioning the role and impact of sport psychology consultant in guiding the reflective conversation for the last twelve weeks of a coach's preparation and during the 2016 women's junior field hockey world championships. Data from life-story interviews sessions, coach's journal and participant observation followed an interpretive thematic analysis using inductive and deductive reasoning (Braun & Clarke, 2006). Supporting previous research, results showed that specific coaching issues afforded reflective conversation and it is constrained by the perceived coach's role. Further, evidence revealed four conditions that allowed successful professional collaboration between a specialty field hockey coach from Argentina and sport psychology practitioner from Canada: (a) collective trust, (b) non-involved approach, (c) safe association, and (d) multimodal strategies. Findings from this case study open the discussion regarding the role of practitioners in implementing strategies for facilitating coach's improvement, in turn enlighten consultant education programs and initiatives.

*Keywords: optimal improvement, collective trust, non-involved approach, safe association, multimodal strategies*

## Training of emotional competencies in a football team

**José Carrascosa (Saber Competir)**

In a consistent way, in education fields has been proved the need of teaching and learning through skills. In a soccer team we have to talk about the emotional skills to teach to players and coaches (staff). The competencies that are directly related with performance and emotional well-being of the soccer players are: 1) emotional autonomy, 2) resilience, 3) team work, 4) social skills, 5) emotional leadership 6) values and 7) healthy life styles. Emotional skills to train coaches are: 1) team building 2) assertive communication, 3) conflict management, 4) motivation, 5) emotional leadership 6) emotional autonomy and 7) training's pedagogy. The teaching-learning methodology is based on: 1) the Kolb learning model (Stice, J. E., 1987); 2) emotional training workshops; 3) the direct observation and the use of audiovisuals, and 4) support through reading of key concepts. The psychologist becomes a facilitator of learning in soccer players and coach. Evaluation is carried out at three levels: assessment by the psychologist or coach; self-evaluation and co-evaluation (evaluation by team mates). The aim is to educate players, who are responsible, self-critical, with good self-esteem, tolerant and understanding success and failure, oriented to the task and to permanent learning, prepared to overcome the difficulty ("Resilient", e.g., Ruiz-Barquín, R. et al, 2012), receptive to live and work with any partner. With regard to the coach the aim is to promote a leadership style that generates commitment, involvement, cohesion and individual and collective performance.

*Keywords: emotional competencies, teaching-learning, performance, personal development, emotional well-being*

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## Sport as a veritable tool to enhance peace sustainability in Port Harcourt metropolis of Rivers State, Nigeria.

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**Chair: Athanasius Nwanegbo Amasiatu, A.V. Ogunleye, B.G Akuru, (Department Of Human Kinetics University Of Port Harcourt, Rivers State Nigeria)**

The purpose of this study was to find out the impact of sports as tool among boys and girls in Port Harcourt Metropolis of Nigeria. The study examined the roles of sports to the development of boys and girls in peace- keeping fostering their physical, emotional health and building valuable social connections. While a descriptive survey research design was used with a questionnaire. With a sample size of one thousand and eight hundred (1,800) respondents for the study, using the simple random sampling techniques which involved two stages divided non- probability and probability sampling technique on a population of all male and female youths from the crisis area of Port Harcourt metropolis of Rivers State, Nigeria. The result was subjected to descriptive statistics of percentage, mean and standard deviation. The results showed that there was a significant relationship between the variables of sports in terms of social control, cultural/ ethical value, character building, occupational mobility, group dynamics and youth positive restiveness on peace and development. Based on these recommendations were made that both state and federal government should give priority to the provision of resources for the establishment of sports facilities and centres at the community level to bridge the social gap so as to foster National peace and development within Port Harcourt Metropolis of Rivers State in Nigeria.

*Keywords: sports, peace and development Abua communities*

## Cultural perspectives to sport psychology: experiences of working with national teams in Botswana

**Tshepang Tshube**(Department Of Physical Education and Health, University Of Botswana) and **Stephanie J. Hanrahan** (School Of Human Movement And Nutrition Sciences and School Of Psychology, The University Of Queensland)

The primary objective of this presentation is to share experiences and methods used when consulting with athletes and their entourages in Botswana. Authors used notes and observations made by the first author when he consulted with athletes and their entourages at three major games/championships (Olympic Games, Africa Games, and Africa Senior Track and Field Championships) and three training camps in preparation for the Olympic Games. Authors observed context specific approaches, a difference in conceptualizations of mental skills in the Setswana culture, and general culture and sub-cultural adaptations. There is rich language diversity in Botswana, and some athletes may have difficulty understanding English. Directly translating some mental skills (e.g., self-talk) may result in unintended meanings that can confuse athletes. Psychologists require an understanding of the context and cultural backgrounds of athletes. For example, some athletes and their entourages may believe in engaging a sangoma (a spiritual healer) or use muti (traditional medicine used for powers or a talisman) to enhance performance. In addition, sport psychologists may be expected by management to take on roles not typically considered to be appropriate for psychologists, and there may be multiple issues with the basic logistics of international team travel. For example, sport psychologists may spend a lot of time addressing issues relating to delayed allowances and uniforms. In conclusion, it is important for sport psychologists to have deep knowledge of cultural customs, language, and organizational cultures (power dynamics in the organization) when working with athletes in Botswana.

*Keywords: Botswana, Culture, Role expectations, Spiritual assistance, Translations*

## Talent development and athletes' fulfilment in Nigerian secondary school sports competition.

**B. L.Oluwatunbi**, **O. A. Ipinmoroti**, **A. O. Adesokan**, (Department Of Human Kinetics, Sport And Health Education, Lagos State University, Ojo, Lasu, Nigeria.)

Through participation in sport, young people learn about the importance of key values such as honesty, teamwork, fair play, respect for themselves and others, and adherence to rules. The purpose of this study was to examine the extent to which sports competitions in Nigerian secondary school contribute to talent development and participants' fulfillment. Descriptive survey research method was employed. A total of 200 athletes and 20 sports masters/mistresses were selected randomly from 4 secondary schools in Ikeja Local Government Education Area of Lagos State, Nigeria. The instrument used to collect data for the study was a self-structured questionnaire named "Talent Development and Athletes' Fulfilment Questionnaire (TIAFQ)". This was developed by the researcher and validated by two experts in sports psychology. The validated instrument was administered on selected respondents. The data collected was used to develop a frequency distribution table for analysis. Three (3) research hypotheses were formulated and tested. The descriptive statistics of frequency counts and percentages was used in presenting the data collected, while inferential statistics of t-test was used to test all hypotheses at a 0.05 level of significance. The three hypotheses were accepted. Hence, school sports does not influence talent development in Nigerian secondary schools; school inter-house sports competition does not have any significant influence of students' participation in sports; participation in school sports has no significant influence on participants' development and fulfilment in sport. It was recommended that sport masters/mistresses should arouse the interest of students to participate in sports particularly beyond immediate benefits; in exercising their expertise, school sport masters/mistresses should improve on the tactical skills of the students; and that school authorities should partner with the

government, corporate organizations and philanthropists to provide sporting facilities and equipment in schools.

*Keywords: competition, fulfilment, potential, school sports, talent development.*

### **Barriers to sports participation as a means of achieving sustainable social development.**

**O. R. Osifeko, C. O. Osifeko, B. E. Folarin, (Department Of Physical And Health Education, Michael Otedola College Of Primary Education, Noforija-Epe, Lagos Nigeria)**

During these difficult economic times, nations are looking for ways to improve their finances, preserve the environment as well as the socio-political climate and educational institutions, which are needed to increase their economy and preserve their sustainable development. Sport is one of the ways through which sustainable development can be achieved. The purpose of this study was to examine the barriers to participation in sport. A total of 1,025 students were purposively selected from all the five schools (School of Arts and Social Sciences, School of Languages, School of Education, School of Sciences and School of Vocational and Technical Education) in MOCPE. A questionnaire, with a tested reliability coefficient of 0.71, was used for data collection. The collected data were subjected to the descriptive survey research design. The findings showed that sports facilities, funding and lecture schedules were significant barriers to sports participation. It was recommended that sports facilities be provided by the Lagos.

*Keywords: MOCPE sports, sustainable social development, sports participation, state government*

### **Youth sport research in the African context: a key to evidenced based programming for youth psychosocial development**

**Leapetswe Maletse; (Michigan State University USA)**

The growing number of youth sport programs aimed at youth development across Africa signal an increasing awareness of the potential impact of youth sports to the overall development of youth. Compared to most community youth sports programs in the developed countries, the typically agency sponsored programs in Africa seek to address the socio economic and other challenges faced by the youth in the continent. They are developed within the UN framework of sport for development and peace (UNOSDP, 2016). They target at risk or disadvantaged youth and such issues as social inclusion, unemployment, health, poverty, and reducing the impact of civil strife. All of these are noble intentions and evidence suggests that they are making a difference to the lives of the youth involved. The challenge is that the programs seem to outpace the evidence needed to guide their structure, assess their outcomes and impact, and if they work the same way across varying contexts. Also worth knowing is the extent of any unintended consequences of youth sport that have been identified in the literature and how these may be affecting the individual child. Therefore, the purpose of this paper is to share existing evidence on the relationship between youth sport and youth psychosocial outcomes in Africa; make a case for more evidenced-based youth sport outreach; as well as the need for investigations on appropriate methodologies that take into account unique contextual elements of youth's sport environments across Africa. The paper makes a case for strengthening the research-practice nexus in youth sport and youth development research as well as the need build sustainability into program development.

*Key Words: Youth sport, youth development, research, outreach*



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## Motivational profiles in exercise and physical activity behavior

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**Chair: Karin Weman Josefsson (Halmstad University)**

From a self-determination theory (SDT; Deci & Ryan 1985; Ryan & Deci, 2002) perspective, the nature of motivation is dynamic and the quite recent concept of “motivational soup” suggest that different types of motivational regulations coexist within people and that these within-person patterns in turn will produce different patterns of behavior. Instead of using traditional approaches focusing on variable centered analyses and between-person patterns, the relatively new trend (within this area) of using person-centered statistical analyses permit insights and understanding in how motivational regulations interact within persons and how these interactions relate to behavior. Such knowledge would provide a valuable contribution to the tailoring of interventions aimed to target specific groups of people using potent psychographic profiles as moderators instead of more blunted demographic variables (Hardcastle & Hagger, 2015). This symposium brings together European researchers from four different universities to discuss new insights on within-person relationships in different steps of the SDT process model. The first presenter will look into the associations between behavioral regulation profiles and exercisers’ emotional response in a large sample of health clubs members. The second presenter will discuss exercise motivational profiles of obese patients and how these relate to exercise behavior 6-months post-discharge. The third presenter will describe a model with four motivation profiles for exercise professionals in relationship to multiple continuous outcomes such as work satisfaction, emotional exhaustion and depersonalization. The fourth presenter will share results from a latent transition analysis on a three-wave longitudinal study in a digital context. The following discussion will then be focused on overlapping and specific motivational profiles in relation to exercise and physical activity promotion and strategies for future research and applications.

*Keywords: motivational profiles, exercise, self-determination*

### A "feel good factor" analysis of four exercise motivation profiles

**Antonio Palmeira (University of Lisbon, Portugal), David Sánchez-Oliva (Universidade Lusófona, Portugal), Diogo Teixeira (University of Extremadura, Spain)**

Self-determination theory predicts that positive emotions are linked with self-determined exercise behavior. Motivational profiles study these associations, but literature is sparse, especially in large samples of exercisers. This study aim was to evaluate the emotional response to exercise in different exercise motivation profiles of regular exercisers in health club / gym settings. This was a cross-sectional study with 495 health club members (186 women, 40.50±13.54 years, 2.61±1.29 sessions per week). Exercise behavior regulations (Autonomous, Controlled and Amotivation), and exercise emotional response (Positive/Negative Affect; Psychological Well-Being/Distress/Fatigue; and Perceived Exertion) were measured through self-report. Cluster analysis was used to define the motivational profiles. No gender differences were detected in the profiles, so an ANOVA, with post-hocs, was used. Four profiles were detected (1 - Low motivation, n=135; 2 - Controlled, n=111; 3 - Autonomous, n=217; and 4 - Amotivated, n=32). In general, the exercise emotional response was more intense in the autonomous and controlled, when compared to the low motivation and amotivation profiles ( $p < .003$ ). Specifically, the autonomous profile had more Perceived Exertion, Positive Emotions and Psychological Well-Being, and less Negative Emotions, Distress and Fatigue than the low motivation profile ( $p < .043$ ). A similar pattern was observed with the controlled profile, but mostly for positive emotional responses ( $p < .008$ ), as Distress scores were similar between controlled and low-motivation profiles ( $p > .05$ ). Interestingly, we observed more Negative Emotions, Distress and Fatigue in this group when compared with the autonomous profile ( $p < .003$ ). The autonomous profile, with high quality of motivation, displayed the best pattern of emotional responses. The controlled profile presented a pattern where high levels of positive and negative emotional responses coexist.

*Keywords: motivational profiles, organismic integration theory, exercise emotional response*

## **Becoming active post-therapy – an exploration of motivational profiles during exercise change in obese patients**

**Anna Wasserkampf, Jens Kleinert, Chloé Chermette (German Sport University Cologne, Germany)**

As the motivational background of exercise behavior in obese patients following hospitalization is not well documented, the present study intended to characterize exercise motivational profiles, based on Organismic Integration Theory (Deci & Ryan, 2000), and to relate these to exercise behavior post-discharge. Patients (N = 262; 34.2% female, age M = 46.53, SD = 9.76, body mass index M = 40.3, SD = 8.8) were asked to complete inventories that assessed exercise behavior pre-hospitalization and 6-months post-discharge (by means of Godin Leisure Time Exercise Questionnaire) as well as exercise behavioral regulations 6-months post-discharge. Motivational profiles were identified by using K-means non-hierarchical cluster analysis. Relationships between motivational profiles and exercise behavior were tested by means of Chi-square tests. Three exercise motivational profiles emerged: a moderate controlled cluster (i.e., moderate controlled regulations, low autonomous regulations; n = 80), a moderate autonomous cluster (i.e., moderate autonomous regulations, low controlled regulations; n = 78) and a high autonomous cluster (i.e., high autonomous regulations, low controlled regulations; n = 104). The majority of patients who became active over time (52%) belonged to the high autonomous cluster, while the fewest belonged to the moderate autonomous cluster (22%). While the high autonomous cluster appears to be most promising, the moderate controlled and moderate autonomous clusters seem to be equally favorable regarding prolonged exercise behavior change, despite their obvious differences in autonomous regulations. Investigating motivational profiles helps health care professionals to better tailor their interventions to facilitate continued exercising.

*Keywords: organismic integration theory, obesity, exercise, post-discharge, motivational profiles*

## **Effects of a digital intervention program on motivational regulation patterns in an exercise context: A latent transition analysis of the “motivational soup”**

**Karin Weman Josefsson, Andreas Ivarsson, Urban Johnson (Halmstad University), Magnus Lindwall (University of Gothenburg)**

Within the self-determination theory of motivation the concept “motivational soup” refers to motivational regulations forming profiles of accumulated drives towards behavior. Few studies have examined the probability of intervention effects to change such motivational profiles over time, knowledge that might inform future program design to promote sustainable exercise motivation. Participants (N=318) were 279 women and 40 men, aged 23-67 years (M<sub>age</sub>=46.7; SD=9.4) consisting of adult members of a web-based step contest provided by their employers. Of the 166 individuals randomly assigned to the experimental group, 85 logged in to the digital intervention platform at least once and were considered treated as intended. This group had access to a web-based digital exercise motivation intervention based on SDT for three weeks. The trial had three measure points; T1 baseline, T2 (3 weeks) and a follow up T3 (6 weeks). To investigate the potential effect of the intervention on the odds of participants to change motivational profiles between T1 and T3 we used Latent Transition Analysis. The intervention had positive main effects on exercise level. A four profile solution showed good quality of classification into the separate profiles (entropy = .92). The profiles were labeled high-high (n=262), high-low (n=26), low-high (n=8), and low-low (n=12), where the label high reflected a more autonomous regulation pattern (missing n=10). Participants in the autonomous profile at T1 had high probabilities of remaining there at T3, but slightly lower probability in the control (82%) than the intervention (95%) condition. Participants in the control condition also had a statistically significant increased probability to belong to the profile with a decreased level autonomy T3 (high-low profile) (OR=4.0, p=.008). These results

indicate that this digital exercise motivation intervention can increase the likelihood for participants to sustain autonomous motivation profiles over time

*Keywords: latent transition analysis, exercise, self-determination, motivational profiles, intervention*

## Understanding motivational strategies used by exercise professional: A person-centered approach

**David Sánchez-Oliva, Eliana V. Carraça (Faculty of Sports and Physical Education, Lusófona University, Portugal), Pedro J. Teixeira (Faculty of Human Kinetics, University of Lisbon, Portugal), Antonio Palmeira (Faculty of Sports and Physical Education, Lusófona University, Portugal), Marlene N. Silva (Faculty of Human Kinetics, University of Lisbon, Portugal)**

Using the self-determination theory (SDT), the aim of this study was to identify different profiles of motivational strategies used by exercise professionals in gym contexts (supportive vs controlling), as well as to examine associations between these motivational profiles and perceptions of job pressure, exercisers' motivation, work-related need satisfaction/frustration, type of motivation, and burnout. Participants were 366 exercise professionals (193 males; experience =  $7.7 \pm 5.8$  years). Using the Latent Profile Analysis (LPA) approach, we included supportive and controlling behaviours to estimate one to four profiles solutions. From the retained model, we also tested the relationship between profiles groups and multiple continuous outcomes. The 3-profiles model was retained as the best solution, composed by a supportive profile ( $n = 225$ ), a controlling profile ( $n = 42$ ), and a mixed profile ( $n = 99$ ). The supportive profile displayed the most optimal pattern, with higher scores in exercisers' self-determined motivation, need satisfaction, self-determined motivation at work, and personal accomplished, and lower scores in job pressure, need frustration, emotional exhaustion, and depersonalization. On the contrary, the controlling profiles displayed the most maladaptive pattern of associations with outcomes, even in comparison to the mixed profile. The current study extends previous variable-centered research by using a person-centered approach, and it highlight that, although much emphasis has been given to promote need-support, reducing controlling practices seems comparably important, as professionals relying mostly on this type of strategies displayed a worse quality of their own motivation and higher burnout.

*Keywords: latent profiles analysis, motivational strategies, exercise professionals*

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## Establishment of sport psychology international accreditation

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**Chair: Gangyan Si (Managing Council -MC-)**

The purpose of this presidents' symposium is to target one important topic "Establishment of Sport Psychology International Accreditation" in the international sport psychology community and promote the exchange of views in relation to this topic among the presidents of different sport psychology organizations. Considering the different development levels of sport psychology around the world, we believe that the regions and countries under various socio-cultural and economic backgrounds may have their specific requests or considerations on the "International Accreditation Standard". ISSP would like to provide a platform for a dialog among international sport psychology organizations in this regard. We would especially appreciate the expressions/comments of the presidents of organizations from sport psychology developing regions. Within this symposium, the Asian and South Pacific Association of Sport Psychology (ASPASP), the African Society of Sport and Exercise Psychology (ASSEP), and the FIAP Sport Psychology section (Iberoamerican Federation of Professional Psychologists) will be discussing their respective efforts in establishing sport psychology accreditation and accreditation standards. The symposium will close with an exchange of opinions and

suggestions, that will be facilitated by two discussants' dialog/comments from the perspective of the European Federation of Sport Psychology (FEPSAC) and the Association for Applied Sport Psychology (AASP).

### Development of accreditation system of sport psychologists in Asian-South-Pacific region

**Dr. Liwei Zhang** (*President of Asian-South Pacific Association of Sport Psychology; Beijing Sport University, China*)

This paper introduced the current statues and future trends about the development of accreditation system of sport psychologists in Asian-south-pacific region. In this region the development of such a quality management system or accreditation system is unbalanced. In some countries such as Australia there is a well-organized accreditation system developed by the Psychology Board of Australia and approved by the Australian Health Workforce Ministerial Council and all sport and exercise psychologists must first gain general registration as a psychologist and then complete the requirements for "area of practice" endorsement in sport and exercise psychology for their professional practice and activities. Korea Society of Sport Psychology has developed a three level accreditation system for sport psychology consultants since 2004 and held 20 sport psychology consultant certification training workshops until 2016. Currently, there are more than 800 certified sport psychology consultants in Korea. In other countries the sport psychology associations are planning to put such a national accreditation system into practice. In future the Asian-South-Pacific Association of Sport Psychology (ASPASP) is considering to introduce an online open course of sport psychology as a first step of ASPASP accrediting sport psychologists. The challenges and difficulties of developing an international accreditation system of sport psychologists were also discussed.

### African Society for Sport and Exercise Psychology-The way forward

**Prof. Athanasius Nwanegbo Amasiatu** (*Acting President of African Society of Sport and Exercise Psychology; University of Port Harcourt, Nigeria*)

The African Society of Sport and Exercise Psychology was established four years ago during the 12th ISSP world congress held in Beijing, China in 2013. The aim was to foster collaboration among National Sport and Exercise Psychology groups to professional bodies and get involved with National Sport Federation, coaches and athletes alike. In general, sport psychology is still in its infancy in Africa, particularly in organized form. Thus it has been difficult to obtain information on training and selection in most countries in the region. The 2001 source book entry for Africa indicates that key countries in sport and exercise psychology currently include Nigeria, South African, Kenya, Zimbabwe Mozambique, Egypt and Botswana. Most of the countries in the continent organize sport and exercise psychology association to foster, unity, research and services to coaches and athletes for competitions. Also there is no organized method for certification/licensing for professionals in sport psychology. Rather the only method to become members of the association is either obtaining sport psychology degree at graduate or post graduate level from Psychology or Human Kinetics departments. There is therefore need to harmonize the professional preparation of sport psychology in our sub-region which will pave way for quality assurance of professionals across National boundaries so as to ensure international standards and acceptability. This 14th ISSP world congress is another opportunity for participants from our sub-region to come together so as to brain storm on the way forward to move our society to the next level.

### "Taking the bull by the horns": Accreditation of the specialty

**Dr. Enrique Cantón** (*Coordinador División Psicología Deportedel Consejo Psicología de España; Coordinador División Psicología Deporte de la Federación Iberoamericana de Asociaciones de Psicología; Universidad de Valencia, España*)

The expression heading the title reflects the need to address in a very direct way an issue, although it presents difficulties that may scare a little. In addition to thinking about what should be required for an accreditation of a specialty such as the psychology of sport, we should also think about other equally important issues. First, what this accreditation should serve for. Second, who should do it. And third, how the evaluation should process be. To this we should add what criteria to require. Therefore, even if it generates debate, or because it is necessary to do it, I will 'take the bull by the horns' and I will aim to express the position of the organization I represent. In relation to the first point, I believe that there is enough consensus to understand it as an accreditation for professional practice of the psychology in the framework of the activities we have defined in the broad concept of sport and exercise. Consequently, it is not an academic accreditation, a training only certification, or a formal recognition of a level of research. The answer to this issue is crucial as a derivation point to which institution would correspond its concession. In that sense, it should be those who regulate the profession who are ultimately responsible for the license. Related to the third issue, the lines of support and collaboration with other entities or organizations could fit in it. Firstly, as it has already been done with private professional associations and in our specific field, for the historical development of our discipline, other organizations not exclusively composed by psychologists can contribute their opinions, experience and their criteria about the process, which does not exclude their own certification processes. These are some of the issues that need to be approached.

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### **Are the stage of change theories applicable to model health behavior change in Chinese sample?**

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***Chair: Yanping Duan (Hong Kong Baptist University, China)***

According to stage models, health behavior change is a dynamic process that consists of a sequence of discrete, qualitatively distinct stages. For example, the Transtheoretical Model (TTM; Prochaska et al., 1992) includes 5 stages (precontemplation, contemplation, preparation, action and maintenance), the Health Action Process Approach (HAPA; Schwarzer, 2008) consists of 3 stages (non-intentional, intentional and action), while the Four Steps from Inactivity to Activity Model (FIT; Brehm, Duan et al., 2010) proposes 6 stages (not-considering, considering, preparing, fluctuating, exploring and maintaining). In addition, each stage model contains different psychosocial variables, which are regarded as essential catalysts for transitions between the stages. During the past two decades, stage models have been widely used in the western countries to explain and predict individual's health behavior change. However, there are still limited studies conducted in the eastern country. This symposium aims to explore the applicability of stage models for health behavior change in Chinese samples. Presentation 1 focuses on the TTM-based intervention application for physical activity among Chinese people by using systematic review. Presentation 2 addresses the applicability of FIT model for physical activity by reviewing three cross-sectional studies in large sample size among Chinese young adults and mixed adult sample (Chinese and German). Presentation 3-5 targets the examination of HAPA model. In particular, presentation 4 tests the hybrid feature of the HAPA for physical activity among Chinese adults with two longitudinal studies. Presentation 5 examines the effectiveness of a web-based intervention on multiple behaviour among Chinese university students. Stages of changes for physical activity (PA) and fruit and vegetable intake (FVI), motivational and volitional variables of behaviours are the outcome indicators in this study.

Keywords: stage of change, psychosocial variables, health behaviour, chinese sample

### **The transtheoretical model-based intervention application for physical activity among Chinese people: a systematic review**

***Qi Si (Zhejiang University, China)***

The transtheoretical model (TTM) was first proposed in China in 1998. Since its initial introduction some 19 years ago, no systematic review has been conducted on the body of whole works of its application that have been produced. The purposed of this presentation is to address the application by reviewing the body of work on TTM and physical activity behavior in China from 1998 to 2016, and test the effectiveness of TTM based intervention to promote Chinese physical activity. Studies published between January 1, 1998 and December 31, 2016 were located by searching three database (i. e., CNKI, WANGFANG DATA, & VIP). Each of the full texts of the potential papers and the associated reference lists of all relevant publications were retrieved and reviewed, a total of 6,435 potential papers were identified. Data were coded and analyzed from the 16 eligible papers using a semi-quantitative summary. The results showed that the TTM model remains a popular theoretical basis for the study of physical activity in China, however, intervention and/or longitudinal designs, as well as the study carried out using all of the core TTM constructs were insufficient, the suitability and applicability of the model remains to be further tested. Future research is needed that focuses on longitudinal study designs, diverse participant recruitment, measurement validation, and studies based on all dimensions of TTM. There is an increasing need to provide definitional criteria for physical activity (i.e., information about duration, intensity, or frequency) and standardize the stage of change.

Keywords: physical activity, review, research methodology, effectiveness

### **Testing the four steps from inactivity to activity model for physical activity: three empirical studies**

***Yanping Duan (Hong Kong Baptist University, China), Walter Brehm (University of Bayreuth, Germany)***

The Four Steps from Inactivity to Activity Model (FIT; Brehm, Duan et al., 2010) has recently been developed to specifically describe and explain health-enhancing physical activity (PA) behavior. It consists of (1) self report PA behavior; (2) a stage algorithm with six stages of PA including not-considering, considering, preparing, fluctuating, exploring and maintaining; (3) ten psychosocial correlates such as outcome expectations, affective attitude, barriers, self-efficacy, body-concept, plans, intrinsic motivation, activity emotions, assessment of activity situation, and social support; and (4) five health outcomes including fitness, subjective well-being, health satisfaction, physical complaints, and BMI. By reviewing three cross-sectional studies based on FIT model, this presentation aimed to examine the applicability of FIT model for PA in large sample size among Chinese and mixed sample (German and Chinese adults). Study 1 assessed stage of change among 1012 Chinese university students in terms of PA, psychosocial variables and health outcomes. Misclassification, sensitivity, specificity, receiver operating characteristic (ROC) curves, nonlinear trends, and planned comparison were computed. The measurement quality of the stage algorithm was verified in study 1. Study 2 tested the relationships among psychosocial correlates, stages of change for PA and health outcomes in university students from a 770 mixed sample (404 Germans, 366 Chinese). The results revealed that barriers and intrinsic motivation were the critical psychosocial variables related to stages of change. The link between stages of change for PA and health outcomes (ie, fitness, health satisfaction) was well established. Study 3 examined the relationships of selected psychosocial correlates of PA with stages of change in a 2017 mixed adult sample (865 Germans, 1206 Chinese). All data were analyzed with a two-way ANOVA.

Keywords: FIT model, stage algorithm, psychosocial correlates, health outcome, adults

### **Testing the hybrid feature of the health action process approach (HAPA) for physical activity among Chinese adults**

***Borui Shang, Yanping Duan (Hong Kong Baptist University, China)***

The health action process approach (HAPA) is a hybrid model that can be analyzed either as a stage model or as a continuum (mediator) model. On the one hand, HAPA as an explicit stage model make a distinction



between intention formation in motivational phase and behavior change in volitional phase. Thus three stages are discriminated as pre-intender, intender and actor. The Psychosocial variables such as risk perception, outcome expectancies and planning play different role corresponding to different stages. On the other hand, HAPA can be regarded as a continuum model. Variables such as self-efficacy and social support are regarded as mediators throughout the whole process. This presentation incorporates two longitudinal empirical studies regarding physical activity (PA) behavior based on HAPA by structural equation modeling (SEM). In the first study, 580 university students were recruited to assess the usefulness of HAPA model. The model fit indices ( $\chi^2/df=1.718$ ,  $p<0.01$ ;  $TLI=.954$ ;  $CFI=.959$ ;  $RMSEA=.035$ ) showed the HAPA model is well-fitting for PA behavior prediction among this sample. The second study examined the model usefulness of the HAPA with a sample of 331 university staff. In general, the model fit the data well with  $RMSEA=.057$ ,  $\chi^2/df= 2.09$ ,  $CFI=.892$ . Specifically, 71% of the variance of intention was explained by the two robust variables of positive outcome expectancy (path coefficient  $\beta=.349$ ,  $p<.001$ ), and action self-efficacy ( $\beta=.566$ ,  $p<.001$ ). The intention ( $\beta=.127$ ,  $p<.05$ ), in turn, with plan ( $\beta=.294$ ,  $p<.01$ ) as well as recovery self-efficacy ( $\beta=.343$ ,  $p<.001$ ) collectively predicted the PA behavior. In addition, results indicated intention was a significant predictor of planning ( $\beta=.225$ ,  $p<.01$ ) and PA behavior ( $\beta=.294$ ,  $p<.01$ ), while planning was a significant predictor of PA behavior ( $\beta=.127$ ,  $p<.05$ ). These results supported planning as a partial mediator bridging the intention-behavior gap.

*Keywords: the health action process approach, stage model, continuum feature, physical activity, Chinese adults*

### Application and effect of psychological intervention of multiple health behavior on cardiac patients in home-based rehabilitation aftercare

**Wei Liang, Yanping Duan (Hong Kong Baptist University, China), Lan Guo (Guangdong General Hospital, China), Gangyan Si (Education University of Hong Kong, Hong Kong, China), Sonia Lippke (Jacobs University Bremen, Germany)**

The literature review shows it is often difficult for rehabilitation patients to integrate learning outcomes from clinical rehabilitation into their daily life after they discharge from rehabilitation. In China, there are numerous limitations of post-rehabilitation service for cardiac patients such as the insufficiency of rehabilitation facilities that result in some obstacles to their recovery and health. To overcome these problems, this study aimed to provide an e-health learning strategies in China, which the patients can follow at home after they are discharged from rehabilitation. Through behavior change techniques (e.g., motivating intention, prompting specific goal setting, feedback on performance, presenting follow-up prompts, and prompting barrier identification), using Health Action Process Approach (HAPA) as theoretical backdrop, we aimed to evaluate the effectiveness of the web-based intervention program of multiple health behavior for 8 weeks. 92 Participating patients (Mean age=49.2 yrs,  $SD=14.84$ ; male=57, female=35) were recruited in an outpatient cardiac rehabilitation center. All of these participants were assigned randomly into one of two groups: 1) intervention group, first PA (week 1-4) and then healthy dietary behavior (week 5-8); 2) the control group. All groups were further contacted to collect data at the beginning of intervention (T1,  $N=92$ ), at the end of intervention (T2,  $N=57$ ), and one month follow-up (T3,  $N=51$ ). Self-reported data including behavior-related indicators for PA and FVI, and psychological indicators of health behavior (i.e., intention, planning), as well as perceived health outcomes (i.e., Quality of Life, QoL, BMI, and depression) were evaluated and analyzed.

*Keywords: e-health learning, web-based intervention, physical activity, fruit and vegetable intake, cardiac patient, rehabilitation-aftercare*

## Effect of a web-based intervention on physical activity and fruit and vegetable intake among Chinese university students

**Chun Hu, Yanping Duan (Hong Kong Baptist University, China), Julian Wienert (University of Lübeck, Germany), Gangyan Si (Education University of Hong Kong, China), Sonia Lippke (Jacobs University Bremen, Germany)**

Ample evidence demonstrates that university students are at high risk for sedentary behaviours and inadequate fruit and vegetable intake. Internet-based interventions for multiple health behaviour appear to be promising in changing such unhealthy habits. Limited randomized controlled trials have tested this assumption among Chinese university students. This study aimed to test the continuous effectiveness of Health Action Process Approach among Chinese university students. Health Action Process Approach divides the health behaviour change process into motivational phase, in which people who do not intend to change their behaviour (non-intenders) are motivated to develop their intentions, and volitional phase, in which people initiate and perform the behaviour. Within the volitional phase, a distinction can be made between people who have the intention to perform a specific behaviour but do not act (intenders) and people who already perform the behaviour (actors). An 8-week web-based intervention was conducted to improve stage of change for physical activity (PA), stage of change for fruit and vegetable intake (FVI) as well as the psychological variables of PA and FVI. Self-reported data including stages of change for PA and FVI, motivational (risk perception, outcome expectancies, self-efficacy) and volitional (action planning, coping planning, social support) indicators for PA and FVI were collected. In a randomized controlled trial, university students from one university in the central region of China were recruited during their PE class. 493 students were randomly assigned into one of two groups: (1) intervention group: first 4-weeks on PA and subsequent 4-weeks on FVI; (2) the control group. Three web-based assessments points were conducted including one at the beginning of the intervention (T1, N=493), at the end of the 8-week intervention (T2, N=337), and at a 1 month follow-up after the intervention (T3, N=142).

*Keywords: web-based intervention, physical activity, fruit and vegetable intake, university students, motivational indicators, volitional indicators*

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## Youth Experience Survey: Where it started, where it has traveled, and what issues it faced along the way

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**Chair: Scott Rathwell (University of Ottawa, Ottawa, Canada)**

Contemporary approaches in sport psychology have adopted strength-based methods for facilitating positive development (Danish et al., 1993). This approach has been exemplified through expanding research in Positive Youth Development (PYD; Gould & Carson, 2008; Lerner et al., 2005). One limitation in the PYD literature is the lack of agreement of an operational definition of PYD which has led to multiple instruments measuring the construct (MacDonald & McIsaac, 2016). Based on their synthesis of PYD literature, Gould and Carson (2008) advocated for the use of the Youth Experience Survey (YES 2.0; Hansen & Larson, 2005), contending that it assesses pertinent themes related to positive youth developmental. Therefore, the aim of this symposium is to present the evolution of the YES and how it has emerged as a useful measure in PYD. Each speaker will summarize a unique variant of the YES and will discuss the merits of the scale. The first presentation by David Hansen will highlight the history of the YES and present recent development with the instrument. The second presentation by Sandy Mosher will discuss adaptations of the YES to a Special Olympics population while the third presentation by Patricia Gaion will discuss adaptation of the instrument into Portuguese. The fourth presentation by Scott Rathwell will review work conducted on a new variant of the YES that is specific to the university sport setting. The fifth presentation by Mathew Marini will speak to a short form version of the YES-S and its utility within youth and university settings. Finally, Dany MacDonald will act as

the symposium discussant and respond to the presentations and reflect on the future of quantitative assessment in PYD through sport.

*Keywords: positive development, psychometrics, measurement*

## The history, evolutions, and future of the Youth Experience Survey

**David M Hansen, Nadia Jessop (University of Kansas, Lawrence Kansas, United States of America)**

The history and ‘evolutions’ of the Youth Experience Survey (YES) will be discussed with the intent of highlighting its conceptual and psychometric strengths and limitations, and future research questions that it can address. A burgeoning research field on positive youth development in out-of-school or after-school youth programs—including sport—emerged in the mid-to-late 1990’s. Although there was growing recognition of the role youth programs in supporting positive development (National Research Council, 2002), the field lacked measures to assess the range of development within these programs. In response to this absence, the YES, 1.0 was developed as a self-report measure to inventory high-school adolescents’ developmental experiences in a particular extracurricular activity or community-based youth program (Hansen et al., 2003). An overarching aim in creating the YES was to focus on ‘tangible’ experiences that adolescents could readily identify and rate the frequency of their occurrence. Although the original YES contained some statements about what adolescents’ learned in a program, the authors’ intent was to focus on experiences (e.g., “I set a goal”) rather than on learning (e.g., “I learned that...”). This distinction, however, is often blurred. Since its publication in 2003, the YES has undergone numerous revisions by one of the original authors (Hansen; versions 2.0, 3.0, and 3.1) and by other researchers (e.g., MacDonald et al., 2012). The purposes for changing the YES are varied and include strengthening its psychometric properties, and adapting it for use with different ages, languages, cultures, and settings (e.g., formal education). While significant improvements have been made, several conceptual and psychometric questions remain, e.g., what is an appropriate response scale? Results from research with two recent revisions (Hansen et al., 2015; 2016) will be presented, along with future research questions on what the YES can (and cannot) address.

## Exploring the factor structure of the Youth Experience Survey for Sport adapted to Special Olympics athletes

**Alexandra Mosher, Jessica Fraser-Thomas (York University, Toronto, Canada), Dany J. MacDonald (University of Prince Edward Island, Charlottetown, Canada), Jonathan Weiss (York University, Toronto, Canada)**

Special Olympics (SO) is the world’s largest sport organization for individuals with intellectual disabilities. The SO mission is to “transform lives through the joy of sport everyday, everywhere” (SO, n.d.). Given this mission, it is important to examine the experiences of young people within SO programs. The purpose of this study was to test the factor structure of a modified version of the Youth Experiences for Sport (YES-S; MacDonald et al., 2012) in a sample of parents of youth in SO Ontario. The original YES-S measures youths’ developmental experiences participating in organized sport activities in five specific domains: personal and social skills, cognitive skills, goal setting, initiative, and negative experiences. The modified version of the YES-S used in this study included only 12 of the original 37 items, with a focus on positive (versus negative) experiences that could be best answered through parent proxy (i.e., eliminating cognitive skills and most goal setting skills items). Participants consisted of 470 parents of SO Ontario athletes. Parallel and Scree plot analyses suggested a two-factor solution be retained. An exploratory factor analysis retaining two factors was conducted using the maximum likelihood extraction method with direct oblimin rotation. Due to cross-loadings above the .30 cut-off, one item was removed, resulting in an 11-item scale with all items having factor loadings above 0.32. The two factors are consistent with two of the original YES-S domains (i.e., personal and social skills, and initiative). Findings suggest the modified 11-item YES-S offers a valuable parent-proxy tool to

measure social experiences and initiative experiences among persons with intellectual disabilities participating in sport programs. Additional research may focus on further testing the tool in diverse samples (i.e., non-SO programs) and cultures, and exploring other potential domains of developmental experiences in this population.

### **Cross-cultural adaptation and psychometric properties of the portuguese version of the Youth Experience Survey for Sport (YES-S)**

**Patrícia A Gaion Rigoni (State University of Maringá, Maringá, Paraná, Brazil), José R A Nascimento Junior (Federal University of Vale do São Francisco, Petrolina-PE, Brazil), Isabella C Belem (University of Paraná, Umuarama-PR, Brazil), Lenamar Fiorese Vieira (State University of Maringá, Maringá, Paraná, Brazil), Dany J. MacDonald (University of Prince Edward Island, Charlottetown, Canada)**

There has been a significant amount of research directed at measuring the experiences of youth engaged in structured sport activities (MacDonald & McIsaac, 2016). Although this work has been undertaken internationally, most of the research has been conducted on English speaking youth. One reason for this may be due to the lack of validated instruments applicable to youth who speak different languages. To address this shortcoming, this study aimed to examine the cross-cultural adaptation and the psychometric properties of a Portuguese version of the Youth Experience Survey for Sport (MacDonald et al., 2012). For content validity, an expert group consisting of translators and academics performed the translation and evaluate the content of the instrument. Reliability was evaluated with a sample of 139 athletes while temporal stability was conducted with 19 athletes across two data collections periods. Construct validity was tested with two different samples totaling 728 athletes. An exploratory factor analysis (EFA) was conducted on the first sample ( $n = 428$ ) while a confirmatory factor analysis (CFA) was conducted on the second sample ( $n = 300$ ). Data analysis was conducted through the Content Validity Coefficient (CVC), Cronbach's alpha ( $\alpha$ ), intraclass correlation (ICC) and EFA/CFA. Results showed a Portuguese version containing clear and relevant questions ( $CVC > 0.80$ ), good internal consistency ( $\alpha > 0.70$ ) and acceptable temporal stability ( $ICC > 0.70$ ). The EFA model revealed a four factor solution with 22 items, which was followed up with a CFA model that produced acceptable properties for the scale. The revised 22-items scales extends original work using the YES-S and measure youth development across the subscales of personal and social skills, cognitive skills, initiative experiences, and negative experiences. Conclusions of this study are that the Portuguese YES-S is a valid measure for assessing experiences of Portuguese speaking youth sport participants.

### **Adapting the youth experience survey for emerging adult athletes: The creation and ongoing validation of the university sport experience survey**

**Scott Rathwell, Bradley W. Young (University of Ottawa, Ottawa, Canada)**

Most Youth Experience Survey (YES) based sport research has looked at adolescent (e.g., Wilkes & Côté, 2010) or youth populations (e.g., MacDonald et al., 2012), with little assessment of developmental outcomes and experiences of emerging adults. The limited focus on emerging adult athletes may be due to a lack of measurement tools available. We sought to establish a valid measurement tool for university sport. Model fit of a modified YES instrument was tested using a pan-Canadian sample of 605 university athletes. Confirmatory Factor Analysis (CFA) and Exploratory Structural Equation Modeling (ESEM) showed poor fit. Post-hoc modifications improved fit, resulting in a 46-item, 9-factor model with five positive and four negative dimensions, which was named the University Sport Experience Survey (USES; Rathwell & Young, 2016). Criterion validity was tested using an independent sample of 498 university athletes. Results showed good model fit. Invariance tests were performed on data from both samples ( $N = 1103$  athletes). The USES was fully invariant across sport sanction (varsity or competitive club), sport type (team or individual), player status (starter or non-starter), and eligibility status (rookie or senior), and structurally invariant across gender (male or

female). Finally, using data from the first sample of 605 athletes, concurrent validity was examined by comparing athletes' responses on the USES with their ratings of their coaches' transformational, transactional, and laissez faire leadership behaviors. Results showed significant correlations between USES outcomes and coaches' use of transformational and laissez faire leadership. These results show the USES is a valid assessment tool for positive development outcomes related to initiative, basic skills, interpersonal relationships, teamwork and social skills, adult networks and social capital, and negative experiences of stress, negative peer interactions, social exclusion, and inappropriate adult behavior.

### The short form YES-S and its utility within youth and university settings

**Philip Sullivan, Matthew Marini, Kaitlyn LaForge-MacKenzie (Brock University, St. Catharines, Canada)**

The Youth Experience Survey has a history of ambivalent support for its psychometric properties and factor structure (MacDonald et al., 2012; Sullivan et al., 2015). A confirmatory factor analysis (CFA) with a sample of 346 Canadian youth sport participants (M age = 15.4 years) showed a poor fit of the model to the data (CFI = .860, SRMR = .076, RMSEA = .071). However, deleting the items with poor factor loadings (as per Hair et al., 2006) resulted in an excellent model fit (CFI = .955, SRMR = .054, RMSEA = .059). This revised version, titled the short form YES-S, includes 22 items that reflect MacDonald et al.'s (2012) five-factor structure. Subsequent research has examined the factor structure of the short form YES-S with university athletes. Rathwell et al., (2015) found that the indices met the criteria for good model fit (CFI = .909, SRMR = .056, RMSEA = .058) with a sample of 605 Canadian university athletes (237 male, 368 female; M age = 20.0). Composite reliability analyses provided additional support for this conclusion; whereby, the coefficients indicated that all subscales had strong internal consistency reliability ( $CR \geq .70$ ; Hair et al., 2010). More recently, Marini and Sullivan (2016) investigated the potential difference in YES-S outcomes in a sample of 82 participants (M age = 15.0) in three different youth sport streams: community, competitive, and instructional. They found significant differences between groups in three sub-scales. Competitive athletes scored significantly higher than community athletes on both Cognitive Skills and Goal Setting, whereas instructional athletes were significantly higher than community athletes on Initiative. In conclusion, the short form YES-S appears to be a valid and reliable assessment of PYD in various youth sport contexts. This is particularly promising considering the history of psychometric properties of PYD measures.

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### Imagery measurement and psychophysiological correlates

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**Chair: Anthony Watt (Victoria University)**

Imagery is a powerful mental process that can influence sports performance. To examine the impact of imagery and its relationship to cognitive, affective, and behavioural variables, it is essential to measure aspects of imagery in a reliable and valid way. Further, such measurement is important to the development of effective programs of imagery training in sport and to the assessment of program impact. An element of imagery that is central to these endeavours is imagery ability. Individuals with low imagery ability might not be in a position to take advantage of imagery training. In this symposium, we include four presentations that examine the measurement of imagery ability and psychophysiological correlates of imagery in sport. Given the advent of modes of electronic communication, developing ways to administer measures of key variables, such as imagery ability, is valuable. In the first presentation in the symposium, Montse Ruiz and colleagues describe the development of an online measure of imagery ability, based on the Spanish version of the Sport Imagery Ability Measure (SIAM; Watt et al., 2004) and report on cross validation of the online form with the original hard copy version. Next, Zhang Bin and colleagues present a study validating the Chinese version of the SIAM across a diverse sample in Shanghai. Then, Dagmara Budnik-Przybylska and colleagues discuss a study examining the psychophysiology of sport imagery in which EEGs and a range of psychophysiological measures were

monitored, while participants imagined scenes from the SIAM and the KWS (Budnik-Przybylska, 2014). Finally, Soni John Thanikkal and colleagues report on the neural correlates observed during imagery of a finger-movement task from internal and external imagery perspectives. Tony Watt leads audience discussion of the implications of these studies.

*Keywords: imagery measurement, imagery ability, online administration, psychophysiological correlates*

### Spanish version of the Sport Imagery Ability Measure (SIAM): cross validation of hard copy and online forms

**Montse C. Ruiz (Faculty of Sport and Health Sciences, University of Jyväskylä, Finland), Anthony Watt (College of Arts and Education, Victoria University, Melbourne, Australia), Natalia Palacios (Sports Studies, Research and Medicine Centre, Pamplona, Spain), Tony Morris (Institute of Sport, Exercise, and Active Living, Victoria University, Melbourne, Australia)**

Imagery is a popular tool used by athletes, coaches, and psychologists for skill learning and performance enhancement purposes (Cumming & Ramsey, 2009; MacIntyre & Moran, 2007). An accurate assessment of imagery ability can assist in the implementation and evaluation of imagery training programs. The Sport Imagery Ability Measure (SIAM; Watt et al., 2004) is a 48-item self-report questionnaire that uses four sport-related scenes to examine five dimensions of imagery (i.e., vividness, control, duration, ease, and speed of generation), six senses (visual, auditory, olfactory, gustatory, tactile, and kinesthetic) and the experience of emotion. In this study, we examined the dimensional structure and reliability of the hard copy and a newly developed online adaptation of the Spanish version of the SIAM, constructed using the Qualtrics program. Participants were 540 (306 male, 234 female, aged 15 to 61 years) athletes competing in individual ( $n = 263$ ) and team sports ( $n = 277$ ) at regional ( $n = 107$ ), national ( $n = 292$ ), or international ( $n = 141$ ) levels. Two-hundred-and-seventy-four participants completed the hard copy and 266 the online version. Cronbach's alpha coefficients were typically above  $\alpha = .7$ , and ranged from ease ( $\alpha = .57$ ) to gustatory ( $\alpha = .87$ ). We undertook exploratory structural equation modeling and confirmatory factor analysis using Mplus software. Results demonstrated satisfactory fit (e.g., CFI = .980; RMSEA = .055) for a 3-factor (i.e., generation, feeling, and single senses) solution of the SIAM for data from the hard copy and online forms. Multi-group comparisons provided support for measurement invariance across gender and competitive level. However, evidence of partial invariance was obtained for both formats of administration. The findings provide tenable support for the reliability and validity of the Spanish version of the SIAM in both formats of administration.

*Keywords: sport imagery, internal consistency, factor analysis*

### Validation of the Chinese version of the Sport Imagery Ability Measure

**Zhang Bin (Shanghai University of Sports, Shanghai, China), Tony Morris (Institute of Sport, Exercise & Active Living, Victoria University, Australia), Anthony Watt (College of Arts and Education, Victoria University, Australia)**

Imagery techniques are widely used by Chinese athletes, so it is important to measure athletes' imagery ability to optimize effectiveness of imagery training. No validated Chinese-language measure of imagery ability exists, so development of SIAM in Chinese is timely. The present study examined the reliability and validity characteristics of the Chinese version of the Sport Imagery Ability Measure (SIAM; Watt et al., 2004). The sample comprised 391 participants (249 male, 142 female) drawn from 32 sports and ranging in age from 16 to 55 years ( $M = 22.73$ ,  $SD = 6.17$ ). All participants had sports experience, they came from various professions, such as professional athletes, coaches, and university students in physical education. Participants competed at national ( $n = 97$ ), state ( $n = 80$ ), district ( $n = 118$ ) and community level ( $n = 77$ ). The Sport Imagery Ability Measure is a 48-item self-report questionnaire that uses four sport-related scenes to examine five dimensions



of imagery (i.e., vividness, control, duration, ease, and speed of generation), six senses (visual, auditory, olfactory, gustatory, tactile, and kinesthetic) and the experience of emotion. SIAM was translated into Mandarin using a standard back-translation procedure. The 3-factor model demonstrated a good fit with the sample (NFI = .91, CFI = .92, RMSEA = .11). Cronbach's alpha coefficient ( $\alpha = .95$ ) indicated good internal consistency for the overall measure. Internal consistency for the subscales was sound, ranging from .61 (ease) to .85 (control). Test-retest reliability for the questionnaire sub-scales was good (between 0.86 (emotion) and 0.95 (visual)) over a 4-week period ( $n = 63$ ). The Chinese version of SIAM demonstrated acceptable factor structure, internal consistency, and test-retest reliability across a wide range of sports contexts. Based on further statistical analysis, refinement of the Chinese version is in progress.

*Keywords: imagery, psychometrics, sport, Chinese SIAM*

### Psychophysiology of sport imagery

**Dagmara Budnik-Przybylska, Jacek Przybylski (University of Gdansk, Poland), Krzysztof Malej (Neuro-Device, Poland)**

To enhance understanding of the functioning of imagery in sport, studies of imagery have often examined psychophysiological parameters (Holmes, 2006). This pilot study analyzed brain waves (alpha wave) and physiological parameters, including pulse rate (PULS), amplitude of the pulse (PVA), temperature (TEMP) and electrodermal activity (SCL), while athletes imagined different situations related to sport. Participants were 10 athletes (female=5; male=5), aged between 14 and 40, with different sport experience. They imagined six scenes related to sport. Situations were extracted from two imagery questionnaires, namely SIAM (Polish) (Budnik- Przybylska, et al., 2014) and the KWS (Budnik-Przybylska, 2014). During imagery, EEG waves and physiological parameters were monitored using Biofeedback Expert and g.Nautilus. The hierarchical linear model for mixed effects was used to assess differences between EEGs and physiological measures for participants and tasks. Physiological measures: SCL, BVP, PVA and PULS were significantly related to gender, age, and sport experience. All effects were significant, but only one effect size for SCL was moderate ( $\eta^2 = .24$ ); the rest were small. Effects of imagery task were highest for PVA ( $\eta^2 = .83$ ), PULS ( $\eta^2 = .67$ ) and SCL ( $\eta^2 = .16$ ). The same indicators of physiological reactions were sensitive to individual differences during the task, but the effects were moderate in PVA ( $\eta^2 = .11$ ) and small in PULS ( $\eta^2 = .05$ ) and SCL ( $\eta^2 = .01$ ). For alpha waves, all effects for individual differences for all localizations were significant and effect sizes were moderate or large (from .23 for PZ to .36 for P3). For four localizations, task effects were not significant and all effect sizes were small (.01 to .06) and for individuals, effects for FP1, FP2, T8, P4, PO8 were not significant. Other effects were significant, but very small. Further research is needed to examine changes in psychophysiological parameters during imagery training.

*Keywords: imagery, psychophysiology, EEG*

### Neural correlates of internal and external imagery

**Soni John Thanikkal (Christ College, Irinjalakuda, Kerala, India), Tony Morris (Institute of Sport, Exercise & Active Living, Victoria University, Australia), Joseph Ciorciari (Swinburne University, Melbourne, Australia)**

We examined the neural correlations of internal and external imagery perspectives (Mahoney & Avenier, 1977) in order to increase understanding of the differences between the two perspectives of imagery. The experimental task comprised video stimuli presented from internal and external views. The views exhibited an index finger pressing the white triangular ready key on a custom-built keyboard, then moving to one of four equidistant, blue, rectangular task keys. The experimental task contained eight video stimuli in random sequences, four showing an internal view (IV; the participant's perspective) and four showing an external view (EV; the perspective from the monitor). We collected EEG data while participants performed the research

tasks. We used Low Resolution Electromagnetic Tomography Analysis (LORETA; Pascual-Marqui, Michel, & Lehmann, 1994) in order to localize the source of neural activations during experimental conditions based on the EEG data. LORETA revealed the brain sources of electrical activity based on power generated during experimental conditions from EEG recorded from 64 electrodes. The LORETA analysis used brain vision analyser software, which displays the strongest current density, using Talairach coordinates (Talairach & Tournoux, 1988), consistent with the Montreal Neurological Institute (MNI) system (Collins, Neelin, Peters, & Evans, 1994). These coordinates are mapped to Brodmann areas. This revealed the brain areas associated with internal and external imagery perspective use. We found that internal imagery activated BA 2, BA 4, BA 20, BA 21 and BA 40, whereas External imagery activated BA19, BA20, BA 22, BA 37, BA 39, BA 40. The findings provide evidence that internal imagery engages more sensory-motor areas of the brain, whereas external imagery engages primarily occipital, that is, visual areas.

*Keywords: internal imagery perspective, external imagery perspective, EEG, Low Resolution Electromagnetic Tomography Analysis*

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## Addressing mental health in sport: An international perspective

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**Chair: Natalie Durand-Bush (University of Ottawa)**

Competitive athletes face complex demands and pressures that can impact their well-being and performance. It is thus not surprising to find that they are predisposed to similar or an even greater risk of mental health issues as their non-athlete peers (Hughes & Leavey, 2012). Concern for the well-being of athletes has traditionally been restricted to their physical health and its influence on performance outcomes (Bergeron et al., 2015). One potential explanation for this is the assumption that athletes are inherently mentally healthy (Bond, 2002). Another is that mental health challenges and illnesses have not been openly discussed within this population due to a prevailing stigma. This has led some athletes to deny distress (Mazzer & Rickwood, 2015) and underutilize mental health services (Lopez & Levy, 2013). We have, however, worked with competitive athletes experiencing mental health challenges and will share critical aspects of our experiences in this symposium. Using an international perspective and a multiple case study approach, we will first present an overview of the literature on mental health, including results of a recent study on the mental health of Canadian athletes. We will then discuss the status of mental health in sport in Sweden, with a focus on two specialized mental health clinics that were recently opened to service elite Swedish athletes and coaches. Third, we will address important skills and tools that enabled Canadian athletes to effectively manage their mental health at the 2016 Rio Olympic Games. Finally, we will shed light on key environmental and political factors that have shaped the mental health of high performance Norwegian athletes and coaches. The role of the sport psychology consultant in managing critical events and relationships directly impacting athletes' and coaches' well-being will be explained. Strengths and limitations regarding mental health research and practice in sport will be addressed.

*Keywords: mental health, mental illness, elite sport, performance, well-being, athletes, practitioners*

## Mental health and well-being in Canadian intercollegiate athletes

**Krista Van Slingerland (University of Ottawa), Natalie Durand-Bush (University of Ottawa), Scott Rathwell (University of Ottawa)**

Mental health has become increasingly important worldwide, including in the context of sport. Although some researchers have investigated the mental health of athletes (e.g., Eklund, Dowdy, Jones, & Furlong, 2011) and attempted to understand their vulnerability to specific mental illnesses (e.g., eating disorders and substance abuse, Reardon & Factor, 2010), empirical evidence on mental health in sport is scarce. The purpose

of this presentation is to provide an overview of the prevalence and factors contributing to mental health and mental illness in sport. In particular, results of a recent study with Canadian intercollegiate athletes underscore the importance of taking a holistic perspective when examining mental health in sport. Athletes from 30 Canadian universities completed an online mental health survey in November 2015 (n=388) and March 2016 (n=110) in order to generate foundational data and help guide the creation of mental health policies and standards of practice. Results showed that mental health levels were, on average, moderate to high, and more athletes were flourishing than languishing (Keyes, 2002). Mental health levels did not significantly differ across time nor based on gender, alcohol use, living situation, year of study, and type of sport. Of the 110 athletes who participated at both time points, 18% reported a previous mental illness diagnosis. These athletes maintained moderate mental health across time and 30% of them were flourishing at Time 2. These findings support Keyes' (2002) dual-continua model of mental health and mental illness, and suggest that the presence of mental illness does not automatically imply low levels of well-being and dysfunction. This presentation concludes with a brief case study showcasing how sport is a powerful medium that can alleviate or exacerbate mental health issues. Recommendations to improve and sustain the mental health of Canadian athletes are provided.

*Keywords: mental health, well-being, athletes, university sport*

## **Well-being and ill-being in the context of elite sports: A reflection on the complex interdependency between performance and clinical issues**

**Göran Kenttä (The Swedish Sport Confederation & The Swedish School of Sport and Health Sciences)**

Sean McCann published an important article titled "At the Olympics everything is a performance issue" in 2008. A range of clinical issues faced and reported at the Games by the U.S. team sport psychologist was presented. Nevertheless, performance accomplishments will always be a fundamental concern when supporting Olympic level athletes, despite co-existing clinical issues, especially in the midst of the Games. This fact raises several challenging questions. A critical question is about how to reduce stigma surrounding mental health and thus increase help-seeking at an earlier stage (Schwenk, 2000). Moreover, we need to better understand the dynamic and complex relationships between mental health and athletic performance and discuss related ethical questions. Unfortunately, knowledge about mental health and elite sport is still limited. Interestingly, the following relationship between psychiatric disorders and elite athletes has been suggested: (a) athletes may obtain high levels of success in spite of a coexistent primary psychiatric disorder, (b) athletes may have chosen the athletic arena as means of coping with the disorder, and (c) athletes may have psychiatric illness precipitated or worsened by sport itself (Reardon & Factor, 2010). This presentation will address reflections and lessons learned from a collaborative effort between the Sport Confederation Elite Department and a Mental Health Clinic specifically devoted to support elite sports. This Clinic started as a pilot project in 2015 within the public health care system as the first of its kind in Sweden. It will be argued that sport psychology staff need to consider performance enhancement, facilitate well-being, prevent ill-being but also provide professional treatment of clinical issues when needed. Ultimately, the purpose is to provide a support system that contributes to more sustainable mental health in the general population of elite athletes, but especially to those vulnerable to mental health.

*Keywords: well-being, ill-being, elite sport, performance, clinical issues*

## **Mental illness and health within the Olympic sport environment: Issues and solutions**

**Penny Werthner (University of Calgary)**

There is little research examining high performance athletes and the prevalence of mental health issues. Athletes in high performance sport are often seen to be healthy both physically and mentally, and there is an

“overall cultural inclination to idealise athletes and their health, thereby foreclosing the possibility of their having psychiatric illnesses” (Bar & Marker, 2013). We know this is not always the reality. However, we must also recognize that the high performance and Olympic environment is not ‘normal’. The pressure to perform at World Championships, Olympic qualifications, and the Olympic Games is immense. Many athletes learn how to manage those stressors very effectively, particularly with skilled coaches and support staff (Din, Paskevich, Gabriele & Werthner, 2015). Nevertheless, many others struggle with anxiety and depression that may become clinical, as well as issues such as eating disorders and substance abuse. And unfortunately, many athletes at this level of sport participation are hesitant to seek help, particularly in a culture that rewards strength and ‘toughness.’ According to Reardon and Factor (2010), it is critical that the stigma of mental illness be alleviated and appropriate diagnosis and treatment of mental health issues for this population be provided. This case study examined the lives of two 2016 Rio de Janeiro Olympic athletes who struggled with mental illness. The mental health issues faced by each of the athletes, the tools and strategies utilized, and the professionals engaged, over a two-year period, to enable each of the athletes to recognize, accept and, in time, to become mentally healthy, will be discussed. Based on these findings, recommendations on how to effectively manage mental illness within the high-performance environment are provided.

*Keywords: Olympic sport, mental illness, mental health, practitioners*

## **Collateral damage: The dark side of extraordinary opportunities in elite sports**

**P. Nicolas Lemyre (Norwegian School of Sport Sciences)**

Athletes and coaches in elite sports share exceptional talent, dedication and commitment in order to deliver high-level performances. Recent research has identified an increase in the media attention and scrutiny of elite athletes and coaches (Kietzmann, Hermkens, McCarthy, & Silvestre, 2011). In general, an increase in visibility tends to lead to greater opportunities for sponsorships and endorsements. However, this increase in popularity does not only lead to benefits. It also puts the athletes and coaches at a great risk for suddenly having to deal with stakeholders, who were originally peripheral to their world but have become main actors. When profiled athletes and coaches face personal challenges during the course of their career, the media exposure and the interaction with stakeholders during these crises will create potential biases of decision makers and often result in an unequal playing field. The mental health of these athletes and coaches is treated as a case of public interest. The aim of this presentation is to highlight the role of the sport psychology consultant in supporting the individuals struggling to obtain fair treatment within the professional sport structure and having their life, liberty, and opportunities being predicated on the media's agenda of selling newspapers or getting hits, expanding media circulation, or conquering ratings (Robinson, 1998). Examples from profiled media cases in Norway will be used to highlight the complex political environment of elite sports and the opportunities for sport psychology interventions to prevent the heightened risks for exhaustion and other debilitating states in athletes and coaches.

*Keywords: elite sports, athletes, coaches, exhaustion, debilitating states*

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## **The effects of exercise on anxiety, depression, and associated unhealthy behaviours**

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**Chair: Fabien Legrand (University of Reims Champagne Ardennes, France)**

Adult mental health is determined by many diverse biological, environmental and psychosocial factors, many of which are impossible to modify (e.g., early life experiences, personal genetic information). However, mental health is not predetermined entirely by uncontrollable processes. For instance, individuals can learn to be more resilient by employing thinking strategies that minimize the negative impact of their vulnerabilities. Likewise, tobacco and alcohol use have been identified as common self-regulatory behaviours in individuals

with high anxiety or depression-related symptoms. Over the past decades, research has also emphasized the potential of physical exercise to alleviate depression and anxiety. In addition, psychological as well as neurobiological explanations have been developed (and are still developing) to account for the link between physical exercise and mental health. The aim of this symposium is two-fold: one aim is to describe research evidence on the efficacy of exercise training programs for relieving depression/anxiety and substance abuse in individuals with depression/anxiety. A second aim is to propose an explanation for the effects of exercise by presenting known or putative psychological and neurobiological mechanisms. We will also highlight current gaps in the literature and questions yet unanswered throughout our presentations. To introduce the debate, Matthew Herring will provide a thorough literature review on the anxiolytic effects of acute and chronic exercise. Jolene Jacquart will pursue this further by presenting a co-authored contribution examining how exercise can help participants with high anxiety sensitivity to quit smoking. Third, Fabien Legrand will shift the debate on to whether aerobic exercise can be used as an adjunct treatment in hospitalized patients with severe depression. Lastly, Lindsey Hopkins will examine the efficacy and acceptability of yoga interventions among two specific samples of depressed participants.

*Keywords: exercise, anxiety, depression, tobacco use*

### **The effects of exercise on anxiety: What is known and how might exercise work?**

**Matthew Herring (University of Limerick, Ireland)**

Research into the effects of acute and chronic exercise on anxiety continues to increase, but, compared to well-established antidepressant effects, the anxiolytic effects of exercise remain understudied. Additionally, little is known regarding how and why exercise might reduce anxiety. Thus, this symposium presentation will provide: i) a critical synthesis of the available empirical evidence regarding the effects of acute and chronic exercise on anxiety among adults, including otherwise healthy adults, chronically-ill adults, and adults with a clinical or subclinical anxiety disorder; and, ii) a brief overview of previous and emerging evidence regarding plausible mechanisms of exercise effects on anxiety, including sex-related differences, anxiety sensitivity, inflammatory markers, and attentional biases to emotional stimuli. The available empirical evidence supports that acute aerobic exercise attenuates state anxiety (Ensari et al., 2015) and that exercise training has consistent, small-to-moderate effects on anxiety symptoms among otherwise healthy adults (Herring et al., 2014), adults with a diverse range of chronic illnesses (Herring, O'Connor & Dishman, 2010; Herring, O'Connor & Dishman, In Preparation), and adults with an anxiety disorder (Herring et al., 2012, 2015, 2016; Stubbs et al., 2016). Emerging evidence supports acute effects of aerobic exercise among young adults with probable Generalized Anxiety Disorder (Herring, Hallgren, & Campbell, In Review) and the anxiolytic effects of resistance exercise training (Gordon & Herring, In Review). Sex-related differences (McDowell et al., 2016), and decreased anxiety sensitivity (Broman-Fulks & Storey, 2008), pro-inflammatory cytokines (Herring et al., in preparation), and attentional biases toward negative emotional stimuli (Herring, Thom, & Campbell, in preparation) have been implicated as plausible mechanisms of exercise effects on anxiety and will be discussed.

*Keywords: anxiety, chronic exercise, acute exercise, mechanisms for effects*

### **An exercise augmented smoking cessation treatment for individuals with high anxiety sensitivity: The relationship between attendance patterns and quit success**

**Jolene Jacquart (University of Texas, Austin, USA)**

The variability in treatment response across studies suggests that exercise may be most efficacious for specific populations of individuals who are most prone to respond. Individuals with high-anxiety sensitivity (AS) are one population for whom exercise interventions appear particularly facilitative. Evidence suggests elevated AS is a risk factor for poor smoking cessation outcomes and there is growing support that targeting AS with

aerobic exercise benefits smoking cessation interventions. However, low treatment attendance is considered problematic. We examined the association between attendance patterns and smoking outcomes in a randomized, controlled exercise augmented smoking cessation intervention for individuals with high AS. In addition to standard smoking cessation treatment, participants were randomized to 15 weeks of an exercise intervention or an education control condition. Latent class growth analysis (LCGA) tested whether intervention attendance would be better modeled as qualitatively distinct attendance patterns rather than as a single mean pattern. Multivariate generalized linear mixed modeling (GLMM) was used to evaluate associations between the attendance patterns and abstinence at the end of treatment and at 6-month follow-up. The LCGA solution with three patterns characterized by high probability of attendance throughout (Completers, 46.3%), gradual decreasing probability of attendance (Titrators, 23.5%), and high probability of dropout within the first few weeks (Droppers, 30.1%) provided the best fit. The GLMM analysis indicated that titration was associated with lower probability of quit success for those in the control condition. Probability of quit success was not significantly different between Titrators and Completers in the exercise condition. These findings underscore that discontinuation is not necessarily indicative of poorer abstinence outcome, and generate testable hypotheses for future research.

*Keywords: anxiety sensitivity, smoking cessation, exercise intervention*

## **The antidepressant effects of exercise in the first two weeks of antidepressant therapy among hospitalized inpatients with major depressive disorders**

**Fabien Legrand (University of Reims Champagne Ardennes, France)**

Many intervention studies have reported very positive results regarding exercise for treating depression (e.g., Legrand, 2014; Legrand & Heuze, 2007). However, a majority of these studies were conducted with participants who had not been recruited from clinical settings but were defined as depressed on the basis of cut-off scores from self-reported questionnaires. Most researchers (e.g., Krogh et al., 2011) now consider that trials should specifically focus on people who had presented to clinical services because this is more likely to mirror clinical situations in which health professionals might consider prescribing exercise as a treatment for depression. The investigation we report here is a randomized controlled trial including hospitalized inpatients with major depressive disorders (MDD). It can be read in full details elsewhere (Legrand & Neff, 2016). Thirty-five inpatients with MDD received either a brief aerobic exercise intervention (10 days of walking/running,  $n = 14$ ), placebo exercise (10 days of stretching,  $n = 11$ ), or no intervention (usual care,  $n = 10$ ). The study outcome was the change in the Beck Depression Inventory (BDI-II) total score from baseline to the end of the study period. All participants had to have started antidepressant drug therapy for  $< 2$  weeks at study entry. The mean initial score on the BDI-II was 36.5 (no between-group differences). Compared to baseline mean scores, both the aerobic ( $p < .001$ ) and placebo ( $p = .011$ ) exercise interventions yielded significant improvements. However pre-to-post intervention reduction in depressive symptoms appeared to be statistically higher in the aerobic exercise group ( $p = .012$ ). Aerobic exercise resulted in a clinical response for 57.1% of participants versus 9.1% of those treated with placebo exercise. Having participants with length of antidepressant use  $< 2$  wks at study entry minimizes the confounding effect of pharmacotherapy.

*Keywords: severe depression, hospitalized inpatients, exercise intervention, adjunct therapy*

## **Yoga for depression: Two trials examining efficacy, mechanisms, and acceptability**

**Lindsey Hopkins (VA Medical Centers, San Francisco, USA)**

Yoga is an increasingly popular approach to enhancing mental health and supported by preliminary research (e.g., Cramer et al., 2013). However, replication and greater methodological rigor is needed to establish yoga as an empirically supported treatment. This presentation will provide a critical review of extant





evidence for yoga's antidepressant effects and discuss new findings from two independent trials. Study 1: Women (N=51; age M=33.5) high in perceived stress and disordered eating were randomized to an 8-week heated hatha yoga intervention or to waitlist control. Multilevel modeling was used to examine change in depressive symptoms (which were elevated at baseline: M=18.1, for BDI-II total score), mindfulness, and self-compassion assessed at baseline and weeks 3, 6, and 9 (post-treatment). Results revealed significant intervention effects on depression ( $p=.009$ ). When mindfulness and self-compassion subscales were examined together in a multiple mediation model, decreases in critical self-judgment emerged as the most robust mediator. Correlates of adherence and early drop-out will be discussed. Study 2: Male military veterans (N=23; age M=59.9) participated in an (uncontrolled) pilot study of an 8-week hatha yoga program. T tests revealed significant improvements in depressive symptoms ( $p=.007$ ), experiential avoidance ( $p=.035$ ), and mindfulness ( $p=.047$ ). Improvement in depressive symptoms was associated with reductions in experiential avoidance ( $p<.0001$ ), increases in mindfulness ( $p=.006$ ), and higher attendance ( $p=.014$ ). Qualitative interviews suggested high acceptability and perceived benefits of yoga among older, male veterans. These trials build on prior work supporting the utility of yoga for treating depression by utilizing more rigorous methodology; extending to new populations; and implicating changes in mindfulness, experiential avoidance, and self-judgment as mechanisms of action. Future research directions will be discussed.

*Keywords: yoga intervention, depression, women, military veterans*

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## Emerging methodological approaches in sport and exercise psychology research

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**Chair: António Fernando Rosado (Faculdade de Motricidade Humana)**

The widespread use of scales in sport psychology assumes that the measures possess adequate psychometric properties, that is, that they reliably and validly assess the constructs in question. However, a perusal of contemporary psychology journals demonstrates that quantitative reports of scale reliability and validity estimates are often missing or incomplete. The purpose of this symposium is to present research work where psychometric reporting characteristics in sport psychology research are updated and exemplified. In fact, if factors do not demonstrate adequate validity and reliability, moving on to test a causal model (a structural model) will be useless. Exploratory Factor Analysis (EFA) is a statistical approach to explore the factor structure that is illustrated in some of the present studies. We add several studies with Confirmatory Factor Analysis (CFA), seen as a necessary step after exploratory factor analysis to determine the factor structure of a dataset. The studies describe the specific procedures to: data screening and analysis of missing data, normality and multivariate normality, detecting and controlling for outliers, linearity, homoscedasticity and homoscedasticity as well as measures that can be calculated to determine goodness of fit. They look to the modification indices for the covariances and for the SRCs, present new procedures considering the measuring of reliability (namely, composite reliability), convergent and discriminant validity (Average Variance Extracted (AVE), Maximum Shared Variance (MSV), and Average Shared Variance (ASV) and Square root of AVE greater than inter-construct correlations. There are articles studying Measurement Model Invariance (configurational and metric) dealing with first and second order factors. The studies present also procedures for criterion-related validity (concurrent and predictive). We add also studies considering the creating of factor scores from latent factors and latent means comparison

## Development of a self-efficacy scale for athletes of collective sports

**Andréa Duarte Pesca (Faculdade Cesusc), Sidónio Serpa (Faculdade Motricidade Humana), António Fernando Rosado (Faculdade de Motricidade Humana), Roberto Cruz (Universidade Federal de Santa Catarina)**

According to Bandura (1997), effectiveness sources are the product of a complex process of self-evaluation and self persuasion that are inserted into the cognitive processes of various sources of information. For Bandura (2001) the construction of a consistent and reliable self-efficacy scale requires a specific analysis of the factors that influence at a certain selected domain. It is essential to know the determinants that influence the fields of activity and allow to specify the aspects of self-efficacy that shall be measured. Based on the theoretical model of Bandura (1997), Feltz (1988; 1994) developed six dimensions for self-efficacy in sport: past performance accomplishments, vicarious experiences, verbal persuasion; physiological indicators; emotional indicators and imaginative experiences. These dimensions based the construction of the scale items. The objective of the research was to develop six scales, each one evaluating a determinant of self-efficacy for team sports according to the model of Feltz (1994). Based on scientific articles of the area, 6 items were elaborated for each factor of each scale, totalizing from 10 to 20 items in each scale. Upon completion of the first version of the scale, it was conducted by seven young experts in sports psychology, a content analysis. Thus, the dimensions were reorganized according to the indications of the judges. At this moment, is under way an application of the preliminary version of the scale to be followed by the process of confirmatory factor analysis, whose data will be ready for presentation at the conference. A confirmatory factorial analysis will be employed to test whether the proposed multi-factorial structure of the scale fits the Portuguese data well. The psychometric properties of the new model will consider the study of internal consistency, convergent validity, and discriminant validity.

*Keywords: self-efficacy theory; psychometric scales; high performance sport*

## **Fear of failure in sport: A portuguese cross-cultural adaptation**

***António Fernando Rosado, Marco Correia, Sidónio Serpa (Faculdade de Motricidade Humana)***

The Performance Failure Appraisal Inventory (PFAI) is a multidimensional measure of threat appraisals associated with one's fear of failure. Whilst emerging research has supported the validity and reliability of the PFAI with North American and British sport participants, its psychometric proprieties remain untested within Portuguese samples. This study examined the psychometric proprieties of the PFAI with a sample of 556 Portuguese athletes distributed in two convenience samples. The mean age of the first sample ( $n = 350$ ) was 15.65 years old ( $SD = 2.45$ ) and approximately two-thirds were males (72%). Regarding the second sample ( $n = 206$ ), the mean age of the participants was 15.29 years old ( $SD = 2.47$ ) and the great majority were males (79.6%). A confirmatory factor analysis was employed to test whether the proposed multi-factorial structure of the PFAI fits well the Portuguese data. The results demonstrated an acceptable fit [ $\chi^2 = 146.63$ , B-S  $p < 0.001$ ;  $\chi^2/df = 2.19$ , PCFI = 0.70, PGFI = 0.60, CFI = 0.96, GFI = 0.94, RMSEA = 0.06]. Composite reliability values ranged from .75 to .79, indicating that the constructs were internally consistent. Evidence for convergent validity was obtained since average variance extracted values ranged from .51 to .62, being greater than the recommended standard of .50. Multi-group analysis revealed cross-validity and the models' invariance. The correlations between fear of failure and sport anxiety measures revealed evidence of its concurrent validity. The second-order measurement model was also tested and presented an overall acceptable fit to the data [ $\chi^2 = 176.32$ , B-S  $p < 0.001$ ;  $\chi^2/df = 2.42$ , PCFI = 0.75, PGFI = 0.64, CFI = 0.94, GFI = 0.93, RMSEA = 0.07]. The PFAI appears to be a psychometrically sound measure and a valid and reliable tool for assessing fear of failure in Portuguese sport contexts.

*Keywords: fear of failure, cross-cultural validation, confirmatory factor analysis*



## Sources of sport-confidence questionnaire to brazilian athletes: Transcultural adaptation and preliminar evidences of semantic validity

**Gabriela Frischknecht (Universidade Federal de Santa Catarina), Andréa Duarte Pesca (Faculdade Avantis), Roberto Cruz, Carlos Nunes, António Fernando Rosado (Universidade Federal de Santa Catarina), Sidónio Serpa (Faculdade de Motricidade Humana)**

Sport-confidence indicates the conviction he or she will obtain success in sport. Sources of sport-confidence relate to the things that an athlete considers important to gain self-confidence. Aim: This research aimed to adapt Sources of Sport-Confidence Questionnaire – SSCQ (VEALEY et al., 1998) to Brazilian Portuguese idiom and to investigate its preliminary evidences of semantic validity. The back translation method was realized in the first stage of the process. SSCQ was translated by three Brazilian experts that domain fluently the English idiom. After that, the resultant version was translated to the original idiom. It was noticed that the back translated version and the original one were similar. But the experts related difficulty to translate items what refereed idiomatic expressions. Specific adjusts were made by researchers to adequate the questionnaire language to Brazilian athletes and their context. Semantic validity evidences were reached by expert analysis and a pilot study. Experts suggested that the instructions and items were clear, relevant and adequate to the dimensionality of the construct. In the pilot study, athletes with different ages, academic levels and sports were consulted. They indicated that instructions, items and scale were clear. The results suggest that the procedures and adjusts were essential to develop the questionnaire in the Brazilian context. Future studies should improve validity and reliability evidences of the instrument.

*Keywords: self-confidence, sport-confidence, psychometry, scales*

## Testing a full theoretical model of parental involvement in sport: Preliminary results

**Pedro Teques (School of Social Sciences, Education and Sport, Polytechnic Institute of Maia), Sidónio Serpa (Faculty of Human Kinetics, University of Lisbon), Luis Calmeiro (Abertay University, School of Social and Health Sciences.), António Fernando Rosado (Faculty of Human Kinetics, University of Lisbon), Carlos Silva (Sports Science School of Rio Maior, Polytechnic Institute of Santarém)**

Parental involvement in children's sport has long been associated with a range of youth athletes' psychological outcomes (Holt & Knight, 2014). Much of this work, however, is atheoretical and fail to explain why parents get involved and how their involvement improves young athletes' outcomes in sport. Teques and Serpa (2013) proposed a theoretical model of the parental involvement process. In the present work, we want to develop an empirical test of this model in full. We use data from the Parental Involvement Project (Teques & Serpa, 2009) which contain a normative archive sample of 1620 parents (M = 891, F = 729) and their 1620 youth athletes aged 10-18 years (M = 13,66, SD = 3,29) from the north, centre, and south coastal region of Portugal. Whereas much of the data were collected between 2009 and 2013, the most recent were collected in 2015. First, confirmatory factor analysis confirmed the measurement model [ $\chi^2(3110) = 5522.81$ , CFI = 0.921, TLI = 0.914, RMSEA = 0.040 (CI = 0.038, 0.042), SRMR = 0.058]. All factors also show reliability (values ranging from 0.74 to 0.92), and most part of them show convergent (Average Variance Extracted values from 0.42 to 0.76) and discriminant validity. Second, structural equation modelling analysis supported the model in which (1) parents' get involved in their children's sports due to their role beliefs, sense of self-efficacy, perceptions of invitations from others, self-perceived time and energy, and knowledge and skills, and (2) athletes' perceptions of their parents' behaviours concerning encouragement, reinforcement, instruction, and modelling, were associated with the child's intrinsic motivation, self-efficacy, social self-efficacy in relating to the coach, and self-regulation [ $\chi^2(3238) = 5931.23$ , CFI = 0.912, TLI = 0.908, RMSEA = 0.041 (CI = 0.040, 0.043), SRMR = 0.061]. Grounded in a review of parental involvement this model presented current knowledge for why parents get involved.

*Keywords: theoretical model, parental involvement, structural equation modelling, youth sport*

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## Sports psychology for the best performance

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**Chair: Marcelo Roffé**

Different types of intervention in Latin America are presented, in different contexts, from Cuba to Argentina, through Mexico and Colombia. As well, as different fields and sports: soccer, baseball, coaches and even different sports psychologists. Coping strategies will be presented to test the relationship between Resilience and Coping Mechanisms in Cuban youth baseball players. As well as the styles that are most related to resilient processes. A three-year professional experience with the Colombian National Team is presented, both in the qualifying period and in the 2014 Soccer World Cup itself, ending in the Copa America 2015. Remaining in the field of soccer, it is presented how cohesion influences the psychological and sports development of teens between the ages of 15 and 17 years in a football team. In this field, a two-year intervention program is shared, with coaches who work with children and youth to increase their psychological skills and improve their training styles. Finally, a paper is presented that seeks to identify what an athlete prioritizes and what motivates him to include a Sports Psychologist in their preparation process and, on the other hand, what areas and variables the Psychologist considers that primarily orient his work with the athlete.

*Keywords: stress, baseball, soccer, mental training, cohesion, perception*

### Influence of group cohesion in psychological development and sports development of teenager football players

**Shirley Jatcee Malo Barriga (SOLCPAD)**

The theme aims to present how group cohesion influences the psychological development and sports development of teenager's part of a soccer team, men between the ages of 15 and 17 years. Based on the fact that during adolescence, boys and girls tend to dedicate much of their free time to sports. The sport has a special attention, and it is important to point out that through its practice the teenager finds the opportunity to enter the world of adults and even compete within it on equal terms, thus having the sensation of having exceeded their own age. The term group cohesion is used to define the methods that make people in a group continue to be united. One of the functions of sport is integration and for many educators, sports activities contribute to fostering the spirit of union between young people from very different backgrounds and cultures, and the more often sports are practiced, especially in teams, such as football, the more likely this integration happens.

*Keywords: teenagers, group cohesion, psychological development, sports development, and soccer team*

### Program of psychological skills for children and youth soccer football trainers

**Ada Sarai Albarran Carbajal (ISSP/Solcpad/AMPDAF)**

This study presents a program of psychological intervention aimed to the acquisition of psychological skills which is focused on the development and transmission of positive values in initiation sports. This program emphasizes the importance and responsibility of sports psychologists and coaches when it comes to working with these formative ages. It also underlines the awareness that the paradigm shift with respect to the training styles is currently taking place in Mexico. This change includes the introduction of psychological skills for coaches and sports initiation contexts such as: increased effectiveness in the communication between coaches and players; Improvement of their strategies of reinforcement in the trainings and matches; The establishment of individual and team goals, and lastly, the use of cooperative games as an effective strategy addressed to increase the willingness to collaborate within teams for both kids and young adults.

*Keywords: skills, ethics, values, cooperatives games, goals, communication*

## Psychological resilience and the coping mechanism for stress on young baseball athletes

**Yoan Hoyos Martinez, Francisco Garcia Ucha (SOLCPAD)**

In order to verify the relationship between Resilience and the methods of coping with stress, 27 young Cuban baseball players in a competitive stage were evaluated by means of: Resilience Scale (Wagner and Young 1993) and Stress Coping Questionnaire (Sandin and Chorot, 2002) applied before and after the main competition, the data were analyzed using the Sign Test and Wilcoxon to obtain the significant differences between the two measurements. The results of the instruments showed the validity of the null hypothesis being interpreted that there were no significant changes between the measurements before and after both tests, with a significance of 0.05 in the statistical scale. The Stress Coping Methods most closely related to the resilient processes are: Focusing on the solution Positive reevaluation Search for social support And those who relate the least: Negative auto focalization Open Emotional Expression Avoidance Religion In a group, they have a high level of adaptation to the circumstances they face, learning from them.

*Keywords: world cup, psychological intervention, sport psychologist, interdisciplinary*

## Sport psychology and its contribution to the development of the career in sports. analysis of perceptions psychologist - athlete

**Natalia Maria Dancuart Allende (SOLCPAD), Bryan Mora Flores**

This paper presents an analysis and relationship of the perception of athletes and psychologists in terms of psychology as a tool to contribute to the development of the sports career. The methodology is descriptive and uses a questionnaire as a data-collecting tool. The sample is made up of 100 athletes and 50 sports psychologists from Latin America. It is intended to identify what prioritizes an athlete to include a Sports Psychologist in their preparation process and, on the other hand, what areas and variables the Psychologist considers that primarily guide their work with the athlete. Likewise, we try to determine those perceptions in common and in contrast to the variables related to: beginning, maintenance and / or abandonment of psychological accompaniment and mental training. In this sense, an attempt is made to present an explanatory model produced by the analysis, exposing useful information so that it is used to work in which the expectations of the psychologist and the athlete are similar, eliminating biases, myths and influences that have permeated the role of Sports psychology for many years.

*Keywords: relationship, perception, athletes, psychologists, development, sports*

## The psychological preparation of the National Absolute National Team of Colombia for the Soccer World Cup 2014

**Marcelo Roffé (SOLCPAD)**

There are few professional experiences of the sports psychologist in Absolute Football Selections and even more, in a World Cup. The objective of the present work is to present a professional experience of three years working with the Absolute Selection of Colombia, both in the qualifying period and in the Soccer World Cup itself, finishing in the Copa America 2015. The psychological intervention is focused primarily on setting goals, developing cohesion, strengthening the players' minds (in the areas of pressure management, attention focus and self-confidence primarily) and generating a winning mentality in the framework of an interdisciplinary work led by the head coach. After three World Cups without participating, Colombia qualifies and finishes the tournament in 5th place. Position among 32 participating teams. From a specialized work of the sports psychologist inserted in a work team, the work done and the limitations of the intervention are discussed, emphasizing the need to adapt to the intervention context (concentrations), the duration of the

intervention, the periodicity between each one of them, and the intervention in the World Cup, maximum possible step to which a soccer player and a sport psychologist can aspire.

*Keywords: Colombia, soccer, World Cup, intervention*

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## Motor control and learning enhancement in individual sports

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**Chair: Francesco Di Gruttola (University of Pisa)**

Our contributions will consider mainly athletes and coaches of individual disciplines (judo, golf, cycling and precision sports), discussing the brain basis of motor control and giving a special focus on imagery and observation use in motor learning. We will move from the assessment to the intervention, presenting the latest neuro-physiological (EEG, ECG, EMG, etc.) and psychological (questionnaires, mental chronometry, self-evaluations, etc.) procedures. Special features mediating the relation between mental training and performance, as athlete's motor experience and current psycho-physiological state will be considered. Firstly, we will discuss the link between cognitive functions and manual action control by means of neuro-physiological procedures. The focus will shift on imagery and action observation. We will present how in judo coaches imagery is related with their subjective perception of coaching and anticipation abilities; then, we will propose an evidence-based protocol to assess motor imagery in athletes of different motor experiences; and finally, we will discuss how an imagery and observation practice can improve mental representation development of golf putt in long-term memory. Lastly, we will propose the Multi Action Plan (MAP), an integrated model of psycho-physiological monitoring and performance enhancement.

*Keywords: motor control, imagery, motor imagery assessment, observation, motor learning, map model*

## Motor imagery assessment in research and professional practice: An evidence-based protocol.

**Francesco Di Gruttola, Danilo Menicucci (Department of Translational Research and New Technologies in Medicine and Surgery, University of Pisa), Elisa Menardo (Department of Philosophy, Education and Psychology, University of Verona), Oriana Incognito, Laura Sebastiani (Department of Translational Research and New Technologies in Medicine and Surgery, University of Pisa)**

Motor imagery (MI) is a dynamic state during which the mental representation of a motor action is internally rehearsed within working memory without produce a visible motor output. The “functional equivalence hypothesis” states that MI and motor performance may be linked, both showing a speed-accuracy trade off and activating brain's motor circuit and autonomic nervous system. MI assessment is not always evidence-based and properly carried out in research and professional practice. The awareness of what is detected is critical to choose the best instrument. According to the functional equivalence hypothesis, we also have to take into account participant's motor experience and its current psycho-physiological state. We measured with high-density EEG if assess MI objectively and subjectively showed different brain activation profiles. The objective index was the time comparison between executing and imagining three movements in a visual internal and a kinesthetic modality. The subjective one was the Movement Imagery Questionnaire-3, a self-assessment about the facility to imagine. We showed that these index were not interchangeable, because only the objective score was positively related with motor areas activation. Moreover, we studied with Recovery-Stress Questionnaire for Athletes-76 how actively play out recovery strategies related to daily life (e.g. somatic relaxation), modify not-athletes' MI quality. Conversely, nor stress, neither recovery would affect MI quality in competitive and not-competitive sportsmen. We used the Vividness of Movement Imagery Questionnaire-2 as assessment tool, that used motor gestures related to various sports (e.g. run) and everyday activities (e.g. walk) imagined in different modalities (visual external, internal and kinesthetic) rating their



vividness. In not-athletes' alongside a MI assessment we have to measure daily life recovery strategies. Finally, we will suggest a low-cost MI assessment protocol based on these evidences.

*Keywords: motor imagery, movement imagery Questionnaire-3, chronometry, EEG, Vividness of Movement Imagery Questionnaire-2, Motor experience*

### Cognitive and biological aspects of controlling complex movements

**Thomas Schack, Dirk Koester (Exzellenzcluster Kognitive Interaktionstechnologie <CI TEC>, Universität Bielefeld)**

Motor control is influenced from bottom-up (e.g. sensory) and top-down (cognitive) information. Cognitive influences are of particular interest in manual action, for example, in climbing. Embedded within a cognitive architecture of action control, we present latest research on manual action control, partly evaluating cognitive processing by means of event-related potentials (ERP, based on electroencephalogram; EEG). Regarding manual control in grasping, the literature and our work point to slow brain potentials which are suggested to reflect anticipatory effects. We note that while there is some consistency in the findings, there remains also some controversies regarding the nature of the ERP effects. Our own work also suggests that action (planning) itself has a strong influence on cognitive processing which suggests a strong action task dependence of cognitive processing. It is argued that neurophysiological research can inform cognitive models of movement control and extend them to a biological level.

*Keywords: motor memory, cognition, movement architecture, brain basis*

### The relationship between imagery ability, experience and perceived coaching ability among judo coaches

**Itay Basevitch (Anglia Ruskin University), Rebeka Prosoli (University of Zagreb), Dagmara Budnik-Przybylska (University of Gdansk), Patrick Swain, Bob Challis, Katrina McDonald (Anglia Ruskin University)**

The use of imagery among athletes has been studied extensively (e.g., Bhasavanija et al., 2011). Findings pertaining to differences among skill level indicate that higher level athletes have better imagery ability skills than lower level athletes (Williams & Cumming, 2011). Surprisingly, scant research has been conducted on imagery use among coaches even though coaches have reported imagery use across sports such as basketball and gymnastics (Short et al., 2005). Furthermore, in many sports coaches need to provide instructions to players by understanding what happened and predicting what will happen next (Ford et al., 2009; Grundel et al., 2013). Thus, the purpose of the current study was to examine imagery ability (e.g., vividness, duration) and use (e.g., perspective) among judo coaches of various experience and perceived coaching ability. Sixty five judo coaches from a European country who have been coaching from 1 – 39 years ( $M = 11.74$ ,  $SD = 10.27$ ) and have competed for 1 – 45 years ( $M = 13.57$ ,  $SD = 7.73$ ) participated in the study. Coaches reported imagery use and ability during coaching on a 7 item imagery questionnaire (Razon et al., 2010). In addition, coaches reported their subjective coaching ability and anticipation ability. Findings indicated experience was not related to imagery ability and use. However, perceived coaching ability was significantly positively correlated with vividness ( $r = .43$ ,  $p < .001$ ), control ( $r = .47$ ,  $p < .001$ ) and engagement ( $r = .42$ ,  $p < .001$ ). Furthermore, anticipation ability was significantly correlated with vividness ( $r = .42$ ,  $p < .001$ ), control ( $r = .47$ ,  $p < .001$ ), engagement ( $r = .35$ ,  $p < .01$ ), ease ( $r = -.28$ ,  $p < .05$ ), and duration ( $r = -.28$ ,  $p < .05$ ). Findings indicate that coaches' subjective perception is a better predictor of imagery ability compared to experience. Future studies should examine the relationship between objective coaching abilities and imagery use.

*Keywords: imagery, coaches, judo, anticipation, instruction*

## The influence of mental types of practice on the performance and the mental representation structure of the golf putt

**Cornelia Frank, Taeho Kim, Thomas Schack (Exzellenzcluster Kognitive Interaktionstechnologie <CITEC>, Universität Bielefeld)**

To date, it is commonly agreed that physical practice as well as mental types of practice have the potential to bring about performance improvements and to induce motor learning (Driskell, Copper, & Moran, 1994; Shea, Wulf, White, & Whitacre, 2000), each activating and inducing changes within the motor system (Jeannerod, 2001). Learning might, however, differ as a function of the state of action used for practice. As a result, learning by way of different states of action is predicted to result in differential changes on perceptual-cognitive and motor levels of the motor action system. To date, the differential influence of physical and mental types of practice on underlying perceptual-cognitive representations of a motor action is still being debated. In this talk, we present research that systematically compares the influence of mental types of practice and physical practice on the performance and the representation of the golf putt. Each of the studies being presented consisted of three test sessions (pre-, post- and retention-test) and a practice phase of three days. Novices were assigned to mental practice (MP; observation or imagery), physical practice (PP), combined practice (CP), or no practice (NP). Putting performance improved similar to the pattern of changes reported from previous research (CP > PP > MP > NP; Driskell et al., 1992; Shea et al., 2000) in each of the studies. Most elaborate representation structures were evident for the groups involving observation or imagery whilst practicing. Findings indicate that practice by way of observation or imagery may particularly promote the development of representational frameworks of complex action, and thus action-related order formation in long-term memory, pointing toward a differential effect of observational practice (Ong, Larssen, & Hodges, 2012) and imagery practice (Ryan & Simons, 1983) as compared to physical practice on different levels of the motor system.

*Keywords: observation, imagery, states of action, simulation theory*

## Performance monitoring and improvement: a psychophysiological approach

**Selenia Di Fronso, Laura Bortoli, Claudio Robazza, Maurizio Bertollo (BIND-Behavioral Imaging and Neural Dynamics Center, Department of Medicine and Aging Sciences, "G. d'Annunzio" University of Chieti-Pescara)**

In the last 20 years, there was a growing interest in the study of the theoretical and applied issues surrounding psychophysiological processes underlying performance. The psychophysiological monitoring, which enables the study of these processes, consists in the assessment of the activation and functional level of the organism using a multidisciplinary approach. In the sporting domain, it can be used to attain a better understanding of the processes underlying performance and to improve athletic performance. The most frequently used ecological techniques include electromyography (EMG), electrocardiography (ECG), electroencephalography (EEG), and the assessment of electrodermal activity and breathing rhythm. The purpose of this presentation is to offer an overview of the use of these techniques in applied interventions in sport. In particular, we will discuss a psychophysiological approach in the framework of the multi-action plan (MAP) model (Bortoli et al., 2012; Robazza et al., 2016). This model is based on empirical evidence that different performance levels are associated with unique behavioral, psychophysiological, and neurological patterns (Bertollo et al., 2013, 2016; di Fronso et al., 2016; Filho et al., 2015). Study findings with dart-throwing, shooting, and cycling athletes will be presented.

*Keywords: performance monitoring, psychophysiological approach, MAP Model, sports*

# POSTERS

## TUESDAY JULY 11TH

### Posters Session 1. (9:30-10:30)

#### Prototypicality ratings of acts for achievement motivated behavior of young competitive athletes by coaches and sport psychologists

**Zuber Claudia (University of Bern)**

Achievement motivation has proved to be an important talent criterion for young athletes (Zuber et al., 2015). However, the evaluation of achievement motivation by means of self-assessment instruments entails the risk of social desired answers. In addition, it would make sense to assess the observable achievement motivated behavior from coaches' reports. One possibility to construct an observation grid, is based on the Act-Frequency Approach (Buss & Craik, 1983) that relies on the definitions of characteristics elaborated by psychological laypersons. In the first step, coaches are asked about manifest achievement motivated behavior in concrete situations (acts). In the next phase, these acts are then assessed with respect to their prototypicality for the construct to be examined. Thereby, the question arises as to whether the concept of "achievement-motivated behavior" of youth coaches - who usually have no well-founded knowledge in sports psychology - is consistent with that of sports psychologists. In the first phase of the project 58 acts were created by 20 coaches. These acts were then evaluated by 21 further coaches and 26 sports psychologists with regard to their prototypicality for achievement-motivated behavior in young athletes on a 5-step scale. It turns out that the assessment of the coaches does not differ fundamentally from those of the sport psychologists across all acts ( $d=0.0$ ; ICC<sub>unjust</sub>=.76) and that the overall assessment with  $M=3.75$  ( $SD=.99$ ) in both groups goes towards "fairly prototypical". At the level of the individual acts, the group judgments differ in nine acts with a large ( $d>.8$ ) or moderate effect ( $d>.5$ ). Of these, seven acts were regarded as more prototypical by the sports psychologists. In terms of content, a trend became apparent, that behavior pointing to the concept of task orientation, are regarded as more prototypical for achievement-motivated behavior by the sports psychologists than by the coaches.

*Keywords: talent identification, motivation, behavior, coach, sport psychologist*

#### Strategies used by elite athletes to maintain and manage their athletic identity

**Zoe Poucher, Katherine Tamminen (University of Toronto)**

The purpose of this study was to explore how athletes maintain and manage their athletic identity (AI) and the challenges associated with having a strong AI. Thirteen elite athletes were individually interviewed on two occasions. Participants were asked questions regarding their AI, successes and failures in sport, and how their feelings of self-worth were related to their athletic achievements. Transcripts were thematically analyzed to identify relevant themes in the data (Braun, Clarke, & Weate, 2016). Athletes conceived of their identity in several ways, identifying as athletes, students, and professionals. However, athletes also reported that their AI changed throughout the season. Athletes engaged in strategies that maintained their AIs, including compartmentalizing aspects of their identities, setting sport-related goals, making external attributions for failures, and maintaining social relationships with other athletes. Aspects of the sport and social environment that contributed to the maintenance of an AI were also identified, including the structure of training, the daily tasks associated with being an athlete, and receiving attention from others based on athletic achievements. Athletes reported challenges associated with experiencing a strong AI: primarily, athletes stated that their

feelings of self-worth were contingent upon their success in sport. Some athletes also viewed having a strong AI as a burden and felt they had few relationships with others outside of sport. The findings expand this body of literature by exploring the various strategies athletes use to support their AI and suggest that an athlete's self-worth may be dependent on their performances, particularly among athletes with a strong AI. This may be potentially debilitating for athletes experiencing failures in sport. Future research could identify ways to assist athletes who experience failure in sport to maintain higher levels of self-worth.

*Keywords: athletic identity, elite athletes, contingent self-worth*

## Study on decision-making of penalty-kick direction from the perspective of theory of mind

**Zipeng Yang (University of York), Tianxue Cui (University of Macau), Jie Li (Beijing Sport University)**

In modern football, it's common to collect opponents' information. After knowing opponents' information and/or knowing own information has been collected by opponents, players' mental states may alter, which may affect their behavioral decisions. This can be understood as a reification of Theory of Mind (ToM), which refers to the ability to attribute mental states to oneself and others and to understand others have intentions and preferences that are different from one's own. From the perspective of ToM, this study explored how participants' decisions in penalty kicks is affected by knowing opponents' preferences and having own preferences being known. A series of three experiments were conducted. Exp1 simulated penalty situation in lab by presenting sentences & pictures on screen. Exp2 adopted a video game to simulate penalty situation. Exp3 was conducted on real pitch with participants making penalty kicks. In Exp1 & 2, different college students were recruited and randomly assigned as keepers/shooters. In Exp3, experts & amateur football players were recruited. We manipulated the participants' levels of knowing opponents according to the rationale of ToM, and the results were largely consistent throughout the experiments. When knowing nothing, both shooters and keepers had evidently own preferred directions. After keeper knew shooter's preferred direction, keeper biased towards shooter's preference and away from his own. Shooters showed the same and inclined to shoot to his non-preferred direction. After keeper knew shooter had known the keeper knew about him, keeper biased further away from both his and shooter's original preference, and turned to almost random guess but slightly biased to shooter's preferred direction. The results indicate the levels of ToM influence the players' direction decision-making in penalty kicks. Players reduce their own direction preference when they know the opponents' preferred direction, and deliberately avoid direction preference when they are known by opponents.

*Keywords: theory of mind, sport decision-making, penalty-kick direction, internal adjustment, external adjustment*

## Performance failure appraisal, optimism and coping among athletes

**Zahra Jafari (University of Panjab, India)**

The improvement in sports performance is linked with using failure as a tool. Prior research has focused a lot on fear of failure and coping styles used by athletes but very few researchers have examined the difference among these variables between individual sport and team sport athletes. The present study examined Performance Failure Appraisal, Optimism and coping among athletes. The sample included 200 players in the age range of 20-35 years (50 individual female, 50 individual male, 50 team sports female and 50 team sports male athletes). The tests used were the Performance Failure Appraisal Inventory, The Life Orientation Test - Revised and Coping strategies inventory. F-ratio for Performance failure appraisal on group was found to be significant and for gender and interaction effect was found insignificant. Optimism on gender was found to be significant and for group and interaction effect was found to be insignificant. F-ratios for engagement coping on gender and interaction effect were found to be significant and for group was found insignificant. F-ratio for

disengagement coping was also found to be insignificant for group and gender and interaction effect emerged significant. The results have implications for specificity in training. F- ratio for optimism on gender were found to be significant and for interaction effect was found to be insignificant. F-ratios for engagement coping on gender and interaction effect were found to be significant. F-ratio for disengagement coping was also found to be significant. The results have implications for specificity in training. The study can useful for both groups to achieve the goals and be success.

*Keywords: performance failure appraisal, optimism, coping, athletes, gender differences*

## Where do people look during drop landing?

**Yusuke Sato (Nihon University)**

Although the role of vision during drop landing has been studied in many previous works, there has been little study into how people collect visual information while naturally directing their gaze. In general, people look at task-relevant objects or locations needed to adequately control movement of the whole body. Assuming that there are multiple strategies governing where individuals direct their gaze during drop landing, there is the possibility that gaze behavior is related to not only gathering of visual information, but also motor behavior at landing. Therefore, the aim of this study was to reveal where people direct their gaze during drop landing and the relationship between the gaze strategies and landing posture, such as neck flexion angle, at foot contact. Participants were 19 healthy male and female university students. Participants were instructed to land from an 0.8-m step with both feet as cleanly as possible. All participants wore mobile eye tracking glasses (Tobii Pro Glasses 2; Tobii Tech., Stockholm, Sweden) and none reported discomfort with the glasses during the trials. Results showed that , two participants directed their gaze to the front wall without looking at floor, seven participants directed it to a soft mat (1.8 × 1.8 × 0.02 m) located just in front of the step, and 10 participants looked at the floor between the wall and the mat. Neck flexion angle and trunk tilt angle in the participants looking down at the mat were significantly different from these angles in the participants looking at the floor. These results indicate that when individuals perform the drop landing, they have a few options as to where to direct their gaze, and their gaze behavior during the aerial phase is associated with posture at landing.

*Keywords: aerial phase, eye movement, gaze behavior, vision*

## The relationship between the use of music in sports and trait anxiety, burnout, and emotional instability among Japanese college athletes

**Yuma Hayashi, Airi Naoi (Kindai University)**

Previous studies have examined the use of music in sports; however, research regarding the psychological effects of music on Japanese athletes is limited. The purpose of this study was to investigate the relationship between the use of music, competitive trait anxiety, burnout, and emotional instability among college athletes in Japan. An additional objective was to elucidate the reasons for the use of music, and the specific situations in which it was used. In total, 154 college athletes from Japan participated in this study. The athletes completed the Trait Anxiety Inventory for Sports (TAIS), the Neuroticism category of the Big Five personality traits model, and the Burnout Scale for University Athletes (BOSA). Additionally, we assessed the tempo and genre of the preferred music. Among the 154 athletes, 98 athletes (65.8%) reported that they listen to music before competitions, and 51 athletes (34.2%) reported that they do not. There were no significant differences in trait anxiety and burnout between the athletes who listen to music before competitions and those who do not. The athletes who listen to music before competitions reported lower emotional instability as compared with the athletes who do not ( $t = 2.22$ ,  $p < .05$ ). Situations in which the athletes listened to music included before a competition (49 athletes), before and during practice (33 athletes), and during commuting time (29 athletes).



Furthermore, athletes reported that increasing positive affect, calming down, and sharpening focus were the most common reasons for listening to music. Since the athletes who listen to music before competitions scored lower on emotional instability than the athletes who do not, athletes with low emotional instability may use music to increase their motivation and excitement before competitions. Furthermore, athletes with high emotional instability might be able to enhance positive affects by listening to music before competitions.

*Keywords: music, emotional instability, burnout*

### Sport psychology as a strategic tool for prevention and training on grassroots sports

**José Carlos Jaenes (U. Pablo de Olavide), Jaume Cruz (UAB), Ladislav Petrovic (ICCE), Pedro Velazquez (ICSS), José Viñas (Sevilla Football Club), Vladison Reis (FARE), Andreas Ivarsson (Halmstad University)**

PsyTool project is a collaborative partnership that allows a group of stakeholders from different sport backgrounds to collaborate in the establishment of a network to take full advantage from the implementation of the Sport Psychology as a strategic tool to promote integrity and to tackle violence, discrimination, intolerance and match-fixing among young practitioners of grassroots sports. PsyTool is based theoretically on the concept of youth development through the practice of sport in positive and safe environments (Cruz et al 2016, Weiss et al. 2008). The specific objectives of PsyTool project are: a) obtain more objective data on the impact of violence, discrimination, intolerance among young practitioners of grassroots sports; b) create educational and innovative tools based on sport psychology to promote integrity and to tackle these harmful factors; c) Train “Agents of change” for recognizing potential dangerous situations and for reacting in an adequate way and d) Prove this new approach and test its results on the field through a pilot experience and disseminate, the new tools developed. Therefore, PsyTool takes account of the social, educational and cultural functions inherent in sport and it looks for to complement the European policies (such as Developing the European Dimension in Sport, 2011) in this field, bringing innovative approaches for promoting integrity among young practitioners of sports, thanks to the use of Sport Psychology as a strategic tool of high value for promoting sportpersonship. \*This research was funded by the Erasmus+ project (Nº567199-EPP-1-2015-2-ES-SPO-SCP) “PsyTool: Sport as a strategic tool for prevention and training on grassroots sports”

*Keywords: sportpersonship, agents of change, violence, discrimination*

### Cheating and gamesmanship in young soccer players

**Marta Borrueco, Jaume Cruz (Universitat Autònoma de Barcelona)**

Sport is considered a valid context to achieve personal and moral development in young people but it is also known that nowadays sport can be linked to negative aspects of moral reasoning such as violence, gamesmanship and the lack of sportpersonship (Cruz, Ramis & Torregrossa, 2016). It is important to know which aspects influence positively and negatively in moral development to try to enhance or diminish them. The main objective of this research is to study the level of predisposition to gamesmanship and cheating in football. Participants were 147 young players (117 males and 30 females) from a club based in Barcelona, aged between 13 and 19 years old ( $M = 15.3$ ,  $SD = 1.7$ ). We have administered the Predisposition to Cheating in Sports (CDED) developed by Ponseti, et al (2012), a six-item questionnaire that measures predisposition to acceptance of cheating (3 items) and predisposition to acceptance of gamesmanship in sport (3 items). The initial findings suggest that players score low in the overall rating of the questionnaire (mean of results under 3 in most of the players). In addition, gamesmanship is more accepted than cheating, players score higher in gamesmanship ( $M = 3.18$ ,  $SD = 1.1$ ) (i.e: Sometimes I waste time to unsettle the opposition) than in cheating ( $M = 2.4$ ,  $SD = 1.2$ ) (i.e: I would cheat if I thought it would help the team win). Further research with other sports and ages could be useful for a better understanding of the role of the acceptance of cheating and gamesmanship in the moral development in young athletes. \*This research was funded by the Erasmus+

project (Nº567199-EPP-1-2015-2-ES-SPO-SCP) “PsyTool: Sport as a strategic tool for prevention and training on grassroots sports”

*Keywords: gamesmanship, football, young players, sportspersonship, fair play*

### Fair play, cheating and gamesmanship in grassroots sports

**F. Javier Ponseti Verdaguer, P. Antoni Borrás Rotger, Jaume Cantallops Ramón, Alexandre Garcia-Mas (Universitat Illes Balears)**

The aim of this study was to analyse the attitudes towards fair play, victory, enjoyment, playing foul/hard, and the acceptability of teams' antisocial behaviour, such as cheating and gamesmanship, in the context of grassroots sports teams. The sample included 48 different teams of basket, football, handball, volleyball and rugby, including 1333 adolescents (1013 boys and 320 girls) with a mean age of 12.50 years (Range: 10-15 years; SD = 2.09 years). In order to study these psychological variables, the athletes answered the Spanish-adapted version of the “Predisposition to Cheating in Sports” (CDED, Ponseti et al., 2012). This tool consists of six items grouped in two factors (Ponseti, et al., 2012) to have two factors: the player's predisposition to acceptance of cheating, and the predisposition to acceptance of gamesmanship. Also, they received the “Fair play attitudes scale” (EAF, Boixadós, 1998). It consists of 22 items, which assesses the players' attitudes regarding several football matches situations. The player's has to answer reporting their degree of agreement and/or disagreement regarding each specific situation and the attitude proposed. Once analysed, EAF showed the existence of three factors: factors, variables are generated: looking for the victory, enjoyment and playing foul/hard. Results showed the importance of the enjoyment in all sports studied, and a large amount of acceptance to gamesmanship and cheating in among the masculine team players. There are significant differences in all studied items regarding the sport practiced and the players' sex. Considering overall the results obtained regarding the negative attitudes to fair play, gamesmanship is somehow accepted by team player's while the cheating is not generally accepted but refused. Therefore, it will have to consider the gamemanship correctly regarding the players' perception of the concept of fair play.

*Keywords: fair play, cheating, gamesmanship, team sports, grassroots sports*

### Impulsivity and inhibitory executive functioning in adolescents with online game addiction

**Yujin Kim, Jingu Kim (Kyungpook National University)**

This study aims to investigate the influence of online game addiction on impulsivity and inhibitory executive functioning abilities in adolescents. Participants were 42 male middle school students aged 13-15 years. Based on the online game addiction scale scores, participants were divided into addiction group, potential risk group and control group. The participants were asked to perform the color-word Stroop task which consisted of neutral, congruent, and incongruent cue types in randomized order. During the experiment, reaction time, response accuracy, the Barratt Impulsiveness Scale (BIS), and event-related potentials (ERPs) were measured. In order to examine the differences of amplitude and latency of N400 at C3, C4, Cz, P3, P4, and Pz, areas known to be related to inhibition control and information processing, the ERP data were collected and analyzed by three-way ANOVA. In the analysis of BIS, the addiction group showed higher non-planning impulsivity and higher motor impulsivity relative to the control group. In the ERP analysis, the addiction and risk groups exhibited smaller N400 amplitude than the control group. The N400 latency was shorter in the addiction and risk groups than in the control group. It was also found that the addiction and risk groups showed faster reaction time than the control group in the congruent tasks, while reaction time was faster in the neutral task relative to the congruent task. In terms of response accuracy, the risk group showed better accuracy than the addiction and control groups. Over all, this study provides neurophysiological evidence which shows that

addiction to online games may cause decline in impulse control and information processing, having negative impact on inhibitory executive functioning.

*Keywords: online game addiction, e-sport, executive function, impulsivity, inhibition control, N400, ERP*

## Re-examining ego involvement in sport: A qualitative exploration of its bright and dark side

**Yuhui Chiu (Taipei College of Maritime Technology, Taiwan), Frank J.H. Lu (Chinese Culture University, Taiwan), Erica Ting-Wen Wang (Feng Chia University, Taiwan)**

Literature suggested that ego - involvement with perceived low ability leads to maladaptive behavior such as reducing efforts, cheating, low sportspersonship , and anxiety ( Duda , 2002; Kavussanu et al., 2003; Harwood et al., 2015 ) . However , very few studies examin ed elite athletes with high ego - i nvolve ment and their psychologi cal experiences. Seven elite athlete s participated in in - depth interview. Personal docu ments and media reports were also collected. Strauss and Corbin (1997) ground ed theory was used to analyze data. Further , we used Douglas (1976) triangulation method to increase trustworthiness of the study. Ego involved elite athletes exhibited both negative and positive psychological experiences . Negative experiences support most literature such as being anxious during competition, easily give up when no opportunity to win, low sportspersonship and cheating behavior. However, high ego involvement als o exhibited many psychological strengths such as high competitiveness, confidence, fighting spirit, pers er varan ce during training, and never give up when having opportunity to win. Ego involvement is not necessarily all disadvantageous to elite athletes . M any unexplored psychological strength s are worthy of further investigation by both qualitative and quantitative studies in the future.

*Keywords: achievement goal theory, psychology of sport excellence, grounded theory*

## Implicit ability of expert baseball batters for distinguishing subtle changes in pitchers' arm movements in computer animations

**Yufu M. Tanaka (Kindai University), Tomoyuki Matsuo (Osaka University), Yoshifumi Tanaka (Mukogawa Women's University)**

Expert baseball players might be able to implicitly perceive subtle changes in a pitcher's motion. However, there is no experimental evidence to support this contention. Therefore, implicit abilities of expert baseball players to distinguish subtle changes in shoulder abduction angle of pitchers were investigated. Expert batters (N = 8) and novices at baseball (N = 9) participated in this study that used computer graphic movies of baseball pitchers with ten types of motions having different shoulder abduction angles from the original pitcher (standard stimulus). Each participant performed randomized 400 trials (40 for each type). In each trial, just after watching a movie the participant was requested to judge and verbally indicate whether the displacement of the pitching arm was higher or lower than that of the standard stimulus. Furthermore, the participant in each trial was requested to indicate the degree of confidence regarding their judgement. Results indicated that the point of subjective equality of experts was significantly closer to the standard stimulus than that of novices. Also, experts indicated a significantly narrower interval of uncertainty than novices. Moreover, the degree of confidence in judgements made by experts and novices was significantly lower than the degree of correct judgements in verbal responses. These results suggest that the correct discrimination of imperceptible changes in arm movements during baseball pitching was conducted implicitly. This tendency was typical for expert players.

*Keywords: point of subjective equality (PSE), discrimination ability, CG, baseball*

## Sport moral disengagement and college athletes' aggressive behavior

**Yuede Chu, Yanru Li (Beijing Sport University)**

Scientists had done a lot of researches based on Bandura's social cognitive theory to explore the relationship between moral disengagement and unethical behavior. Plenty of results show that the moral disengagement is a predictor of individual's unethical behavior (aggression, antisocial behavior, drug abuse, crime, child and adolescent bullying behavior, etc.); the higher individual moral disengagement level is, the more unethical behavior there could be. Recent years, researchers start to pay close attention to moral disengagement that predicts the aggressive behavior in different situations. Athletes use more moral disengagement mechanism in sport environment (Bredemeier & Shields, 1984) than in everyday life. We developed three studies to explore how sport moral disengagement impacts specific attacks in different moral pressure situation. In the first study, taking the Boardley's sport moral disengagement measure as the basis, we developed questionnaire in Chinese for athletes. The results support a model that is best fitted college athletes in China. The data of the model has 8 first-order factors that could be represented by 1 second-order factor. In the second study, we used hierarchical regression method to explore what kind of role moral identity plays between moral disengagement in sport and college athletes' aggression. The results show that moral identity played the moderating role between moral disengagement in sport and college athletes' aggression. Furthermore, we reached out whether sport moral disengagement is associated with a specific act of laboratory-based aggression. Results show that the prediction for aggression only works in the low pressure situation and the medium pressure situation, but not in the high pressure situation.

*Keywords: sport moral disengagement, aggression, moral situational pressure, athletes*

## The skill necessary for a good play of the circumstantial judgment in the soccer

**Yudai Ura (Seinan Gakuin University)**

The purpose of this study was to determine the difference of the ability of the circumstantial judgment paid attention to sight information in the soccer. The experimental conditions were to classify 12 members of soccer club of University A in a circumstantial judgment evaluation high group and the low group from the evaluation of supervision and the coach, and to divide phases four. (1) A simplicity reaction problem. (2) A choice reaction problem (fortunetelling). (3) A choice reaction problem (difficulty). (4) The semi-structured interview and tested it. The discrimination time was measured by a mat switch in (1), (2) and (3). Stimulation of this study was (1) A green circle, (2) A green circle and two red circles and (3) Pictures of a variety of scenes of soccer game; the situation that I make three sets of pairs of defense and the offence, and situation that one set is easy to go along a pass, two sets are hard to go along a pass. The experiment procedure of this study was (1) is the participant passed after the stimulation presentation immediately, (2) is the participant passed the goal under a green circle after the stimulation presentation, (3) is the participant passed the goal under the member whom a pass is more likely to go along. The results of this study were that the significant difference was not seen by the simple reaction problem and choice reaction problem (fortunetelling), but significant difference was seen by a choice reaction problem (difficulty). And it became clear that high group of circumstantial judgment had the clue of a concrete judgment. It suggested that the circumstantial judgment was affected by difference of the ability of the sight information processing and the ability of the sight information processing affected the ability of the information processing had the clue of the judgment.

*Keywords: circumstantial judgment*

## Disadvantageous height perception by high jumpers before the run under psychological pressure

**Yoshifumi Tanaka (Mukogawa Women's University), Joyo Sasaki (Japan Institute of Sports Sciences), Kenta Karakida, Kana Goto (Mukogawa Women's University), Yufu Tanaka (Kindai University), Takayuki Murayama (Kanazawa University)**

Most athletes feel subjective changes in their perception of the environment during sports competitions. These changes include alterations in spatial, temporal, and kinematic information about the opponent. However, such changes under psychological pressure have not been experimentally investigated just prior to task execution in sports contexts. Therefore, effects of psychological pressure on perceiving the height of a jump bar, just before starting a high jump run was investigated. University students (N = 14, 7 women and 7 men) training for a high jump event participated in this study. They performed 15 trials (3 practice, 6 non-pressure, and 6 pressure) in counterbalanced order in their daily practice environment with a partner. The height of the bar in pressure and non-pressure conditions was set to -25, -22, -19, -16, -13, -10 cm of participant's personal best height. Participants were requested to verbally state the height of the bar in centimeters before starting the run. A combination of pressures, including reward, penalty, and social stress for the partner, was used in the pressure condition. Significant increases in subjective pressure and mental effort assessed by using the visual analog scale indicated that stress responses were successfully induced under pressure. Results indicated that the height of the bar was judged as significantly higher in the pressure compared to the non-pressure condition. Additionally, a regression analysis indicated that participants reporting increased subjective pressure under pressure, judged the bar to be higher. There was no significant difference between pressure and non-pressure conditions in the performance index defined as the success rate in the six trials. This study provides the first evidence that psychological pressure prior to executing a motor task changes environmental perceptions in a direction disadvantageous for task performance.

*Keywords: stress, choking, perception, affordance*

## Assessment of team coordination in sport: A scoping review

**York-Peter Klöppel, Dieter Hackfort (University FAF Munich)**

Since its early days, sport psychology research has predominantly focused on individuals. Many researchers, however, highlight the need for more research to be conducted on teams (Carron et al., 2012). The aim of this systematic review of the social-cognitive research literature on teams in sport is to identify common features for an objective, validated and reliable tool for the assessment of team coordination. The methodologically rigorous scoping review approach (Arksey & O'Malley, 2005) is used to fulfil the aims of this study. A systematic search of empirical studies and book chapters is carried out in the data bases using relevant keywords (e.g. team coordination, coordination, cooperation, interindividual, etc.). The inclusion criteria are (a) written in English or German, (b) relevant to the topic, and (c) published in peer reviewed journals, conference papers, or book chapters. Furthermore, the references are explored and key journals are hand-searched to identify additional contributions. Key characteristics for a definition of team coordination based on an analysis across available relevant literature are provided. Furthermore, the concept of an objective measurement of team coordination applicable to a broad scope of team sports is proposed. Despite an increasing number of articles concerning the social characteristics of sports teams (Eccles & Tenenbaum, 2004), the literature on cognitive aspects is scarce and there is no objective, reliable and validated measurement. Moreover, the computer-based system, which is conceptualised based on an action theory framework, can be used not only to test but also to train interindividual coordination, communication and effectiveness in teams.

*Keywords: team coordination, interindividual coordination, teamwork, scoping review, sport teams, social-cognitive*

## The psychological effect of virtual exercise system on university students

**Yongtao Yang, Yanlin Sun (Tianjin Sport University)**

Virtual reality (VR) is a new technology for exercise. Studies have investigated the psychological effect of VR exercise in adults and senior citizens. However, most of those studies did not consider the impact on exercise intensity when using the VR exercise system. In other words, whether the psychological effect was coming from the VR environments or the exercise, was still unknown. Therefore, we simulated a VR exercise system in which the exercise intensity was controlled by an Ergoline cycle ergometer to compare the psychological effects among moderate-intensity exercise in VR (condition 1), non-VR (condition 2), and pedaling without workload (very low intensity) in VR (condition 3). The VR environment was outdoor with water, hill, trees, and so on. The display speed of VR environment was proportional to the participant's pedaling speed. Thirty university students participated in the study and all of them cycled 40 minutes with or without moderate intensity workload. The profile of mood states (POMS) and exercise-induced feeling inventory (EFI) was used before and after the exercise. Rate of perceived exertion (RPE) was also measured every 5min from the 10thmin during cycling. The exercise intensity was monitored by POLAR RS400. Results showed large positive effects on POMS and EFI in both condition 1 and 2, and condition 1 showed more positive than condition2 (lower fatigue and RPE level). However, pedaling with no workload in VR only showed a little positive effect on POMS and EFI. The results suggest that VR without exercise intensity may have little positive effect on psychological state. Moderate intensity exercise in VR may augment the psychological benefit on exercisers. It will be necessary to discuss the psychological effects of different exercise intensities in VR for adults or other people in the future.

*Keywords: Virtual reality (VR), exercise, Profile of Mood States (POMS), exercise-induced feeling inventory (EFI), Rate of perceived exertion (RPE)*

## The prediction of empowering and disempowering motivational climate on subjective vitality among youth athletes: The mediating effects of basic psychological needs

**Yi-Ting Tsai, Mei-Yen Chen (National Taiwan Normal University)**

Recently, more and more research interest has focused on examining coach-related factors influence athletes' well-being and health. Duda (2013) considered that empowering climate will satisfy athletes' basic needs and then enhance their health. Vitality is an important aspect of health and refers to a dynamic aspect of well-being indexed by the subjective experience of energy and positive aliveness (Ryan & Frederick, 1997). Therefore, the purpose of this study was to examine the mediating effects of basic psychological needs between empowering, disempowering motivational climate and subjective vitality among youth athletes. The participants were 81 youth athletes (58 males and 23 females) recruited from four high schools. After received the informed consent, participants completed Empowering and Disempowering Motivational Climates Questionnaire, Basic Psychological Need Satisfaction Scale, and Subjective Vitality Scale. The results of Bootstrap mediated analyses indicated that empowering motivational climate positively predicted subjective vitality and were mediated by autonomy and relatedness. On the other hand, disempowering motivational climate negatively predicted subjective vitality and were mediated by autonomy, competence and relatedness. The findings of current study suggest that coaches should create empowering climate to satisfy young athletes' perceptions of autonomy and relatedness and then promote their subjective vitality. In contrast, Creating disempowering climate thwart psychological needs and then reduce athletes' subjective vitality.

*Keywords: well-being, autonomy, bootstrapping*



## Research on influential factors of rehabilitation exercises in consumer psychology perspective

**Ying Liu (Chengdu Sport Institute)**

This study aimed to explore the individual difference of rehabilitation exercises as consumers from all over China by a questionnaire. The reliability of the questionnaire is 0.747 and the validity is acceptable. This study focused on influential individual factors of rehabilitation exercise, which are age, gender, exercise preference, and cognition level of rehabilitation exercises. Data have inputted into SPSS 12.0. The results were gotten by covariance analysis method and showed as followed: Motivation level was obviously different between subjects of exercise preference and no exercise preference. The subjects of exercise preference were more willing to do rehabilitation exercise. The cognition level of rehabilitation exercises was related positively with rehabilitation exercises obviously and so does age. Although there was no difference between male and female subjects, the interaction of gender and age influenced rehabilitation exercises obviously (p

*Keywords: exercise, rehabilitation exercise, exercise preference*

## Self-talk and motor skill performance: Moderating effects of mindfulness

**Yi-Hsiang Chiu, Frank Jing-Horng Lu, Ko-Hsin Chang**

Recently, it has been found mindfulness influences motor performance (e.g., Kaufman et al., 2009; Kee et al., 2013; Zhang et al., 2016). Also, it has been found self-talk is an effective cognitive strategy in enhancing motor performance (e.g., Kolovelonis et al., 2011; Chang et al., 2014). However, very few studies examine how the role mindfulness in influencing self-talk-motor performance relationship. Therefore, the purpose of this study was to examine the moderating effects of mindfulness on self-talk-motor performance relationship. Forty-nine college students ( $M_{age}=18.96\pm1.08$ ) sampled from 121 college students with high/low mindfulness (high=23; low=26) and were instructed to perform a gross motor skill (i.e., stand long jump) and a fine motor skill (i.e., tracking task) under instructional, motivational and unrelated self-talk by a counter-balance order. By a 3 (self-talk type) X 2 (high/low mindfulness) X 2 (gross/fine motor skill) repeated MANOVA analyses we found both instructional and motivational self-talk had better performance than unrelated self-talk on standing long jump and tracking test. Also, it was found mindfulness interacted with self-talk on tracking test. Results partially support the task-matching hypothesis of self-talk. Limitations, future research directions, and practical implication were discussed.

*Keywords: cognitive strategies, attention disposition, motor skill performance*

## The psychological benefits of grunting on tennis court: A qualitative exploration

**Yi-Chen Peng, Chu-Min Liao (National Taiwan Sport University)**

Many tennis players grunt loudly while hitting shots. Previous researches, from a physical perspective, have suggested that grunting might increase power and speed on motor tasks (Callison et al., 2014; O'Connell et al., 2014; Welch and Tschampl, 2012). The psychological mechanism and the effects of grunting in tennis, however, has not yet been systematically studied. The purpose of this study was to explore the perceived psychological effects of grunting of elite tennis players and coaches by adopting a qualitative approach. We purposefully selected 12 elite Taiwanese tennis players who usually grunted while playing (including 2 professional and 1 retired players, 9 males and 3 females, mean age=21.4, mean tennis experience= 9.01years) and 5 tennis coaches (4 males and 1 female, mean coaching year= 15.4.) and interviewed them either individually or in a focus-group (4 players). The interviews were semi-structured and conducted following an interview guide with probing questions regarding how the interviewees felt and believed about grunting. Interview data was analyzed according to the grounded theory protocol. Content analysis generated thirty-two

sub-themes and five higher-order themes (physical, technical, psychological, emotional and other aspects) of the perceived effects of grunting of the interviewees. The interviewees believed that grunting helped tennis players to generate more power, pump up energy, establish hitting rhythms, gain confidence, stay focus, regulate emotional levels, and cope with psychological stress more effectively. These results are in line with the underlying psychological mechanism of performance-enhancing strategies suggested in the literature relating to self-efficacy, arousal regulation, and attentional control. More research is warranted to shed more light on the mechanism of grunting and make it a more effective strategy on the court.

*Keywords: rhythms, confidence, regulate emotional*

## **The global integrated methodology for the development of specific behaviours in football: examples and applied proposals**

**Miguel Morilla, Santiago Rivera Matiz, Juan Martín Tassi**

This work proposes integrated analytical and global integrated methodologies as a means for training in football (Morilla, Rivera & Tassi, 2017) and presents various examples of drills where the psychological component is emphasized in specific game situations at the pitch. Each method complement the other to favor the sports behavior, from reduced situations (i.e. integrated analytical) to more complex global game situations (i.e. global integrated). They are used to design tasks with the following characteristics: 1) reinforce individual and collective behaviors associated with repeated actions vs. complex collective situations; 2) are carried out in small vs. wide spaces (e.g. field sectors, specific game positions vs. one or more sectors of the field); 3) the amount of interactions between players is limited vs. the number of players and their interactions are extended (e.g. defensive or offensive blocks); 4) present an increased number of specific repetitions vs. a smaller number of repetitions with greater collective involvement; 5) include the presence of some vs. all the structural parameters of the game; and 6) they focus on specific or simple game situations that do not address the overall game, unlike to analytical integrated tasks. Therefore integrated analytical methodology favours the development of sports behaviours that in the same task pursue specific goals for each performance component (e.g. tactical and psychological), individually (i.e. demands of the playing position) or collectively (i.e., game model). On the other hand, global integrated methodology fosters the development of collective game intelligence. The tasks associated with both of the methodological proposals can emphasize the psychological variables present in any situation and will be evaluated through quantitative and qualitative observation in future works.

*Keywords: complexity, sports behavior, global integrated, collective interaction, psychology, football*

## **Psychology of sport and mental health: An experience with body practices**

**Rodrigo Salomão, Telma Matos, Adriele Ishimoto, Luiza Figueiredo, Karoline Michalski, Cristiano Barreira (University of São Paulo)**

When reflecting on the relationship between mental health and quality of life, it is possible to consider benefits in several dimensions, such as physical, psychological and social rehabilitation, general improvement of physical fitness, valuable gains of independence and self-confidence by the realization of daily life activities, in addition to improve the self-concept and self-esteem of the practitioners. Taking into account mental health and quality of life, the regular practice of physical activity for psychiatric patients is much relevant. The purpose of this intervention was to offer corporal practices, based on a phenomenological perspective in Psychopathology and Sport Psychology, as a promotion and health resource aligned to the therapeutic proposal of the Community Group of Mental Health of the Day Hospital (HD) of Clinical Hospital of the Medical School of Ribeirão Preto – University of São Paulo. The patients are usually sedentary and complain about the side effects of the medication, such as muscle stiffness and weight gain. Phenomenological studies on the

corporeality in the varied psychopathological conditions should favor the recognition of the experiences to be unfold by these practices, aiming an integral improvement of the patients. Intervention activities occurred over 12 months, attending on average 16 psychiatric patients of the HD. A Physical Education professional (PE) taught the practical activities, also followed by three monitors (PE), and a Sport Psychologist. A phenomenological perspective in Psychopathology and Sport Psychology guided the methodological procedures. Aligned with a therapeutic work, these corporal practices seek to favor social support and inclusion, and the activities are surrounded by the valorization of subjectivity, mental health and personal experience.

*Keywords: body practices, psychology, phenomenology, sport psychology*

### Cooperation on sports: Measurement in categories of basic soccer football forces

**Yesica Jimenez Arcos, Claudia Alicia Rivas Garza, Alexandre Garcia-Mas (ISSP/SOLCPAD/AMPDAF)**

Today, different authors such as Garcia-Mas, A. and Rivas, C talk about teamwork, group cohesion, and more specifically the influence of cooperation on sports on performance results in any team sport. Cooperation on sports, understood as the decision of at least two people, acting together to achieve a goal, comes up to make an effort in order to clarify the different interactions that are established between the players of a team in the competition, and the Decision-making process in which players choose to collaborate with their teammates in solving the different moves of the game (García-Mas, 2001). This investigation parts of the meaning of identifying the level of cooperation on sports in the categories of the basic forces of a football club, overall and by factors; Later it makes an analysis of the global cooperation on sports of the categories all together according to the age of the players and the time that they have been inside the club. The poster shows the punctual way that cooperation on sports and the factors it makes up. It points out the methodology of research used and ends with schemes that exemplify the obtained results.

*Keywords: cooperation, cohesion, soccer, young, sport, global*

### The role of coach-athlete relationships and achievement goals in determining motivational orientation of adolescent athletes

**Yesim Karaç (General Directorate of Sport), Atahan Altintas (Baskent University Faculty of Health Science)**

Achievement goal theory (Dweck & Leggett, 1988; Elliot, 2005; Nicholls, 1984) is one of the most established theories in the study of competence motivation. In this context it was recently suggested that more sport research is warranted concerning the theoretically expected links between achievement goals and coach-athlete relationships and motivation (Conroy et al., 2007; Adie & Jowett, 2010). The aim of this study was to investigate the motivation of adolescents athletes with regard to coach-athlete relationship and achievement goal orientations. Sixty three females ( $M_{age}=14.17\pm0.77$ ), 182 males ( $M_{age}=14.11\pm0.79$ ) totally 245 athletes ( $M_{age}=14.13\pm0.79$ ) voluntarily participated in this study. The Coach Athlete Relationships Questionnaire (CART-Q), The Perception of Success Questionnaire (Child Version) and Sport Motivation Scale (Child Version) were used to participants. Stepwise Multiple Regression Analysis was used to assess the relationship between coach athlete relationship, achievement goal and motivational orientation. Analysis results indicated that the commitment subscale was significant predictors of the intrinsic motivation ( $R=0.14$ ;  $R^2=0.02$ ;  $p<0.05$ ). Also, closeness subscale was negative predictor of intrinsic motivation ( $R=0.09$ ;  $R^2=0.03$ ;  $p<0.05$ ). Another results showed that task orientation was significant predictors of amotivation as negatively ( $R=0.28$ ;  $R^2=0.08$ ;  $p<0.05$ ). In conclusion, coach-athlete relationship and achievement goal orientation effects motivational orientations of adolescent athletes. In other words, the athletes who maintain their coach-athlete relationship over time have high level intrinsic motivation. On the other hand, when the coach and athlete feel emotionally close to each other in the relationship, athletes' intrinsic motivation level decreased.

*Keywords: coach athlete relationship, motivation, achievement goal*

## **Athletic identity and career behaviors - the moderating effects of self-identity status and self-complexity**

**Yawen Hsu (National Chiayi University)**

Career development and transition of athletes has received considerable attention in sport. Previous literature proposed that athletes with an exclusive athletic identity was found to be more vulnerable to negative influences of career transitions. However, strong athletic identity is essential for outstanding sport performance and athletic training. Based on literature, the qualitative and quantitative aspects of athletic identity - self-identity status (Marcia, 1980) and self-complexity (Linville, 1985) - were discussed in this research. The purpose of this study was to examine the relationship between athletic identity and career development behaviors, and to test the moderating effects of self-identity status and self-complexity. 256 college students majoring in physical education and sport-related programs in Taiwan participated in the present study. Research measurements included Athletic Identity Measurement Scale (AIMS), Objective Measure of Ego Identity Status (OMEIS-2), self-complexity measurement, and Career Development Survey (CDS). Product-moment correlation and hierarchical regression were employed to conduct statistical analysis. The results from correlation analysis indicated that college students' athletic identity was negatively related to "Identity-diffusion" and was positively associated with their "Identity-achievement". On the other hand, athletic identity was negatively related to their perceived "Identity-achievement" from peers. Furthermore, the moderating effects of "Identity-achievement" and perceived "Identity-diffusion" were significant. The findings confirmed that the use of the qualitative and quantitative aspects interpreted athletic identity more effectively, and provided better understanding of the effects of athletic identity and its association with self-identity status, self-complexity, and career behaviors. A conclusion of the findings obtained in this paper and suggestions for future research were proposed.

*Keywords: identity-diffusion, foreclosure, proactive career behaviors, career transition, buffer coping*

## **The adaptation of psychological support in Japanese ski jumping men's national team from 2006 to 2014**

**Yasuhisa Tachiya (Japan Institute of Sports Sciences)**

The purpose of this case study was to enhance performance of ski jumpers in Japanese men's national team by providing psychological support to prepare them for big games such as the Olympic Games and the World Champions. The intervention has been conducted since May 2006 (after the Torino Olympic Games) until the 2014 Sochi Winter Olympic Games. Before the intervention start, I deeply discussed the psychological support for the team with the coaches. After that I mapped out our support line. This support method was based on JISS team psychological support method (2002). JISS psychological group have supported many Japanese Olympic teams and athletes since 2002. This intervention consists of two sessions: MT seminars and one-on-one sessions. First, MT seminars were held several times in training camps. The contents of MT seminars were divided into two parts: teaching MT techniques and making own philosophy of athletic life. The athletes acquired MT techniques such as relaxation training, imagery and others. They used to some MT techniques in trainings and competitions. In addition, one of the most essential works was to guide them to be aware of important mental factors for the jumpers in athletic life, in turn, to make their own philosophy of athletic life. Second, the main purpose of one-on-one sessions was to listen to athletes' individual issues and to provide advice for the athletes. After the one-on-one sessions, athletes could make a set for their mind prior to competitions. These support continued also in the 2014 Sochi Winter Olympic Games. During the 2014 Sochi, I stayed at outside athletes' villages in Sochi, visiting formal trainings and competitions and listening and

advising the jumpers about psychological conditions. The team was great performances especially in the 2014 Sochi Winter Olympic Games.

*Keywords: psychological support, ski jumping, national team*

### **A study on the color preferences and aggressive behaviors in college students**

**Yan Shi**

It is generally known that the color brings a tremendous affect to human's cognition. The relationship between colors and psychological functioning has always been paid dramatic attention to for a long history. Color preference is a favorite color which people mentally like or preferentially choose. On the basis of summary and analysis, this study made a thorough inquiry about the relationship between color preferences and aggressive behaviors of college students. The Buss-Perry aggression questionnaire and a self-designed questionnaire of color preference were used to measure the color preferences and aggression behaviors among Chinese college students. A total of 227 college students were investigated, the result shows that: (1) The order of undergraduates' color preference is that : Red, blue, purple, orange, green, yellow. The color preference has definitely significant differences and there is a dichotomy between male's and female's preferences about red and yellow.

*Keywords: color preference, aggressive behavior, college student*

### **Perfectionistic strivings and concerns on the emotional experience of young athletes**

**Yago Ramis, Miquel Torregrossa (Universitat Autònoma de Barcelona), Alexander T. Latinjak (Escola Universitaria de la Salut i de l'Esport (EUSES) Universitat de Girona)**

Perfectionism has been considered a maladaptive trait in general population (e.g., Burns, 1980). However, recent trends on the field of sport suggest that some types of perfectionism can be beneficial for performance and sport competition in particular (e.g., Stoeber & Otto, 2006). The paradox of Flett & Hewitt (2005) specifically posits that, although negative consequences are expected from perfectionistic athletes, in elite sports, almost absolute perfection is required. Alleviating this position, current researchers on perfectionism subdivide two types of perfectionism with differing effects on well-being, motivation and emotional experiences: perfectionistic strivings refer to the setting of exceedingly high standards in sport whereas perfectionistic concerns refer to negative reactions to imperfection. In this research, 225 young athletes (Mage= 14.29; SD = 2.62) practicing basketball, water polo and synchronised swimming, answered the Spanish versions of the Personal Standards and Concern Over Mistakes subscales of the Sport MPS2 (Gotwals, Dunn, Causgrove Dunn, & Gamache, 2010), Sport Emotion Questionnaire (Jones, Lane, Bray, Uphill, & Catlin, 2005), Sport Anxiety Scale-2 (Smith, Smoll, Cumming, & Grossbard, 2006) and the Self-Confidence Scale of the CSAI-2 (Cox, Martens, & Russell, 2003). Results show that measures of anxiety both from SAS-2 and SEQ, as well as negatively toned emotions were positively predicted by perfectionistic concerns ( $\beta = .42$  to  $.82$ ;  $p < .001$ ) whereas, perfectionistic strivings positively predicted happiness and self-confidence ( $\beta = .40$  and  $\beta = .56$  respectively;  $p < .001$ ) which were also negatively predicted by perfectionistic concerns ( $\beta = -.58$  and  $\beta = -.80$  respectively;  $p < .001$ ). Our study suggests that although both forms of perfectionism seem to be two sides of the same coin ( $r = .68$ ) when focusing in perfectionistic strivings instead of in concerns on imperfection more positive emotional experiences are expected in young athletes.

*Keywords: emotions, perfectionism, structural equation modelling, anxiety*

## The prediction of 3 × 2 achievement goal on the subjective well-being among youth athletes: The mediating effects of psychological needs

**Xin-Yu Hsieh, Mei-Yen Chen (National Taiwan Normal University)**

Previous research concerned with the role that achievement goals may play in facilitating the psychological well-being in the academic setting. Specifically, task goals were related to positive psychological well-being, and ego goals were related to negative psychological well-being (Kaplan & Maehr, 1999). However, few studies have been conducted to examine the possible mechanism. Recently, Elliot, Murayama, and Pekrun (2011) proposed a 3 × 2 achievement goal model. The purpose of this study was to examine the mediating effects of psychological needs on association between 3 × 2 achievement goals and subjective well-being in youth sport. Participants were 123 high school student-athletes (78 males and 45 females) recruited from Taipei and New Taipei city. Their average age was 16.49 year, and the average training year was 5.83. After received the informed consent, participants were asked to complete 3 × 2 Achievement Goal Questionnaire (AGQ), Subjective Well-being Questionnaire and Psychological Needs Questionnaire. The data was then analyzed by the descriptive statistics, product-moment correlation and Bootstrap mediation analysis. The results of Bootstrap mediation analyses indicated that autonomy played as mediators in the prediction of all the approach goals (Self-Approach Goal, Other-Approach Goal, and Task-Approach Goal) on subjective well-being. Moreover, Task-Avoidance Goal positively predicted youth athletes' autonomy and then positively predicted their subjective well-being. Base on the findings, the implications and applications of this study are discussed.

*Keywords: self-avoidance, self-approach, other- avoidance, other- approach, task- avoidance, task- approach*

## The effect of tennis expertise on motion-in-depth perception: An event-related potential study

**Xiaona Wei, Changzhu Qi, Xia Xu, Xiaobin Hong (Wuhan Sports University)**

Visual information is used continuously to guide and modify the hitting action in fast interceptive sport, and motion-in-depth perception is important for the athletes to gain visual information. Many studies have confirmed athletes' expertise advantage in information processing, while results of praxeology experiments have not reached consensus. The present study investigated the effect of tennis expertise on motion-in-depth perception by event-related potential (ERP). The study includes 19 sport university students majoring in tennis (national athletes' technical certificate Level Two, training period ≥ five years) as experts and 19 college students without tennis experience as novices. ERPs were recorded when participants were discriminating direction of motion in depth. ERP data from five midline electrode sites was selected for further statistical analysis: PO7 and PO8 for P1 and N180, Oz for P2, CPz and Pz for P300. Expertise group (experts vs. novices) × direction (toward vs. away) × rotation pattern (rotating vs. non-rotating) analysis of repeated variance analysis (rANOVA) were conducted on the amplitudes and latencies. Three main expert-novice differences are found in the current study. First, the tennis expert group shows a significant advantage in accuracy rate comparing to the novice group. Second, for the novice group, the latency of occipitotemporal P1 in the "toward" condition was significantly longer in response to the "away" condition, but the tennis expert group shows no difference in the two conditions. Third, for the tennis expert group, the latency of occipital P2 in the "toward" condition was significantly longer in response to the "away" condition; however, no significant difference is found in the novice group. The present study indicates that tennis expertise has an advantage on motion-in-depth perception. The occipital P2 is the potential biomarker for the assessment of athletes' perceptual skills training effect in interceptive sports.

*Keywords: expertise, motion-in-depth perception, event-related potential*



## Research on implicit cognitive attitude of red attire among wrestlers in wrestle game

**Xiaobin Hong (Wuhan Sports University)**

Previous studies found that athletes with red uniform have competitive advantage in combat game (Hill, 2005). However, participants' attitude on athletes with red uniform were examined by explicit measure among the most of previous study (Little, 2007; Feltman, 2011). Thus, the present study tried to explore athletes' cognitive attitude on red uniform from the perspective of implicit. 36 college wrestlers and 38 college students to participate in the study. The traditional Implicit Association Test was used to measure participants' implicit cognitive attitude on the competitive uniforms' color. The present study used competition pictures as concept dimension material, and used character as attribution dimension material. In total, original 8 pictures from training context were collected, which consists of four groups of 2 wrestlers in each group. We used Adobe Photoshop CS.6 Color manipulation to modify the hue of the 8 pictures, which one wrestler was changed into shadow in each picture. Thus, we got 16 pictures for the present study. Attribution dimension material included 16 words, which involved 8 aggressive words (4 positive and 4 negative) and non-aggressive words (4 positive and 4 negative). For college students, their average reaction time to the picture of athlete with red uniform + aggressive words is significantly shorter than the picture of athlete with red uniform + non-aggressive words ( $p < 0.001$ ). In the compatible task, wrestlers' average reaction time is significantly shorter than college students ( $p < 0.05$ ). In the incompatible task, wrestlers' reaction time is significantly longer than college students, but there is no significant difference. From the perspective of implicit, both wrestlers and college students have the attitude that colour red is more aggressive.

*Keywords: competition attire, red effects, implicit cognition, IAT*

## Changes in sleep quality and mental health following the physical activity program administered to civil sanitation workers

**Won-Min Choi, Ye-Lim Choi (Sungkyunkwan University)**

Numerous existing studies showed the positive effects of regular exercise on mental health and sleep quality. However, it is not clear whether such effects would be applicable to the population with poor vocational and overnight working conditions. Also, because of the intense physical demands of overnight street cleaning duties, exercise participation is the last option for after-work activities among the Korean civil sanitation workers. In this study, we hypothesized that regular exercise activity would help them to improve sleep quality and mental health. A total of 18 sanitation workers were randomly assigned to either an experimental group ( $n=9$ ) or a control group ( $n=9$ ). Then, a 12 weeks of physical activity program was applied to the experimental group. Participants from both groups completed Sleep quality (Lee, 2005), Concise Measure of Subjective Well Being (Suh & Koo, 2011), and Depression-Anxiety-Stress Scale (Lovibond & Lovibond, 1995) questionnaires before and after the 12 week period. The result could be summarized as follows. First, sleep quality and mental health showed significant differences between the pre- and the post-test periods. Next, this pre-post difference was significantly greater among the workers who participated in the physical activity programs. Regular physical activity was, again, shown to be an effective intervention for quality of sleep and mental health. Further, this beneficial aspect of physical activity could be applied to the people working in demanding and harsh conditions such as civil sanitation workers or other public caretakers.

*Keywords: physical activity program, quality of sleep, mental health, cleaning worker*

## Measuring individual hierarchy of anxiety invoking sports related activities: development and validation of the Photographic Series of Sports Activities for Anterior Cruciate Ligament Reconstruction (PHOSA-ACLR)

**Wim van Lankveld (HAN University of Applied Sciences)**

Fear of harm (FoH) after Anterior Cruciate Ligament Reconstruction (ACLR) hampers return to sports. Fear for specific movements can be addressed using graded exposure. Assessing an individual hierarchy in fear eliciting activities is a prerequisite for exposure(1). This study describes measurement properties of the first instrument to measure FoH that allows to determine such a hierarchy of sports related fear inducing activities specific for ACLR. ACLR experts selected 12 sports situations invoking FAH in ACLR. Photographic representations of these situations were included in the Photograph Series of Sports Activities for ACLR (PHOSA-ACLR). Internal consistency and structural validity are assessed in 109 patients. In 58 patients criterion validity is assessed by calculating pearson correlations with the Tampa Scale of Kinesiophobia (TSK). Correlations with self-reported knee function (KOOS and Lysholm score), and Knee Self-efficacy Scale (K-SES) were computed for hypothesis testing. Test-retest reliability was determined in a group of 55 patients, assessed twice within 1 week. Responsiveness to change was assessed in 10 patients shortly after reconstruction, with four assessments with a time interval of 3 weeks. The resulting 10 items PHOSA-ACLR showed excellent internal consistency (Cronbach's Alpha is .95), with large correlation with TSK ( $r = .59$ ). Test-retest correlation was excellent ( $ICC = .86$ ), and the PHOSA-ACLR was responsive to change. A priori formulated hypothesis are confirmed. An important limitation of the study is the small number of patients for responsiveness. The PHOSA-ACLR showed excellent measurement properties. The PHOSA-ACLR gives specific information about fear invoking sports situations that are not measured by other kinesiophobia measures. Therefore, the PHOSA-ACLR might be a valuable additional tool in rehabilitation of ACLR patients.

*Keywords: anterior cruciate ligament reconstruction (ACLR), kinesiophobia, fear of harm/movement/injury, validation*

## Athlete's envy: Appraisal patterns, benign envy and malicious envy

**Wan-Un Chung (Research Centre of Sports Psychology in Wuhan Sports University), Chu-Min Liao (National Taiwan Sport University)**

Envy, the feeling that oneself is inferior to others, is an emotion that athletes experience often since social comparison with others (rivals and/or teammates) is inevitable in sport. According to Pila et al. (2014), envy can be either benign or malicious. Benign envy makes individuals to improve themselves while malicious envy drives people to attempt to drag others down. This study examined the effect of athletes' perceived deservingness of teammate's superiority and perceived control potential of changing the inferior situation on both benign and malicious envy. Participants were 202 student athletes from Taiwan (130 males; 72 females) and were randomly assigned to one of the four conditions in a 2 (Undeserved vs. Deserved) by 2 (Low control vs. High control) experimental design. Participants read a story script regarding a fictional athlete losing his starting position to a teammate and then report how they would feel if they had been the athlete. The levels of perceived deservingness and control in the story scripts were manipulated according to the experimental condition. Between-groups ANOVAs showed that both Deserved with High control condition and Deserved with Low control condition had a higher level of benign envy than Undeserved with High control condition ( $p = .004$ ;  $p = .044$ , respectively). In addition, Deserved with High control condition had a lower level of malicious envy than both Underserved with High control condition ( $p = .036$ ) and Undeserved with Low control condition ( $p = .027$ ). These results support the notion of Pila et al. (2014) and suggest that coaches should pay attention to athletes' feelings of envy since envy can lead to a more adaptive response if athletes feel that other people's superiority is deserved and the current situation can be changed.

*Keywords: benign envy, malicious envy, appraisal patterns*

## Competition result and its influence on the motivation score of athletic handball players

**Vinicius Freitas, Cristina Melo, Tatiana Boletini, Franco Noce (Universidade Federal de Minas Gerais)**

Motivation can be defined as factors that determine the actualization of forms of behavior directed to a specific goal, depending on the interaction of personal (intrinsic) and environmental (extrinsic) factors. Intrinsic motivation refers to the pleasure an athlete has in performing a task. Extrinsic motivation corresponds to behaviors performed for the purpose of obtaining a material or social reward, or to avoid some form of punishment. The objective of the study was to verify the influence of the competition result on the motivation score of athletic handball players. The hypothesis is that a bad result in a competition can alter the motivation of the athletes, causing demotivation and even dropout. The sample was composed by 8 teams, making a total of 89 athletes participating in the School Games of Minas Gerais (JEMG). The profile of the sample is composed by handball athletes from public and private schools, aged 15 to 17 years. Data were collected through the Sports Motivation Scale (SMS), an instrument that measures 7 different motivation scales through 28 questions on a likert scale of seven values, in which 1 corresponds to nothing and 7 corresponds exactly. The application occurred one hour before the start of the first game and after the last game. To analyze the data, a descriptive statistic was used, composed of mean, standard deviation and frequency distribution. To compare the moments before and after the competition in each dimension, the Paired Samples Test (t-test) was used, the level of significance adopted was  $p < 0.05$ . These data were observed using an overall of all teams and per team. The results also show that the most affected dimensions were "intrinsic motivation to know" and "demotivation". The winning team (7), presented favorable results in relation to the others when comparing the score of motivation before and after the competition. It can be concluded that the result of the competition had a significant influence on motivation score.

*Keywords: motivation, handball, competition*

## Analysis of depression, anxiety and stress among professional students at collegiate level

**Vineet Kumar Sharma, Nibu R. Krishna (Inlpe Gwalior, m.p., India)**

Academic stress, anxiety and depression among college students are a cause of concern. Research survey on college student's reports there will be 10 to 20 % of students suffering from psychological problems like Stress, Anxiety & Depression (Narasappa, 2013). The purpose of the study is to examine the current status of depression, anxiety and stress of different professional students. A group of male-female mix of 180 (N=60 each) from medical, engineering and physical education profession, of 18-25 years with mean and SD of  $21.20 \pm 2.35$  were selected randomly. Depression Anxiety and Stress Scale (DASS) by Lovibond (1995) questionnaire was used as an instrument. Descriptive statistics such as mean and standard deviation and comparative statistical technique (one way ANOVA) and Post HOC test LSD were used and level of significance was set at 0.05, where the mean and SD for the three groups, medical, engineering and physical education for depression are  $11.23 \pm 7.23$ ,  $9.50 \pm 9.62$  and  $14.97 \pm 7.21$ ; for anxiety are  $11.77 \pm 6.05$ ,  $10.35 \pm 8.3$  and  $16.62 \pm 6.84$  and for Stress  $14.05 \pm 6.13$ ,  $10.15 \pm 8.4$  and  $16.8 \pm 6.47$  respectively. F-value is significant as the calculated f values 7.14 for depression, 12.77 for anxiety and 13.39 for stress were found to be greater than the tabulated f value = 3.04 with 2, 177 df at 0.05 level of significance. Post HOC test analysis reveals a significant difference in depression among physical education and engineering students and among physical education and medical students. Further, there is significant difference in anxiety among physical education and engineering students and among physical education and medical students. Lastly, there is significant difference in stress among physical education, engineering and medical students. As, Aerobic exercise training has antidepressant and

anxiolytic effects and protects against harmful consequences of stress Peter Salmon (2001). These results may be due to, physical education students involves mostly in sports.

*Keywords: depression, anxiety and stress*

### Teaching life skills through soccer to inmates of a juvenile offenders institute

**Victor Souza (University of São Paulo)**

One of the principles of educational sport is to transmit positive values of life to those who practice it. A main factor that contribute to this learning is the link between student and coach through the use of an appropriate language within a systematized method of teaching sports and life skills. Juvenile offenders present some psychosocial demands and complaints about the absence of good examples of life, difficulty setting goals for the professional career, assessing their capabilities in general and drawing up strategies for entry into the labour market. The objective is to present the results of a social project implemented in the CASA Foundation (Brazilian detention center for the youth) at Sertãozinho, São Paulo State, Brazil. The project served 110 students from 12 to 18 years. The educational sports methodology was adapted from the Street Soccer Skills method, developed by Street Soccer USA - HELP USA. The method comprises an interaction between soccer skills and life skills, drawing a lesson from the relationship between them. Thus, the skills are divided in four dimensions: basic, specific, group and strategic. During the trainings, the exercises proposed by the coach have a direct relationship with life skills. Thus, in the same way the hability of ball control and ball driving are basic conditions for the practice of football, security, health and housing are fundamental to a person daily life, for example. Of this, it is taken a lesson called Street Soccer Skill as "show up" and "play with heart". In this way, specific training for each skill was planned over 4 months. A group of 25 boys was selected to participate in focus groups that discussed the themes of soccer and life skills, related to the method. The results showed that the students who participated in the group had an improvement in the discipline in the institution, they played a leadership role in the group and all received the release in the trial to leave the institution.

*Keywords: sport for development, life skills, soccer*

### The relationship between sport-grit, temporal state anxiety and performance in track and field athletes

**Vicky Price, James Rumbold (Sheffield Hallam University, UK)**

Growth mindset theory of learning (Dweck, 2000) suggests that grit enables individuals to successfully attain long-term performance goals (Duckworth et al., 2007, p.1087). This is because grit requires passion and perseverance towards completing tasks despite encountering obstacles. Although recent research in sport has evaluated cross-sectional relationships between grit and performance (Larkin, O'Connor, & Williams, 2015), research has neglected to consider the role that grit may play in predicting athletes' anxiety perceptions, which may mediate the relationship between grit and performance (Duckworth, Kirby, Tsukayama, Berstein, & Ericsson, 2011). Furthermore, future research should examine these relationships episodically and employ domain-specific measures of grit, to more reliably test these relationships within specific life contexts (Duckworth & Gross, 2014). The purpose of this study was to examine whether sport-grit was associated with temporal pre-competition anxiety and performance. Using an experience sampling methodology (Hektner, Schmidt, & Csikszentmihalyi, 2007), 30 collegiate track and field athletes (Mage = 21.21, SD = 2.31 years) completed a sport version of the grit scale (Duckworth & Quinn, 2009) a week prior to competing. Following this, participants completed the competitive state anxiety inventory-2 (Jones & Swain, 1992; Swain & Jones, 1993) at three time points (2 days, 1 day, 2 hours) before three competitions. Objective performance was also measured following competition. Regression analyses revealed that sport-grit was associated with cognitive

anxiety intensity (inversely) and performance across all time points and competitions. Additionally, grit was negatively associated with somatic anxiety intensity at 2 days ( $B = -3.00$ ,  $p = .02$ ) and 1 day ( $B = -3.40$ ,  $p = .03$ ) but not 2 hours before competition. Athletes should be coached to persevere towards the attainment of their goals despite experiencing anxiety symptoms prior to competition.

*Keywords: grit, longitudinal, personality, state anxiety, track and field*

### The moderating role of disability in the effect of Athletic Identity and Satisfaction with life

**Vicente Javier Prado Gascó (Universitat Valencia), Gabriel Martínez Rico, Carlos Pérez Campos, Jose Manuel Boquera Navarrete (Universidad Católica de Valencia)**

Sport practice seems to positively affect the quality of life and well-being of individuals. Also, Athletic Identity of athletes can play a very important role in their well-being and quality of life, however, this type of studies are scarce especially considering professional athletes and more when we focus on the field of adaptative sports. In those athletes, features of disability such as origin (since birth or acquired) or severity, could act as moderating variables for the effect of Athletic Identity on their well-being. After an exhaustive reviewing of the literature, we have not been able to observe studies that have analyzed these aspects. Therefore, the objective of this study is the assessment of the impact of the Athletic Identity on Satisfaction with the life for athletes with disabilities, while analyzing the moderating role of the origin and severity of the disability. This analyses was performed using the PROCESS macro (Hayes, 2013), designed for testing the moderation by directly assessing the significance of the indirect effect of the independent variable (X; Athletic Identity) on the dependent variable (Y; SWLS) through two moderators: Origin (M) and severity (W). The Moderation effect (with  $n = 5,000$  bootstrap re-samples) is demonstrated when the bias-corrected confidence interval (95%) of the indirect effect does not include zero (Hayes, 2013). The sample of the present study consisted of 231 athletes with disabilities who participated in 14 sports competitions during the seasons 2013-2014 and 2014-2015. The range age of the participants goes from 18 to 62 years old, with an average of 30.2 ( $\pm 10.7$ ). 74% are men. The results obtained suggest that the Athletic Identity accounts for 15% of Satisfaction with life of athletes with disabilities, and also a moderating effect of severity but not the origin of the disability.

*Keywords: satisfaction with life, athletic identity, disability, athlete, moderation*

### Adaptation of the Bernese Motive and Goal Inventory in leisure and health sports for people in adolescence and young adulthood (BMZI-JFEA)

**Vanessa Gut, Julia Schmid (Institute of Sport Science, University of Bern)**

For tailored promotion of physical exercise in adolescence and young adulthood, an appropriate questionnaire is needed to assess sport-related motives and goals. One proven German questionnaire eliciting motives and goals is the Bernese Motive and Goal Inventory (BMZI) for people from 35 to 64 years in middle adulthood. However, based on developmental-psychological considerations the found motives and goals in middle adulthood can not be transferred to adolescence and young adulthood without any adaptations. For this reason, the aim of the study is (1) to develop an appropriate questionnaire to assess the sport-related motives and goals of adolescents and young adults from 14 to 34 years (BMZI-JFEA) and (2) to validate the psychometric criteria of the inventory. The sample consists of 717 Swiss adolescents and young adults (Mage = 20, 63% female). Focusing on construct validity, an exploratory structural equation modeling (ESEM) was carried out using Mplus 7. In addition, for further validation bivariate correlation analyses were conducted to investigate the relationship between motives and goals and sport-related self-concordance. Using ESEM eight factors (CFI = .986, TLI = .969, SRMR = .013, RMSEA = .036) were found consisting 26 items: contact, competition/performance, distraction/catharsis, body/appearance, fitness, health, aesthetics and risk/suspense. As assumed, purposed-centred motives and goals show negative correlations with intrinsic

motivation (e.g. body/appearance) whereas activity-centred motives and goals are characterised through positive correlations with intrinsic motivation (e.g. aesthetics). A first validation indicates that the BMZI-JFEA is an economic and age-specific inventory meeting psychometric validity requirements. However, a cross-validation is necessary to confirm the factorial structure of the sport-related motives and goals. Furthermore, examining measurement invariance of age, gender and exercise behaviour is intended.

*Keywords: physical exercise, sport-related motives, adolescence, young adulthood, questionnaire*

## Psychological training for inclusion of persons with disabilities to participate in sports

**Valerii Malkin, Ekaterina Gilyazetdinova, Liudmila Rogaleva, Koibagarova Dayana (Ural Federal University)**

Understanding the importance of positive influence of adaptive sports leads to search of ways of involvement of persons with limited possibilities of health into adaptive sports. The purpose of our research was development and implementation of psychological training program to involve persons with limited possibilities of health into adaptive sports. In the framework of research were used the methods of questionnaire, survey. Into research were involved 35 specialists in adaptive physical culture, 22 persons with limited possibilities of health, 25 sportsmen involved in adaptive sports. In the first stage of study a questionnaire was conducted aimed at identifying the social-psychological factors influencing on involvement of persons with limited possibilities of health into adaptive sports. The questionnaire revealed that The main difficulties for persons with limited possibilities of health in involvement them into sports are the following: not readiness to handle the load; difficult to do sport due to progressing disease; no choice in kinds of sport; financial difficulties. The second stage was focused on the development and realization of social-psychological training on involvement of persons with limited possibilities of health into adaptive sports. The training was held in mixed group together with people not involved in sports, sportsmen involved in adaptive sports and instructors of adaptive physical culture. In the framework of this stage we developed mini-lectures, organized analysis of video about sportsmen-paralymians, interview with sportsmen involved in adaptive sports. Also we had a dialogue and a discussion of difficulties and perspectives arising at doing adaptive sports, etc. Were created the situations which develop reflection, stimulate the need of self-development, formation of motivation to the process and result of activity, development of the need of self-knowledge and surrounding reality.

*Keywords: persons with disabilities , sport, psychological training*

## The mediating role of self-esteem on perfectionism-creativity relationship in college dancers

**Tzu-Wen Lin, Jui-Fu Chen (National Taiwan Normal University), Yi-Hsiang Chiu (National Taiwan Sports University)**

Recently, there is an increasing interest on the influence of perfectionism on creativity and self-esteem (e.g., Moghadam, Beheshtifar & Sefidi ,2012), and self-esteem affects creativity (e.g.,Goldsmith & Matherly, 2001), but no study has examined the role of self-esteem on the perfectionism-creativity relationship. Therefore, the purpose of this study was to examine the mediating role of self-esteem on perfectionism-creativity relationship in college dancers. Four hundred and one college student-dancers (Mage=19.5; SD=+0.63) completed multidimensional perfectionism scale of Frost (Frost et al., 1990), Rosenberg self-esteem scale (Rosenberg, 1965), and creative thinking test (Wu et al., 1998). SEM was used to analyze mediate effect of self-esteem. Results indicated that both positive and negative self-esteem fully mediated the relationship between perfectionism and creative. It is indicated that perfectionism led to more creativity via higher self-esteem. We suggest dance instructors and practitioners should pay attention to dancers' esteem because



esteem is an important mechanism between perfectionism and creativity. Future research directions and intervention strategies were also discussed.

*Keywords: creative verbal, creative figural, dancer students*

### **3 × 2 achievement goal profiles in table tennis players**

***Tsz Lun (Alan) Chu, Tao Zhang, JoonYoung Lee (University of North Texas)***

The recently developed 3 × 2 achievement goal theory (AGT; Elliot et al., 2011) differentiates achievement goals as task-based, self-based, and other-based in definition as well as approach and avoidance in valence. Although previous studies have examined achievement goal profiles based on the dichotomous AGT (Nicholls, 1989) and the 2 × 2 AGT (Elliot, 1999), little research has studied the 3 × 2 model in sports (Mascret et al., 2015). Thus, this study aimed to examine table tennis players' achievement goal profiles using the 3 × 2 AGT as a framework. Two hundred and nine table tennis players (Mage = 39.91 ± 18.02 years), mostly from the United States (n = 150) and China (n = 46), completed a validated online survey assessing 3 × 2 achievement goals and table tennis experiences. A hierarchical cluster analysis was used as a preliminary step to examine the possible cluster solutions, which were then validated using nonhierarchical (k-means) procedures. The agglomeration schedule from the hierarchical cluster analysis demonstrated a large increase in the clustering coefficient from seven- to six-cluster solution (15.8%), and from four- to three-cluster solution (21.5%). Inspection of the dendrogram indicated a four- or six-cluster solution, thus concluding four clusters as the best solution. Using the cluster means from the hierarchical cluster analysis as seed points, k-means procedures produced four new clusters that possessed similar cluster means and sizes. These analyses revealed four types of goal profile, namely, "high approach-high avoidance" (n = 84), "moderate approach-low avoidance goals" (n = 34), "low approach-moderate avoidance" (n = 15), and "low approach-low avoidance" (n = 76). Results suggest that among table tennis players, a high approach-high avoidance goal profile is the most common, followed by a low approach-low avoidance goal profile. This highlights the need for assessing and improving players' goal profile for motivational interventions.

*Keywords: achievement goals, motivation, table tennis, cluster analysis*

### **An exploration study on strategies that professional baseball player use in coping with an increasing number of games**

***Tsung-Yi Wu, Sheng- Hsien Fang (National Taiwan Sport University), Yi-Chieh Chang (Chung Shan Medical University)***

The purpose of this study was to explore the coping strategies that professional baseball players have adopted for dealing with the stress brought on by an additional number of seasonal games played. A purposive sampling was used to select four of the best baseball players (age was 30 + 1.0) in the Chinese Professional Baseball League. At the start and end of the season, the researchers conducted semi-structured interviews with these players. In order to verify the validity of these interviews, at the end of the season, researchers additionally conducted in-depth interviews with the team's coach and trainer. The four dimensions covered were the coaches' knowledge and team management skills (positive vs. negative for each). Content analysis was performed in order to analyze the qualitative data of transcribed verbatim statements obtained through individual face-to-face interviews that lasted about 60 minutes. The results revealed that stress influences players because of: a) certain negative factors in coaches; b) other team personnel without enough professional knowledge; and c) not enough trainers being available during the season. Players would then take countermeasures against these negative factors by seeking outside support, including purchasing nutritional supplements, visiting medical centers, and finding their own short-term trainers. Adjusted self-training strategies, including increasing cardio training, weight training, and reducing the time spent on specific

technical training, were developed as ways of dealing with the stress of an extended schedule. Their findings suggest that baseball players held a positive attitude when facing increased competition screenings. They used existing resources of the team and also external resources, so as to enhance their competitive strength, and tend to think that such practices are a form of self-investment.

*Keywords: professional baseball, trainer, self-training, coach*

## Development of athletic injury emotion regulation behavior scale

**Tomonori Tatsumi (Kio University)**

Injuries are known to have negative effects on various physiological aspects of athletes. Injuries can also be detrimental to the psychosocial functioning of athletes because they engender anxiety concerning the ability to continue doing sports, or about the loss of position in the team hierarchy, or a future role. In order to examine effective coping to emotional problems of athletes resulting from injury, it is necessary to develop a scale for assessing emotion regulation that injured athletes used. The purpose of this study was to develop an "Athletic Injury Emotion Regulation Behavior Scale" (AIERB-S) to assess emotion regulation that injured athletes used. Athletes ( $N = 180$ ) that had experienced an athletic injury (Mean age = 20.27 years,  $SD = 1.02$ ; Mean days required for complete cure = 66.58 days,  $SD = 87.13$ ) participated in this study. They were asked to complete a provisional version of the AIERB-S that was developed based on studies of Nozaki (2013) and Kashimura & Iwamitsu (2007). The three factors in the provisional scale that were identified by Confirmatory factor analysis included, "Emotional Suppression (4 items)", "Positive Reappraisal (4 items)" and "Emotional Expression (4 items)". The three-factor model had a goodness of fit indicated by  $\chi^2 (51) = 114.362$  ( $p = .000$ ),  $GFI = .909$ ,  $AGFI = .861$ ,  $CFI = .918$ , and  $RMSEA = .083$ . The Cronbach's alpha was used to assess the internal consistency of the scale, which confirmed the reliability of the scale ( $\alpha = .75-.82$ ). AIERB-S is a reliable and valid scale composed of three subscales.

*Keywords: injured athletes, athletic injury emotion regulation behavior scale (AIERB-S), reliability, validity*

## Gaining entry in sport psychology consulting: A critical review of consultant characteristics and future research directions

**Toby Woolway (Loughborough University)**

The sport psychology consultant's (SPC) first impression and rapport building with potential clients is vital to 'gaining entry' – the precursor to subsequent service provision (Coumbe-Lilley, 2011; Human, Sandstrom, Biesanz, & Dunn, 2012). Understanding those characteristics of the consultant that influence the clients' preference and likelihood to seek psychological services contributes to the development of educational training programs for neophyte practitioners, and marketing tools for the field as a whole (Van Raalte, Brewer, Matheson, & Brewer, 1996; Woolway & Harwood, 2015). This poster presents a critical review of studies that have investigated the preferred characteristics of SPCs in term of likelihood to seek services. A computerised literature search of PsycARTICLES, PsycINFO, PubMed, and SPORTDiscus was conducted using the search terms consult\* (for consultant, consultation, and consulting) and either charact\* (for characteristic and character), preference, perception, or effectiveness. A hand search of major sport and exercise psychology journals (i.e. Journal of Applied Sport Psychology, Journal of Sport and Exercise Psychology, and Psychology of Sport and Exercise) was conducted to identify any papers missed during the computerised search. Papers were included if they (1) were published in an English language journal (2) specifically regarded the characteristics of consultants and their effectiveness (3) specifically focused on the SPC. The search identified 18 studies representing a total of 3350 participants. The most preferred SPC was of the same gender, race and age of the client with a high athletic background, sport-specific knowledge, and interpersonal skills. Such a consultant was lean and athletically built, physically active, possessed either an advanced degree or was certified and had

experience working with diverse populations. SPCs and governing bodies are encouraged to consider these findings for training and marketing purposes.

*Keywords: gaining entry, consultant characteristic, preferences*

## **The effect of perceived peer relationship on expectancy and value beliefs in physical education: the moderating effect of gender**

**Ting-Chih Huang, Hsiu-Tin Wu**

According to the expectancy-value theory of achievement motivation (Eccles, 1983; Wigfield & Eccles, 2000), expectancy and value beliefs are two important determinants of students' motivation related behaviors in both academic and physical activity domains. Expectancy and value beliefs are affected by individual's socialization agents (e.g., peers) as well as personal characteristics (e.g., gender). The purpose of this study was to examine the influence of perceived peer relationship on expectancy and value beliefs in physical education of junior high school students and the possible moderating effect of the student's gender on this influence. Participants were 190 junior high school students from Taiwan, including 90 eighth graders and 100 ninth graders (88 males and 102 females). They filled in a set of questionnaires regarding their perceived levels of positive and negative peer relationship as well as expectancy and value beliefs in physical education. Hierarchical multi-regression analyses found both significant positive peer relationship and gender main effects ( $p < .05$  and  $p < .001$ , respectively) and a significant interaction on value belief ( $p < .01$ ). Simple main effects showed that when perceived level of positive peer relationship was high, there was no gender difference in value belief. While perceived level of positive peer relationship was low, females' value belief was significantly lower than males'. A main effect of negative peer relationship (but no interaction with gender) was also found on value belief ( $p < .05$ ). The higher the perceived level of negative peer relationship, the lower the value belief. No main effects or interactions of peer relationship and gender on expectancy belief were found. In general, these findings suggest that peer relationship may influence adolescents' value belief, though not expectancy belief, in physical education, especially for females.

*Keywords: expectancy-value theory, peer relations, sports participation*

## **Response biases and strategies in sport data: An item response theory perspective**

**Till Utesch, Bernd Strauss (University of Muenster, Germany), Dirk Büsch (University of Oldenburg, Germany), Henk Erik Meier (University of Muenster, Germany)**

In sports, questionnaires and behavioral assessments are often conducted across disciplines. Data can be biased, because participants might use certain strategies to solve sport tasks or use different styles to respond on rating scales. Response biases can for instance be a tendency to middle categories or a favor of extremes. These styles can result in specific response patterns and participants with the same real (latent) level of the measurement can differ at the observed level only due to their response bias. Without identifying those response styles, a successful testing of hypotheses can be affected (Eid & Zickar, 2007; Bockenholt & Meiser, 2017). Therefore, an identification and correction for response biases can be necessary and tested. Occasionally, it can be appropriate to exclude response patterns if they violate model assumptions from further content-related considerations. The study objective is to demonstrate how response biases can be identified in a large dataset within the item response theory framework (IRT, i.e., the Mixed-Rasch model, MRM, Rost, 1990). As a data example the German fan identification scale is used. It consists of seven questions (5-point Likert-scale; Strauss, 1995; Wann & Branscombe, 1993). Fan identification with the German national soccer team was assessed from a total of 12,333 people in the context of the soccer world championships 2002-2014 every day of the event for one hour in public in Muenster, Germany. Unidimensionality of the scale was hypothesized. However, the one-dimensional polynomous Rasch model did not adequately fit the whole data.

Modeling revealed two latent classes with different response styles: Class 1 (66.5%) fitted to the assumed one-dimensional model of identification using a holistic response style. Class 2 (33.5%) revealed a response style in favor of crossing extreme values, which violated scale validity. This study demonstrates practical solutions for handling potential response bias in sports data.

*Keywords: rasch, IRT, statistics, fan identification, identification*

## **Socio-moral reasoning, Social Identity and Social Justice among adolescents in Physical Education**

**Areti Paraskevi Maragkou, Aralambos Tsorbatzoudis**

The purpose of the study was to investigate adolescents' evaluation of interracial inclusion in Physical Education context, based on a theoretical perspective that integrates social domain theory, social identity theory and theory of planned behavior. Specifically, the study aimed to investigate how adolescents' socio-moral reasoning and social identity affect their evaluation of interracial inclusion in Physical Education and their attitudes towards social justice. The sample consisted of 325 adolescents (170 boys and 155 girls) 12-18 years. To assess the moral judgments of participants a scenario was presented depicting interracial peer exclusion occurring in physical education setting. Social Justice Scale was used to measure the components of Ajzen's model whereas a four item scale was used to assess adolescents' social identity. The results indicated that the majority of participants utilized moral reasoning when explaining race-based exclusion. Exclusion was rated as least acceptable by the students who used moral judgments and most acceptable by the students who used socio-conventional judgments and stereotypic justifications. In addition, lower social identity was related to more inclusive evaluations and to higher levels of social justice. Stronger social identity commitment was related to more exclusive evaluations and to lower scores in social justice's four subscales (attitudes, perceived behavioral control, subjective norms, and intentions). Interactions between socio-moral reasoning and social identity were found to affect social justice attitudes and intentions. The results could be interpreted in light of current theories and illustrate the importance of them being further examined. Future interventions should focus on promoting factors as intergroup contact and participation in sports, as in this study were found to be positively correlated with evaluations of interracial inclusion in PE.

*Keywords: socio-moral reasoning, social identity, cultural inclusion, social justice, physical education*

## **Is there a difference on reaction time, movement time and response time between U18 and U21 categories of the Brazilian judo team?**

**Thiago Ferreira, Varley Costa (UFMG)**

Response time is composed of reaction time (RT) and movement time (MT), and are important variables in martial arts sports. The Judokas define their strategies of attack or counterattack during the fight, and must react appropriately depending on their speed's response after the presented stimulus (Cojocariu & Abalasel, 2014). However, in judo, little is known about the behavior of these variables between categories U18 and U21. The objective of this study was to compare the reaction time, movement time and response time between elite judo athletes on U18 and U21 categories in simple reaction time task. Seventy one male athletes from the Brazilian Judo Team participated in the study. Thirty seven elite athletes for U18 (M age= 15.5 years, SD=0.05) and thirty four elite athletes from U21 (M age= 18.42 years, SD=0.75). The reaction time, movement time and response time were analyzed with the RT test (S1 version/simple reaction time task), by the Vienna Test System SPORTS®, and the results were given in milliseconds (ms). The statistic procedures adopted were: Mean (M) and standard deviation (SD), the Shapiro Wilk and Mann-Whitney tests ( $p < 0.05$ ). The following values were found: U18: RT (M=286.91ms, SD=39.52), MT (M=132.25ms, SD=33.64) and response time (M=406.5ms, SD=65.23); U21: RT (M=279.64ms, SD=39.28), MT (M=124.62ms, SD=24.75) and response time (M =402.54ms,

SD=50.57). After analysis, no statistical differences were found for both variables, with values of RT ( $p=.63$ ), MT ( $p=.48$ ) and response time ( $p=.77$ ) between the U-18 and U-21 categories of the Brazilian Judo Team evaluate. This study concluded that no significant differences were found for the reaction time, movement time and response time between on U18 and U21 categories of the Brazilian Judo Team. It's possible that the variables of simple reaction time may not be a good fit to establish parameters of performance differences between judo categories.

*Keywords: reaction time, judo, sport, elite athletes*

### **Career adapt-abilities scale—dual career form (CAAS-DC): Psychometric properties and initial validation in high school student-athletes**

**Tatiana V. Ryba (University of Jyväskylä, Finland), Chun-Qing Zhang (Hong Kong Baptist University, Hong Kong, China), Zhijian Huang (Hong Kong Sports Institute, Hong Kong, China), Kaisa Aunola (University of Jyväskylä, Finland)**

Talented adolescent athletes often face multiple risks to sustain their academic and vocational training alongside increasing demands of their athletic career, which subsequently may hinder young people's employability and adaptation to life after elite sport. Therefore, it is necessary to better understand the specific competencies that youth athletes can draw upon to successfully combine sport and education into a dual career pathway. Building on the existing Career Adapt-Abilities Scale (Savickas & Porfeli, 2012), we developed a Dual Career Form of the Career Adapt-Abilities Scale (CAAS-DC) for the use with adolescent student athletes. A sample of 391 Finnish-speaking athletes completed the CAAS-DC at the beginning of their freshman year in sport high school. Adequate factorial validity of the CAAS-DC and internal consistency reliabilities of its five subscales were demonstrated in both exploratory structural equation modelling (ESEM) and confirmatory factor analysis (CFA). Concurrent validity of the CAAS-DC was revealed with positive and significant associations with self-esteem, sport task values, school task values, and career construction; and negative association with school and sport burnout. Finally, partial strong measurement invariance was also demonstrated across males and females. The evidence from this study suggests that the CAAS-DC is a promising self-report inventory that can be used by researchers and applied practitioners to assess young athletes' self-regulation capacities in dual career pursuits.

*Keywords: dual career, student athletes, adolescence, scale validation*

### **Perfectionism and goal orientation with sports shooting athletes**

**Victoria Ivancheva (National Sports Academy)**

Perfectionism is an important psychological variable. It influences the way the cognitive, affective, and behavioristic characteristics of the athlete function. Perfectionism is connected with orientation towards higher goals and more successful performance (Bradham, 2000). According to the Achievement Goal Theory (Duda, 1989) when we have high task orientation, success is a result of the improvement of skills, self-development, and hard work and leads to positive and adaptive behavior directed to achievements. Ego-orientation is connected with a type of behavior directed to domination, superiority, obedience and comparison of one's personal abilities with those of the others. The aim of the present study is to reveal the peculiarities of Perfectionism and Goal orientation with sports shooting athletes depending on their qualification, kind of weapon and gender, as well as the interrelations between the researched indexes. In order to fulfill the aim of the study we used: 1) Multidimensional Perfectionism Scales (Frost-MPS), by Frost, Marten, Lahart & Rosenblate (1990); 2) Task and Ego Orientation in Sport Questionnaire—TEOSQ, Duda&Nicholls, 1992. The research was done among 99 sports shooting athletes from different clubs in Bulgaria aged between 18 and 50. The researched individuals were divided into two groups –medalists from international and national

competitions – 62, and average athletes – 37. The results reveal significant differences in the ego orientation depending on the qualification. There are significant differences depending on the kind of weapon (Concern over Mistakes, Parental Expectations and Organization) and age (Concern over Mistakes, Parental Expectations). The specific interrelations between the researched indexes have been revealed with the medalists and the average athletes. The important role of the parents on building the researched parameters have been pointed out.

*Keywords: perfectionism, goal orientation, task orientation, ego-orientation, sports shooting*

## Research on the two-way relationship between adolescent short track speed skating skaters' self - consciousness and personality

**Tao Li (Harbin Engineering University, China)**

Research on the two-way Relationship between adolescent short track speed skating Skaters' Self - consciousness and Personality LI Tao<sup>1</sup> SU Qing-fu<sup>1</sup> YuTao<sup>1</sup> YueXiu<sup>1</sup> (1.Physical Educational Department of Harbin Engineering University, Harbin 150001) Abstract: Thirty-six teenage short track skaters were tested with the Piers-Harris Child Self-Consciousness Scale (PHCSS) and Eysenck Personality Questionnaire Junior (EPQ) to explore the relationship between self-awareness and personality characteristics of juvenile athletes in short track speed skating. The results showed that the scores of self-consciousness of male athletes were significantly lower than that of Chinese norm. There was no significant difference in self-consciousness factors in athletes of any gender, but female athletes had higher scores than male athletes. The six factors of adolescent athletes' self-consciousness are positively relevant to extroversion but are negatively relevant to neuroticism and psychoticism, identifying that self-consciousness and personality had a mutual influence and restriction on each other in the process of development. Body attributes, anxiety and behavior were the dominant factors of influencing extroversion, neuroticism and psychoticism respectively. Extroversion and mental quality are the most important personality traits that affect the development of self-consciousness.

*Keywords: adolescent, athletes self, consciousness, personality*

## Effects of psychological pressure intentionally generated during practice

**Takuya Endo, Hiroshi Sekiya (Hiroshima University)**

The purpose of this study was to determine the most experienced types of psychological pressure intentionally generated during practice, and to identify which types of psychological pressure are thought to be effective in improving practice session quality and in acclimating to match pressure. Seventy-nine athletes [55 Male, 24 Female; mean age = 18.91 ± 0.87 years; 14 sports (23 soccer, 13 baseball, 12 basketball, 8 volleyball, 8 track and field, 4 tennis, 2 table tennis, 2 dance, 2 rugby, 1 handball, 1 mixed martial arts, 1 badminton, 1 sailing, and 1 Japanese art of fencing players)] completed a questionnaire of closed-ended questions assessing their experience of each pressure type. For each type of pressure answered "experienced," participants further reported their subjective efficacy of the pressure type using a five-point Likert-type scale from 1 = "strongly disagree" to 5 = "strongly agree." Descriptive statistics revealed that the most commonly experienced types of psychological pressure intentionally generated during practice were "having practice in a match format" (86%), "concentrating on one's each trial" (86%), and "thinking of the need to perform as usual" (83%). Moreover, high rates of the subjective efficacy for improving training quality were reported for "imaging match circumstances" (Mean = 4.83 ± 0.86), "reminding players of their goals" (Mean = 4.54 ± 0.60), and "having practice in a match format" (Mean = 4.50 ± 0.77). The subjective efficacy for acclimating to match pressure was offered by "having training partners with characteristics similar to the opponents" (Mean = 4.61 ± 0.50), "practicing at the match venue" (Mean = 4.53 ± 0.60), and "putting pressure on oneself" (Mean = 4.46 ± 0.59).



These results show that most athletes have experienced practice with added psychological pressures. In particular, most of added pressures were related to making players experience situations close to real matches.

*Keywords: effective training, anxiety, survey*

### Visual search strategies of soccer players in offensive situation of soccer: Combining eye movement and retrospective verbal protocol data

**Takayuki Natsuhara (Tokyo Seitoku University), Takahiro Matsutake (University of Tsukuba), Takaaki Kato (Keio University), Masao Nakayama, Takeshi Asai (University of Tsukuba)**

This study aimed to examine visual search strategies in simulated attacking situations in soccer by using eye movement measurement and verbal reports of soccer players with different skill levels. Participants were 18 experts who had experience of playing at the national-level competition, and 18 sub-experts who had experience of playing only at the local level. The task was to accurately perform a one-touch pass to a player who the participant considered the best pass choice during a 4-on-4 attacking play. The eye movements during the task were measured and verbal reports were collected immediately after each trial in order to examine how the situation was captured. Experts exhibited better at reproducibility and accuracy of decision-making than the sub-experts did. The eye-movement data demonstrated that the soccer players maintained a longer gaze on the free attacker, defender, free space, and attacker who was marked by defenders. Further, before receiving the ball, they maintained their line of sight on the ball and on the attacker who aimed to pass. These strategies are considered as representative of soccer players. In addition, differences based on the level of competition in eye movements were observed. Specifically, experts maintained a longer gaze on attacker, defenders, and the attacker who aimed to pass. In the verbal reports, experts generated more information on the defender as compared to the sub-experts. Further, the verbal data, showed that experts observed the situation as a larger chunk by combining information on the attacker and defender, or more specifically on the attacker, defender, and space. The present findings imply that effective strategies of experts included recognizing a wide perspective centered on the attacker and defender and then directing the line of sight to the attacker who aimed to pass, in order to make appropriate decisions.

*Keywords: decision-making, soccer player, perceptual-cognitive expertise*

### Effects of quiet eye training on learning of perceptual-motor skills

**Takayuki Murayama, Takashi Yamazaki (Kanazawa University, Japan)**

Effects of Quiet Eye Training (QET) on the accuracy of spatial perception during motor tasks and learning of motor skills were examined. Participants (N=24) were classified into three groups: the QET group that learned an elite volleyball player's gaze behaviors well, the Non-QET group that learned basic motion skills, and a Control group that received no instructions. All three group conducted a volleyball task in which participants were required to serve a floater towards a wider space between three virtual receivers projected on a wall. This study consisted of practice (60 trials) and test (10 trials) conditions. In practice condition, QET group viewed a video of an elite volleyball player displaying the optimal gaze control. Then, the researcher asked them to note any features of the player's gaze control. Finally, QET group received four specific features of the player's gaze control. Under the practice condition, the central receiver was moved to the right or left by 0.5-5.0cm. Moreover, under the test condition, the central receiver was shifted right or left by 0.5-2.5cm. Performance assessed by the success rate, accuracy of perception assessed by the rate of correct responses about the wider area, and self-confidence about perception and gaze behaviors assessed by gaze fixation time during tasks implementing were recorded. Results indicated that the performance, accuracy of perception and self-confidence about perception in the QET group were significantly higher than in the Non-QET, or the Control group, even for small shifts conditions. Furthermore, the percentage of gaze fixation time at the center

of the image in the 0.5 cm and 1.0 cm conditions when implementing perceptual judgments, and the percentage of gaze fixation time on the ball from toss to impact in the QET group were significantly higher than in the Non-QET, or the Control group. The above results suggest that QET improves both the accuracy of spatial perception and motor performance.

*Keywords: spatial perception, gaze training, motor learning*

## Visual search strategies in female college basketball players

**Takamasa Sakabe, Hideaki Takai, Hitomi Okubo (Nippon Sports Science University)**

There are no completely identical situations in the competition scene, but similar situations can occur many times. Therefore, it is important to clarify how the visual search of the athlete is performed against similar situations that are repeatedly occurring. The aim of this study was to clarify the temporal changes of visual search strategies in college women's basketball players. The participants were 12 female athletes belonging to the college basketball club. The experimental task was to push the button with the thumb of the right hand when judging that dribble cut is possible while watching dribble videos of four types (1 low - slow, 2 low - fast, 3 high - slow, 4 high - fast). The number of trials was repeated 10 times for each dribble videos (40 trials in total). As a result, there was no significant difference in response time to dribble cut in session (1st and 10th), height, tempo. From the results of gaze point, it was shown that many visual lines are directed "around the dribble arm (perimeter range from the right shoulder to the right hand of the model)" and "on the ball orbit (perimeter range from the ground to the ball's highest reach point)" in all dribble conditions. In addition, as a result of analysis by gaze area, the proportion of gaze that was aiming for "ball's highest reach point (The highest point of the ball that bounced the ground)" from 1st to 10th time increased significantly. Furthermore, although the difference was not significant, the proportion of the line of sight directed to "on the ball orbit" decreased from the first time to the tenth time. In other words, it is suggested that experts are using a more efficient visual search strategies while directing the line of sight to a consistent specific area.

*Keywords: eye movements, visual search strategies, dribble cut*

## Reaction time of Japanese expert football players during decision making

**Takahiro Matsutake (University of Tsukuba), Takayuki Natsuhara (Tokyo Seitoku University), Masaaki Koido, Kensuke Suzuki, Yusuke Tabei, Masao Nakayama, Takeshi Asai (University of Tsukuba)**

In soccer, there are many situations in which decision making for instantaneous judgments is required. The purpose of this study was to elucidate the features of information processing in the brains of skilled soccer players during selective reaction challenges under simulated playing conditions. Indicators used in this study were the electromyography reaction time (EMG-RT), and reaction time (RT). For the expert group, we recruited 13 collegiate soccer players who had previously won the All Japan University Championships. For the sub-expert group, we recruited 13 collegiate soccer players who had never competed at the national level and never been selected in prefectural or regional teams. We conducted 3vs1 and 4vs2 ball possession tasks under simulated playing conditions wherein situation assessment was required. As a result of EMG-RT and RT in the expert group were significantly shorter than those in the sub-expert group. This result suggests that differences between the expert and sub-expert groups in terms of information processing by the brain during situation assessment depends on whether fast accurate movements/reactions can be executed. Based on the above findings, it was concluded that a feature of information processing in the brains of expert soccer players is their ability to perform faster information processing and react or move faster during situation assessment. This is because skilled players are assumed to execute reactions by information processing using fewer nerve resources. Players should try reducing the burden on their central nervous system to more effectively move their own body. This approach may help becoming an advanced or expert athlete.

*Keywords: central nervous system, electromyography reaction time*

## Visual search strategies of baseball players in the simulated infield defensive situation

**Takaaki Kato (Keio University)**

In the sport of baseball, the shortstop who is considered to be among the most demanding defensive positions and must have the best fielding skills of any fielder. Successful field the balls requires not just catch the ball, but also perception skills in order to predict the direction in which the ball would be hit by the batter, and to respond to the batter's movement pattern as early as possible, and moreover pitcher's movements and the thrown ball as well. However, little has been reported on baseball infielder's perceptual skills. In this study, we analyzed visual search activities of experts who are playing college baseball league and novices, and their reactions in the simulated baseball fielding situation. Nineteen collegiate players participated in this study and divided into four groups: infielders, outfielders, pitchers and novices, and their visual search behaviors and reactions were examined in the laboratory setting. An analysis of variance (ANOVA) comparing the reaction times revealed significant differences among groups,  $F(2, 1133) = 24.77$ ,  $p < .001$ . A post hoc Tukey test showed that infielders (mean  $\pm$  ms:  $303.39 \pm 112.84$  ms) responded faster than outfielders ( $355.46 \pm 183.96$  ms) ( $p < .001$ ), pitchers ( $354.15 \pm 133.93$  ms) ( $p < .044$ ) and novices ( $407.93 \pm 130.64$  ms) ( $p < .001$ ), but there is no significant difference between outfielders and pitchers. In addition, the results indicated differences in visual search strategies between players even though within groups. Infielders tended to set their lines of sight on the batter's body before the ball released from the pitcher in order to predict where the ball would be hit by the batter, on the other hands, it seems like outfielders pursued the ball the whole time. Findings are discussed from empirical and coaching perspectives.

*Keywords: eye movements, baseball, visual search strategies, infield*

## Influence of psychological competitive ability on the emotional intelligence of canoe players

**Taiyo Fujimoto (Nippon Sport Science)**

The relationship between diagnostic inventory of psychological competitive ability for athletes (DIPCA.3) and the emotional intelligence scale (EQS) has already been studied in the sport of an open skill sport. However, the relationship between DIPCA.3 and EQS has not been clarified in closed skill sports. Thus, this study aimed to clarify the relationship between the DIPCA.3 and the EQS of practitioners of the sport of canoe, which is a closed skill sport. The hypothesis for this study with regards to the relationship between DIPCA.3 and EQS was that DIPCA.3 affects EQS, as per Takagi et al.'s research. The subjects of the survey were 35 practitioners of the sport of canoe. The method of analysis was partial correlation analysis of the 12 DIPCA.3 scales and the 9 EQS factors, and multiple regression analysis. In addition, in order to understand the characteristics of the canoe, a t-test was carried out in which the two groups (the high group, which was the above average total scores of the DIPCA.3 and the low group, which was the below average scores). The results showed that there were positive correlations between the EQS (self-insight factor, self-motivating factor, self-control factor and leadership factor) and DIPCA.3 (perseverance scale, fighting spirit scale, concentration scale, confidence scales and cooperativity scale). The results of multiple regression analysis showed that the EQS self-motivating factor received a significant positive influence from DIPCA.3's fighting spirit scale, and the EQS self-control factor received a significant positive influence from DIPCA.3's fighting spirit and concentration scales. The results of the t test showed that the high group showed higher scores than the low group for the EQS situational judgement factor. From the above, it is clear that there is a relationship between DIPCA.3 and EQS for canoeists, and furthermore that the DIPCA.3 has a positive influence on the EQS.

*Keywords: diagnostic inventory of psychological competitive ability for athletes, emotional intelligence scale, closed skill, canoe players, human quality*

## **The effect of acute exercise on the planning aspect of executive function among preterm children**

**Tai-Sheng Chen, Jui-Ti Nien, Tai-Fen Song, Yu-Kai Chang (National Taiwan Sport University)**

Acute exercise is positively affects cognitive performance in children, and its benefits are even demonstrated on children with clinical conditions. Preterm children have been associated with lower executive functions, and whether the beneficial effects from acute exercise would extend to Preterm children is yet to be known. This present study was conducted in order to explore the effects of acute exercise on executive function in Preterm children, specifically; the planning aspect of executive function was assessed. Twenty children (mean age =10.05, SD = 2.33 years), with a gestation period of less 37 weeks, and a birth weight of less 2700g, were recruited. All children were involved in two treatments, control and experimental respectively, in a counterbalanced order. The exercise treatment involved a single bout of ergometer exercise, done at a 65-70% heart rate reserve for 30 minutes; whereas the control treatment required the test subjects to watch cartoons for 30 minutes. A Tower of London (TOL) Task, one of the main neuropsychological assessments for measuring planning, was employed following each bout of acute intervention. The indices of the TOL included a move score, a correct score, an initiation time, an execution time, and a problem-solving time score. The results indicated that those undergoing the exercise treatment displayed a better performance on the TOL task, in terms of the move score, execution time and problem-solving time score. These findings of the decrease in the number of the total move score suggested an enhanced planning capacity. The better performances regarding execution time and problem-solving time represented that Preterm children could increase their planning efficiency by doing acute exercise. These findings suggest that acute exercise is positively associated with planning among Preterm children, and therefore should be considered as a basis for conducting further studies among this population.

*Keywords: acute aerobic exercise, tower of london task, preterm children, executive function*

## **Cognitive awareness of the Müller-Lyer illusion influenced the grip size estimation**

**Tai-Seok Chang, Ji-Hang Lee, Jae-Moo Lee (Sungkyunkwan University)**

During the visual perception process, visual information first encoded in the primary visual areas is divided into dorsal and ventral streams. Previous researches suggested, while each of these streams has its own function in visual perception, neurophysiological and functional interactions between the dorsal and the ventral streams exist. Such segregation of visual perception mechanism has often been behaviorally reflected by the Müller-Lyer Illusion paradigm. Most previous studies all assumed the subjects were naïve to the illusion effect. However, because this illusion effect are well-conceived by general public, subjects may understand the nature of the illusion. Although the illusion effect on perception is powerful regardless of the pre-existing awareness of the paradigm, no previous study directly investigated the effects of subjects' awareness regarding the presented stimuli on the action consequences. Therefore, in this study, we have provided a visual feedback that can establish the cognitive awareness of the actual stimuli length to subjects, and investigated the changes in their matching action responses. A total of 32 young and healthy subjects were randomly divided into two groups. Subjects were asked to match the stimulus size with their index fingers and thumbs. Initially, three different visual stimuli were randomly presented 60 times and the grip sizes were recorded using the Liberty Motion Analysis System. Then, video clips of two lines merging each other were presented as feedbacks. Post-test protocol was identical to the pre-test protocol. The data were analyzed using the 3-way ANOVA with one RM factor. Results showed a significant 2-way interaction effect. Post-hoc results showed significant interaction

between stimulus shape and pre/post-tests only in the experimental group. Overall, current results indicates that, while visual illusion can affect the action, the provision of visual feedback can establish the awareness of actual stimulus size.

*Keywords: müller-lyer illusion, visual perception, cognitive awareness, dorsal stream, ventral stream*

### **The association of cardiovascular fitness, obesity, and executive function: An ERP study of Task-switching**

**Tai-Fen Song, Chien-Heng Chu, Jen-Hao Liu (National Taiwan Sport University), Lin Chi (Ta Hwa University of Science and Technology), Yu-Kai Chang (National Taiwan Sport University)**

The purpose of this study was to compare different levels of cardiovascular fitness (CF) between young adults with obese and non-obese status, in relation to task-switching. 104 young adults aged 18-25 years were categorized into four groups ( $n = 26$  for each): obese with high CF (OH) and low CF (OL); non-obese with high CF (NH) and low CF (NL). The N1 and P3 event-related potential components were recorded while performing the task-switching task. The task included two indices: global switch (i.e., heterogeneous and homogeneous block) and local switch (i.e., switch and non-switch trials). Results revealed that the higher CF groups, regardless of their obesity status, exhibited shorter response times on the task-switching task, for both global and local switches. In addition, the effect of facilitation on the global switch declined for the NH group, relative to the OL group, and significantly the local switch indicated a reduction difference between the OH and the OL group. Furthermore, the ERP analysis of the P3 component revealed that the NH group had an increased P3 amplitude, relative to the other three groups in the global and local switches, but no group differences were observed for the N1 indices across the four groups. Collectively, the OL young adults may reflect stronger associations with poorer ability for modulating their cognitive flexibility; particularly these adverse effects were observed when they were faced with greater task demands. The present study provides evidence that CF and obesity provided parallel results, while CF may act as a moderator of the relationship, in reducing the detrimental effects on executive function, and the obese population seems to demonstrate less sensitivity in this regard than does the non-obese population. While the cross-sectional comparison may be limited for casual effect, intervention would be warranted for future research.

*Keywords: obesity, fitness, executive function, task-switching, working memory*

### **Contextual interference effect in sport skill learning: systematic review and meta-analysis**

**Taewon Kim (Texas A&M University), Judith Jimenez (University of Costa Rica)**

Previous studies have reached conflicting conclusions regarding the contextual interference (CI) effects of learning sport skills. We aimed to summarize the efficacy of a random practice (RP) versus block practice (BP) schedule for improved sport skills acquisition and retention. PubMed and Web of Science were searched for published articles up to January 2017. Cross referencing and expert reviews were performed for randomized trials of BP versus RP in sports skill acquisition. Studies were selected and extracted by the two authors. Risk of bias was assessed using three items from TESTEX Scale (maximum points = 3). Random effects models using the standardized mean difference (between-group analysis) and effect size (ES) were used to pooled results. Heterogeneity was examined using the Q statistic and inconsistency using  $I^2$ . An alpha value  $< 0.05$  was considered statistically significant. A total of 20 studies were included, representing 1047 males and females and up to 28 ES. Risk of bias was  $M + SD = 2.17 \pm 0.38$  (scale 1 to 3). The BP group had no statistically different compared to RP schedule group in the acquisition phase ( $ES = 0.015$ ,  $CI95\% = -0.13$  to  $0.16$ ;  $n = 28$ ;  $Q = 43.34$ ,  $p = 0.02$ ,  $I^2 = 37\%$ ). There were also no statistical differences between-group during the retention phase ( $ES = 0.08$ ,  $CI95\% = -0.09$  to  $0.26$ ;  $n = 28$ ;  $Q = 54.49$ ,  $p = 0.001$ ,  $I^2 = 50\%$ ). For the transfer test the RP outperformed the BP

(ES = 0.46, CI95%= 0.14 to 0.77; n = 12; Q= 27.92, p= 0.003, I<sup>2</sup>= 60%). The overall results suggest that CI effects extend to acquired sport skills practice only for the transfer test.

*Keywords: contextual interference, motor learning, meta-analysis*

## **Accomplishment motivational level and personality characters of Basketball Players and Non-sportsmen-An Analytical study**

**Syed Ibrahim (King Fahd University of Petroleum & Minerals)**

The main aim of the existing investigation was to assess the accomplishment motivational level and personality characters of basketball players and non-sportsman. Method: The study piloted on a sample size of 360 subjects which consisted of 120 college level players (low) 120 university level players (high) and 120 non-players from different colleges and universities. Accomplishment motivational level data was acquired through sports achievement motivation test and the personality traits were achieved by administering the Eysenck Personality Inventory (EPI) on two dimensions of personality i.e. extraversion and neurotic. The Scheffe's multi comparison test was applied to calculate the significance of differences amongst the three groups. The level significance was fixed at 0.01. Result: The outcomes of the study specified that the higher level performance group was more extravert than the low performance group and the non-sportsmen ( $p < 0.01$ ), while non-sportsmen were more neurotic than the high and low performer groups ( $p < 0.01$ ). As far as the achievement motivational level was concerned the high and low performer groups showed significant differences than the non-sportsmen ( $p < 0.01$ ) and there was no significant difference between the high and low performer groups. Conclusion: It was concluded that the high performer basketball group were more emphatic persons and better in the achievement motivational level than their counter parts.

*Keywords: motivational level, personality character, non-sportsmen*

## **Everything is cool when you're part of a team? Interdependence and cognitions, emotions, and performance under pressure**

**Svenja A. Wolf (University of Amsterdam), Katharina Geukes (University of Münster), Jessica van Geemen, Dave van Schie (University of Amsterdam), Felix Heldmann, Oliver Schulz (German Sport University Cologne)**

Pressure is an innate characteristic of competitive sports and can change how athletes think, feel, and perform (e.g., choking under pressure; Mesagno & Hill, 2013). Most research on performance under pressure has focused on individual, independent tasks. However, competitive sports often involve interdependent team-tasks and it is yet unsolved whether athletes on such teams perceive the same pressure, respond with the same emotions, and suffer the same performance consequences as their independent counterparts. In the present study, we aimed to provide first answers to these questions by assigning 72 Handball players (24 years of age, 51% male) to either an individual (i.e., performance scored individually) or an interdependent (i.e., performance scored additively) dyad. As part of these dyads, each athlete completed a throwing accuracy task (i.e. penalty shot) under low pressure and high pressure (e.g., monetary incentives, presence of an audience) conditions. Directly prior to completing these tasks, athletes reported their perceptions of pressure (single item) and anxiety (Sport Emotion Questionnaire; Jones et al., 2005). Whereas all athletes perceived more pressure ( $f = .69$ ) and anxiety ( $f = .65$ ) under high pressure conditions, athletes in the interdependent dyads indicated less of an increase than athletes in the independent dyads ( $f = .24$  and  $.28$ ). Interdependent athletes also generally responded with less anxiety ( $f = .28$ ). Yet, despite these effects, dyads did not differ nor did they show any pressure-induced changes with regard to performance. Thus, it remains unknown which consequences the observed cognitive and emotional differences entail. Similarly, it needs to be investigated whether they are a function of shared responsibility (Brawley et al., 1987), diffusion of evaluation (Carron et al.,



1999), or other mechanisms. Nonetheless, these differences indicate that being part of a team alters athletes' perceptions of and responses to competitive pressure.

*Keywords: precompetitive anxiety, group dynamics, emotions, team, social loafing*

### **An exploration of the relationship among female adolescent athletes' perceptions of the motivational climate, goal orientation, refocusing, and peaking ability**

**Susumu Iwasaki (Fort Lewis College), Mary Fry (University of Kansas)**

Sport psychology research in achievement motivation has consistently revealed evidence that young athletes reported positive psychological and behavioral responses with a caring/task-involving climate and task orientation (Harwood et al., 2015; Roberts & Treasure, 2012). The purpose of this study was to examine the relationship among athletes' perceptions of the motivational climate, goal orientations, refocusing, and peaking ability. Athletes (N = 190, Mage = 15.59, SD = 1.15) volunteered to complete a survey that consists of caring (CCS; Newton et al., 2007), task- and ego-involving climates (PMCSQ; Seifriz et al., 1992), task and ego orientations (TEOSQ; Duda et al., 1995), refocusing (subscale of MIS; Thienot et al., 2014), and peaking ability (subscale of ACSI-28; Smith et al., 1995). Descriptive statistics and correlation coefficients were computed and reliability coefficients for each scale demonstrated adequacy (alphas range from .72 to .90). Before Structural Equation Modeling (SEM) analyses, a measurement model was established (factor loadings range from .572 to .897 for all the latent variables). A final SEM result (Fit indices: Chi-square/df = 388.485/237, RMSEA = .058, CFI = .932, TLI = .921, and SRMR = .088) revealed a significant full mediation path ( $\beta = .141$ , 99% CI [.038, .362]) that athletes' reported refocusing ability mediated the relationship between task orientation and peaking ability after controlling correlations among independent variables: caring, task-, and ego-involving climates, task and ego orientations. In summary, overall results indicate that creating a caring/task-involving climate and fostering athletes' task orientation may be key for assisting young athletes to maintain their refocusing ability, and in turn, which enhances their perceived ability to peak under pressure. Future research should examine with objectively measured peaking performance such as time record for important races and scores at clutch times in ball games.

*Keywords: motivational climate, goal orientations, refocusing, peaking under pressure*

### **A study on relationship of lifestyle and socio-economic status with obesity in indian children**

**Sushma Ghildyal (Banaras Hindu University, India), Sanjay Singh (Harishchand p.g College,u.p.,India), Alka Naik (Rdvv, Jabalpur,m.p., India), Shialja Mohan (Inipe, Trivendrum,t.n, India)**

The purpose of the study was to understand relationship of lifestyle and Socio-Economic status with child obesity among 1000 boys aged from 16 to 18 years of Varanasi District of Uttar Pradesh State in India. The study was conducted in both urban and rural area of the District. Ten schools i.e. five from urban area and five from rural area were selected by using purposive sampling. Healthy boys of class 10th, 11th and 12th were taken as subjects for the study. Anthropometric measurements taken were Standing Height, Weight, Biceps skin folds, Triceps skin folds, Sub-scapular skin folds and Supra-iliac skin folds. Skin folds were taken by Lange's skin fold caliper. Lifestyle and Socio-Economic Status were obtained by questionnaires. In order to assess the BMI, Body fat %, Lifestyle and Socio-Economic Status; descriptive analyses were done. To find out the significant association of obesity with lifestyle and Socio-Economic Status Chi-square test was used. To find out significant difference between obesity of Urban and Rural children t-test was applied. Level of significance was set at 0.05 level. The result showed that in urban area Varanasi District 25.4% were in above average level adaptive lifestyle. In rural area Varanasi District 24.8% children were in average level adaptive lifestyle. In urban area 30.2% were in middle class Socio-Economic Status. In rural area 51.6% were in middle class Socio-

Economic Status. In urban area 21.2% children of 16-18 years were obese. In rural area 0.2% children of 16-18 years were obese. In overall Varanasi District 10.7% children of 16-18 years were obese. There was no significant relationship of obesity with Lifestyle of urban area children. There was significant relationship of obesity with Socio-Economic Status of urban and rural area children. Results showed significant difference between urban and rural area children of 16-18 years in respect to obesity of Varanasi District of Uttar Pradesh.

*Keywords: lifestyle, obesity, socio-economic status, rural area, urban area*

## Change in proprioceptive perception after the prolonged tendon vibration treatment

**Sungmin Oh, Seo-Jin Yoon, Ji-Hang Lee (Sungkyunkwan University)**

Possibilities of improving proprioception by training have been implicated in the clinical rehabilitation for some time. However, the changes elicited by so-called 'proprioceptive training' lacks experimental supports. The purpose of this study was to investigate the changes in proprioceptive perception when prolonged tendon vibration was introduced to the joint. Further, two different experimental techniques (ipsilateral joint position matching and psychophysical threshold methods) evaluating the changes in proprioceptive perception were compared. A total of 24 subjects was randomly divided into an experimental and a control groups. Each subject in the experimental group received the tendon vibration treatment (15 seconds X 12 times) on the non-dominant wrist joint for 4 days of training period. Before and after the training, abovementioned protocols were performed to evaluate the proprioceptive sensitivity. The Liberty Motion Analysis System (Polhemus Co., America) was used to collect angular kinematic data, and the repetitive measure 2-way (2X4) ANOVA were performed for data analyses. The tendon vibration applied subjects (experimental group, n=12) showed immediate perceptual improvements after the treatment ( $F(3,48)=2.861$ ,  $p=.046$ ) and significant retention effect was present with the joint position matching method during the training ( $F(3,48)=5.386$ ,  $p=.003$ ). Also consolidation effects were observed; however, overall training effect of tendon vibration was not verified. Psychophysical threshold method did not reveal the overall effect of tendon vibration while retention effect was observed during the training period ( $F(3,48)=2.992$ ,  $p=.040$ ). Meanwhile, there was no consolidation effect. Current results showed that tendon vibration as a passive training technique induced the proprioceptive improvement implicating the possibility of clinical application. Significant retention effect further expands the possibility of practical use of tendon vibration training.

*Keywords: proprioception, tendon vibration, joint position matching, psychophysical threshold*

## Examining the relationship between moral values and moral behaviour among adolescent athletes and non-athletes

**Sukys Sukys, Enrika Kromerova (Lithuanian Sports University)**

Relatively little knowledge is available about moral values and behaviour among adolescents. As participation in sports activities may contribute to positive youth development, this study aims to examine associations between adolescents' value and prosocial behaviour depending on their participation in sports activities. Study sample included 694 adolescents (331 girls, M age =14.7, SD =1.21). Among research participants, 33.6% participated in different sports for an average of 3.71 (SD = 1.22) years. The internalisation of moral values was assessed using the 24-item adolescent-report Moral Values Internalisation Questionnaire. The revised Prosocial Tendencies Measure (PTM-R) was used to measure prosocial behaviour. Four forms of value regulation (external, introjected, identified and integrated) and four forms of prosocial behaviour (altruism, public, anonymity and help in emergency) were measured. Regression analyses were performed to assess relationship between moral value regulation and prosocial behaviours in athlete and non-athlete samples. Results showed that for adolescent athletes' altruistic behaviour only introjected regulation was significant predictor ( $\beta = 0.38$ ,  $p<.01$ ), while for non-athletes identified regulation ( $\beta = 0.19$ ,  $p<.05$ ). Adolescent

athletes' public prosocial behaviour was positively associated with introjected value regulation ( $\beta = 0.50$ ,  $p < .001$ ), while for non-athletes with integrated value regulation ( $\beta = 0.21$ ,  $p < .01$ ). Identified regulation was positively associated with adolescent athletes' intention to help in emergency ( $\beta = 0.29$ ,  $p < .05$ ). For non-athletes' intention to help in emergency, significant predictors were identified ( $\beta = 0.16$ ,  $p < .05$ ) and integrated regulation ( $\beta = 0.17$ ,  $p < .05$ ). Moral value regulation was not related to anonymous prosocial behaviour. This study suggests that internalisation of moral values plays different roles in the prosocial behaviour depending on adolescent involvement in sports activities.

*Keywords: adolescents, participation in sport activities, internalization of moral values, moral behaviour*

## Testing for causality in exercise psychology: Applying the Bradford Hill criteria

**Stuart Biddle (University of Southern Queensland)**

Exercise psychology is concerned with the psychology of physical activity, exercise, sedentary behaviour and health. It contributes psychological knowledge to measurement, correlates, intervention design and delivery, and mental health outcomes of physical activity and sedentary behaviour. It draws on evidence from cross-sectional, longitudinal/prospective, and experimental designs, as well as from qualitative studies. In epidemiology, evidence is often appraised for 'causality', yet this is rare in exercise psychology. The aim of this conceptual presentation is to outline the well-established 'Bradford Hill criteria' for establishing causality for behavioural risk factors on health outcomes. The methods adopted include presentation of data from existing reviews of evidence. Key criteria for exercise psychologists to consider are strength of association, temporal sequencing, consistency, coherence and plausibility, dose-response effects, and experimental evidence. A case will be made for considering these factors, and exemplars will be presented from research on sedentary behaviour and health outcomes, specifically obesity in young people and adults, as well as all-cause mortality.

*Keywords: causality, Bradford Hill criteria, exercise psychology*

## What researchers develop is sometimes not what counseling sport-psychologists need: How long should a questionnaire be?

**Stephan Horvath, Philipp Röthlin, Gareth Morgan, Daniel Birrer (Swiss Federal Institute of Sport Magglingen, Switzerland)**

Questionnaires are important tools to measure sport-psychological concepts. When a new questionnaire is developed, it has to show good psychometric properties (i.e., high reliability and validity). Both indicators improve with the number of items. However, this comes at the cost of its usability in everyday counseling. Athletes often complain about long questionnaires and similarly formulated items. Thus, short questionnaires are what counseling sport-psychologists need, but not what research develops. As a consequence some sport-psychologists do not use questionnaires, or they use short not-validated self-created measures. We suggest that validation of short questionnaires in applied research should focus more on usability and appropriate indicators of reliability (e.g., inter-item correlations) and validity (e.g., predictive validity). To demonstrate that shortened questionnaires are equally valuable, we reduced the 20-item Self-Determination-Index (SDI-20; Lonsdale, Hodges, & Rose, 2009), which is based on five weighted components (i.e., external, introjected, identified, and integrated regulation, as well as intrinsic motivation) to a 5-items version (SDI-5) by selecting one item of each relevant concept. Based on the data of 331 female soccer players (Mage = 18.0, SDage = 3.9) we calculate the original SDI-20 as well as the new SDI-5. The two indices were highly correlated ( $r = .86$ ), and the required simplex structure was found for both indices. In addition, both indices showed expected divergent and convergent validities, e.g., they correlated with persistence, self-standards, and self-discipline, but were uncorrelated with status motivation and competitiveness. The SDI-5 was again completed by 200 of the players half a year later (retest-reliability  $r = .45$ ). We conclude that the SDI-5 is a very economical tool to measure self-

determination. In general, we think that short questionnaires should enjoy a higher status in applied sport-psychological research.

*Keywords: questionnaires, applied research, self-determination*

### Physical self perception profile of adults participating in zumba aerobic programs

***Stella Rokka, George Mavridis, Dimitrios Goulmaris (School of Physical Education & Sport, Democritus University of Thrace, Greece)***

Scientific research supports that participating in organized physical activity programs affects the increase of physical abilities and, as a result, the improvement of the perceptive physical ability and simultaneously the improvement global physical self value. The aim of the present study was to evaluate the level of physical self perception of adults participating in Zumba aerobic programs and investigate any differences concerning gender and years of participating. The sample was consisted of 167 participants (61 men & 106 women; age  $27.8 \pm 6.4$ ) who took part in group Zumba aerobic programs in private clubs of Komotini. For the data collection, the questionnaire used was the Physical Self-Perception Profile, PSPP; Fox & Corbin, 1989, adjusted for the Greek population by Vlachopoulos, Leptokaridou and Fox (2014). This concise version includes 15 questions in 5 factors. For the needs of the research, the sample was divided according to the years of participation a) up to 1 year ( $n=49$ ), b) 2 to 3 years ( $n=52$ ) and c) 4 years or more ( $n=66$ ). The internal cohesion indicators fluctuated on satisfactory levels. The descriptive statistics analyses showed high means in all five factors, the highest being physical self value ( $M=5.48$ ) and body attractiveness perception ( $M=5.29$ ). The fluctuation analyses showed statistically significant differences in gender, concerning the strength perception factor ( $p<.001$ ), with the men showing a statistically higher mean. Additionally, in relation to the years of participation, there were statistically significant differences in the factors perception of physical condition ( $p<.001$ ), body attractiveness ( $p<.05$ ) and physical self-value ( $p<.01$ ), with those participating for the first year presenting lower means. The results of the study show that participating in Zumba aerobic programs has an important effect on the improvement of physical self-perception.

*Keywords: physical self-perception, years of participation, zumba aerobic*

### Development of the Arabic version of the Trait Sport Confidence Inventory

***Stefan Koehn (Liverpool Hope University, School of Health Sciences, UK), Jaime Díaz-Ocejo (ASPIRE Academy for Sports Excellence, Qatar)***

The validation of questionnaires is an integral part of sport psychological research to quantitatively assess and corroborate theoretical and conceptual models. There is a lack of quantitative studies outside of English speaking countries that affects cross-cultural research and the confirmation of the universality of sport-specific constructs. The aim of this study is the development and cross-cultural assessment of the Arabic Trait Sport Confidence Inventory (A-TSCI). The A-TSCI item pool was based on the original items of the TSCI (Vealey, 1986). Five official translators and sport psychologists, who are bilingual in English and Arabic, were involved in the translation process. Two persons independently translated the original into the Arabic version, and two additional persons back-translated the A-TSCI into English. Any discrepancies in item meaning were discussed with a bilingual sport psychologist, bilingual coaches and athletes. Following ethics approval the final 13-item version was completed by 86 junior athletes between 12 and 18 years of age. Cronbach's alpha for the A-TSCI was .95. The one-factor model revealed item loadings between .67 and .84. Confirmatory factor analysis showed strong scores for indices of Chi-square / df = 1.493, CFI = .958, TLI = .950, and RMSEA = .078. The preliminary results indicated that no item modification or deletion is required. The A-TSCI significantly correlates with the Arabic version of the POMS,  $r = -.31$ ,  $p < .01$ . To compare the original with the Arabic version a multi-group CFA confirmed small CFI differences between the original TSCI (completed by 261

Australian junior athletes) and the Arabic version ( $\Delta CFI = .000$  between unconstrained and measurement weights model). The preliminary findings on the A-TSCI are encouraging and need to be examined in greater depth including a bigger sample and additional reliability and validity testing.

*Keywords: Arabic scale, TSCI, reliability, CFA*

### **Does the use of an audio-imagery intervention affect pre-competition anxiety and increase self-confidence in female collegiate soccer players?**

**Andrew Tunnicliffe, Stefan Koehn (Liverpool Hope University, School of Health Sciences, UK)**

Research suggests that anxiety and self-confidence are considered to be two important psychological factors influencing an athlete's performance in competitive sports (Martens, Vealey, Burton, 1990). Imagery has been applied as one of the main intervention techniques in sport psychology (Morris, Spittle, Watt, 2005). The current study used a single-case design in conjunction with an audio-imagery intervention. Three female NAIA Division One athletes completed the Competitive State Anxiety Inventory-2 four times in the week (4 days, 2 days, 1 day, 3 hours) prior to competitive collegiate soccer games. Following a baseline phase, the imagery intervention was introduced with the aim to decrease anxiety and increase self-confidence. Baseline data was collected over five matches (= five weeks) collecting pre-competitive CSAI-2 data. Individualized audio-imagery scripts were designed describing environmental cues, information and opportunities specific to each players' role/position in the team. The post-intervention phase lasted for four matches (= four weeks). The results for the three participants showed that self-confidence, cognitive anxiety, and somatic anxiety remained fairly stable in the lead up to competition (eg. 4 days, 3 days, 1 day before performance) for the baseline and post-intervention phases. Data inspection also showed that immediately before competition (ie. 3 hours prior) self-confidence increased from pre- to post-testing, and a substantial decrease in cognitive anxiety, and a decrease in somatic anxiety. The results are encouraging, combining a methodology used in multidimensional anxiety research (eg. Craft et al., 2003) with a case-study imagery intervention. Particularly, the effect of imagery on self-confidence and anxiety in the lead-up to competition is helpful for competitive athletes, as well as practitioners, coaches, and applied researchers.

*Keywords: anxiety, confidence, imagery, intervention*

### **Swimming for people with disabilities x motor development tests: Project of the University of Santa Cruz do Sul - RS - Brazil**

**Sandra Mara Mayer, Heloisa Elesbão (UNISC), Laudemiro Volmar da Cunha Trindade (APAE / UNISC)**

Swimming for People with Disabilities X Motor Development Tests: Project of the University of Santa Cruz do Sul - RS - Brazil Sandra Mara Mayer - Project Coordinator Piracema Laudemiro Volmar da Cunha Trindade - Co-counselor Heloisa Elesbão - Scholarship PROBEX smmayer@unisc.br University of Santa Cruz do Sul - UNISC, RS, Brazil Motor development is a process that occurs sequentially, being that the development of the disabled has restrictions, such as the decrease in the execution of movements. Swimming is indicated in these cases, as it facilitates the execution of the movements. The "Piracema Project" is a partnership between the University of Santa Cruz do Sul (UNISC) and the Association of Parents and Friends of the Exceptional (APAE). Its team is made up of professors and scholars of the Physical Education, physiotherapists and psychologists. To compare the General Motor Age (IMG) and Negative Age (IN) of the participants of the pre-test (May 2016) with the post-test (November 2016). The sample consisted of 14 individuals, 6 males and 8 females, aged 108.0 months (9 years) and 616.0 months (51 years and 3 months). The IMG was evaluated through the Rosa Neto Motor Development Scale, being the result of the sum of the positive results of all the tests, divided by six, expressed in months. IN is obtained through the difference between the Chronological Age (IC) and IMG. The analysis was performed with SPSS 22.0 program (IBM, Armonk, NY, USA). In the pre-test the mean of IMG was 38,8±41,0

months, when we compared it with the mean of  $333,2 \pm 306,0$  months, we found that they had an IN of  $289,4 \pm 283,0$  months. In the post-test the mean IMG was  $42,6 \pm 31,2$  months, and the mean of IC was  $256,3 \pm 168,0$ , and then IN  $204,2 \pm 160,8$  months. There was improvement in the pre-test and post-test results, taking into account that individuals have physical and / or mental limitations. The work should be emphasized in the skills that they have the greatest difficulty.

*Keywords: motor development, water activities, disabled people*

## **Aquatics activities associated with the process of well-being and quality of life - Piracema Project**

***Heloisa Elesbão, Sandra Mara Mayer, Laudemiro Volmar da Cunha Trindade (UNISC)***

People with disabilities seek to combat the practice of social exclusion to which they have been subjected. They idealize a more integrated and dignified society for all, with the same opportunities to learn and develop their capacities to achieve social and psychological independence, and to be able to integrate community life. The objective of this work is to report the experiences of an project of the University of Santa Cruz do Sul (Brazil). In addition to sharing experiences of the development of aquatic recreational activities with the disabled, socio-affective attitudes and experiences in the aquatic environment that aim at the well-being. The methodology of the project is given by the execution of sessions three times a week: Mondays, Wednesdays and Fridays lasting fifty minutes. The project serves twenty-five students, aged between 9 and 51 years, divided into three classes, according to age and physiological development and psychomotor impairment. In the first class, students are more independent. In the second to third class the students are accompanied by the parents and perform activities oriented. Participants' motor development assessments are performed through the Rosa Neto scale. The team is comprised of Physical Education teachers and scholars, physiotherapists and psychologists. The results obtained with the evaluations show a significant improvement in the motor aspects, taking into account that they have numerous limitations. There have been improvements mainly in the affective and social relations aspects. It can then be concluded that there was an evolution in the development of the motor, cognitive and affective partner aspects. Therefore, the importance of aquatic activities, serving as a leisure activity, enable them to become citizens of an inclusive society, enabling them to become citizens of an inclusive society.

*Keywords: disability, swimming, motor development*

## **Exploration on recognition and satisfaction of learners and instructors regarding the feedback utilizing dance image analysis**

***Siwan Han, Sungje Park (Chung-Ang University)***

Quantitative identification of physical behaviors done by psychological approach is a desirable method to measure and analyze movements (Crane, 2009). Traditional experiments on dance required much time to check the experiment results. Therefore, it was difficult to provide learners with information immediately. Also, teaching dance orally by a professional instructor in a studio was hard to provide intuitive information to learners. There are restrictions in using oral teaching as an educational material for practical correction of postures, more intuitive and effective instruction method is required. The purpose of this study is to explore recognition and satisfaction of learners and instructors on the feedback utilizing real-time image feedback. For the purpose, we conducted classes with a program that consisted of 7 ballet majors of university students and 1 instructor. The feedback utilizing image analysis on the recorded animated image was suggested by using DARTFISH Version 5.5. Also, in-depth interview by individual was implemented with semi-structured interview questionnaire to explore recognition and satisfaction of learners and instructors. As an analysis result of inductive contents, it was found that the feedback utilizing image analysis improved performance of learners



and decreased conflicts between individuals by forming trust on instructors. It also had positive influence on the recognition and satisfaction on the feedback utilizing image analysis. These results were discussed in the relational aspects of interactions between dance instructors and learners.

*Keywords: dance, image analysis, feedback*

### Relationship between motor abilities and behaviors in children with ADHD

**Sin-Chi Liu (National Taiwan Normal University, Taiwan), Chung-Ju Huang (University of Taipei, Taiwan), Tsung-Min Hung, Yu-Jung Tsai (National Taiwan Normal University, Taiwan)**

Attention deficit hyperactivity disorder (ADHD) has been described as high prevalent behavioral disorder in children which leads to poorer behaviors and motor abilities. The incidence of ADHD amongst genders has been debated. Boys and girls with ADHD also exhibit different comorbidity profiles; boys are more likely to exhibit comorbid disruptive behavior disorders, while girls are more likely to exhibit comorbid internalizing disorders during adolescence. The objective of this study was to investigate the association between motor abilities and behaviors in children with ADHD and compare the gender difference. We hypothesized that poor motor abilities might correlate with poor behaviors. In addition, such effects by child sex will be examined. Movement Assessment Battery for Children - Second Edition (MABC) and Achenbach Children's behavior scale (CBCL) were evaluated in 81 children (73 boys and 8 girls) aged between 7 years and 13 years. In the ADHD group, nine (11%) children had significant motor impairments and seven (89%) were borderline cases. Normally, males had lower scores than females on the internalizing problems [male  $M(SD) = 61.28(10.05)$ ; female  $M(SD) = 61.04(4.01)$ ], had more scores than females on externalizing problems [male  $M(SD) = 64.28(8.52)$ ; female  $M(SD) = 65.57(5.77)$ ] and total CBCL [male  $M(SD) = 67.85(7.37)$ ; female  $M(SD) = 68.14(2.91)$ ] scores than females. As the aforementioned, we got the debate. Finally, the results indicated that MABC in manual dexterity was correlated with CBCL subscale in internalizing problems ( $r = -.28, p = .01$ ), MABC in balance was correlated with CBCL total T scores ( $r = -.23, p = .04$ ) and MABC total scores was correlated with CBCL total T scores ( $r = -.26, p = .02$ ). These findings support the association of motor ability and behavioral problems in children with ADHD, which may shed light on possible physical activity or exercise interventions aiming to improve motor abilities then improve poor behavior.

*Keywords: motor development, children, attention deficit hyperactivity disorder, social*

### The hidden and disclosed messages of motivational pre-game videos and their influence on soccer players' performance

**Sima Zach (The Academic College at Wingate, Israel)**

The hidden and disclosed messages of motivational pre-game videos and their influence on soccer players' performance Mental preparation for sport events in elite sport is imperative. Coaches and sport psychologists do their best to adopt the worthiest approach for their team performance enhancement. One innovative approach is motivational pre-game video clips. The aim of the current study was to examine the relationship between pre-game motivational video clips and performance among elite soccer players. Twenty-six pre-game video clips were produced by a soccer teams' performance enhancement consultant, within two consecutive seasons. Duration of the clips ranged from 2-4 minutes. In the first season, the team was portrayed as the underdog, and in the second season as the top dog. Two researchers separately analyzed the clips' hidden and disclosed content. Analysis revealed substantial differences between the messages that were conveyed to the players in the first season and those conveyed in the second. Video clips can be used as a powerful mental technique for performance enhancement among elite soccer players.

*Keywords: video clips, pre-game, mental preparation*

## A mindfulness-based intervention for the rehabilitation of an injured sportist: A case study in professional soccer

**Silvia Sole (Universitat de Lleida)**

The big number of sport injuries, especially in soccer, is becoming an important problem for the professionals who work with these players. Every year injuries in soccer causes a big amount of economic losses and they have a great emotional impact on the teams and the players. Sport injuries' causes are frequently classified into external and internal ones, and requires the engagement of the whole multidisciplinary teams of professionals surrounding the group. The study of sport's injuries epidemiology and the complexity of the variables that are present in the athletes' rehabilitation process creates us the necessity of incorporating new intervention techniques in order to improve the rehabilitation and return to play process. In this case a mindfulness-based intervention is proposed as a complement to rehabilitation of an injured soccer player, after an anterior cruciate operation on left knee. Theoretical and practical aspects of mindfulness and stress management were explained and practiced and psychological and physiological variables were evaluated before, during and after the intervention. These variables were Heart Rate (HR), Heart Rate Variability (HRV), Blood Pressure (BP), Emotional Mood, Mindfulness levels and socio-sportive items. The return to play is also observed and studied carefully. After the intervention we can say that there is an improvement in the player state's perception and in the cardiac coherence among other variables. So we can find subjective and objective changes in the player. After these good results and being conscious of the limitations of a single case study like this, we can suggest that this kind of interventions can be useful in future programs of rehabilitation of injured players. More studies, with bigger samples and objective variables are needed to confirm these preliminary results.

*Keywords: sport injury, sport psychology, soccer, mindfulness, rehabilitation*

## Influences of physical attributes on visual analysis and athletic performance

**Shuzhi Chang**

Visual analysis plays an important role in the performance of athletes in competitive situation. A recent study shows that the relationship between the visual analysis process and the athletic performance of athlete can be evaluated by "consistency" and "effectiveness", and the expert's visual information search results were consistent with their athletic performance, which was more effective than novice (Hu Yue, 2015). Why is the novice's consistency and effectiveness lower? What factors affect visual analysis and athletic performance in the development of skills? What kind of visual strategy can be the most effective to make novice train into an expert? The purpose of this study is to explore these core issues. Actually, there are many factors affecting novices' performance, the athlete's physical quality has been noticed for a long time. But few people discuss the relationship between athlete's physical quality and visual analysis ability, and its impact on the development of sports skills. 12 rock climbers and 25 non-climbers participated two experiments. Portable eye tracking system (SMI) was used to track the eye movement. Four indexes were used to evaluate physical qualities of rock climbers: strength, aerobic endurance, agility and coordination, balance and flexibility (Gao Feng, 2009). The climbers and non-climbers in different physical qualities developed different types of visual analysis course. The climbers in good physical qualities can predict its visual analysis process more accurate than non-climbers do. Feedback on rock climbing skills can improve visual analysis abilities and physical qualities of non-climbers. Visual analysis course of climbers and non-climbers can develop different visual analysis types due to personal physical qualities, and use relative visual analysis strategy. Personalized visual analysis strategy and the effective feedback on skill performance can help athletes to achieve the best performance in skills.

*Keywords: visual analysis, physical quality, rock climber*

## Gymnastics exercise facilitates visuo-spatial working memory in children

**Shu-Shih Hsieh**

A growing body of evidence has indicated the positive effects of physical exercise on cognition in children. Recent studies have also investigated the cognitive benefits of exercise regimens that target cognitive-motor interaction, such as gymnastics. Accordingly, the purpose of this study was to examine the effect of a 8-week gymnastics exercise regimen on visuo-spatial working memory (VSWM) in children. Forty-four voluntarily participants between the ages of 7 to 10 were recruited. Children in the experimental group (EX) ( $n = 20$ ; mean age =  $8.7 \pm 1.1$  years) were recruited from Yilan County, Taiwan; children in the control group (CTL) ( $n = 24$ ; mean age =  $8.6 \pm 1.1$  years) were recruited from Taipei City, Taiwan. Children in EX underwent 8 weeks of a gymnastics exercise regimen (2 sessions/week, 90 minutes/session); whereas children in CTL received no intervention but were instructed to maintain their routine daily activities. Measures on physical fitness, motor ability, and VSWM were taken before and after intervention. The results revealed that motor ability, not physical fitness, was improved in the EX (pre: 83.7 percentile; post: 94.1 percentile;  $p < .05$ ). For VSWM, response accuracy was improved in EX (pre: 63.7%; post: 70.2%;  $p < .05$ ) regardless of WM demands; whereas no accuracy change was found in CTL. Regarding reaction times, there was no performance change for either group. Taken together, our findings suggest that 8 weeks of gymnastics exercise has a general benefit to VSWM in children between the ages of 7 to 10, which highlights the importance of exercise on cognitive-motor interaction in stimulating cognitive development during childhood. However, our results should be interpreted with caution given the selection bias of participants.

*Keywords: fitness, motor ability, cognitive-motor interaction*

## An evaluation of time movement anticipation among female athletes of various sports

**Shubhda Bhosle, Jayashree Acharya, Sanchita Baruah (Lakshmibai National Institute of Physical Education, Gwalior)**

Anticipation in sport is the ability of the athlete to make decisions and to act ahead of time (Surkov, 1982). (Taylor 2016) noted that expert advantage in utilising informative cues for anticipation remains stable across sports, the cues that are most important or relevant for effective anticipation varies depending on the type of sport. Zhu (2012) mentioned that there is great potential in using technology-based assessment to overcome the limitations of traditional measurement methods. The Vienna Test System (VTS) developed by Schuh-fried GmbH (Moedling, Austria) is one such computerized system that is able to analyse many different sport psychology-related constructs. ZBA (Time/ Movement Anticipation Test) that measures time and movement anticipation ability, in which a green ball moves at a certain trajectory and suddenly disappears after a while. Participants are required to indicate where the ball hits the target line and the point on the target line where the ball will pass. The present study focused of highlighting possible differences in time and movement anticipation of visual stimuli movement. For this 45 university female athletes aged between 19 to 24 years with a mean and SD of  $22.73 \pm 2.14$  of various sports (i.e. cricket, football and hockey;  $N=15$  from each), ZBA was measured for mean deviation time (MDT)-slow and mean deviation time (MDT)-fast. ANOVA results revealed no significant difference among female athletes of different sports when considered on the score of MDT-slow ( $F(2,42) = 2.99$ ,  $p = .061$ ). But in MDT-fast significant differences was found ( $F(2,42) = 6.98$ ,  $p = .002$ ). Post-hoc test of Tukey HSD reveals significant difference in time movement anticipation between football and hockey group, also in football and cricket group.

*Keywords: movement anticipation, time anticipation, vienna test system, movement perception*

## Effect of Mindfulness-based Cognitive intervention on the stress-related psychological indexes of elite athletes

**Shu Yang (Chengdu Sport Institute), Zhongqiu Zhang (China Institute of Sport Science)**

This study was to investigate effectiveness of the Mindfulness-based cognitive intervention (MBCI) on related psychology parameters of elite athletes with stress-coping problems. Four essential components of MBCI in this study were: (1) correct understanding of stress-coping problems and mindfulness; (2) focus and cognitive reconstruction; (3) acceptance; (4) value-driven behavior. The methodology of the study used a single—case multiple—baseline design model. Four athletes received a five-week MBCI, once a week for 90 minutes. The TH-FX Psychological evaluator for Athlete, the Five Facet Mindfulness Questionnaire (FFMQ), the Self-generated Physiological Coherence System (SPCS), the State Anxiety Inventory (S-AI), and the Profile Of Mood States (POMS) were adopted as measurements. Among these measurements, the data of The TH-FX Psychological evaluator for Athlete and FFMQ were collected before and after intervention; the data of SPCS, S-AI and POMS were collected weekly. The results were showed as followed: From the figures, after the MBCI, athletes' score of FFMQ increased; the scores of SPCS increased, especially the dimensionality of psychological adjustment ability and psychological stability; the peak of a combination score of breath, respiratory and pulse rates, skin resistance, a motion sensor, which was scored by TH-FX Psychological evaluator for Athlete, and the score of S-AI and TMD of POMS were decreased. These results showed that Mindfulness—based cognitive intervention (MBCI) can effectively improve athletes' mindfulness as well as improve their adjustment ability to cope with certain pressure, lower anxiety and improve mood.

**Keywords:** *psychological intervention, mindfulness training, psychological indexes, Stress coping, elite athlete, the Dual-Factor Model of mental health (DFM)*

## Characteristics and physical activity intentions of women taking part in a mass participation charity event

**Zoe Mcvinnie, Carolyn Plateau, Clare Stevinson (Loughborough University)**

Mass participation charity events have been identified as having untapped potential for public health by encouraging physical activity through charitable and social participation motives. This study examined the characteristics of women taking part in a charity 5km run and their intentions to increase physical activity post-event. Adult women taking part in a Cancer Research UK women-only Race for Life 5km event (n=226) completed an online questionnaire just before or just after the event. Information on current physical activity (PA), future intentions, motivation, and wellbeing were collected. Additional measures included training habits and mode of completion for the event (walk or run). Mean age of participants was 42.8 years (SD = 12.0; range = 18-71), with 47.2% classed as overweight or obese. Current training habits indicated that while 39.6% trained year-round, a further 40.1% had specifically trained in preparation for the event. Compared with women who ran the event, those that walked reported significantly lower PA, self-efficacy for exercise, autonomous motivation and psychological wellbeing, and significantly higher social physique anxiety. They were also less likely to state intentions to be exercising beyond minimum recommended levels 3 months later. These results suggest that Race for Life may contribute to greater levels of physical activity for some women through training for the event. Those choosing to walk such events may particularly benefit from support in their race preparation to increase confidence, motivation, and wellbeing outcomes.

**Keywords:** *mass participation, physical activity, public health, motivation, self-efficacy, wellbeing*

## Brain mechanism of the effect of physical activity on physical self information processing of adolescence

**Yanlin Sun, Jinling Fan**

Physical self is the individual cognition and evaluation of the body. It relates to appearance, personality, physique and physical ability, and other aspects, it is the most basic part of the self-concept, and also the first germination composition of the individual self-consciousness. Therefore, how to improve the adolescents' understanding of physical self has become a hot topic in the field of contemporary psychology research. Based on the cognitive neuroscience, this paper aims on the effect of the physical exercise on the neurophysiological basis of physical self. According to the standard of sports population, we selected 10 students who exercise and 10 students who don't exercise. The experimenters choose depicting adjectives as stimulus material, and use Event Related Potential (ERP) to collect the teenagers' brain waves in the process of Self-cognitive and judgment facing the stimulation materials. The results showed that in the aspect of sports ability, the exercise group and non-exercise group in the late 400 ms - 1000 ms slow-wave (LPP) are different. The waveform of the exercise group tends to positive. And when the individuals evaluate physical self, the activation degree of the forehead - central region of the exercise group is larger than the non-exercise group. In the aspect of self-esteem, the exercise group and non-exercise group have significant difference in the late 400 ms - 1000 ms slow-wave (LPP). The waveform of the exercise group tends to positive, and compared to the non-exercise group as the individuals evaluate physical self-esteem, the degree of brain activation of the exercise group is higher, the range is wider. The results provide a implication that more physical activity can improve the self.

*Keywords: physical exercise, adolescent, physical-self, ERP*

## Psychological burnout among basket ball referees

**Tarek Brahimi (University of Djelfa)**

The research aimed to define the following variation in the degree of psychological Burnout phenomena among Basket Ball Referees according to the variable of Referee degree (international and first in education). The research sample consisted (12) Referees chosen according to the deliberate method (6) from international degree. Degree retirees and (6) from first degree referees all actually registered in list of the Branch federation of Iraqi Basket Ball. The research used measure of psychological Burnout of the sport Refer which consists (s) tool stamen after the applicability and accuracy of tool was determined the data were statistically processed using a Arithmetic mean, standard deviation, Pearson's simple relation coefficient, and the T-test". The research remanded the following: - Emphasize on psychotically preparing of referees in additional to the physical preparation in order to contract the matches in an efficient way and establishing physical courses and psychological courses to sharpen the referee senses and in order to find self successfully in the duty of referee.

*Keywords: psychological burnou, basket ball*

## Promoting physical activity in workplace; an integrated model for applied exercise psychology interventions

**Seyed Ahmad Ghaziasgar, Amir Behrouz Daghoghi, Amir Hosein Memari, Hamideh Abrishamkar)**

On average, adults spend at least one-third of their life at work (World Health Organisation, 1999). Also, there is a clear relationship between the impact of work on individual health and company outcome so that it makes the workplace an ideal environment to promote the physical activity and other health behaviours of the adult population. (Chu, Breucker, Harris, Stitzel, Gan, Gu & Dwyer, 2000). In addition, managers have a unique opportunity to improve the health of their staff through physical activity, improve worker performance and reduce sickness leave (Medibank Private, 2005), but they have may encounter with a few barriers to provide

physical activity and other health behaviours for their staff. In the other hand, a lot of workplaces have some facilities for doing physical activity but their staff do not use of this services. In this presentation, we discuss about our experience on how exercise psychology help us to conduct an integrated physical activity program in workplace setting. In the first part, we will present how we could receive the support of managers for our program. In the second part, we will speak about our detailed psychological intervention. Also, in the third presentation we will explore about and present the flowchart of psychological guideline that our fitness trainer observed and those helped us to promote physical activity in workplace.

*Keywords: exercise psychology, physical activity, workplace*

## Posters Session 2 (19.30-20.20)

### The validation of the Chinese version of Youth Experience Survey for Sport (YES-S)

**Shu Fang Huang, Chu-Min Liao**

This study was an exploratory validation of a Chinese version of The Youth Experience Survey for Sport (YES-S) developed by MacDonald (2012). YES-S is a self-reported instrument measuring what adolescents gain and experience in sports with 5 factors, including 'personal and social skills' (ability to adjust to and cooperate with others), 'cognitive skills' (creativity and information processing ability), 'goal setting' (ability to self-regulate for reaching goals), 'initiative' (motivation and dedication), and 'negative experiences' (stress, negative influences, and inappropriate behaviors). Items of YES-S were translated into Chinese language (traditional font) with a back-translation procedure and administrated to 185 Taiwanese adolescents ( $M=135$ ,  $F=50$ ; Age= 9- 19) participating in either varsity teams or sport clubs from 10 different sports. Exploratory factor analysis and item analysis were conducted given that this was a cross-cultural validation and changes in factor structure were possible. Results revealed a 5-factor structure as outlined by MacDonald (2012) but with several changes. 'Goal setting' merged with 'initiative' into a single factor ('initiative'), while items of 'negative experiences' were divided into two factors which were termed 'negative experiences' and 'deviant behaviors'. In conclusion, our data provided preliminary supports for the validity of this Chinese version of YES-S with 5 sub-scales: Personal and Social Skills, Cognitive Skills, Initiative, Negative Experiences, and Deviant behaviors. Further research with cross-validation on more samples, especially for Chinese from areas using simplified Chinese font (e.g. China and Singapore), and examination of criterion-related validity is warranted.

*Keywords: positive youth development, youth sport*

### Experiential avoidance and cognitive fusion associated with competitive state anxiety among adolescent aerobics athletes

**Shousen Xu, Jingcheng Li**

Based on the psychopathological model of the Acceptance and Commitment Therapy (ACT), Experiential Avoidance (EA) and Cognitive Fusion (CF) are essential components of psychological inflexibility. The competitive state anxiety among athletes presented their psychological inflexibility during the competition. Therefore, the purpose of present cross-sectional study was to investigate whether EA and CF would linkage to three components of competitive state anxiety (cognitive anxiety, somatic anxiety, and self-confidence) differently. In total, 142 adolescent aerobics athletes participated in 2014 National Aerobics Championship and were asked to assess the Competitive State Anxiety Questionnaire-2, Acceptance and Action Questionnaire, and Cognitive Fusion Questionnaire through self-report. Data analysis indicated that, EA correlated with somatic anxiety significantly, and CF correlated with cognitive anxiety and somatic anxiety significantly. Regression analysis results showed that CF predicted cognitive anxiety and somatic anxiety significantly and



positively, with higher level of cognitive fusion linked with severe cognitive anxiety and somatic anxiety. However, EA did not predict cognitive anxiety and somatic anxiety. Also, EA and CF had no significant association with self-confidence. The results of current study provided a framework in understanding the competitive state anxiety of adolescent aerobics athletes and suggested intervention of competitive state anxiety focusing on reducing EA and CF.

*Keywords: adolescent aerobics athletes, experiential avoidance, cognitive fusion, competitive state anxiety*

### **Habitual technical trainings do not improve cognitive functions**

**Shota Sakamoto, Masamitsu Ito, Masahiro Katagiri, Takeru Gushiken, Yuta Uematsu, Kazuhiro Suzukawa**

It has been widely accepted that physical exercises improve cognitive function. There are various types of physical exercise: aerobic exercise, resistance training, coordinative exercise, and sports. Several studies suggest that soccer, which is a typical team sport, improve executive functions. However, there are few studies focusing on the qualitative aspects in types of training method. In this study, we evaluated the relationship between habitual technical training and executive function. The total number of subjects was 130 children (8-12 years old). We divided them into 2 groups: One that has technical trainings (e.g. dribbling, feint, shoot) in a soccer team (N=60)(average 5.05 years of soccer experience, SD = 1.47) and the other one that do not participate in a sport club but has physical education classes (45 minutes) 2 or 3 times a week (N=70). Executive functions were evaluated by a modified flanker task. The flanker task consisted of two trial types, with either congruent or incongruent visual stimuli. Children were asked to respond to the direction of the target arrow within the array of arrows by pressing the corresponding right or left button as quickly and accurately as possible. The result indicated reaction time. The test result was compared between the junior soccer players and non-soccer players. We expected that the junior soccer players had higher accuracy and faster reaction times than the non-soccer players in the task because the technical training that the junior soccer players regularly have must have improved their executive functions. Surprisingly, however, we did not see any significant difference in the score of the task between them. This result suggests that habitual technical training does not contribute to the executive functions.

*Keywords: sports activity, soccer, inhibitory control, executive functions*

### **Relationship between trait rumination/trait reflection and state self-esteem among Japanese university athletes: Using a qualitative approach**

**Shohei Yamakoshi (Graduate School of Osaka University of Health and Sport Sciences)**

Recent research indicated inverse effects of trait rumination and trait reflection on mental health due to their different effects on state self-esteem among university athletes (Yamakoshi & Tsuchiya, 2017). Research question was how highly ruminative athletes and highly reflective athletes face adversity that decreases state self-esteem. Grounded theory approach was adopted. Participants were recruited from the study of Yamakoshi & Tsuchiya (2017). Participants were 1) three university athletes whose trait rumination score was higher than 1 standard deviation (SD) away from the mean score and trait reflection score was lower than the mean score, and 2) three university athletes whose trait reflection score was higher than 1SD away from the mean score and trait rumination was lower than the mean score. Data were collected through the use of semi-structured qualitative interviews. The interview guide consisted of five main question areas; 1) type of events, 2) coping strategies, 3) relationship with teammates and coaches, 4) social support, 5) consequences of the event. Results indicated that both athletes experienced low state self-esteem when facing competitive related stressors such as slump. During this time, athletes high in trait rumination used problem-focused coping, felt jealousy and discomfort for teammates, felt isolated from others, and experienced negative self-perceptions. On the other hand, athletes high in trait reflection utilized coping strategies which involve communication with

others, respected and trusted for teammates, received social support, and experienced positive self-perceptions. These findings suggested that relationship with others might be the factor to differentiate the effects of trait rumination and trait reflection on state self-esteem. Therefore, developing positive relationship with others might be effective to enhance state self-esteem for athletes high in trait rumination.

*Keywords: trait rumination, trait reflection, state self-esteem, Japanese university athletes*

## **The psychological mechanism involved in the group sandplay technique's positive effect on team performance in sport**

**Shiro Nakagomi (University of Tsukuba)**

At present, the development of mental training methods for performance enhancement in team sports lags behind that for individual athletes. In order to directly affect a team's group dynamics for the enhancement of team performance, special mental training techniques for team sports are necessary. The authors have previously applied Group Sandplay Therapy (G-SP) to two team ball-sports and to two tennis doubles pairs, and confirmed the effect of such a method (1996, 2008, 2017). Sandplay Therapy was originally developed by D. Kallf, as a play therapy for children, based on her knowledge of Jungian psychology. It was subsequently introduced to Japan by H. Kawai in 1965 as the Hakoniwa Therapy. Okada adapted G-SP as a sensitive training method for psychotherapists (1991). The present study is an examination of the psychological mechanism involved in the enhancement of team performance by G-SP. For that purpose, we reviewed research materials from previous studies involving a women's soccer team and a women's volleyball team. Regular members of each team were divided into groups of four or five that underwent G-SP sessions. Since better team performance was achieved after these sessions, the mechanism involved in the improved performance was determined by examining the changes in the content and composition of Sandplay works, looking at introspective reports, and checking the results of team cohesion, collective efficacy and psychological competitive ability. The GS-P experience was able to bring on these changes through cooperative working, the sharing of images and non-verbal communication between teammates in a special "playful and unreal" psychological space. This helps lead to an understanding of oneself and others in athletic situations and brings about positive changes in team dynamics and team performance.

*Keywords: mental training, team performance, group sandplay technique*

## **An investigation on self-esteem among community-living adults in India**

**Shipra Srivastava, Jayashree Acharya, Pooja Rawat (Lnipe)**

Five different groups in society namely school group, engineering college group, physical education group, elite athlete group, and fitness group were assessed on their self-esteem by administering Rosenberg's self-esteem scale (1965). The 472 subjects were selected from Gwalior, MP, India age ranged from 14-35 with a mean and SD 21.25+9.11. The subjects of various groups were selected on the bases of their nature of activities like school students who focus on studies as well as playing activities and age factor also very less than other groups, engineering students are more focused in studies, physical education college students focused on pedagogical aspects of physical education and sports, elite athlete group who continuously play their games and grasp the opportunity to meet various culture of different society, on the other side fitness center who do their physical activity to being fit and for good shape. To find out the difference among these groups descriptive statistics and ANOVA was applied and the significance level was set at 0.05. The calculated F value of 7.60 found significant because p-value 0.001 is less than 0.05 level of significance, so post hoc test was applied to know the mean difference. The mean difference found significant ( $p < 0.05$ ) elite athletes to fitness group (-2.65) and elite athletes to engineering students (-1.85). The result of the study indicates elite athletes are having higher self-esteem.

*Keywords: self esteem, physical activity, pedagogical aspects*

### **Relationship between motor abilities, toe skill, and like and dislike for physical activity among Japanese kindergarten children**

**Shino Izutsu (Japan Women's College of Physical Education), Akari Kamimura (Juntendo University), Natsumi Hamano (Japan Women's College of Physical Education), Masataka Hirose (Juntendo University)**

The purposes of this study was to determine Japanese kindergarten children's like and dislike for physical activity and to examine the relationship between motor abilities, toe skill, and like and dislikes for physical activity. We collected data from 123 children, including 57 boys and 66 girls (42 three-year-olds, 37 four-year-olds, and 44 five-year-olds), in 2016. Individual interviews were conducted to assess the kindergarten children's like and dislike for physical activity. We measured their 20-m sprint time, distances for standing broad jump and tennis ball throw, and the number of marbles they could move using their toes (toe skill index). Statistical analysis was performed by using the chi-square test and Pearson's correlation analysis. More than 70% children answered, "I like physical activities." There were significantly more "likes" than "dislikes." The correlation analysis revealed no significant correlations between like and dislike for physical activity and motor abilities or toe skill. However, a significant correlation was observed between motor abilities and toe skill. The 5-year-old children showed a significant correlation between the number of marbles (right leg) and physical ability (20-m sprint time;  $r = .35$ ) and standing broad jump ( $r = .39$ ). The 4-year-olds showed a significant correlation between the number of marbles (right leg) and motor ability (standing broad jump;  $r = .54$ ). The 3-year-olds also showed a significant correlation between the number of marbles (left leg) and motor ability (ball throwing;  $r = .37$ ). We conclude that most children like physical activity, and like and dislike for physical activity might not be associated with motor abilities and toe skills among Japanese kindergarten children. Toe skill might be correlated with some part of motor abilities.

*Keywords: like and dislike for physical activity, motor abilities, toe skill, preschool children*

### **Relationship between athletes life stress and burnout: Mediating effects of perceive global stress**

**Shih Wei Chan**

Although many studies adopted Smith (1986) cognitive-affective model of athletic burnout in examining mechanism underlying stress-burnout relationship (e.g., Gustafsson, & Skoog, 2012; Lu, Lee, Chang, Chou, Hsu, Lin, & Gill, 2016), very few studies examine the mediating role of perceived global stress on the athletes' life stress and burnout relationship. Purposes: (a) to examine the relationship between athletes' life stress, perceived global stress, and burnout; (b) to examine the mediating role of perceived global stress on athletes' life stress and burnout relationship. Methods: We sampled 195 college athletes (Mage = 19.89, SD = 1.34; males = 138; females = 57) and completed the College Student-Athletes' Life Stress Scale (Lu et al., 2012), Perceive Stress Scale (Cohen, Kamarack, Mermelstein, 1983), and Athlete Burnout Questionnaire (ABQ, Raedeke & Smith, 2001). Results: Pearson's product correlation analyses found two types of life stress (sport-specific stress and general-life stress) correlated with perceive global stress, and burnout. Hierarchical regression analyses revealed a partial mediating effect of perceive global stress on athletes' life stress-burnout relationship. We concluded that athletes' perceived global is the key mechanism underlying stress-burnout relationship. Future research directions and implications of the study were discussed.

*Keywords: competitive sports, life stress, well-being, over-training*

## Effect of parental behavioral control on water high-risk practices for adolescents: Moderated mediating effect

**Shi Luo, Yun Li, Hui Zhang**

Base on social learning theory and ecosystem theory, the study explored the mechanism of perceived parental behavioral control in predicting water high-risk practices through a moderated mediation model centering on affiliation with deviant peers. A total of 7485 participants (3663 male, 3822 female ; Mean age=12.95) from five provinces completed a questionnaire survey. The results indicated that : (1) Affiliation with deviant peers played partial mediating effect between parental behavioral control and water high-risk practices. Parental behavioral control not only had a direct influence on water high-risk practices, but also promoted water high-risk practices indirectly by increasing affiliation with deviant peers. (2) Sensation seeking moderated this mediation effect. Sensation seeking moderated the second path of the mediation. Simple slope test shows that, in the sense of low level of sensation seeking, with the increase of affiliation with deviant peers, the water high-risk practices showed a significant upward trend( $\beta=0.20$ ,  $t=4.983$ ,  $P<0.001$ ) , poor companion increased by a standard deviation, water high-risk practices increased 0.46 standard deviation. Therefore, the effect of parental behavioral control on adolescents' water high-risk practices was moderated mediating effect.. These findings had important theoretical and practical value to reduce water high-risk practices.

*Keywords: adolescents, parental behavioral control, affiliation with deviant peers;sensation seeking, water high-risk practices, moderated mediating effect*

## Effect of water safety skills on high-risk practices for adolescents: Moderated mediating effect

**Shi Luo, Yun Li, Hui Zhang**

Base on KASP theory and overconfidence theory, The study explored the mechanism of perceived water safety skills in predicting water high-risk practices through a moderated mediation model centering on overconfidence. A total of 2840 participants from five provinces completed a questionnaire survey. The results indicated that: (1) Overconfidence played partial mediating effect between water safety skills and water high-risk practices. Water safety skills not only had a direct influence on water high-risk practices, but also promoted water high-risk practices indirectly by increasing overconfidence. (2) Water risk perceptions moderated this mediation effect. Water risk perceptions moderated the second path of the mediation. The simple slope test showed that the high risk practices showed a significant upward trend ( $\beta = 0.39$ ,  $t = 4.90$ ,  $p<0.05$ ), with the water risk perceptions being low (the risk-aware standard score was equal to -1) , overweight self-confidence increased by 1 standard deviation, high risk practices will increase 0.39 standard deviation; risk perception in the general level (risk perception of the standard is equal to 0), with excessive self-confidence increase, water high-risk practices is still significant ( $\beta= 0.25$ ,  $t = 4.02$ ,  $p <0.001$ ). Overweight self-confidence increases by 1 standard deviation, and high-risk practices will increase by 0.25 standard deviation. When water risk perceptions is more (risk-aware standard is equal to 1), ( $\beta= 0.21$ ,  $t = 5.01$ ,  $p <0.001$ ). The self-confidence increased by one standard deviation and the water high-risk practices increased by only 0.21 standard deviation, which was higher than that of water risk perceptions when less, the increase will be reduced by almost half. Therefore, the effect of water safety skills on adolescents' water high-risk practices was moderated mediating effect.. These findings had important theoretical and practical value to reduce adolescents' water high-risk practices.

*Keywords: adolescents, water safety skills, overconfidence, risk perceptions, water high-risk practices, moderated mediating effect*

## The beneficial effects of acute exercise on executive function in adolescents

**SeYun Park (Chungnam National University), Jennifer Etnier (University of North Carolina Greensboro)**

Evidence supports that a single session of exercise has benefits for cognitive performance following exercise (Chang et al., 2012; Lambourne & Tomporowski, 2010), with meta-analytic results suggesting that the benefits are largest for measures of executive function (EF). Although these benefits have been demonstrated across the lifespan, the vast majority of research has been conducted with young adults (18-30 yrs), and we are unaware of any study that has tested the effects for high-school aged, healthy children (HS students). Hence, the primary purpose of this study was to assess the effect of moderate intensity acute exercise on subsequent EF performance in this population. Korean HS students (8 male, 11 female; age:  $M=15.95$  yrs,  $SD=0.23$ ) volunteered to participate in the study. Using a within-subjects design with order of conditions randomized and counter-balanced, participants performed the Stroop task, the Trail Making Task, the Symbol Digit Modalities Test (SDMT), and the Tower of London (TOL) test following rest and following exercise with sessions performed on different days. Participants were equipped with a heart rate (HR) monitor and instructed to exercise at 60-80% age-predicted HR. On the exercise day, participants performed a 5-min warmup, 20-min of exercise, and a 5-min cooldown on a bicycle ergometer. Findings indicated that exercise resulted in significant benefits for Stroop Color and Stroop Color/Word tests ( $p<.05$ ) and nearly significant benefits for Stroop Word, SDMT, and TOL total moves ( $p<.10$ ). These results provide an important extension to the literature by confirming that 20 minutes of moderate intensity exercise benefits EF performance for HS students. Benefits were particularly robust for measures of information processing and inhibition, but were also suggestive for working memory and planning. These findings may have implications relative to the inclusion of exercise during the school day to benefit HS students' academic performance.

*Keywords: acute exercise, executive function, cognitive performance, adolescents*

## The effect of neurofeedback and mindfulness on sport anxiety and athletic performance of young soccer players

**Seyed Mohammad Zadkhosh, Hassan Gharayagh Zandi, Rasool Hemayattalab (University of Tehran)**

The aim of this study was to examine neurofeedback and mindfulness interventions for anxiety reduction and athletic performance enhancement. For this purpose, 45 soccer players who were attended in national football league of Iran were assigned to three experimental 1 (intervention based on alpha/theta neurofeedback training), experimental 2 (intervention based on mindfulness meditation) and control group. Athletes in experimental group 1 received twelve-session, 30-minute alpha/theta neurofeedback training, in experimental group 2 received twelve-session, 30-minute mindfulness meditation training and control group did not receive any intervention. Before and after interventions sport anxiety scale questionnaire and shoot performance test were used to collect data. Covariance analysis results showed that the improvement of athletic performance scores and reduction of anxiety scale were significant in experimental group 1. In addition, results of the experimental group 2 showed that the improvement of athletic performance scores and reduction of anxiety scale scores were significant. And there were significant different between experimental group 2 compared to experimental group 1 in sport anxiety scale, but there were not significant differences between experimental group 1 compared to experimental group 2 in athletic performance. According to these findings, we concluded the alpha/theta neurofeedback training and mindfulness meditation training are appropriate to increase athletic performance and decrease level of sport anxiety.

*Keywords: neurofeedback, mindfulness, sport anxiety, performance, soccer player*

## The psychological impact of media on the performance of Iranian Olympic athletes'

**Seyed Ahmad Ghaziasgar, Amir Hosein Memari, Mohammad Khabiri, Mohammad Hadi Hadizadeh**

The aim of present study was to survey the effect of media on Iranian Olympic athletes' performance. Phenomenological approach in qualitative research was used. In this study, five Olympic athletes that participated in Rio 2016 were interviewed by using in-depth, open-ended, and semi-structured interviews. Data was analyzed by using open and coaxial coding methods as well as hierarchical analysis. Results from data analysis showed that media (e.g., TV) could affect the athletes in two paradoxical ways: a) provided high pressure situation that reduced athletes' performance and b) provided motivational situation that improved their performance. Finally, based on finding researchers suggested that media's managers and reporters must aware of psychological effect on athletes performance. Also, sport psychologists must pay attention to these factors and instruct athletes to how face and manage media pressures or aids.

*Keywords: psychological media roles, olympic athletes, pressure, motivation*

## Visual control strategy by sloped and non-sloped green and skill expertise in golf putting

**Seungmin Lee, Dong-Wook Han**

The purposes of this study were to investigate performance accuracy and visual control characteristics according to breaking lie in golf putting task. To accomplish this goal, 14 participants (7 professional golfers with more than 10 years of experience and 7 amateur golfers) were participated in the study. All participants performed 40 putts, 20 putts at straight lie and slopy lie respectively. In each type of terrain, 10 putts were executed in 1.5m and 2.5m respectively with wearing eye movement tracking system all the time. Visual control characteristics such as quiet eye duration(QED), quiet eye dwell time(QEDT) and gaze fixation location were measured. The result is as follow: First, there was a difference in both performance accuracy and visual control characteristics according to the golf expertise. Particularly, pro golfers showed lower absolute error in both experiment conditions, distance and slope, than amateur golfers [ $p < .01$ ]. Second, the QED and QEDT were found to be longer in professional golfers on straight lie putts [QED:  $p < .05$ , QEDT:  $p < .05$ ] than in amateur ones. Third, there was a difference in gaze fixation location between different level of expertise [ $p < .05$ ]. Especially, the professional golfers fixed their gaze location at the breaking point of putting lie, however, amateur golfers fixed their gaze location at the hole. In conclusion, the visual control characteristics were found to be more different in slopy lie than straight lie of putts according to the golf skill level. It could be seen that performer's visual control characteristics from the green affects the putting performance.

## Exploring exercise addiction experiences of fitness activity participants

**Seul Lee (Kookmin University)**

Participation in exercise is commonly known as positive behavior for physical and psychological health. However, this does not apply to all exercise behaviors. Addictive exercise behaviors often causes harm to a person's health and well-being. The purpose of this study was to examine participants' experiences of exercise addiction. The current study is a case study design using inductive content analysis method. The research participants were three male fitness activity participants with more than three years of experiences in exercise. They spent more than three hours a day, five times a week in a fitness exercise, and obtained high scores (70 or more) on the Korean version of exercise addiction scale. Data were collected by 30- to 40-minute semi-structured interview, observation notes and related literature search. The semi-structured interviews consisted of questions such as the starting point of the exercise, personality traits, and mood when exercising or not exercising. Observations were recorded three times while the participants were in their fitness activity. The collected data were transferred to a computer word processor and analyzed by triangulation to enhance the



integrity and validity of the research data. Data were categorized to get meaningful themes. Data analysis extracted three research findings: role models in their mind, psychological characteristics, and emotional state; (a) Their role model was a strong inspiration when the participants were in exercise; (b) The three participants had Type A personality, perfectionism, and obsession with body image and dietary control; (c) The participants experienced positive emotional states such as stress relief, happiness, and ecstasy while they were immersed in exercise. However, when they were unable to exercise, they showed withdrawal symptoms such as severe anxiety, depression, and helplessness.

*Keywords: exercise addiction experiences, semi-structured interview, fitness activity participant*

## **Roots to grow and wings to fly: A case study of psychosocial development of young people in a performance club setting**

**Sergio Lara-Bercial (ICCE and Leeds Beckett University), Jim McKenna (Leeds Beckett University)**

The need to conduct psychosocial development research in ecologically valid settings has long been identified (Bronfenbrenner, 2008). Informed by the principles of Realist Evaluation (Pawson & Tilly, 1997), this case study examined the programme theories (PTs; context, mechanism and outcome configurations) of the environment's stakeholders at two different points in time. In-depth semi-structured interviews were conducted with former club athletes and their parents (n=16) and current coaches (n=5). In addition, two sets of focus groups were carried out with current parents (n=6) and players (n=6) at two different age groups (Under 13 and Under 15). Subsequently, a targeted in-situ examination of the setting was conducted using ethnographic methods (i.e., extensive observation, interviews, pictures, etc.). The analysis of the data revealed a broad range of developmental outcomes at self, emotional, moral, social and cognitive level. It also established the relevance of the club context in the consecution of these outcomes (i.e., club ethos and culture, and club history and social and geographical context). Myriad interconnected and interdependent mechanisms were observed and judged to play a central part in whether positive or negative development took place. The study reaches two main conclusions. First, that the overall functioning of the club seemed to provide players with roots to grow (i.e., structure, routine and stable relationships) and wings to fly (life-purpose, hope and a safe space to self-express). Secondly, the highly individualised journeys of young people through sport are highlighted. The outcomes of the experience varied greatly based on the internal and external assets of the young person. The study offers a set of recommendations for practitioners and clubs to maximise the psychosocial development of their athletes.

*Keywords: psychosocial development, youth development, youth sport, realistic evaluation*

## **Improving decision making with video-feedback analysis (The DTM Model Applies to Tennis)**

**Sergio Costa (University of Chieti)**

The decision training model (DTM) developed by Vickers (2003, 2007) explains the construction of tactical experiences, favouring the development of tactical knowledge and cognitive skills, including the training of cognitive skills involved in decision making. To do so, different tools are used, such as video feedback or questioning (Vickers, 2007). The purpose of this poster is to explain the effect of a decision training program, using a combination of video feedback and questioning with tennis players (González et al., 2014). My research was done with two players of the Circolo Canottieri Roma, 17 and 20 years old, with a sporting experience of 7 and 8 years. Both had at the beginning of the work a Italian ranking 2.7 and trained 5 times a week for 2 hours a day with the same coach. I analyzed 3 games before the operation to compare these data with 3 games after the program analyzing the differences between correct and wrong decisions and executions. The intervention consisted in a reflexive supervision protocol through the use of video feedback of 5 matches. The program,

inspired by the works of Vickers (2007) and Garcia-Gonzalez (2014), included analysis of six actions (3 successful and 3 bad decisions). The videos were analyzed between 24 and 48 hours after the match, showing the development of the whole point, to give the athlete the possibility to carry out a correct and better interpretation of the context. The goal of the sport psychologist was to guide the player in the analysis of the game situation through a process of discussion and reflection, not intervening directly, trying to understand what had brought the player to that choice, using a particular schema. My results showed that the reflexive supervision protocol produced an improvement of the sports competence, the procedural knowledge, the decision-making and the sports performance, confirming the results obtained in other studies (Iglesias, 2006; Moreno 2010; Moreno et al 2008).

*Keywords: tennis, decision making*

### The influence of core affect on cycloergometer endurance performance

**Selenia Di Fronso, Laura Bortoli, Claudio Robazza, Maurizio Bertollo (BIND-Behavioral Imaging and Neural Dynamics Center, Department of Medicine and Aging Sciences, "G. d'Annunzio" University of Chieti-Pescara)**

Research on health behavior has been focused on the influence of physical activity on affect, mood, and emotion (Ekkekakis, 2013). In the current study we examined the influence of core affect on cycloergometer endurance performance and on Heart Rate Variability (HRV). Participants were 20 sport science students aged from 20 to 28 years ( $M=24.1$ ,  $SD=2.6$ ). Core affect was randomly elicited by two sets of positive and negative pictures chosen from the International Affective Picture System (IAPS; Lang et al., 2008) that were displayed to the participants during a cycloergometer performance. In a preliminary visit, participants rated the pictures in terms of affective valence, arousal, and dominance, and undertook a ventilatory threshold assessment. ECG was continuously recorded before, during, and after performance using Bioharness (Zephyr Technology) in order to assess the influence of positive and negative pictures on HRV indices. Perceived effort (Borg Scale, CR-10), arousal and hedonic tone (affect grid, Russel, 1989) were collected every minute during performance. Core affect elicited idiosyncratic effects on performance. RM ANOVA 2 groups (fit, unfit) x 2 conditions (positive, negative pictures) revealed significant differences between groups and conditions ( $F_{1,18}= 3.64$ ,  $p = .05$ ). Fit participants obtained better performances when negative pictures were presented. Unfit participants obtained better performances associated with positive pictures without any change on HRV indices after performance ( $p = .86$ ). In summary, both positive and negative pictures were found to exert beneficial effects on cycle-ergometer endurance performance as a function of the participants' physical fitness level. These findings could help coaches to support performance improvement using visual stimuli.

*Keywords: core affect, IAPS, HRV, endurance performance*

### Imagery use helps attention focus and task adherence during effort: Recommendations for best practices

**Selen Razon, Umit Tokac, Gershon Tenenbaum**

Sedentariness remains high despite the well known benefits of physical activity. This study investigated the effect of imagery use on perceived exertion (RPE), attention allocation, time on task, lactate accumulation (LA), and Heart-Rate (HR) during an exertive task. Forty five participants (22 males, 23 females) were randomly assigned to one of the three groups: control, dissociative imagery (i.e., external focus of attention), associative imagery (i.e., internal focus of attention) and performed a progressive cycling task at 10% above anaerobic threshold to volitional fatigue. RPE, attention, and HR (at 1mn intervals), and lactate levels (RPE=5, and at task completion) were assessed. Participants using associative imagery remained longer on task ( $M = 420.40$  seconds,  $SD = 344.87$ ) relative to the ones using dissociative imagery ( $M = 405.80$  seconds,  $SD = 390.26$ , Cohen's  $d = .04$ ), and no imagery ( $M = 377.20$ ,  $SD = 290.52$ , Cohen's  $d = .14$ ). Participants using associative

imagery reported higher RPEs ( $M = 3.60$ ,  $SD = 0.312$ ) relative to the ones using no imagery ( $M = 3.05$ ,  $SD = 0.312$ , Cohen's  $d = 0.82$ ), and dissociative imagery ( $M = 2.38$ ,  $SD = 0.312$ , Cohen's  $d = 4.02$ ) resulting in a significant main effect for condition,  $F(2, 42) = 3.80$ ,  $p = .030$ ,  $\eta^2 = .153$ . Participants using associative imagery reported higher mean of attention focus ( $M = 5.42$ ,  $SD = .368$ ) relative to the ones using no imagery ( $M = 4.02$ ,  $SD = .368$ , Cohen's  $d = 3.94$ ) and dissociative imagery ( $M = 3.32$ ,  $SD = .368$ , Cohen's  $d = 5.91$ ) resulting in a significant main effect for condition,  $F(2, 42) = 8.43$ ,  $p = .001$ ,  $\eta^2 = .286$ . Imagery use through its capacity to modulate the attentional focus facilitates perceived exertion and time on task. Findings can help cost-effective strategies to lower perceived exertion and increase exercise adherence. Implications and recommendations will be outlined.

*Keywords: imagery use, perceived exertion, attention focus, time on task, lactic acid, HR, exercise behavior*

### Tracking activity: Evaluating perceived usefulness and effectiveness of Fitbit

**Selen Razon, Alex Wallace, Jorge Ballesteros, Nicole Koontz, Alex Montoye**

Most adults fail to meet the recommended physical activity (PA) guidelines (Pleis, Lucas, & Ward, 2009). PA tracking technologies may help increase PA behaviors because they facilitate self-monitoring and self-regulation for users (Michie et al., 2011). In response to recent calls (Cadmus-Bertram, Marcus, Patterson, Parker, & Morey, 2015; Cheon & Jarrahi, 2015), the present study surveyed opinions and attitudes on perceived usefulness and adoption of Fitbit within a university setting. Participants ( $N = 371$ ,  $\text{Mage} = 31.3$ ,  $SD = 14.4$ ) responded to an online survey. Analyses revealed that 97.3% of the respondents used Fitbit to track PA while some others did it to track heart rate or to compete against others. Majority of respondents (80.9%) reported increased PA levels as a result of Fitbit use and 63.5% reported that Fitbit had a very positive impact on their health. Additionally, most respondents (88.1%) reported that they like using their Fitbit and 67.7% reported intentions for continued use in order to increase PA in the future. Respondents' reported satisfaction with Fitbit use was significantly associated with the perceived usefulness of the Fitbit's mobile application, perceived impact of Fitbit on their health, and intentions for future use ( $P < .001$ ). Qualitative analysis revealed three major themes: (1) criticism related to use, (2) positive comments related to use, and (3) comments related to mobile application. The results suggest that novel advances such as Fitbit could hold unique potentials to improve PA behaviors. Practical recommendations to best use Fitbit or alternative activity trackers to improve exercise behaviors will be outlined.

*Keywords: PA behaviors, Fitbit, best practices*

### Coaches' perspectives on their roles related to athletes' personal and psychosocial development in university sport

**Scott Rathwell, Bradley W. Young (University of Ottawa, Ottawa, Canada)**

Evidence suggests that university sport programs can foster positive development (Deal & Camiré, 2016; Rathwell & Young, 2016). Qualitative studies on university coaches suggest that coaches may play an integral role in facilitating university athletes' development of personal and psychosocial competencies (Jeemin, Bloom, & Bennie, 2016; Rathwell, Bloom, & Loughead, 2014; Vallée & Bloom, 2005). However, little is known about university coaches' strategies for enhancing personal and psychosocial development. The purpose of this study was to thoroughly understand university coaches' views on and strategies for fostering athletes' personal and psychosocial development. Semi-structured open-ended interviews were conducted with 14 outstanding Canadian university coaches (9 male and 5 female) who were recognized by their athletes as being individuals who invested considerable effort, and concern towards athletes' development. Interviews were analyzed using an inductive approach (Braun & Clarke, 2006). Coaches discussed the conditions of university sport that foster personal and psychosocial development. Specifically, coaches felt sport accelerated athletes' development because it (a) forced athletes to interact with people who were different from themselves, (b) exposed athletes

to a greater variety and frequency of experiences than regular university students, and (c) placed athletes in high pressure situations. Coaches also described the deliberate strategies they used to maximize their athletes' personal and psychosocial development, including establishing support networks, building team culture, and empowering athletes to take responsibility of their own development. Overall, the findings from this study offer one of the first accounts of university coaches' views and strategies regarding their direct and indirect roles related to personal and psychosocial development in university sport.

*Keywords: coaching, positive development, emerging adulthood, university sport*

### **The utility of three questionnaire measures of physical activity in healthy young adults: Comparison with accelerometer data**

**Schilling René, Gerber Markus (Department of Sport, Exercise and Health, University of Basel)**

Accurate assessment of physical activity is essential to determine the magnitude of the health-related benefits of regular physical activity. While physical activity questionnaires are easy to use, their accuracy in comparison to objective measures has been questioned. The purpose of the present study was to examine the utility of three questionnaire measures; a recently-developed instrument, the Simple Physical Activity Questionnaire (SIMPAQ), the Seven Day-Physical Activity Recall (7DPAR) and the short form of the International Physical Activity Questionnaire (IPAQ-SF). Accelerometer data was collected in 72 university students (50% females). Telephone interviews were conducted to complete the SIMPAQ and the 7DPAR. Participants also self-completed the IPAQ-SF. The amount of moderate-to-vigorous physical activity (MVPA) measured using the SIMPAQ differed much less from MVPA assessed via accelerometry compared to the 7DPAR and IPAQ-SF. Significant correlations ( $p < .001$ ) were found between accelerometer-based MVPA, the SIMPAQ ( $r = .51$ ), the 7DPAR ( $r = .55$ ) and the IPAQ-SF ( $r = .41$ ). While participants needed less time to complete the SIMPAQ ( $p < .001$ ), participants tended to be more confident about the accuracy of the answers they provided on the 7DPAR ( $p < .01$ ).

These three questionnaire measures of physical activity performed similarly in a healthy young adult sample. The SIMPAQ can be completed in a relatively short time, which could be an advantage in clinical settings where time for physical activity assessment is limited. Research is currently underway to validate the SIMPAQ in people with psychiatric diagnoses, an example of a highly sedentary population that was the primary target for this new instrument.

*Keywords: questionnaire, accelerometer, physical activity, IPAQ, SIMPAQ, 7DPAR, usability, validity*

### **Stop&Go: An intervention program to promote healthy and physically active lifestyles for patients with substance use disorders**

**Saül Alcaraz, Marina García (Addictive Behaviours Unit, Department of Psychiatry, Hospital de la Santa Creu i Sant Pau)**

In patients with substance use disorders, exercise could help in the treatment of substance addictions. Interventions focused on promoting physical activity and healthy lifestyles for patients in residential treatment centres and ambulatory settings have been developed in the last years. However, there is a lack of programs promoting a healthy and physically active lifestyle for patients requiring inpatient detoxification treatment. We present the development of an intervention program with such characteristics, namely "Stop&Go". Stop&Go includes two different phases. Phase I is aimed at understanding the variables related with adherence to healthy lifestyle interventions. Patients with substance use disorders will be invited to participate in focus groups (Study1) and to respond to questionnaires assessing variables related to exercise and healthy habits (Study2). Phase II will use the knowledge obtained in Phase I to develop and evaluate an intervention to promote healthy and physically active lifestyles for patients admitted to an inpatient detoxification centre. We

will develop an intervention based on Self-determination theory postulates with two axes: education and motivation. Patients will participate in four practically-oriented training sessions, focused on (1) nutrition and oral hygiene, (2) sleep habits and self-care, (3) physical activity and exercise, and (4) smoking cessation. In addition, the entire inpatient detoxification centre will be adapted to encourage autonomous physical activity and to reinforce the ideas presented in the education sessions. The main strength of Stop&Go is the combination of perspectives included in its development (i.e., intervention led by an interdisciplinary team and based on patients' needs). Stop&Go may help patients move towards a healthy lifestyle and thus, may bring about changes in patients' (1) knowledge acquired, (2) variables related to healthy habits (e.g., exercise motivation) and (3) psychological well-being.

*Keywords: exercise motivation, psychological well-being, healthy living, physical activity, autonomy support, self-determination theory*

### **Motivational profiles for exercise of patients with substance use disorders: A preliminary cluster analysis**

**Saül Alcaraz, Sergio Remis (Addictive Behaviours Unit, Department of Psychiatry, Hospital de la Santa Creu i Sant Pau)**

Research has shown that exercise activates reward pathways and neurochemicals that are similar to those induced by drugs of abuse, which supports exercise as a promising adjunct treatment for substance use disorders (SUDs; Linke & Ussher, 2014). In light of this, the purpose of the present study is to identify motivational profiles for exercise in such a context. Participants were 86 patients with SUD admitted to an inpatient detoxification centre. Patients ( $M_{age}=43.48$ ,  $SD=8.39$ ; male=76.7%) were mainly admitted to the detoxification centre due to alcohol (37.2%) and cocaine (31.4%) SUDs. Most of them (64%) considered themselves as physically active. The Behavioural Regulation in Exercise Questionnaire-3 (BREQ-3) was used to assess patients' regulations towards exercise and the International Physical Activity Questionnaire was included to measure patients' physical activity. A hierarchical cluster analysis using Ward's linkage method with the squared Euclidian distance measure was initially conducted. The six subscales of the BREQ-3 were used as clustering variables. Inspection of the results suggested that a 3-cluster solution was the most appropriate. Subsequently, a k-means cluster analysis was conducted in order to confirm the results of the previous analysis. Three similar clusters were again identified: "high self-determined motivation/low controlled motivation" (C1;  $n=49$ ), "low motivation" (C2;  $n=16$ ) and "moderate self-determined and controlled motivations" (C3;  $n=15$ ). The ANOVA conducted to test differences in the levels of physical activity between clusters did not show significant results, although the "low motivation" cluster clearly showed the lowest score ( $C1=3166.14$  MET-minutes/week [MMW],  $C2=1603.88$  MMW,  $C3=3791.57$  MMW). Even though further analyses need to be conducted to confirm our results, the three motivational profiles identified could be useful to practitioners in order to design exercise promoting interventions as an adjunct treatment for SUDs.

*Keywords: exercise, physical activity, self-determination theory, cluster analysis, motivational profile, substance use disorders*

### **How do freshmen experience a training program based on sports psychology? -A study of a female university football club-**

**Satoshi Tominaga, Hironobu Tsuchiya (Osaka University of Health and Sport Sciences)**

The purpose of this study was to qualitatively examine the internal experience of freshmen with regard to a support program and conceptualize a model for this experience. Freshmen have many difficulties because they are experiencing a new environment. Maintaining a support environment is useful for preventing non-adaptation. In this study, we provided a "Support Program for Freshmen" to help freshmen adapt to their new

lifestyle and examined their internal experience through the program. This qualitative study was based on the research question, “How do freshmen experience the Support Program for Freshmen?” The Support Program for Freshmen was based on Structured Group Encounter programs (Kokubu, 1981), which incorporate learning of the psychological skills of Sport Mental Training, an area of Sports Psychology. The program consisted of 8 sessions (orientation, self-analysis and goal setting, self-understanding, understanding of others, coping, self-release, discussion with an older student, and settlement). Data was collected using free-format introspective reports written by 14 freshmen (female, mean age 18.42 years, mean athletic experience 10.79 years) who participated in the Support Program for Freshmen, and was analyzed using the Grounded Theory Approach. From the results, we created 26 codes, 12 categories, 5 category groups, and conceptualized a model of the Support Program for Freshmen based on internal experience. The model produced 5 hypothetical findings. Experiencing the Support Program for Freshmen (1) encouraged conversation between freshmen in a non-daily context, (2) was a positive experience for freshmen, (3) deepened self-understanding, (4) deepened understanding of others, and (5) provided a foundation for interpersonal relationships in the context of university life. These results suggest that the Support Program for Freshmen is an effective strategy for maintaining a support environment for freshmen.

*Keywords: support program for freshmen (SPF), structured group encounter (SGE), grounded theory approach (GTA)*

### Applicability of recovery and stress ratings among junior athletes

**Sarah Kölling (Ruhr University Bochum), Michael Kellmann (Ruhr University Bochum, University of Queensland)**

Regeneration management and regular recovery-stress monitoring play pivotal roles in junior sports, as high training volume and intensities are already standard among competitive junior athletes. The Acute Recovery and Stress Scale (ARSS) and the Short Recovery and Stress Sale (SRSS) (Kellmann et al., 2016) are eligible for this purpose. However, these were validated among adolescent athletes > 16 years. Therefore, it was the purpose of this study to examine psychometric properties of these questionnaires to assess their applicability among 14- to 16-year-old athletes. A sample of 303 junior athletes between 14 and 16 years ( $n = 185$  male) answered the 32-item ARSS which contains four recovery and four stress scales on a scale ranging from 0 to 6. The 8-item SRSS which represents the ARSS scales as single items were rated on the same scale. Analyses involved internal consistency (Cronbach's  $\alpha$ ), discriminatory power ( $r[it]$ ) and correlations between corresponding ARSS scales and SRSS items. ARSS scales Physical Performance Capability ( $\alpha = .84$ ), Mental Performance Capability ( $\alpha = .79$ ), Overall Recovery ( $\alpha = .79$ ), Muscular Stress ( $\alpha = .84$ ), Lack of Activation ( $\alpha = .73$ ), and Overall Stress ( $\alpha = .79$ ) showed acceptable to good internal consistency, whereas Emotional Balance ( $\alpha = .60$ ) and Negative Emotional State ( $\alpha = .66$ ) were below that threshold. Satisfactory discriminatory power ranged between  $r[it] = .33$  to  $.74$ . Internal consistency of SRSS-Recovery ( $\alpha = .75$ ) and SRSS-Stress ( $\alpha = .70$ ) were acceptable. ARSS scales and SRSS items correlated between  $r[s] = .50$  and  $.65$ . The results indicate some difficulties in participants' understanding of single items which might reduce the scales' reliability. Emotional Balance and Negative Emotional State need modification, especially before these questionnaires can be applied among younger athletes (10 to 14 years). This underlines the importance of youth-adequate tools for sustainable and practical use in junior sports.

*Keywords: monitoring, regeneration management, questionnaire, psychometrics*

### Self-regulation and wellbeing of retired football athletes

**Sara da Silva (School of Psychology, Cardiff University, UK), Sasa Elizabeth Vann (School of Kinesiology, Ball State University, US), Patrícia Coutinho (Faculty of Sport, University of Porto, Portugal), Jean Marie Place (Department of Nutrition & Health Science, Ball State University, US)**



Across their life span, individuals encounter optimal age-periods for achieving certain goals (Heckhausen et al., 2010), such as to achieve expertise in a given career domain. Once those optimal age-periods have passed and investment in a given goal is no longer possible, developmental regulation theories claim that disengagement from the goal and reengagement in alternative goals will contribute to an adaptive development (Haase et al., 2013). The present study explored the regulatory strategies used by retired elite football-athletes. We applied an interpretative phenomenological analysis (IPA) to semi-structured interviews conducted separately with four football ex-athletes. Our findings show that participants found it difficult to disengage from their career goal as football athletes and this had a negative impact on their wellbeing. The main reasons stated for finding it difficult to disengage from their careers as athletes were the reduction of sense of identity and high intensity emotions, the lower level of responsibility when compared to being a coach, and loss of social recognition. Additionally, while participants did invest in alternative life-goals linked to the football field (e.g. becoming a coach), they did not consider these goals to be as fulfilling as their career as athletes. These findings suggest athletes approaching retirement might benefit from support interventions since this process seems to have a negative impact on their wellbeing. These interventions should aim at helping ex-athletes to reframe the meaning of retirement, and to identify new life-goals that could be equally fulfilling.

*Keywords: ex-athletes, football, developmental regulation theories, wellbeing*

### **Drive for muscularity, drive for thinness, attitudes and intentions to use substances to improve performance and appearance in students of sport sciences**

**Sara Agnello, Luca Mallia** (*Department of Movement, Human and Health Sciences, University of Rome "Foro Italico"*), **Fabio Lucidi** (*Department of Social and Developmental Psychology, 'La Sapienza' University of Rome*), **Arnaldo Zelli** (*Department of Movement, Human and Health Sciences, University of Rome "Foro Italico"*)

Previous studies have been investigating the relationship between personal dispositions towards their own bodies and intentions to use PAES in adolescent athletes of different sport levels (e.g. Zelli et al., 2010). These studies have shown that for both males and females, the drive for muscularity (DM) and the drive for thinness (DT) positively predict through time, and in a direct way, the intention to use PAES. Moreover, only the DM have an indirect effect on the intention, through its effect on the attitude towards this use (eg. Zelli et al., 2010). The aim of this study is to test the same model in a group of university students of sport sciences, analyzing possible differences between males and females. Two-hundred and forty-three students of sports sciences (59.3% males) from the State University of Rome "Foro Italico" (mean age=22.9 years, SD=3.0) carried out an online questionnaire including: a) the Drive for muscularity Scale ( $\alpha=.95$ ); b) the EDI-2 Drive for Thinness sub-scale ( $\alpha=.88$ ); c) a scale of positive attitudes towards the use of PAES ( $\alpha=.95$ ); and d) a measure of the intention to use PAES in the next three months ( $\alpha=.97$ ). Multi-group Structural Equation Models (SEM) were used to test across gender a model hypothesizing that DM and DT have a direct and an indirect effect, through their relationship with attitudes, on the intentions to use PAES. The results showed that the model has good fit indices (Chi-square (135)=377.77,  $p<.001$ , CFI=.95, TLI=.94; RMSEA=.111; SRMR=.063). However, the pattern of relationships quite differs across gender. In males and females, the DM has a direct effect on the intention ( $\beta=.32$  and  $\beta=.52$ ,  $p<.001$ ). On the contrary only for males the DM presents an indirect effect on the intention ( $\alpha\beta=.15$ ;  $p<.001$ ), through its positive relationship with the attitudes ( $\beta=.28$ ,  $p<.001$ ). Overall, the study results show the fundamental role, also in students of sport sciences, of the DM, then it can be considered one of the main factors on which to intervene in a preventive way in the use of PAES.

*Keywords: body image, PAES*

## Motivational climate and the intention to continue / drop-out and burnout in two moments of a season

**Santiago Troncoso, Orlando Reyes, Alejandra Rodriguez, Nallely Castillo (Universidad Autónoma de Nuevo León), Isabel Balaguer (Universitat de Valencia), Jeanette López-Walle (Universidad Autónoma de Nuevo León)**

Based on Duda's proposal (2013) on the coach-created motivational climate and empirical work, this study examines the effect of Empowering/Disempowering Climate on the beginning of a season (T1), and the intention to continue/drop-out and burnout, at the middle of a season (T2) in two groups, one of them trained with Empowering Coaching programme (EC; Duda, 2013). Research informed that empowering dimensions linked to adaptive responses to sport, like persistence (Pelletier et al., 2001). Disempowering dimensions predicted more maladaptive responses such as intentions to dropout sport (Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002). The Empowering Coaching™ education programme (Duda, 2013) comprises of an interactive workshop that aims to have coaches become more aware of the nature of and ways to enhance quality motivation in their players. Six soccer academies participated in the study, three in the experimental group (EG) and three in the control group (CG). A total of 111 boys soccer players (Mage = 12.45; SD = .95), with a three-day weekly training average (SD = .93) filled the questionnaires at the beginning and the middle of a season: Empowering and Disempowering Motivational Climate Questionnaire (EDMC-Q); Athlete Burnout Questionnaire (ABQ); and Intention to continue/drop-out (INT-C/D). The results showed adequate reliability of the instruments used: In T1 the CG and EG of Empowering Climate (ECL) and Disempowering Climate (DCL) were  $\alpha = .78$  and  $.90$ ; In T2 the CG and EG of INT-C, INT-D were  $\alpha = .61$  and  $.95$ . In the EG, disempowering climate in T1 predicts positively the intention to drop-out in T2 ( $\beta = .57$ ,  $p < .01$ ). Otherwise, the DCL of T1 predicts negatively the intention to continue in T2 ( $\beta = -.63$ ,  $p < .01$ ). On the other hand, in the CG, the ECL in T1 predicts negatively the intention to drop-out in T2 ( $\beta = -.54$ ,  $p < .05$ ).

*Keywords: Empowering Coaching™, motivational climate, intention to continue/drop-out, burnout*

## Helping teachers overcome negligence in elementary physical education

**Sangmo Han (Gyeongin National University of Education)**

The purpose of this study was to identify the negligence factors in teaching elementary physical education among teachers and to describe how those are overcome through CoP program (Community of practice program). The participants in this study were three elementary school teachers who taught physical education to 4th graders. In-depth interviews, participant observation and documents were employed in order to collect data. Constant comparison method were used for data analysis. Research findings indicated that teachers had low level of motivation to teach (more teachers were reluctant to teach physical education). CoP (community of practice) program established to help teachers cope with this phenomenon was applied to solve problems found in this study, which included 'reforming the curriculum', 'improving teaching environment', and 'enhancing the professionalism'. The program helped teachers increase their self-efficacy on their physical education lesson and prepare themselves for physical lessons more faithfully. The CoP program has created a positive environment that was not only preventing negative group-thinking but also practicing good physical education lessons.

*Keywords: elementary school teacher, physical education, community of practice*

## The predictability of big-five personality on coaching efficacy among coaches

**San-Fu Kao (National Tsing Hua University, Taiwan, ROC), Wei-Chieh Tseng (National Taiwan Sport University, Taiwan, ROC), Chien-Ming Hsu (National Tsing Hua University, Taiwan, ROC)**

The purpose of this study was to determine the relationship between big-five personality and coaching competency. This study examined the five subscales of Big-Five Mini-Markers (BFMM), openness, conscientiousness, extraversion, agreeableness, and emotional stability and their predictability of the four subscales of the Coaching Efficacy Scale (CES), game strategy efficacy (GES), motivation efficacy (ME), technique efficacy (TE), and character building efficacy (CBE). Participants were high school and university coaches (N = 217; male = 142, female = 75) from Taiwan. The coaches were administered the BFMM and CES. Regression analyses showed openness and conscientiousness positively predicted to GES, ME, and TE. While conscientiousness and agreeableness positively predicted to CBE. These results are in accordance with the frameworks of personality and coaching efficacy within sport.

*Keywords: personality, sources of coaching efficacy, coaching education*

### Unique case study to evaluate EMDR model efficacy on improving pianist performance skills and competition anxiety reduction

**Sandra Nogues Recasens**

Sport psychology is about human performance. Activities where high performing skills are needed expose the athlete to a physical, mental and emotional impact. Musicians and athletes have the same commitment: training and using their mind and body to perform. We brought this case study to prove the effectiveness on using Eye Movement Desensitization and Reprocessing (E.M.D.R.). Model for improving performance. Specially on this case, competition anxiety and pianist skills' activation. Based on a multi-procedural approach: the High Risk Model of Threat Perception (Wickramasekera, 1988) and the E.M.D.R Model intervention (F. Shapiro, 1979). Our methodology consists on pre and post data recollection for qualitative and quantitative results comparison: i.e. Neurocognitive test, self-perception evaluation on variables focus, comfort and control, pre-anxiety response, levels of induced self-pressure and negative cognitions. Qualitative and quantitative coach's' evaluation on negative and positive body language, repetitions, musical reading accuracy, technical consistency, clarity and organization on execution. Besides, variable HRV monitoring during trainings and during EMDR intervention. A 10-day EMDR intervention with Basic protocol and EMDR Endurance Protocol (EMDR Spanish Association). Our subject experienced positive changes in all variables measured. Pre and post percentage data comparison was higher. Post intervention variables had positively changed. Increased positive self-perception, as focus of attention and quality of practice, also positive total percentage change on all variables measured, including quantitative SDNN values and level of pressure, which was reduced. Her psychological and physiological response to stress pre and during competition has reduced. She experienced less inside pressure, negative fears and cognitions, and disappeared her anxiety physical reactions, leading her to perform better.

*Keywords: E.M.D.R. model, pianist skills performance, competition anxiety, cognitive believes, physiological response*

### Bullying among schoolchildren from the municipalities of Novo Cabrais, Vale do Sol and Vera Cruz, RS, Brazil

**Sandra Mara Mayer, Heloisa Elesbão (UNISC)**

Debates about violence and aggression are present nowadays, especially in the school environment. School violence in Brazil is not a recent problem, but the aggravating issue is the repetition in which these acts are happening. When it occurs repetitively, it is called bullying. This violence is practiced by one or more students against others, generating pain and anxiety in the victim. To identify the number of students who have been assaulted and to verify the form of aggression reported by the students from the 6th to the 9th year of schools in the municipalities of Novo Cabrais, Vale do Sol and Vera Cruz, in the state of Rio Grande do Sul,

Brazil. The sample consisted of 564 students, of which 236 were female and 328 were male, aged 10 to 17 years. The data were collected through the Olweus questionnaire, adapted by Mayer. Statistical analysis was performed in the SPSS 22.0 program (IBM, Armonk, NY, USA). In Novo Cabrais 36,4% of students say they have already been assaulted, in Vale do Sol 30,43%, in Vera Cruz 32,54%. In all three municipalities, the main form of aggression reported was verbal, Novo Cabrais (12,1%), Vale do Sol (30,43%) and Vera Cruz (40,82%). In this research we concluded that a high number of students suffered aggressions. Based on the results found, it is necessary our reflection about how we could try to change these data. On November 6, 2015, Law 13.185 was approved, called "Antibullying Law", so all schools are developing public policies to try to minimize this issue. With the approval of this law we will seek ways to in order to reduce the rates of school violence, with education as the main mechanism.

*Keywords: school children, aggressiveness, school*

### **Sheltered children and adolescents: a study of the motor development of the participants of the Copame Project of the University of Santa Cruz do Sul - RS - Brazil**

**Sandra Mara Mayer, Heloisa Elesbão (UNISC)**

The shelter situation in Brazil is a measure of judicial protection for children and adolescents who are in situations of social vulnerability. However, this is still today, with paradoxical functioning and management policies, because, at the same time as it protects, it segregates and excludes its sheltered from the social context. The Copame Project is a partnership between the Community Association Pro - Amparo do Minor (Copame) and the University of Santa Cruz do Sul (UNISC). It counts with the participation of scholars and professors from several areas of knowledge, Physical Education, Psychology and Dentistry. With the intention of promoting recreational and recreational activities, stimulating care aspects psychomotor, affective and well-being of the sheltered. To verify the Motor Age of those housed in the aspects of Fine Motor (IM1) and Global Motricity (IM2), comparing the pretest and post-test after the interventions with Physical Education classes. The sample of this study consisted of 9 individuals, 5 males and 4 females, aged between 63 months (5 years and 3 months) and 153 months (12 years and 9 months). For the evaluation, the Rosa Neto Motor Development Scale tests were used. Motor ages Fine Motor (IM1) and Global Motor (IM2) were obtained through the sum of the positive values in each of the tests for each aspect, being expressed in months. Statistical analysis was performed with the SPSS 22.0 program (IBM, Armonk, NY, USA). In the pre-test the IM1 had the mean of  $58,6 \pm 60,0$  months and in the post-test  $76 \pm 22,4$ ; In IM2 in the pre-test the mean was  $80,0 \pm 72,0$  months and in the post-test  $100,0 \pm 18,0$ . There was improvement in the IM1 and IM2 aspects in the post-test in relation to the pre-test and it was observed an improvement in the emotional and relational issues of individuals.

*Keywords: motor development; motor deficit; social vulnerability*

### **Exploring the subjective experiences of amateur club golfers during competitive performance**

**Martin Ridley, Stefan Koehn (Liverpool Hope University, School of Health Sciences, UK)**

Kimiecik and Stein (1992) claimed that the subjective experiences of sport performers are often neglected by sport psychology researchers due to a predominant focus on performance outcomes. This study used the experience sampling methodology as described by Kimiecik and Stein (1992) by adapting their questionnaire for golfers to complete during a competitive round of golf. Six male adult amateur club golfers with handicaps ranging between 3 and 13 (mean 7.5) rated their feelings using a Likert scale before and after each hole. These golfers were also asked to declare their scoring goal for each hole and the score that they had achieved. The handicap system for golf is intended to improve the experience of participation and is based on a golfer's

potential rather than their mean score. This group of golfers had a mean scoring goal for their rounds (cumulative goals from each hole) of seven shots better than their mean handicap, but actually scored five shots worse than their mean handicap. The findings from the questionnaire showed strong correlations (0.7 and above) between key facets of positive subjective experience, for example ratings of enjoyment after a hole had strong correlations with focus, performance, feeling in control, decision making, satisfaction and competitiveness during performance. Also of interest was that their subjective rating for their performance only had a moderate correlation with their scoring outcome (-0.6). Kimiecik and Stein (1992) stated that to achieve optimum experience there needs to be (among other things) a harmony between the perceived challenge and skill level, a focus on the task and a feeling of being in control. To improve golfers' experiences of playing golf, researchers and practitioners could focus more on golfers' mental approach and subjective experiences rather than just on technical performance outcomes.

*Keywords: golf, experience sampling, scoring goal, enjoyment*

### **Anxiety, self-confidence, and performance in football players: A mixed-method approach**

**Tom Penman, Stefan Koehn (Liverpool Hope University, School of Health Sciences, UK)**

To date there is little research that specifically applies to state anxiety and performance analysis. Therefore, the purpose of this study was to examine the influence of anxiety and self-confidence on performance among amateur footballers. The methodology of this study employed qualitative, quantitative, and performance analysis. The Competitive State Anxiety Inventory- 2 (CSAI-2; Martens et al., 1990), performance analysis and semi-structured interviews were utilized in order to assess the different psychological states before, during, and following performances. Eleven amateur football players completed the CSAI-2 45 minutes prior to kick-off during their footballing season in the southwest of England, UK. Results from the CSAI-2 indicated that none of the associations were significant yet the correlation between cognitive anxiety and performance was in the predicted direction. However, interviews results provided additional information on the CSAI-2 findings. It became apparent during the study that the use of three measurements in the form of CSAI-2, performance analysis and semi-structured interviews were beneficial as the CSAI-2 wasn't a strong enough predictor alone. This study does however provide support for past research that states moderate anxiety and high self-confidence predict optimal performance. Future studies should explore how symptoms should be managed where psychological skills training are enforced with a direct focus on increasing self-confidence and reducing anxiety levels.

*Keywords: football, CSAI-2, interviews, performance analysis*

### **Differences in general intelligence and visual memory among middle aged housewives of varied lifestyle**

**Sanchita Baruah, Jayashree Acharya, Shubhda Bhosle (Lakshmibai National Institute of Physical Education, Gwalior)**

As people age, they change in a myriad of ways, both biological and psychological. Age related changes are not uniform across individuals. Cognitive function tends to decline with advancing age. The basic cognitive functions most affected by age are attention and memory (Glisky, 2007). Women with higher levels of physical activity were less likely to develop cognitive decline (Yaffe et al 2001). The objective of the present investigation is to identify differences in general intelligence and visual memory among middle aged housewives of varied lifestyle i.e regular exerciser (who are involved in free hand exercise including walking daily for 45 mins), casual exerciser (once in a week for more than 2hours ) and non exerciser (no exercise at all) . The subjects were voluntary participant in the age group of 45-55 years with mean and SD of 43.81± 3.58. Each group had 10 subjects each The test on general intelligence (Adaptive Matrices test [AMT]) and visual

memory (VISGED) was conducted in Vienna Test System. ANOVA reveals a significant difference among the three groups. The obtained value for general intelligence is ( $F [2, 27] = 13.25, p = .00$ ) and visual memory is ( $F [2, 27] = 13.29, p = .00$ ). The post hoc test shows significant difference between groups who performs regular exercise and casual exercise; between regular exercise group and non exerciser in both general intelligence and visual memory. Casual exerciser and non exerciser did not show any significant difference. A Meta analysis was done by Sofi et al. (2010) and found high level of physical activity was significantly protected against cognitive decline.

*Keywords: general intelligence, visual memory, regular exerciser, casual exerciser, non exerciser*

### **Antecedents, characteristics and consequences of psychological momentum: a taiwanese athletes' perspective**

**Sam H. H. Hsu , Frank J.H. Lu, Hong-Yu Liu (Chinese Culture University, Taiwan)**

Psychological momentum (PM) is a phenomenon that is commonly reported by athletes, coaches and commentators characterized by players/teams gaining dominance for a period of the game (Hartley, 2010; Jackson & Mosurski 2005; Jones, & Harwood, 2008). Still, there is lack of research by holistically examine its antecedents, characteristics and consequences from different culture. To examine athletes' experiences of PM by holistic perspective. Five different elite athletes (pool, track and field, volleyball, table- tennis), participated in-depth interviews, and their media reports, personal documents, and field notes were also collected. Ground theory method (Strauss & Corbin, 1986) was used to analyze related documents and transcribed verbatim, and to produce meaningful results. Athletes' personality, motivation, and external social reinforcements are significant triggers leading to PM as previous literature (e.g., Jones, & Harwood, 2008 ), but some are different such as winning drive and psychological edge. The characteristics of PM includes changes in the athletes' sense of control, confidence, optimism, motivation and energy as current literature reported (e.g., Crust & Nesti 2006). Consequences of PM includes winning the game, increasing motivation, confidence, and resilience. Findings are worthy forwarding to athletes, coaches and practitioners in order to gain PM frequently. Future research directions are also suggested.

*Keywords: psychological energy, mindset, winning drive, competitiveness*

### **The role of perceived autonomy support on athlete-coach relationship and enjoyment in adolescent soccer players**

**Safer Elmas, Sevim FiDan, F. Hülya Asçi (Marmara University)**

The primary aim of this study was to examine if perceived autonomy support predicts athlete-coach relationship and enjoyment in male soccer players. Second aim was to examine if there is difference in perceived autonomy support, coach-athlete relationship and enjoyment based on age. Coach-Athlete Relationship Questionnaire, Perceived Autonomy Support Scale-Coach Form and Physical Activity Enjoyment Scale-Short Form were administered to 203 adolescent male soccer players (Mean=13.26;SD=1.23). Hierarchical regression analysis was conducted to test the role of perceived autonomy support on subscales of coach-athlete relationship and enjoyment. Year of sport experience and age were entered to analysis in Step 1. In Step 2, perceived autonomy support was included to the model. Further, ANOVA and MANOVA were conducted to test the difference in perceived autonomy support, enjoyment and coach-athlete relationship by age. Hierarchical regression analysis showed that year of sport experience and age only explained 5% of commitment in Step 1. In Step 2, while perceived autonomy support predicted all subscales of coach-athletes relationship and explained 43% of commitment, 47% of closeness, 38% of complementarity, it did not predict enjoyment ( $p > 0.05$ ). The perceived autonomy support was positively correlated with commitment ( $\beta = 0.66$ ), closeness ( $\beta = 0.70$ ), complementarity ( $\beta = 0.63$ ). Moreover, ANOVA analysis showed no significant difference in



enjoyment by age ( $p>0.05$ ), but perceived autonomy support differed ( $p<0.05$ ). MANOVA analysis showed significant difference in coach-athlete relationship by age (Pillai's Trace=0.26;  $F(12,588)=4.71$ ;  $p<0.05$ ). Follow up univariate analysis indicated age difference in all subscales of coach-athlete relationship ( $p<0.05$ ). As a result, perceived autonomy support predicts the quality of coach-athlete relationship in adolescent soccer players. Further, perceived autonomy support, closeness, commitment and complementarity decrease as age increases.

*Keywords: perceived autonomy support, coach-athlete relationship, enjoyment*

## Expertise of leading female tennis athletes – From the perspective of deliberate practice/deliberate play –

**Ryoko Takemura (Sophia University), Takaaki Kato (Keio University)**

The aim of this study was to clarify the process through which leading female tennis athletes gain expertise from deliberate practice (DPR), which first requires high concentration and effort for performance improvement, and from deliberate play (DPL), which attaches importance to experiencing enjoyment in the early period of learning. In recent years, review studies have reported that a high proportion of factors are not explainable by DPR, indicating the need for a new approach. In this study, in addition to a survey on the quality and quantity of practice, survey items were drawn up from keywords presumed to have an important connection to the process of gaining expertise in order to identify other influencing factors. The subjects of the survey were ten female professional tennis players. The results revealed that, in the categories that involved the use of DPL/DPR over time and Developmental model of sport participation (Cote et al., 2007), nine players displayed a disposition for early stage specialization. Of those nine players, six had more than 10,000 accumulated hours before becoming a professional, and three had less than 9,000 hours. Moreover, in the early stage specialization type, enjoyment of tennis as a game had been maintained to a high degree in the early period of learning. This was also observed in the transitional type. Furthermore, one transitional type player who had transitioned to tennis after having experienced various competitions and games had less than 4,000 accumulated hours when she became a professional player. Analysis of the family/coach types revealed that both strict and receptive characteristics were noted among parents and coaches, which appears to be connected to the maintenance of a player's motivation. Finally, common items were demonstrated with each player's distinguishing skill trends, and the possibility of a new interpretation was explained.

*Keywords: expertise, female athlete, tennis*

## Searching strategy in performing response selection task under time constraints

**Ryoji Onagawa, Masahiro Shinya, Kazutoshi Kudo (Graduate School of Arts and Sciences, The University of Tokyo)**

Decision making in sport is often performed under severe time pressure. For example, when a football player searches for pass courses, s/he decides whether to pass to a pre-planned pass target, or to spend more time to search for better options. In this situation, s/he needs to consider the trade-off on spending time to search: increase of gain by finding better option, and decrease of the gain by the pass target being covered by defenders while searching. Here, we developed a response selection task that mimics decision-making under time constraints, and investigated whether people can optimize their strategies under the time constraints. Eleven healthy graduate students chose one of four targets, each of them had different values (two, four, six or eight), presented on a screen. Three time constraints were set by using fast, middle, and slow discount function, in which the target's value decreased linearly to zero in 800, 1200, and 1600 ms after each participant's simple reaction time, respectively. If a participant spent 400 ms for searching and chose a target of six in the middle condition, s/he got four points (target value six was discounted by 33% (400/1200 ms)). Expected score was modeled as a function of time and optimal timing to maximize the expected score was

estimated. We then compared the observed participants' response timing with the estimated optimal timing. Based on the model, the participants should take enough time to search for the high valued target in the slow condition, which was exactly what the participants did. In contrast, in the middle and fast condition, estimated optimal strategy was to spend limited time for searching target and respond at earlier timing, whereas the participants spent more time. These results suggest that it is difficult to optimize their strategy under severe temporal constraints, at least without sufficient practice.

*Keywords: decision-making, statistical decision theory, visuomotor control, time pressure, optimality*

## **Factors influencing on exercise habits after having one's first child - Perspective of the value consciousness of sports and purposes of playing sports -**

**Ryo Konno (J.F. Oberlin University)**

The purpose of this research is to assess factors influencing on exercise habits after having one's first child from the perspective of one's value consciousness of sports and purposes of playing sports. The participants were 492 middle-aged persons. The survey contents were the value consciousness of sports, current and previous exercise experiences, and purposes of exercising. The characteristics of participants were 226 males and 266 females (the average age = 50.1 years old, SD = 4.09, age range = 38 – 65). The factor analysis on the value consciousness of sports (principal factor analysis, promax rotation) produced 3 factors: fair play, competence, cooperativeness, and their reliabilities and validities were assessed. Exercise habits were classified into 3 groups: high exercise habit group, low exercise habit group, and no exercise habit group. Both high and low exercise habit groups were further divided into 2 subgroups: 1) constant exercise group, those who continue to do regular exercise even after having their first children, 2) stopped exercise group, those who used to do regular exercise after completing their highest level of education but stopped doing so after having their first children. The results showed that men in the constant exercise groups had significantly greater value consciousness of sports than men in the stopped exercise groups, but women in these two groups did not show any difference on their value consciousness of sports. For both men and women, the constant exercise groups and the stopped exercise groups had significant differences in their purposes of playing sports.

*Keywords: exercise habit, after having one's first child, the value consciousness of sports, purposes of playing sports*

## **Stress-mindset, personal stress and psychological well-being: a multi-study paper**

**Ross Wadey (St Mary's University, Twickenham), Chris Wagstaff (University of Portsmouth), Stephen Mellalieu, Rich Neil (Cardiff Metropolitan University), Brendan Cropley (University of South Wales)**

Stress continues to receive significant research attention in the field of sport psychology (e.g., Neil et al., 2007; Fletcher & Arnold, 2017). Yet, while we have developed a more nuanced understanding of how athletes transact with the demands they encounter in competitive and organisational contexts, limited attention has been devoted to personal stress. In addition, researchers interested in stress in sport have typically focused on providing recommendations to eliminate or reduce the negative outcomes associated with stress; ignoring the possibility that stress can have beneficial outcomes for athletes' psychological well-being (PWB; Collins & MacNamara, 2012; Howells & Fletcher, 2015). Study 1 aimed to explore the relationship between personal stress and PWB. Participants (N=214; Mage=24.3 years) completed two measures: personal stress and Psychological Well-Being–Posttraumatic Changes Questionnaire (PWB-PCQ; Joseph et al., 2012). Data was analysed using Pearson product-moment correlation. Findings revealed a positive relationship between positive stress and PWB. Despite this novel and significant finding, we know little about who is more likely to experience greater PWB. Study 2 aimed to examine if stress-mindset moderates this relationship, which is defined as the extent to which one holds the belief that stress has enhancing consequences (Crum et al., 2013).

Participants (N=241; Mage=23.2) completed three inventories: personal stress, PWB-PCQ (Joseph et al., 2012), and Stress Mindset Measure (Crum et al., 2013). Data was analysed using hierarchical multiple regression. Findings revealed that stress-mindful moderated the relationship between personal stress and PWB. That is, athletes with a stronger belief that stress has enhancing qualities were more likely to experience greater PWB following personal stress. These findings have important implications for athlete well-being. Future research should examine how stress-mindset leads to improved PWB.

*Keywords: stress, well-being, growth, mindset*

### Performance optimization in competitive exams of Clinical Psychology: case study

**Rosana Llamas (University of Seville), Ana García-Dantas (University Hospital), Juan Tomás Escudero (Universidad de las Islas Baleares)**

There is ample evidence in the literature on the importance of psychological preparation for improvement in performance. If we take the definition of competition "test or set of tests in which a series of opponents struggle to win" and apply it to a CE (Competitive Exam), we understand that the opponents requirements are similar to an athlete's psychological demands, however we have not found studies about the efficacy of psychological intervention in CE. This study aims to assess the efficacy of a psychological intervention in the preparation of a CE (study/examination) from the same treatment that would be applied in a case of preparation for an athlete in competition (training/competition). The subject is 26 years old with a PhD in psychology, who was presented, for the second time, PIR (clinical psychology) opposition. Intervention was initiated on the basis of the demand of the subject "to the test in psychological conditions that favoured the maximum performance". It took place during 11 weeks prior to the exam, with a weekly session. Was divided into three phases: 1) evaluation and goal-setting; (2) cognitive-behavioral intervention to improve study habits and reduce obsessive negative thoughts related to the outcome. (3) elaboration of competitive routine (location of exam). We evaluated the efficacy by means of qualitative interview pre and post intervention. The preliminary phase showed high levels of activation, difficulties in planning that interfered with proper habits of resting and feeding, and catastrophic obsessive thoughts related to the outcome of the opposition. At the end of the intervention the applicant presented an optimal psychological state with a regulated routine, reduction of obsessive thoughts, greater self-confidence and optimum activation levels to perform properly. She passed the CE. As conclusion we recommend psychological intervention in candidates of CE in order to optimize performance.

*Keywords: sport psychology, competitive examination, performance, clinical psychology preparation*

### Progress and prospect of student water safety education

**Rong Fan, Yun Li, Hui Zhang, Bin Wang, Shi Luo**

Water safety education is universally accepted the best way to prevent drowning accidents. It is crucial for school safety education. After more than ten years study and practice, foreign water safety education has made great progress, however, the high rate of drowning accidents reflects the importance for further study about water safety education. This study discusses the concept ,content and mechanism of water safety education. The development of water safety skill has experience a series of stages, which include single swimming skill instruction, the transformation from swimming skill to water safety skill, and the modeling of water safety skill. Scholars have been trying to define water safety education from the instrumental perspective. Water safety skill and knowledge are developed constantly in order to improve students' water safety attitude and to reduce the influencing mechanism of water high risk behavior, which leads to a system of water safety education that needs to be completed. Literature review show that water safety education is realized through the command of water safety skill and knowledge. Students' water safety attitude and their

water high risk behavior are educated by water safety education. Therefore, water safety education is no longer restricted to instrumental perspective such as "survive, fitness or competition". It is very necessary to switch the educational concept to establish the integrated educational mode such as "skill, attitude, and behavior". Future study is suggested to change from practical use(lifesaving) perspective to mode construction: first the student water safety education mode is to be established as a foundation; second, water safety education experimental test need to be considered as method; third, water safety education hierarchical test standard is to be completed. The scientific water safety education mode is expected to be established in the future.

*Keywords: water safety education, mode, student, research progress, prospect*

### What is next? How young athletes experience the youth academy

**Rodrigo Salomão, Cristiano Barreira (University of São Paulo)**

In this research, the sport is approached as a cultural practice capable of mobilizing the subjectivation of its practitioners. Thus, young athletes compound their existential horizon by significantly considering their sports practice. Situated on career transition and aiming to understand how these athletes go through decisive moments and engage in sports activity, the purpose of this study is to identify and understand the horizon of lived experiences by young athletes belonging to young academy of two sports modalities (basketball and athletics). The phenomenological psychology of sport was adopted as a method. Through its rigorous process of data collection and analysis, the results can reach a descriptive character, based on phenomenological interviews and intentional cross. Therefore, it was made and transcribed 12 interviews, 6 of each modality. The results were described in 5 categories, such as existential decision, restrictions, commitment, values, athletic career and sports culture. They address essential and predominant aspects among practitioners of these modalities, as the constant tension of negotiation that circumscribes the daily life of these young athletes by circulating among commitments, training and leisure. This is a balanced approach to how conflicts, values and existential definitions appear decisive in these transition horizons. Consequently, it is possible to recognize and understand the structural elements of this experience that unfold essential psychological meanings by which these athletes will existentially guide themselves in their future. Admitting practical applications of the results, we highlight the relevant contribution to the technical committee that works with this public and especially sports psychologists who, based on this work, will be able to guide their interventions, taking into account lived and contextualized experiences in the youth sports universe.

*Keywords: young academy, sport psychology, phenomenological psychology of sport, youth sport*

### Psychology of sport and mental health: An experience with body practices

**Rodrigo Salomão, Telma Matos, Adriele Ishimoto, Luiza Figueiredo, Karoline Michalski, Cristiano Barreira (University of São Paulo)**

When reflecting on the relationship between mental health and quality of life, it is possible to consider benefits in several dimensions, such as physical, psychological and social rehabilitation, general improvement of physical fitness, valuable gains of independence and self-confidence by the realization of daily life activities, in addition to improve the self-concept and self-esteem of the practitioners. Taking into account mental health and quality of life, the regular practice of physical activity for psychiatric patients is much relevant. The purpose of this intervention was to offer corporal practices, based on a phenomenological perspective in Psychopathology and Sport Psychology, as a promotion and health resource aligned to the therapeutic proposal of the Community Group of Mental Health of the Day Hospital (HD) of Clinical Hospital of the Medical School of Ribeirão Preto – University of São Paulo. The patients are usually sedentary and complain about the side effects of the medication, such as muscle stiffness and weight gain. Phenomenological studies on the

corporeality in the varied psychopathological conditions should favor the recognition of the experiences to be unfold by these practices, aiming an integral improvement of the patients. Intervention activities occurred over 12 months, attending on average 16 psychiatric patients of the HD. A Physical Education professional (PE) taught the practical activities, also followed by three monitors (PE), and a Sport Psychologist. A phenomenological perspective in Psychopathology and Sport Psychology guided the methodological procedures. Aligned with a therapeutic work, these corporal practices seek to favor social support and inclusion, and the activities are surrounded by the valorization of subjectivity, mental health and personal experience.

*Keywords: body practices, psychology, phenomenology, sport psychology*

### **Child sport cohesion questionnaire: Cross-cultural adaptation and content validity to brazilian portuguese**

**Rodrigo Pieri (Universidade do Estado do Rio de Janeiro), Adriana Lacerda (Pontifícia Universidade Católica do Rio de Janeiro), Pedro Pires (Universidade Federal Fluminense), Alberto Filgueiras (Universidade do Estado do Rio de Janeiro), Livia Meireles (Universidade Federal do Piauí), Angela Donato (Universidade do Estado do Rio de Janeiro)**

Cohesion is a theory construct that has been studied in different contexts for some decades and group cohesion is an idea that tries to understand the kind of relationship established among individuals. Inside sports, cohesion can influence performance, communication, well-being and possible cases of drop-out. Since 1985 four instruments were developed in Canada to assess cohesion through sports team in different ages - Group Environment Questionnaire (1985), Physical Activity Group Environment Questionnaire (2000), Youth Sport Environment Questionnaire (2009) and Child Sport Cohesion Questionnaire (2013). In children's sports the development of group cohesion is pivotal to promote pleasure and well-being during practice. In this sense, the present study aims to present the cross-cultural adaptation process and content validity assessment of the Child Sport Cohesion Questionnaire to Brazil. This Canadian instrument assesses cohesion in 9-to-12 years old teams in two dimensions: social and task. The final version of the measurement, named in Brazilian Portuguese as Questionário de Coesão no Esporte Infantil, was produced by the following methodology: translation, synthesis, back-translation and content validity assessment by 5 specialist judges in the field in two criteria: pertinence towards the psychological construct and semantic understanding. During the process there was a constant concern about the cultural differences of both country involved, instrument original and adapted. The Content Validity Coefficient was used to measure judge's evaluations toward the two criteria. Results showed items adequacy regarding understanding (.90) and pertinence (.90) with two exceptions. The difficult in the instrument's adaptation was discussed in the lights of cohesion and group dynamics theories and both items were reviewed. It was concluded that the Brazilian translation of the questionnaire was adequate to be used in the target population to be validated.

*Keywords: cohesion, adaptation, content validity, sport, psychology, children*

### **Burnout in professional female soccer players**

**Roberto Ruiz-Barquín, Silvia María Bartolomé García, Ricardo de la Vega (Universidad Autónoma de Madrid)**

Burnout in sport has been analyzed mainly from a cross-sectional perspective, although longitudinal studies have increased in recent years (Cresswell & Eklund, 2006; Qusted & Duda, 2011). The objectives of the present study are: describe the characteristics of the Burnout in two differential moments of the season in professional and semi-professional female soccer players; analyze if there are differences of Burnout and the symptoms that compose it in the two different moments of the season. The sample is made up of 36 female soccer players aged between 16 and 31 years old ( $M=20.50$ ;  $SD=3.68$ ) belonging to two teams of a Professional

Soccer Club of the Autonomous Community of Madrid. The first team ( $n = 19$ ) plays in «1st female division» and the second ( $n = 17$ ) in «1st National». The instruments administered were: Personal and sport data questionnaire (Ruiz-Barquín et al., 2010) and the Burnout Inventory in Sportsmen (BDI, Garcés, 1999, 2004). The evaluations were carried out in February and May of 2015. The Wilcoxon W test and the Contingency Coefficient were applied in the statistical analysis. Burnout has been analyzed by prevalence analysis, based on the Total Burnout Index (TBI), and based on the "risk levels" associated with Burnout. The analyses show a low Burnout rate both in the first moment (5.6%) and in the second moment (2.8%). However, there are significant changes in Burnout symptoms at both times, as well as a trend towards statistical significance in risk levels ( $p < .10$ ). It was observed a lower realization with sports activity ( $p < .05$ ) and increases in Depersonalization levels ( $p < .01$ ) and in TBI ( $p < .05$ ). On the other hand, there are no changes in the Emotional Exhaustion factor. The results show the usefulness of analyzing the Burnout using different indexes of analysis and approaching it from a dynamic perspective (Quested & Duda, 2011).

*Keywords: burnout, soccer, longitudinal analysis, risk levels, total burnout index*

### Chronotype in judokas of high performance and sports technification

**Roberto Ruiz Barquín, Daniel Jimeno Ruiz, Alejo García Naveira (Universidad Pontificia de Comillas)**

The analysis of the chronotype (morning, mixed and evening) in athletes constitutes an important research line when it comes to predicting the moments of the day in which the people obtain a greater sport performance (García-Naveira, Locatelli and Ruiz-Barquín, 2015; Jarraya, Jarraya, Chtourou and Souissi, 2014). The objectives of the present study are to describe the chronotypes in high performance judokas and to establish possible differences in chronotypic according to the sport age category and sex category. The sample is composed of 24 judokas with ages between 14 and 25 years of age ( $M = 17.67$ ,  $SD = 3.28$ ), 17 men ( $M = 17.65$ ,  $SD = 3.34$ ) and 7 women ( $M = 17.71$ ;  $SD = 3.40$ ), distributed in three sports age categories (cadets,  $n=10$ ; juniors,  $n=9$ ; seniors= $5$ ). The evaluation instrument used was the Composite Scale of Morningness (CS). The results show that 23 judokas have a mixed chronotypic profile, and only 1 judoka has a morning profile. The analysis carried out according to the sport age category shows a gradual decrease in the CS scores (trend towards eveningness) to higher age sport category ( $p < .10$ ). Post hoc analyzes shows clear differences between cadets and seniors ( $p < .05$ ) and between juveniles and senior ( $p < .05$ ). Regarding the sex variable, it does not show significant results. The existence of a predominantly mixed profile could facilitate the adaptation of judokas evaluated in terms of the loads of training and competition in different time zones. Regarding the sports age category, it indicates the need to determine optimal training and competition schedules. Senior judokas could get higher training benefits for their higher performance during the afternoon (evening). The absence of differences according to the sex variable could indicate that the lifestyle and sports activity of high performance judoka is more determinant than the condition of being male and female.

*Keywords: cronopsychology, personality, judo, high performance, sports technification*

### Physical self-concept in runners: Changes during a training cycle in non-professional adult runners

**Roberto Aviles, Antonio Sanchez, Alberto Rodriguez, Raimundo Castaño, Jose Maria Fuentes, Salvador Perez, Sara Alonso**

Physical self-concept is a psychological variable with great influence on human behavior (Candel, Olmedilla y Blas, 2008; Contreras, 2010). The relationship between physical activity and physical self-concept has been well documented (Rodríguez, Goñi y Ruiz de Azúa 2006; Contreras, 2010). However this relation is not always stable throughout the life cycle (Moreno et al, 2013). This study sought to determine how a running



training plan in collective modality and carried out by a trainer modifies the perception of physical self-concept in adult non-professional runners that get involved in a training plan for the first time. The Physical Self-Concept Questionnaire (Cuestionario de Autoconcepto Físico – CAF) was administered to (N=) 18 subjects (13 W, 5 M) of adult age (37 – 42). The quasi-experimental Pre –Test/ Post – Test design was analysed through an analysis of the average scores and variances on the different scales of the questionnaire. The data collected were examined in ANOVA table and analysed with SPSS 11.5. The post - test obtained a high internal consistency between their items ( $\alpha = 0.895$ ). We observed positive correlations ( $p < .01$ ) among all the scales of the instrument employed. The training program was performed 3 days per week for 4 months: Tuesday session (strength & conditioning based on functional training (bodyweight) and flexibility; Thursday sessions: proprioceptive, aerobic/anaerobic intervals, core stability); and Saturday sessions (aerobic resistance). Training sessions were carried out on the street and at city parks. The results show that training program increased significantly all CAF scale levels ( $p < .01$ ) with the exception of strength scale ( $p < .05$ ). Physical attractiveness is the scale with the highest correlation with Post –Test CAF in adult non-professional runners ( $p < .01$ ) ( $r_{xy} = 0.829$ ). Our results show how a training plan can promote beneficial effects on the psychological condition of non-professional runners in adulthood.

*Keywords: physical self- concept, running, adult stage, mental health*

### The stability of mental toughness across situations: Taking a social-cognitive approach

**Robert Weinberg (Miami University), Joanne Butt (Sheffield-Hallam University)**

The present study adopted a social-cognitive perspective to explore the stability of mental toughness using the cognitive-affective processing system model. (Michel & Shoda, 1985). Specifically, the purpose of this study was two-fold: (a) to explore possible fluctuations in mental toughness across situations; and (b) to identify the cognitions, affect, and behaviors associated with perceived mental toughness and mental weakness. Participants were tennis players ( $n=12$ ) based full time in an elite performance academy and were aged between 14 and 20 years ( $M_{age} = 16.5$ ;  $SD = 2.66$ ). Players were interviewed and transcribed interviews were analyzed using a thematic analysis (Braun & Clarke, 2006). Three researchers searched for themes across the interview data and reached consensus on the coding of raw data and subsequent categorization of data into themes. Players identified a variety of competition (e.g., opponents, pressure) and training (e.g., consistency, intensity) related situations requiring mental toughness. Findings indicated that players could be mentally tough in some situations but mentally weak in other situations suggesting that mental toughness can fluctuate. In addition, players identified different cognitions, affect, and behaviors when they perceived mental toughness and mental weakness. For example, mentally tough facilitative cognitions included positive thinking, belief in self, and task-focus whereas mentally weak cognitions included doubting self-thoughts, distracting thoughts, and a focus on outcome. Mentally tough behaviors included high effort, focused decision-making and assertive play, whereas mentally weak behaviors included decreased effort, negative body language and poor strategy. Coping strategies included being relaxed, maintaining confidence and focusing on task-relevant cues. To conclude, it is anticipated that findings generated can be used as a platform to develop context-rich mental toughness training interventions.

*Keywords: mental toughness, stability, social cognitive*

### Does passion predict exercise addiction? A study in team- and individual sports

**Rita Kovácsik (Eötvös Loránd University of Science)**

Limited new empirical evidence suggests a robust connection between passion, especially obsessive passion and exercise addiction. The aim of the current inquiry was to examine the relationship of obsessive- and harmonious passion to exercise addiction specifically in people practicing team- and individual sports.

Athletes ( $n = 190$ , 59% of them were women and 41% men, mean age =  $22.94 \pm SD = 4.64$  years) represented six sports, three team- (cheerleading, soccer, and basketball;  $n = 92$ ) and three individual sports (running, gymnastics, and kettlebell;  $n = 98$ ). Participants completed the Exercise Addiction Inventory (Terry, Szabo, & Griffiths, 2004) and the Passion Scale (Vallerand et al., 2003). A multiple linear regression revealed that both obsessive- and harmonious passion were strong ( $p < .001$ ) predictors of exercise addiction and together accounted for 39% of the variance in it. Separate regressions for team and individual sports, revealed that passion accounted for 25% of the variance in exercise addiction in the former, but for twice as much in the latter (50%). However, albeit significant, harmonious passion had only a weak contribution in both cases (4 - 3%). The prevalence of exercise addiction in team- and individual sports' athletes were identical (15%). Athletes in team sports scored higher on harmonious passion than those in individual sports ( $p < .001$ ). All psychological measures correlated with the weekly hours of exercise ( $p < .001$ ), which, nevertheless, was not a predictor in the model for exercise addiction. The findings support the emerging empirical results suggesting that exercise addiction is largely determined by obsessive passion. They expand the extant knowledge by distinguishing the predictive power of obsessive passion within the team- and individual sports. The study also supports recent findings that athletes in team sports report greater harmonious passion than those practicing individual sports.

*Keywords: athlete, compulsive exercise, exercise dependence*

## The influence of sport participation on psychological states of an athlete with an acquired impairment

**Rika Sekiya, Hiroshi Sekiya, Chiaki Raima (Hiroshima University)**

Athletes with an acquired impairment have been paid less attention compared to other athletes in sport psychology. The purpose of this study was to investigate the influence of participating in sport after injury on psychological states of an athlete with an acquired impairment using a qualitative method. A semi-structured interview was conducted with the athlete with an acquired impairment (female; age = 23 years; competitive experience in para-sport = 5 years). Verbal data were analyzed with the Trajectory Equifinality Model that enabled us to describe important events and psychological states in three phases of her life. Before the injury, she had a fun life with common troubles. After the injury, she always had suicidal thoughts. However, she started playing sport after watching a DVD about para-sport that was recommended by her attending physician. After the day of starting sport to the present, she received encouragements from her teammates and coaches who didn't discriminate against impairment and became to enjoy an active life. On the other hand, she has been frustrated by some coaching guidance policies that promote continuation of playing sport rather than achieving excellence in results. Taken together, she became positive after participating in para-sport because she received social support such as encouragements from people around her, although she requires further improvement in attitude of surrounding people.

*Keywords: psychological change, psychological states, athlete with an acquired impairment*

## Preliminary validation of the implicit scale of conceptions of sports ability on the Chilean context

**Ricardo Martínez- Romero (Autonomous University of Barcelona, Spain and University of Concepción, Chile), Hugo Aranguiz Aburto, Oscar Herrera Gacitua, Jorge Salazar Espinoza (University of Concepción, Chile)**

The conceptions that people has, influence directly on their behavior, can be subject and influenced by internal or external attributes. The objective is to identify, in a preliminary way, the scale of implicit conceptions of sports ability in the Chilean context (Conceptions of the Nature of Athletic Ability Questionnaire). The study was descriptive, correlational and cross-sectional, with a sample of 126 university students (18-26 years), from the Universidad de Concepción, Chile. The scale of implicit conceptions of sports

ability applied, presents 12 questions distributed in two dimensions: fixed and incremental. On this study the validated version in Spain was adapted to the Chilean context with previous revision of experts from the areas of psychology, physical education and methodologists. The instrument has a Likert scale, with a minimum score of 1 point (Never) and a maximum of 5 points (Always). The overall results are  $3.63 \pm .37$ , while in the fixed dimension it was  $2.47 \pm .71$  and in the incremental  $4.79 \pm .28$ . On the other hand, the analysis of the Cronbach presented a score of .62, while the fixed and incremental dimension obtained indices of .75 and .49, respectively. The Kaiser-Meyer-Olkin (KMO) sample adequacy showed a value of .74, indicating that it is acceptable and less likely that a question is explained by more than one factor. The results showed four factors, where the first factor brings together all the items of the incremental dimension, while the items of the fixed dimension are distributed in the three remaining factors. The conclusions show that the internal consistency proved to be acceptable and presents implications from the theoretical-practical point of view, since knowing the type of sports conception will improve the physical, technical and motivational capacities, improving the results in the trainings and in sports competitions.

*Keywords: sport, conception, skill, incremental, university students, fixed*

### Type of sport, practice time and self-efficacy among university students

**Ricardo Martínez- Romero (Autonomous University of Barcelona, Spain and University of Concepción, Chile)**

Self-efficacy is the judgment that each person has over their own abilities, based on what they organize and execute to achieve the desired performance (Bandura, 1987). It has been much studied by psychology, being a determining factor in the behaviors and responses of individuals. The aim of this study is to characterize and relate the type of sport, the time of practice and the self-efficacy in university students. The study was descriptive, correlational and cross-sectional. It was carried out with a sample of 126 university students from the Universidad de Concepción-Chile (18-26 years). The Spanish version of the general self-efficacy questionnaire, validated in Chile (Cid, Orellana & Barriga, 2010), consisting of 10 items with a Likert scale, minimum of 1 point (Never) and a maximum of 5 points (Always) and two questions: the type of sport (individual or collective) and practice time (years). The results show that the practice time in individual sports is  $6.01 \pm 1.56$  and collective  $8.31 \pm 0.95$  and the total of  $7.80 \pm 0.83$ . The self-efficacy in individual sports is  $4.02 \pm 0.36$  and collective  $4.26 \pm 0.01$  and the total  $4.21 \pm 0.22$ . The variables does not present levels of significance at 1% and 5%, which reflects that there are no relationships. The analysis identifies that the practice time is about seven years, reflecting the commitment to sports practice, even with the academic responsibility to study higher education. Likewise, self-efficacy is close to the maximum score with a low standard deviation, which implies positive feelings and success in the execution of the tasks, which influence the emotional and behavioral reactions in the development of the sports competitions (Bandura, 2001). These results could be useful for the beginning of future interventions that allow to extend the design of the sports demands in this population, identifying other characteristics that contribute to the improvement of the performance and sports result.

*Keywords: self-efficacy, individual, time, sport, collective, students, university*

### Satisfaction of basic needs and associated coping strategies. A study in a sample of Spanish soccer players

**Cecilia Peñacoba Puente, Patricia Catalá Mesón**

Since 1980s, research on coping within sports psychology has increased exponentially. The definition of coping as a process and the need to contemplate specific situational variables has led to the study of the relationship between satisfaction of basic needs and coping strategies of athletes. In this context, the aim of this study is to analyze the relationship between the three basic needs (autonomy, competence and

relationships) and coping. In addition, given the need, pointed out by some authors, to consider the perception of coping effectiveness, in addition to its use, both indicators have been taken into account: effectiveness and use. The sample consisted of 562 soccer players aged between 12 and 19, all belonging to teams from the Community of Madrid. In this study, data was collected using the Basic Psychological Needs Satisfaction questionnaire (PNSE) and the Approach to Coping in Sport Questionnaire (ACSQ- 1). The results showed that the need for competence was positively associated with most coping strategies (except with the use of mental withdrawal and risk behaviors that maintained a negative association). Regarding effectiveness, positive correlations were observed in all cases, except for mental withdrawal. Regarding autonomy, there were significant positive correlations with regard to the use of certain coping strategies (i.e., mental withdrawal, risk behaviors, and seeking social support). Finally, with regard to social relations, there are significant positive correlations with the use of emotional calm, cognitive restructuring, risk behaviors and search for social support, and with perceived effectiveness of cognitive restructuring and risk behaviors. Results pointed to differential relations between the need that the player intended to cover and the use of certain coping strategies. However, perceived effectiveness of coping seemed to be less associated with the type of need that is intended to cover than the use of coping.

*Keywords: basic needs, coping, soccer*

### Temporal patterns of U-15 soccer players' moods

**Ricardo Marinho de Mello de Picoli, José Lino Oliveira Bueno (FFCLRP-USP)**

The aim of this study was to examine mood changes in U-15 soccer players which occurred during a competitive season. Processes like mood decay and the influence of expectation for the game were investigated, as well as the influence of context in the athletes' mood variations. Eighteen young players ( $15.4 \pm 0.266$  year-old) from a Brazilian soccer club participated in this study. For the assessment of players' mood, a short form of Lista de Estados de Ânimo Presentes (LEAP – Present Mood List) was used, applied forty minutes before some training sessions and matches. LEAP is a Brazilian instrument constructed to measure forty different moods, grouped in twelve factors, at the moment of the response. Presence values of each LEAP's Factor were calculated for each participant in each event. The data were collected in three weeks (interval of time of one match to another) of the competition and in types of events: prior to the last training session before the match, at a few moments before the match and prior to the first training session after the match; to the analysis of the time course of moods. Results have shown temporal patterns of mood changes. LEAP's Factors II (Fatigue), VII (Interest) and XII (Serenity) changed in function of time course, allowing the analysis of mood decay process and the influence of the expectation in these changes. Also, some moods showed different patterns in function of a given time interval (Factors IV – Limerence/Empathy and VII – Interest), as well as different presence values in these time intervals' comparison. Moreover, Factors III (Hope), V (Physiologic) and XI (Receptivity) have shown patterns of mood changes in function of time course in different intervals of time. The importance of including temporality as an influential variable in neurobiological models is noteworthy, especially in the investigations about subjective aspects like mood.

*Keywords: mood, soccer, time course, sport psychology*

### ESC Project: Are we influenced by strangers' physical activity and sedentary behaviour? A Randomized Controlled Trial

**Ricardo Gonçalves, Rui Batalau, Joana Cruz (Centro de Investigação em Desporto e Educação Física (CIDEF), Manuel Teixeira Gomes Institute – Portugal), Antonio Palmeira (Interdisciplinary Centre for the Study of Human Performance (CIPER) – Faculty of Human Kinetics, Universidade de Lisboa – Portugal)**

Research has found that people are more active when their significant others are, suggesting that this behaviour can be "contagious". However, social contagion through unfamiliar people is not well known. So, the aim of this randomized controlled trial was to analyze the association between social contagion through strangers and PA and SB bouts. Data from the ESC project were used. In total, 142 adults were randomly allocated in four groups: a) control group, primed with videos about healthy nutrition; b) Brochure Group, primed with brochures about PA and SB; c) PA Group, primed with strangers (staff members) talking about PA, ten people doing PA (prepared actors) and videos about PA; d) SB Group, the same intervention as PA Group, but SB priming instead of PA. Participants PA and SB were measured by Actigraph (wGT3X) accelerometers for seven consecutive days, one week before, one week after, and three months after the intervention. The number and duration of SB bouts (<100 counts/minute) lasting 1-14, 15-29, and  $\geq 30$  consecutive minutes, and of Moderate-to-Vigorous PA (MVPA) bouts ( $\geq 1952$  counts/minute) lasting  $\geq 10$  consecutive minutes were calculated. Repeated measures multivariate ANCOVA, using gender as covariate, was used. Results show that the PA brochure decreased 1-14 min SB bouts daily duration (less 12%) in the following week (all  $p < .001$ , large effect size). Nonetheless, this effect is overturned after three months (all  $p < .001$ , large effect size). Regarding  $\geq 10$  min MVPA bouts, both groups primed with PA decreased their daily duration in the following week ( $p = .011$ , medium effect size). The use of brochures to promote PA may not be beneficial. Additionally, the interventions with strangers did not affect activity levels in this exploratory study. More studies are warranted to confirm these results.

*Keywords: strangers, priming, social contagion, physical activity, sedentary behaviour, adults*

### **Teacher evaluation based on student performance, well-being and ill-being in physical education teachers: Self-determination motivation as mediator**

**Ricardo Cuevas (University of Castilla-La Mancha), David Sánchez-Oliva (University of Lisbon), Juan Gregorio Fernandez-Bustos (University of Castilla-La Mancha), Héctor Moreno-Casado (University of Extremadura)**

The use of teacher evaluation based on student performance use has been spread considerably in different countries in the last years. In addition, the impact of this kind of evaluation on the teachers' psychological health has been understudied. Thus, using Self-determination theory as a framework, the aim of this study was to examine different types of teacher motivation as possible mediators between the pressure caused by assessment based on student performance and the teacher psychological well-being and ill-being. For this objective, 360 Spanish PE teachers of secondary education (230 men and 130 women), aged between 23 and 61 years filled a questionnaire that assessed perceived pressure due to student performance, self-determination motivation (autonomous, controlled, and amotivation), subjective vitality (as indicator of well-being), and exhaustion (as indicator of ill-being). For the mediation analysis the bootstrapping technique was used. The results showed that the total indirect effects between pressure for the evaluation and well/ill-being were significant. However, when examining specific indirect effects, it was seen that these effects were not significant for autonomous and controlled motivation. Only amotivation mediated the negative indirect effect from pressure on vitality, and the positive indirect effect of pressure on exhaustion. These data indicates that perceived pressure resulted in higher levels of exhaustion and lower levels of vitality via increased amotivation. Because of a lack of previous studies that analyse the relations between these variables, this finding is particularly useful to understand the processes that affect to the teacher psychological well-being.

*Keywords: evaluation, school, bootstrap, vitality, exhaustion*

## External focus of attention and autonomy support have additive benefits for motor performance in children

**Reza Abdollahipour (University Olomouc, Czech Republic), Miriam Palomo-Nieto (University Olomouc, Czech Republic & Technical University of M, Rudolf Psotta (University Olomouc, Czech Republic), Gabriele Wulf (University of Nevada Las Vegas, USA)**

The purpose of this study was to examine the combined effects of external focus instructions and autonomy support on motor performance of children. In addition, we sought to provide evidence for an increased focus on the task goal under the external focus condition by using an inattention blindness manipulation. Thirty-six children (mean age: 8.5, SD: 1.3 years) were asked to perform a bowling task with their dominant hand. In a within-participant design, each participant performed 8 trials under external focus (path of the ball), internal focus (hand), or control conditions. In each attentional focus condition, they performed half of the trials under a choice (autonomy support) condition, in which they were able to choose among 4 bowling balls, and a no-choice condition (white ball). Both attentional focus and choice/no choice conditions were performed in a counterbalanced order. The external focus instruction resulted in greater bowling accuracy (i.e., more pins knocked down) than internal focus and no instructions (control). Furthermore, choice resulted in more effective performance than no choice. Thus, both factors had additive benefits for performance. There was some evidence for an increased task focus in the external condition. The present results show that, within the same individuals, instructions to adopt an external focus and providing them with a small choice contributed independently to enhance motor performance in children.

*Keywords: choice, bowling, inattention blindness*

## Attribution for success and failure of student athletes

**Martina Jurkovic, Renata Baric, Rebeka Prosoli (Faculty of Kinesiology University of Zagreb)**

Success and failure are an integral part of the sport and everyday life of the athletes. Because of that, the goal of this study was to investigate how student athletes explain the causes of their most and least successful performance in their sports career. We examined how these reasons differ for success and failure, between male and female students and according to the type of sport (individual vs. group). Participants were 194 students from the Faculty of Kinesiology, University of Zagreb (Nw=77, Nm=117). For measuring attributions, we used Weiner attribution model and CDS II scale (McAuley, Duncan & Russell, 1992). The results showed that participants make more internal, stable and personally controllable attributions for success than for failure. Differences between male and female students were obtained only on the locus of control dimension for failure where women attributed their failures significantly more to internal factors. There were no significant differences in attributions considering the type of sport. We also analyzed the reasons stated by the athletes and concluded that, for the most successful competition performance, 59 % of the reasons can be categorized as mental preparation, 24 % can be categorized as physical preparation, 8 % of the reasons are related to effort, 5 % of the reasons are connected with support from others (coach, teammates...), 1 % are connected with good luck and 3 % can be categorized as other reasons. For the least successful competition performance, 56 % of the reasons can be categorized as mental preparation, 11 % as lack of support/pressure from others, 10 % were connected with fatigue/injury/sickness, 9 % were about physical preparation, 3 % were connected to having a bad day, 2 % with inexperience and 9 % of the reasons can be categorized as other. These results can help further understand athletes' perceptions about the reasons connected with their success and failure.

*Keywords: reasons most successful, least successful, achievement*



## Preliminary results of a systematic descriptive bibliographical review on the measurement of sport performance in sport psychology

**Raúl Barrios, Damián Ursino (Universidad de Buenos Aires)**

Sports performance is a polysemic term and sensitive to sports discipline. The published scientific literature does not present a consensus in its operationalization making it difficult to measure it with the different psychological factors. The aim of the present poster is to present the preliminary results of a bibliographical study on psychological factors and sports performance. The study consists of a general description of bibliometric aspects and an analysis of the different ways of measuring sports performance. A systematic descriptive review was conducted in seven academic searchers. Each of the descriptors combined a psychological factor (anxiety, self-confidence, concentration, motivation, and self-efficacy) and the term "sports performance" (in English and Spanish). The filters implemented were: a) publication period from 2006 to 2016, b) journal articles, and c) Spanish, English or Portuguese language. Inclusion-exclusion criteria consisted of: a) empirical studies b) studying some psychological factor and c) measuring sports performance. A pre-selection of 79 documents was made from the reading of titles and abstracts. The final selection includes 60 articles selected from the complete reading of them. The documents were analyzed by the IBM SPSS in its version 22. The most investigated sports correspond to sports with cooperation and opposition (50%) and they turned out to be Basketball (13%), Volleyball (13%) and Football (11%). Besides, the most used sports performance measurement methods were the ad-hoc observation instruments (32%) and competition scores (23%). Measurements by data from institutional sources, as well as measurements by ad-hoc observation instruments, are more frequent in cooperation and opposition sports. In addition, the use of competition scores measures is more frequent in sports without cooperation or opposition. Finally, the only three studies using psychometric instruments were used in non-cooperative sports with opposition.

*Keywords: sport performance, systematic review, psychological factors, sport psychology*

## Motives for the practice of physical activity and the impact on subjective well-being in older adults

**Raul Antunes, Nuno Couto, Diogo Monteiro, João Moutão, Luís Cid (Sport Science School of Rio Maior (ESDRM-IPSantarém), Research Center in Sports Sciences, Health and Human Development (CIDESD))**

The inherent reasons for human involvement in an activity have been broadly studied, since it is one of the constructs with the most influence on behavioural maintenance throughout the time. This issue is particularly important in physical activity context if we consider the low adherence to this behaviour all over the world, assuming particular relevance in the European elderly population. This way, the main goal of this study consisted in an analysis of the impact that the motives that lead to the practice of physical activity in older adults can play on the variables that constitute subjective well-being (satisfaction with life and affect) through a structural equations model. With regard to the analysis of differences in these variables' levels according to the amount of physical activity practiced (IPAQ categories: Low; Moderate; High), through one-way anova test, complemented by a tukey post-hoc test. Participants included 300 older adults (n=300), including 238 females and 62 males, aged between 60 and 90 years old (M = 68.59; SD = 6.54), of Portuguese nationality who practice differing levels of physical activity. The results enable us to conclude that the motives for the practice of physical activity have positive effects on the perception of satisfaction with life and on affect. On the other hand, the analysis of the differences in the level of subjective well-being (satisfaction with life and positive and negative affect) according to the amount of physical activity practiced verified that there seems to be a progressive effect of physical activity on the perception levels of satisfaction with life and positive affect, and respectively, the cognitive and emotional dimensions of subjective well-being.

*Keywords: aging, affect, satisfaction with life, physical activity*

### Validate the satisfaction of the sports services: UANL, México

**Raquel Morquecho Sanchez, Verónica Morales Sánchez, Jose Alberto Perez García, Juan Carlos Gonzalez Castro, Erika Gadea**

In the actuality it is the great importance in the Mexican universities the management of the sports facilities, this is link with the competitiveness of the organization and the user satisfaction. The sports organizations has taken this challenge and have the propose to better the conditions of the internal organization, executing actions in the facilities, as well as in the personal, with the propose to enhance the satisfaction of the services that they offer. In this context, the Universidad Autónoma de Nuevo León (UANL) counts with great offer of sports installations and physical activities programs. The present investigation has the propose of validate the satisfaction of the sports services in the UANL. This design of this investigation is descriptive, through a stratified sample. The instrument used in this investigation was the Cuestionario de Evaluación de la Calidad Percibida en Organizaciones de Servicios Deportivos Universitarios (QUNISPORT v.mx); Which is composed of 5 factors (1. Functionality and comfort of university sports areas, 2. Interaction with the Coach, 3. Management of sports services, 4. Characteristics of the program of sports activities and 5. Measure environment and comfort of bathrooms And dressing rooms); the sample was integrated for 357 participants Of both genders, 156 men and 195 women, lost values, divided in a range of age between 14 and 61 years, all users of the facilities in the university. Between the more significant results show that the human factor is determinant for the user satisfaction, in special the coaches, being an direct contact of the organization with the users during the process of the presentation of the service. We concluded that the university sport organization should establish strategies based in the continuous improvement, through the client satisfaction, because the quality of the sport service, is not defined by the organization, but bye the own users.

*Keywords: satisfaction, sports services, user, university*

### In the UCA fair play. The sport education

**Teresa García Valderrama, Antonio Yébenes Montoro, Rosario Navarro Durán, Rafael Rivas Caballero (University of Cádiz)**

The University of Cadiz (UCA) is committed to education and training through sport. To this end, the Vicerectorate of Social Responsibility, Cultural extension and services, by its Sports Service, created in 2008 the program "In the UCA Fair Play, The sport education" (Sport educates through fair play). This ambitious program establishes an ethical frame of reference for university sports: The "Decalogue of the Fair Play" and its instrumentalization through the application of additional points in the scores. These additional points are established for each match, two ways: positive points (if there are not sports sanctions), or negative points (in case of higher-level penalties). So with the implementation of these points has been possible the decline in almost 85,4% of sports sanctions (in football and indoor football matches). Also, the teams have changed the way they had to work, through the putting out of the players that cause problems or with non-sporting behavior. This program has been implemented in a few sports organizations, committed to fair play (Sports Games in town council of Cadiz and Andalusian zone championships). So, it obtaining over the years various prizes at local, regional, national and international level: Andalusian Sports Prize, 2009; City of Cádiz Award for Sports, 2010; National Sports Prize "Joaquín Blume Trophy", 2010; World Fair Play Diploma of the International Fair Play Committee, 2011; Best Sports Program in Andalusia. AGESPORT (Andalusian Association of Sport Managers) 2015 All the program information in [www.uca.es/deportes/campana-la-uca-juega-limpio](http://www.uca.es/deportes/campana-la-uca-juega-limpio)

*Keywords: fair play*

## The impact of the sports climate generated by the coach in the goal orientation of university athletes

**Rafael Peñaloza Gómez (Universidad Nacional Autónoma de México), José Carlos Jaenes (Universidad Pablo de Olavide), María del Pilar Méndez Sánchez (Universidad Nacional Autónoma de México), Mirna García-Méndez (Universidad Nacional Autónoma de México), Nancy Ponce-Carbajal (Universidad Autónoma de Nuevo León), José Alberto Calva-Franco (Universidad Nacional Autónoma de México)**

Goal orientation is an approach to the study of people's motivation and has been defined as the mental structure through which individuals interpret and respond to goal situations (Cáceres, 2005, Cáceres-Alvarado, 2013); different theories have divided the goal orientation in two or three dimensions, in the latter case, they differentiate between master's goals, goals of approximation and avoidance of performance; these forms of giving meaning to the execution are of vital importance in the sport and in young people, can be influenced by contextual variables such as the athletic climate that generates the trainer during the competitions and trainings (Salinero, Ruiz & Sánchez, 2006), this sport climate can be characterized by how the coach supports the autonomy of the athlete, which has been related to avoidance of negative experiences, self-efficacy, among other variables (Appleton, & Duda, 2016, Hung, & Wu, 2016). For this reason, the objective of the present work is to analyze if there is an impact of the sports climate, in the different dimensions of the goal orientation of youth athletes. Participants included 150 university athletes from Mexico City who answered two instruments, the Three-Dimensional Questionnaire on Achievement Goals (Cáceres-Alvarado, 2013) and the Sports Climate Questionnaire (Deci, & Ryan, 2000). The analyzes showed the internal consistency of the scales (Tridimensional Goal of Achievement Questionnaire,  $\alpha = .870$ ; Sports Climate Questionnaire,  $\alpha = .917$ ), in addition, it found significant regression values of the Sports Climate on the Master ( $R^2 = .27$ ,  $p < .05$ ) and on performance avoidance ( $R^2 = .36$ ,  $p < .05$ ). These findings demonstrate the importance of coaching behaviors aimed at supporting autonomy in their teams, especially the impact on athletes' reactions to goal situations.

*Keywords: sports climate, goal orientation, motivation, coach*

## Understanding the relationship between mental illness and sport: A life history perspective

**Rachel Jewett (University of Toronto)**

Mental illness remains a significant health concern and evidence suggests that athletes are not immune from experiences of mental illness (Gulliver et al., 2015). Although sport participation has been associated with psychological benefits, when participation reaches competitive levels it can become entangled with stressors such as injury, performance pressures, and vulnerabilities such as developing a strong athletic identity and early retirement (Storch et al., 2005; Lavalley & Robinson, 2007). These stressors may influence an athlete's experiences with mental illness. A life history methodology was used to explore an elite athlete's experience with mental illness. This perspective allowed for the exploration of phases of the athlete's sport career, including transitions to different training environments, working with different coaches, periods with injury, and retirement. The participant was a female former national and collegiate athlete in her mid-twenties, was one year post-retirement from sport and had been diagnosed with an adjustment disorder with depression and anxiety. Seven interviews were conducted which produced nine hours of recorded material. Data analysis involved an iterative process of reviewing transcripts with the participant to develop initial interpretations and then a thematic analysis. The participant developed a strong athletic identity and enhanced self-confidence during her sport career which, coupled with a damaging interpersonal relationship, contributed to a period of identity loss and mental health challenges post-retirement from sport and graduation from university. The findings from this study lead us to question whether the significant support and free access to services provided to sports stars within the collegiate system potentially leaves such individuals vulnerable to feelings of

isolation and helplessness once outside of the collegiate-athlete bubble and thus contributed to challenging transitions out of sport.

*Keywords: mental health, sport, life history, elite athlete*

### **A systematic review and meta-analysis of randomised control trials to promote physical activity via dyadic interventions**

**Rachel Carr (Curtin University, Perth, Australia), Andrew Prestwich (The University of Leeds, England), Eleanor Qusted, Cecilie Thøgersen-Ntoumani, Daniel Gucciardi, Dominika Kwasnicka, Nikos Ntoumanis (Curtin University, Perth, Australia)**

Physical activity (PA) is known to be associated with health benefits including reductions in risk of chronic diseases (e.g., diabetes, bone and joint diseases, cancer) and depression (Warburton et al., 2006, 2010). Individuals usually attempt to change their PA (or refrain from doing so) while embedded in social networks with friends, romantic partners and family (Scholz & Berli, 2014). Most of the research on the role of social influence has explored individual/group level effects or how one person can support someone else to increase their PA (e.g. Knoll, Hohl, Keller, Schuez, Luszczynska & Burkert, 2016). There is lack of research evidence additionally exploring interventions that aim to change the PA behaviour of a dyad (e.g. parent-child, romantic partners, friends). Transactive goal dynamics theory states that a given dyad are not two independent agents, they share resources and goals (Fitzsimons, Finkel & vanDellen, 2015). This systematic review and meta-analysis focuses on the effectiveness and utility of dyadic randomized control trial interventions (RCTs) to promote PA. Medline, Psycinfo and Web of Science were searched using terms relating to “dyad”, “RCT” and “PA”. This study also explores whether any observed effects of dyadic interventions on PA vary as a function of the type of dyadic relationship; the quality of the study; or the type of PA measured. This review analyzes whether the type of goals promoted (e.g. whether they target one dyad member or both) alters the effects of dyadic interventions on PA. Preliminary data from 58 studies indicate the effect size of dyadic interventions on PA is small but moderator analyses indicate that dyadic interventions work better in certain contexts/populations. Initial results show that when dyad members have simultaneous goals for their own PA they achieve the greatest effect size. The findings of the review will inform future dyadic interventions for PA promotion.

*Keywords: dyads, systematic review, meta-analysis, randomised control trials, physical activity, interventions*

### **Encouraging older adults with a disability to participate in sport and physical activity: An examination of the Inspire and Include project**

**Rachel Arnold, Jessica Francombe-Webb (University of Bath), Sean Smith (Age UK)**

Inspire and Include is a project designed to encourage older (age 50+) adults with a disability (OADs) to participate in sport/physical activity. It involves the delivery of various adapted activities, supported by trained volunteers and project partners. The study presented will provide an overview of the project and then an evaluation of its impact. The project was implemented by ten local Age UK partners, with 346 OADs (118 male, 199 female, 29 not reported) participating in this study. Participants were asked to complete questionnaires at four time-points: the start of the project, 10-weeks, 20-weeks, and 1-year post. Questionnaires assessed sport and physical activity participation, choice and accessibility of sport and physical activity, experiences (e.g., enjoyment, others' awareness of issues faced by ODAs when participating), health (e.g., physiological measurements and subjective ratings), and well-being. Using unconditional latent growth models, the findings showed a significant positive average rate of change in the number of active pursuits (0.089,  $p < .01$ ), enjoyment of activities (0.365,  $p < .001$ ), and perceptions of general health (0.120,  $p < .001$ ), sleep quality (0.093,  $p < .001$ ), energy levels (0.084,  $p < .001$ ), strength (0.064,  $p < .01$ ), flexibility (0.066,  $p < .01$ ), mental well-being (0.090,  $p$



<.001), life satisfaction (0.420,  $p < .001$ ), and others' awareness of the issues faced (0.332,  $p < .001$ ) across the four time points. Furthermore, a significant negative average rate of change was demonstrated in body mass index (-0.260,  $p < .01$ ) and waist circumference (-5.072,  $p < .01$ ) across the first three time points. Rates of change in the frequency/duration of active pursuits, perceived barriers, and other physiological measures were non-significant. These findings offer a number of important recommendations and implications, which will be presented, for those wishing to enhance activity participation across the lifespan and within specific populations.

*Keywords: ageing, disability, exercise, inclusion, physical activity, sport*

## **The relationship between athletes' gratitude and subjective well-being: The mediating role of perceived social support**

**Qi Luo (Wuhan Sports University)**

Traditionally, research in psychology has focused on the study and prevention of psychopathology. With the increased popularity of positive psychology, researchers have shifted their attention to examining the development of personal strengths and competencies. A hot research topic within the positive psychology movement was well-being. In recent years, a very large body of evidence has emerged, suggesting that gratitude was strongly related to all aspects of well-being. However, the underlying mechanisms between gratitude and well-being have rarely been examined for athletes. Thus, the current study aimed at investigating the mechanism underlying the relationship between gratitude and athletes' well-being. We proposed that the perceived social support would be an important mediator. A sample of 483 Chinese elite athletes (47.2% female, mean age=19.24 years,  $SD=3.99$ ) was recruited to complete athlete gratitude questionnaire (Chen, 2012), athletes' subjective well-being questionnaire (Jiang, 2013), perceived available support in sport questionnaire (Freeman, 2011). Regression analysis indicates that gratitude and perceived social support significantly positively predict athlete's well-being ( $\beta=.24$ ,  $t=6.12$ ,  $p < .001$ ;  $\beta=.52$ ,  $t=4.43$ ,  $p < .001$ ), altogether explaining its 44% variance. Structural equation modelling has been used to analyse the mediating effect of perceived social support, indicating that perceived social support partially mediates the relationship between gratitude and well-being. The mediating effect size of perceived social support is 0.23. The ratio of the mediating effect to total effect is 49%. To sum up, we could draw the conclusion that gratitude could help athletes to perceive more social support and thus gain higher level of well-being. Lastly, practical implications are discussed in term of gratitude intervention, such as gratitude lists, gratitude contemplation.

*Keywords: gratitude; subjective well-being; perceived social support*

## **Differences in sensomotor coordination as a function of team games**

**Pooja Rawat, Jayashree Acharya, Shipra Srivastava (LNIFE)**

The purpose of the study was to analyze the sensomotor coordination (SMK) among various team games. The 60 subjects (Basketball-15, Volleyball-15, Hockey-15, and Soccer-15) were selected on the bases of purposive sampling from Lakshmibai National Institute of physical education, Gwalior, India. Their age ranged between 17-24 years with a mean and  $SD$  of  $20.73 \pm 2.78$ . Vienna test system (VTS), a leading computerized psychological assessment tool was used for measuring sensomotor coordination. The Vienna Test System SPORT is perfectly designed for sports psychology assessment. The psychometrically valid tool for profile analysis, talent assessment and development of training plans gives players and athletes a clear picture of their sports psychology profile – in terms of both skills and personality (Vienna Test System sports, 2017). Researcher analyzed the sensomotor coordination (SMK) with sub factors, mean angle deviation (SMK\_MAD) this indicates how well the respondent was able to control and influence the tilting motion regardless of correct motion, mean horizontal deviation (SMK\_MHD) in which how consistently in terms of time the

respondent able to control and influence horizontal motion , mean vertical deviation (SMK\_ MVD) in which how consistently in terms of time the respondent able to control and influence motion from front to back & Time in ideal range (SMK\_TIR) percent of time the circular segment will in the ideal range within a given interval. Descriptive and ANOVA statistics was applied. F-values of SMK\_MHD; SMK\_ MVD; and SMK\_TIR (4.78, 6.08 & 3.23) were found significant because their p-values 0.005; 0.001; 0.029 are less than 0.05 level of significance. After applying post hoc test, soccer has higher MHD than other team games; in MVD of SMK again soccer better than other team games; at the last in TIR of SMK volleyball is better than other team games.

*Keywords: sensomotor coordination, team games*

## Exploring the cultural aspect of motivational climate: An eastern perspective

**Po-Fu Lee, Frank Jing-Horng Lu (Chinese Culture University), Chien-Chang Ho (Fu-Jen Catholic University)**

Achievement goal theory (Nicholls, 1989; AGT) have led development into an authoritative model of motivational climate (MC) in past decades. However, researches successively argued that dichotomous model of MC might be unable to explain the phenomena comprehensively within achievement behaviors and motivational environments (Keegan et al., 2010; Urdan & Maehr, 1995; Wentzel, 1993), and need to investigate from different domains. The purpose of this study was to explore the cultural aspect of motivational climate surrounding in non-competitive sports by investigating the experiences of martial artists/instructors, fitness participants/coaches, and team sport members that were perceived to be motivationally relevant by the performers/instructors. A grounded theory approach (Strauss & Corbin, 1990) was employed throughout the data collection and analysis. Eleven martial artists/instructors, fitness participants/coaches, and team sport members were invited to participate semi-structured interviews investigating how/what they perceived/expected the motivational climate during practice/training. Besides, another 11 trained qualitative researchers/PE teachers and one senior sport psychology professor were arranged to join a focus group interview. Numerous cultural aspects (relating to cultural expectation of personality, attitude, citizenship, moral, emotional connection, respect, social ranking order) and social influence were found in the study. The results indicated that instructors might create a situational achievement task on cultural expectation while training or practicing beyond inter/intra-personal comparisons on the nature of sport, especially in student/non-competitive sports. A central finding of this paper is that there was a specific cultural expectancy on sport participation created by instructors/coaches. More specifically, sports are reflection of culture, and could be an educational media to citizenship and socialization.

*Keywords: motivation climate, achievement goal theory, cultural influences, citizenship*

## The differences in mental toughness and exercise behaviour amongst athletes and exercisers

**Phillippa Wood (Leeds Beckett University)**

Mental toughness (MT) remains a contested concept which emerged from the realms of sport psychology and is closely associated to superior athletic performance (Sheard, 2012). Engagement in exercise requires selected aspects of mental toughness such as self-control (Dusseldorp et al., 2014) and confidence (Middlekamp, Wolfhagen & Steenbergen, 2015). Nascent research noted that MT may coincide with over-training (Crust et al., 2014) and intense physical activity (Sabouri et al., 2016). Yet, there still remains scant empirical research examining the differences in exercise behaviour and MT. To develop further understanding this study examined differences in MT (using multidimensional measures: SMTQ; Sheard, Golby & van wersch, 2009; PPI-A; Golby, Sheard & van Wersch, 2007) and exercise frequency, intensity, duration, structure and nature, in addition to occurrences of over-training. Participants (N=504 athletes and exercisers, M= 23.3 years, SD= 4.5; 236 males) were recruited within the student body and via social media and participated using the



online survey hosted by SurveyMonkey (SurveyMonkey Inc, 2016). The data was assessed for normality, and analysed using MANOVA. The findings suggest that those higher in mental toughness engaged in structured workouts ( $p=.003$ ;  $p<0.001$ ), more frequently ( $p<0.001$ ) and for a greater duration ( $p<0.001$ ). However, there were no significant differences in MT across the nature of the exercise ( $p=.140$ ), the frequency of intense sessions ( $p=.780$ ), or over-training ( $p<0.001$ ). The results suggest that superior athletic performance of the mentally tough may be attributed to the way in which they engage in exercise; the current findings did not support the notion that MT may coincide with over-training. Beyond the scope of sport, further research is warranted to examine mental toughness in the context of exercise and health.

*Keywords: mental toughness, exercise behaviour, performance, athletes, exercisers*

## How to determine success of sport psychological interventions? Ambulatory assessment of functional athletic behavior

**Philipp Röthlin, Stephan Horvath, Daniel Birrer (Swiss Federal Institute of Sport Magglingen)**

Sport psychological interventions (SPI) are often evaluated by changes in objective performance (e.g., ranking). Unfortunately, external factors like opponents or training load may conceal the true effects of SPI. A promising alternative is an ambulatory assessment of functional athletic behavior (FAB) during competitions. We present the development and initial validation of a three item FAB questionnaire. It examines the quality of actions and movements (item 1), the attentional focus on relevant performance cues (item 2) and the accordance with valued distal goals (item 3). These are important preconditions for objective success that are less influenced by external factors, and therefore suitable indicators for the success of an SPI. The FAB measure was completed by 44 athletes (48% male,  $M_{age} = 25.3$ ,  $SD_{age} = 8.9$ ; amateur, elite junior and elite level) from three sports (tennis, curling, floorball) during two matches or games, respectively (familiarization and validation phase). Each time they rated three to four sport specific sequences (i.e., a game, an end or a period) directly after the sequence (tennis and floorball) or at the end of the game (curling). Results from familiarization show that athletes understood the instruction very well and reported no or minor positive changes for their athletic performance indicating a good usability of the FAB measure. Furthermore the FAB measure is reliable ( $\alpha > .81$ ) and valid. FAB significantly correlated with general subjective and objective performance measures (e.g., win/loss), and was related to performance level. Advantages and disadvantages of the ambulatory assessment method in sport are discussed. In sum, FAB might be a good alternative to objective performance outcomes to examine the quality of a SPI. FAB is less dependent on interfering factors, allows for a comparison between different sports, and is close to what athletes actually do and experience in competitive situations (i.e., a high external validity).

*Keywords: ambulatory assessment, applied research, validation*

## Psychological well-being in relation to leisure-time physical activity among female university students

**Petra Dolenc (University of Primorska)**

Several studies have provided ample support for the positive association between regular physical activity and psychological well-being. Despite the well-known health benefits of physical activity, young women are less likely to meet physical activity recommendations compared with men. The objective of the present cross-sectional study was to examine the relationship between participation in leisure-time physical activity (LTPA) and psychological well-being (emotional states, life satisfaction, self-esteem, perceived global health status) in Slovenian female university students. A total of 145 participants aged between 19 and 25 ( $M = 20.49$ ,  $SD = 1.31$ ) were classified into three LTPA groups (low, moderate, and high) according to physical activity frequency, intensity and duration. Psychological well-being variables were measured using the Slovenian versions of

Satisfaction with Life Scale, Positive and Negative Affect Schedule, State Self-Esteem Scale and Self-Rated Health. In relation to the three LTPA groups, MANOVA indicated significant differences in well-being variables (Pillai's Trace = 0.32,  $F = 3.18$ ,  $p < .01$ , partial  $\eta^2 = 0.13$ ). High and moderate LTPA groups rated their perceived health status better than the low LTPA group. Participants with high and moderate LTPA also exhibited higher self-esteem compared with those with low LTPA. Furthermore, life satisfaction and positive affect were significantly higher in the high LTPA group than in the low LTPA group. Research findings have demonstrated the potential effect of regular physical activity on psychological well-being in female university students. It would be of utmost importance to promote physical activity during the emerging adulthood years since lifestyle patterns are often set during this time period.

*Keywords: life satisfaction, positive affect, negative affect, self-rated health, self-esteem, physical activity*

### **Stress coping strategies and self-efficacy in athletes of different performance**

**Petar Mitic, Nenad Stojiljkovic (Faculty of Sport and Physical Education, University of Nis, Serbia)**

Adequate stress coping is often cited as one of the important factors of success in sport. Also, frequent question is which psychological characteristics are associated with adequate coping. It is particularly important to identify those psychological characteristics that can be improved. The aim of this paper is to examine the relationship between self-efficacy expression and stress coping strategies in athletes of different performance. The sample comprised 340 athletes, 171 of which belong to a sub-sample of elite athletes (those playing for the national team or participating in international competitions), whereas 169 of them are non-elite athletes (involved in the regular competition system at a lower national level). The CISS instrument is used in order to collect data on the stress coping strategies (Endler & Parker, 1990) and GSE (Schwarzer & Jerusalem, 1995) for self-efficacy. The results indicate that elite athletes show a preference for using task-focused strategies rather than those emotion-focused and avoidance-focused ones (social diversion and distraction). In both sub-samples, task-focused coping strategy use is in a statistically significant positive correlation with self-efficacy, whereas self-efficacy has statistically significant, poor and negative correlation with emotion-focused strategies only in elite athletes. The results emphasize the importance of adequate coping with stress for elite sports performance, as well as the connection between self-efficacy with such coping strategies. Considering the fact that self-efficacy can be improved from the earliest ages through vicarious experience, verbal persuasion and successful performance, this finding could have practical implications for coaches in the sense that by improving self-efficacy they can help athletes to be more prepared to deal with stress.

*Keywords: coping strategies, self-efficacy, athletes, performance*

### **Attentional focus in motor learning: the effects of the distance of external focus of attention and task difficulty**

**Pei-Pei Cho, Chu-Min Liao (National Taiwan Sport University)**

Previous studies (e.g., Wulf, Höß, & Prinz, 1998) have shown that learning can be enhanced by directing performers' attention away from their body ("external focus"). It has also been suggested that the distance of the external focus and task difficulty might affect the advantage an external focus of attention (e.g., Wulf, 2007). The purpose of the present study was to test the interactional effects of the distance of the external focus and task difficulty on learning badminton services. Badminton novices ( $N=78$ ) were randomly assigned into a 2x4 (task difficulty x attentional focus) between-group design, learning either forehand (relatively simple) or backhand (relatively difficult) low services with an internal attentional focus (focusing on the wrist), near external focus (focusing on the face of the racket), far external focus (focusing on the top of the net), or the farthest external focus (focusing on the service line on the opposite court). Participants had a total of 200 trials (20x10 blocks) in the acquisition phase and 20 trials in a retention test and a transfer test. Performance was

measured by both the trajectory and the location of the service. ANOVAs showed that the group focusing on the top of the net performed significantly better than the group focusing on the wrist in the transfer test, with no other differences in the transfer test and no group differences in the retention test was found. These results didn't support the suggested effects of the distance of the external focus and task difficulty but did show the benefits of external focus of attention on learning badminton services.

*Keywords: attentional focus, relatively difficulty task, distance effect*

### **Parents' emotional intelligence and sideline behaviors: The mediating role of coping strategies**

**Pedro Teques (Polytechnic Institute of Maia), Henrique Martins (Maia University Institute), Daniel Duarte (Polytechnic Institute of Maia)**

Although the significance of emotional intelligence and coping has been recognized for parental involvement in youth sports (e.g., Harwood & Knight, 2015), no studies were found that explore these relationships. The current research examines how emotional intelligence facilitates adaptive coping across parents' sidelines behaviors at youth soccer games. During an international youth soccer tournament, 236 parents (126 women, 110 men) of youth soccer players (boys and girls who were between 9 and 15 years of age) were recruited to participate in this study. Parents ranged in age from 28 to 62 years old ( $M = 40.50$ ,  $SD = 5.63$ ). Naturalistic observations were carried out in a football field. Subsequently, parents were approached at the end of the game to participate in the study. Structural equation modelling was performed to test the relationships between emotional intelligence, coping strategies, and parents' sideline verbal behaviors. The overall assessment of the structural model was found to be acceptable [ $\chi^2(120) = 1242.48$ ,  $p < 0.001$ ,  $CFI = 0.95$ ,  $TLI = 0.94$ ,  $RMSEA = 0.05$  ( $CI = 0.05, 0.06$ ),  $SRMR = 0.04$ ]. Regarding the associations between emotional intelligence and coping, parents' self-emotions appraisals and regulation of emotion showed significant negative relationships on maladaptive coping strategies, whereas others-emotions appraisal, use of emotion, and regulation of emotion were positively associated with adaptive coping. Next, we examined the links between coping and sideline behaviors. Adaptive coping was positively associated with praise/encouragement, and negatively with negative comments. Maladaptive coping was associated with striking a balance, negative comments, and derogatory comments. These findings highlight the relevance of parents' emotional intelligence, and coping strategies in the expression of sideline behaviors during youth games.

*Keywords: parents' influence, naturalistic observations, structural equation modeling, youth sport, soccer*

### **Emotional intelligence and competitive sports: Comparative study between adolescent athletes and non-athletes**

**Pedro Galvis Leal (Universidad Libre)**

The aim of the study was to compare the Emotional Quotient (EQ) and Intrapersonal, Interpersonal, Stress Management and Adaptability scales in adolescent elite athletes and non-athletes. A sample of 105 subjects (47 athletes and 58 non-athletes) was studied. The subjects had an average age of 14.6 years on the emotional intelligence quotient. Additionally, the athlete subjects were asked to fill out questionnaires regarding perceived motivational climate. The data obtained indicate a significant difference between the emotional quotient of competitive athletes and non-athletes, with the exception of the variable "Intrapersonal Scale" in which no significant difference was presented. Also, a positive correlation was found between motivational climate in regards to task orientation and the EQ of athlete subjects.

*Keywords: emotional Intelligence, sport, motivational climate*

### Self-concept in primary schools students and its association with fitness

**Pedro Antonio Sánchez Miguel, Diana Amado, Miguel Ángel Rodríguez González, Mikel Vaquero Solís (University of Extremadura)**

The importance of fitness to promote psychological issues in Primary school children is a topic well documented (Mayorga, Viciano, & Cocca, 2012; Rodríguez-García et al. 2012). In this regard, self-concept is one of the most examined health-related psychological constructs (Madariaga & Goñi, 2009). Thus, the purpose of the current study is to test the relationship between self-concept and fitness in Primary schools students. Participants were 303 students, both male ( $n = 150$ ) and female ( $n = 153$ ), ranging in age from 10 to 13 years old ( $M=11.74$ ;  $SD=.85$ ), belonged to 8 schools from the city of Cáceres (Extremadura, Spain). Individuals filled the Physical Self-Concept Scale (Fox, 1990) adapted and validated into Spanish by Moreno, Cervelló, Vera & Ruiz (2005). Moreover, they completed the agility – velocity test (10 x 10 meters) included in Alpha Fitness Test by Ruiz et al. (2009), and the 6 minute walking test (Zenteno, Puppo & Ramiro, 2007) to measure agility and aerobic resistance, respectively. The dependent variable was fitness, whereas agility and self-concept were included as independent variables in the research. Descriptive, correlation and regression analysis were used in order to know the relationships and predictions with the variables studied. Results revealed a strong relationship between perception of self-concept and velocity-agility, as well as low levels of self-concept were related with poor fitness. Further, appearance and self-esteem emerged as predictors of poor fitness in Primary students. Finally, these outcomes showed evidences of the importance of promoting physical activity in education in order to enhance self-concept in students. Besides, some strategies to increase physical activity levels in education, as well as some practical implications are shown.

*Keywords: self-concept, fitness, students, primary school*

### Levels of stress and recovery in brazilians road cycling athletes

**Paulo Vitor Suto Aizava, Matheus Almenara Rosendo (Maringá State University)**

Ciclism is a sport popularly practiced by young people and adults in general. As a competitive context, stress is a variable that can lead to psychophysical destabilization between the athlete and the environment. High levels of stress are related to insecurity, restlessness, increased anxiety-state and have a direct impact sports performance. This study verified the levels of stress and recovery in Brazilian road ciclism athletes. Our sample was composed by 45 athletes from 9 ciclism teams from the state of Paraná – Brazil. Data were collected with the RESTQ-Sport Stress and Recovery Questionnaire for Athletes, 1 or 2 days before the 16th Century game Song City Cup, in the second semester of 2016. Athlete were evaluated at their accommodations, according to the subject's availability. Data were analyzed using the Anova One Way (Levene homogeneity test, Bonferroni's post hoc) Kruskal-Wallis test, Spearman's correlation coefficient ( $p<0.05$ ). The results showed that cyclists presented low levels of stress (general stress  $x = 2.25$ ) and recovery (social recovery  $x = 4.25$ , physical recovery  $x = 3.75$ ). The athletes who did not complete the competition had greater somatic complaints ( $Md = 2.25$ ) and the athletes who won the podium showed a better physical recovery ( $Md = 4.25$ ) than the other competitors ( $p = 0.008$ ). The dimensions conflict / pressure ( $r = -0.293$ ,  $p < 0.05$ ), lack of energy ( $r = -0.444$ ,  $p < 0.01$ ) and somatic complaints ( $r = -0.317$ ,  $p < 0.05$ ) significant and negative relation with age, whereas fatigue ( $r = 0.294$ ,  $p < 0.05$ ) was positively correlated with the time of practice. It is concluded that better-performing ciclism athletes are better equipped to withstand all the physical and psychological pressure that the sport provides to the athlete during the competition, indicating age as a possible factor to control these demands.

*Keywords: stress, recovery, performance, ciclism*

## Levels of personal and social responsibility of athletes and attitudes towards sport

**Paulo Martins (Faculdade Motricidade Humana)**

The development of personal and social responsibility (PSR) through sport participation, promotes a successful transition into adult life. As such, this study looks to contribute towards the understanding of the relationship between the development of personal and social responsibility (PSR) and attitudes towards sport within the context of competitive sports. The study counted with the participation of 472 athletes (mas=365; fem=107) the average age was 16.97 years ( $SD=4.51$ ). The athletes were from different competitive levels (i.e. elite, national and regional) different sports (individual, collective and combat sports). In order to measure the levels of PSR and attitudes towards sport (both positive and negative ones) we used the Portuguese versions of the Personal-Social Responsibility Questionnaire and of the Sports Attitudes Questionnaire. A confirmatory factor analysis was conducted to examine the psychometric properties of the model. Internal consistency of the constructs was assessed through composite reliability, while average variance extracted (AVE) values were estimated to assess convergent validity. Then a structural model was performed to test the relationships between the constructs. The results revealed a good adjustment with the data [ $\chi^2(247) = 616.93$  ( $p < .001$ ),  $\chi^2/df = 2.498$ ; CFI=.94, GFI=.90; TLI=.93, RMSEA=.058]. The results also revealed that PSR ( $\beta=.79$ ,  $p < .001$ ) has a positive meaningful connection with Positive Attitudes. On the other hand, the coefficients of the trajectories between RPS and Positive and Negative Attitudes revealed that the coefficient of the trajectory between PSR and Negative Attitudes ( $\beta=-.04$ ,  $p < .689$ ) did not showcase a statistically meaningful value.. Overall, the RPS variable was responsible for approximately 63 % of the variance of the factor Positive Attitudes ( $R^2=.63$ ). In conclusion this study remarks that high levels of PSR correspond to high levels of positive attitude towards competitive sport participation.

*Keywords: Personal and social responsibility, attitudes, sport*

## Competitive anxiety in young elite female handball players according to specific playing position

**Patricia Irene Sosa Gonzalez, Rosa Maria Alfonso Rosa (Universidad de Sevilla)**

Many authors emphasize the importance of competition anxiety about sports performance. Thus, the main objectives were to determine the psychological profile presented by young female handball players in terms of competitive anxiety, and explore the relationship between competitive anxiety and specific playing position. The sample was composed by 137 female players aged 13 to 16 years old ( $M=14.25$ ,  $SD=.74$ ). The competitive anxiety subscale (with 8 items) belonging to the Spanish "Escala Infantil - Juvenil de Habilidades Psicológicas y Comportamiento en el Deporte - CHPCDC" (Godoy, Vélez, Ramírez & Andréu, 2005) was used ("Psychological Skills and Behaviors in Sport Competition -Children-Young Scale" in English). The results show that the days before the game the players are more nervous than when the game will start and feel even less nervous during the game. The main reason that increases their nervousness during the game are their own or team's mistakes or failures. Regarding matches, 34.3% say that they feel just as nervous whether they play at home or away or if they win or lose, and 32.1% say they feel more nervous when they play at home and lose. On the contrary, during the training the players do not feel any pressure or this does not affect their performance. 41.6% say that when they feel overly active or nervous they do things that always help them feel better and control them. The results show a statistically significant association, low and directly proportional (contingency coefficient = 0.329,  $p < 0.05$ ) between the amount of pressure, tension, fear or nervousness felt by the players in the hours prior to the match and their specific position of game. It is necessary to implement specific intervention programs to provide tools that help athletes adjust their levels of competitive anxiety, especially for the days before the competition.

*Keywords: competitive anxiety, handball, young female players, specific playing position, sports performance*

## Study about motivation in young high level performance female handball players

**Patricia Irene Sosa Gonzalez, Rosa Maria Alfonso Rosa (Universidad de Sevilla)**

The aims of this study were to know the motivation level of female handball players in terms of basic, daily and competitive motivation, and analyze possible differences in the degree of each these motivations, depending on the specific playing position. The sample was composed by 137 high-level female handball players aged 13 to 16 years old ( $M=14.25$ ;  $SD=0.74$ ) participated in the study. All players competed in the highest league of their sports category, were selected as the best players of their sport category and included in the National Sporting Training Program of the Royal Spanish Handball Federation. As data collection instrument the three subscales of motivation (basic, daily and competitive) of the Spanish "Escala Infantil - Juvenil de Habilidades Psicológicas y Comportamiento en el Deporte - CHPCDC" (Godoy, Vélez, Ramírez & Andréu, 2005) - "Psychological Skills and Behaviors in Sport Competition -Children-Young Scale", in English, were used. The results, analyzed by percentage in each of the five response options, show that in the basic motivation subscale, 90.5% of the players responded that they practice this sport because "I simply have free time and I am good at this." About the daily motivation subscale, 52.6% of the players reached a high level, and 43.1% even very high. With regard to competitive reasons, it is observed that 92.7% of the players show a high competitive motivation during the match, dropping this high competitive motivation to 68.6% of the participants during the training sessions, noting also that 29.9% of them report an intermediate competitive motivation during training. Regarding the analysis of the different types of motivation according to the specific position of the game, the results show there wasn't association between basic motivation, daily motivation and competitive motivation according to specific playing position occupied by these young female handball players.

*Keywords: motivation, handball, young female players, specific playing position, sports performance*

## Effects of exercise on executive functions in Korean preschool children

**Hei-Rhee Ghim (Chungbuk National University), In-sun Kang, Hyeonjin Lee (Yeungnam University)**

This study examined the effects of physical exercise on Korean children's executive functions. Fifty one 3-year-old, 53 4-year-old, and 53 5-year-old children participated in the study. The children in each age group were divided into two groups, i.e., a physical exercise group and a non-physical exercise group. Children in the physical exercise group participated in the football game or Taekwondo (Korean martial art) after school and children in the non-physical exercise group participated in a violin lesson or an English lesson after school. The children were trained 4-5 times a week for 3-months. Three components of executive functions were measured at the beginning of the semester and remeasured after 3-months. Inhibitory control was measured by a flag task, switching was measured by a card-sorting task, and working memory was measured by a backward-word task. After controlling the pretest scores, the covariance analysis were conducted. The results were as follows. There was a significant group effect (inhibitory control,  $F(1,150)=18.81$ ,  $p < .001$ , switching,  $F(1,150)=51.91$ ,  $p < .001$ , working memory,  $F(1,150)=79.64$ ,  $p < .001$ ), showing much higher performance in the physical exercise group than in the non-physical exercise group. These results mean that physical exercise plays an important role in executive functions. There was also a significant age effect (inhibitory control,  $F(2,150)=4.84$ ,  $p < .01$ , switching,  $F(2,150)=13.22$ ,  $p < .001$ , working memory,  $F(2,150)=7.16$ ,  $p < .001$ ), showing a big difference between 3- and 4-year-olds. These results imply that the physical exercise effect might vary depending on the age level.

*Keywords: exercise, executive function, inhibitory control, working memory, switching*

## Distributive justice: the effects of coaches' interpretation of status and power of the role of coach

**Ling-Wen Huang, Chu-Min Liao (National Taiwan Sport University)**



Blader & Chen (2012) have been devoted to differentiating status and power, and have found status and power would have opposing effects on justice enacted toward others. The purpose of our study was to explore the coaches' interpretation of status and power on distributive justice. In our experiment, 34 coaches who were divided into status or power group. Each coach read a scenario and role play as the head coach in the scenario that described a city team won champion in national competition and the team received prize from sport department in the city. Every coach can remain the same allocation or reassign the prize to 5 starting athletes, 1 bench player, 1 head coach and 1 assistant coach. In proportion analysis, three out of eleven coaches in power group and six out of twenty-three coaches in status group remained the same distribution way. Eight out of eleven coaches in power group reassigned and six of them distributed much more money to head coach. On the other hand, fifteen distribution ways were occurred in status group and only two of them reassigned more money to head coach. We assume that athletes perceived been exploit by head coach if they receive less money than they deserved. Comparing two kinds of explanation of role, 9.1% injustice occurred in status group significantly lower than 36.4% injustice in power group. Our results showed different ways in explaining the authority of coach lead to different decision making process. We suggested coaches to see themselves in a good way that is earn respect from others instead of manipulate power.

*Keywords: fairness, coach-athlete relationship, leadership*

### Relationship of physical condition with attentional and perceptive measures in adolescents depending on gender

**Rafael Enrique Reigal Garrido, Antonio Hernández Mendo, Verónica Morales Sánchez, Juan Pablo Morillo Baro, Juan Antonio Vázquez Diz, Luna Moral Campillo, Miriam Crespillo Jurado, Araceli Fernández Gea, Joaquín Delgado Giralt, Alejandro Domínguez Fernández, Roberto Pérez Lobato, Rocío Juárez Ruiz De Mier (Universidad de Málaga, España)**

To analyze the relationship between physical activity practice and cognitive development, it is necessary to evaluate physical fitness variables. In numerous studies it has been emphasized that the improvements in brain functioning appear when the physical capacity of the individuals has been significantly increased. The purpose of this study was to analyse the relationship between physical condition and perceptual and attentional capacity in a group of adolescents according to gender. A total of 116 adolescents from the province of Malaga (Spain), aged between 14 to 17 years ( $M = 15.07$ ;  $SD = .86$ ) participated in the study. To analyse the perceptive and attentional processes, the Toulouse-Pieron test and the D2 care test were used. The physical condition was evaluated through the horizontal jump test, the Course Navette test and the 5 x 10 meter speed test. Linear regression analyses were performed, which indicated that oxygen consumption and the horizontal jump test were predictors of the attentional and perceptive measures analysed in the boys. In girls, oxygen consumption and speed test were the main predictors. The obtained results suggest, as described in previous research, that physical fitness should be a variable valued when the impact of physical activity is analysed on the cognitive development of children and adolescents. In addition, coinciding with previous research, the variable oxygen consumption is one of the main measures related with cognitive performance, appearing in this work both in the predictive models of boys and girls.

*Keywords: physical activity, physical condition, attention, adolescence*

### Physical condition and attentional ability in adolescents

**Antonio Hernández Mendo, Juan Pablo Morillo Baro, Verónica Morales Sánchez, Juan Antonio Vázquez Diz, Rafael Enrique Reigal Garrido, Fernando González Guirval, María Auxiliadora Franquelo Egea, Joaquín Delgado Giralt, Miriam Crespillo Jurado, Luna Moral Campillo, Araceli Fernández Gea, Alejandro Domínguez Fernández (Universidad de Málaga, España)**

In the last years, several works have highlighted the positive impact of the practice of physical activity on children and adolescents. The benefits that have been suggested by these investigations have a special relevance in this phase of the life cycle due to the positive relationship that exists between a correct cognitive activity with an adequate psychosocial functioning and adaptation to the environment. It is also considered that for physical practice to affect these health parameters, it must have a previous impact on the physical condition of the people, acting as a modulator. With the purpose of increasing the evidences about this line of work, the purpose of this work was to analyse the attentional capacity of a group of adolescents in function of diverse variables of physical condition. 116 adolescents from the province of Malaga (Spain), aged between 14 and 17 ( $M=15.07$ ;  $DE=86$ ), participated in the study. The Toulouse-Pieron test was used to analyse the perceptual and attentional processes. The physical condition was evaluated with the horizontal jump test, the Course Navette test, the 5 x 10 meter speed test and a percentage of fat mass measurement. Two groups ( $n_1=55$  y  $n_2=61$ ) were made up through cluster analysis, characterized by a low and a high level of physical condition respectively. The analyses of means comparisons indicated that the group with the best physical condition scored the most favorable in the following care test parameters: responses (R), processed (P), hits (A), omissions (O) and direct score (P.S). There were no significant differences in errors (E). The results obtained suggest, as has been described in previous research, that the fitness level could be related to the attentional capacity at these ages.

*Keywords: physical activity, physical condition, attention, adolescence*

### **How does leadership affect wisdom through coaching-efficacy based on passion? A conditional process model**

**Gokhan Caliskan (Gazi University), Arif Ozer (Hacettepe University), Veysel Kucuk (Marmara University)**

Most decisions are based on incomplete information on wisdom, which is both the most effective use of available knowledge and the acceptance of the consequences of wrong decisions (Lloyd, 2006). Morse (1996) indicated that transformational leaders dealt with ambiguity and could see the limitations of their decisions. They encourage the maturation in followers. Young (2006) asserted that individuals having higher self-efficacy made more decisions than ones having lower self efficacy. This research investigated the mediator role of efficacy between leadership and wisdom. Also, this indirect relationship could change depending on passion. For the development of individual wisdom, passion, which is the enforcement of belief to make things happen, is highly significant. Moreover, passion is essential to the application or action of wisdom (Rowley, 2005). Therefore, passion could be in moderated relationship with transformational leadership, efficacy, and wisdom. The aim of the current study is to examine whether the passion moderates the indirect effect of the coaches' transformational leadership on wisdom. The coaching-efficacy mediates the relationship between coaches' transformational leadership and wisdom (Hayes, 2012-2016; model 14). 152 voluntary soccer coaches from Turkish professional leagues in 2016-2017 participated in this study. Coaching experiences of the participants ranged from 13 to 18 years. Differentiated Transformational Leadership Inventory (Callow et al., 2009), Coaching Efficacy Scale (Feltz et al., 1999) Coach Passion Scale (Vallerand et al., 2003) and Three-Dimensional Wisdom Scale (Ardelt, 2003) were applied to the participants. Process script was performed. As pre-analysis, assumptions of regression were checked. According to the result of the analysis, there is a statistically significant positive correlation between the scores of transformational leadership and self efficacy ( $b=.93$ ,  $t=7.93$ ,  $p=.00$ ). Increase in each unit transformational leader.

*Keywords: wisdom, transformational leadership, coaching efficacy, passion*

## Parental support throughout athlete development: The case of Portuguese volleyball players

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In the past decades, researchers have examined the psychosocial influences in athlete development and their impact in expertise achievement (Harwood & Knight, 2009; Ulrich-French & Smith, 2006). Specifically, the support provided by parents is considered of utmost importance, having significant implications in athletes' sport participation, personal development, and performance (Côté, Murphy-Mills, & Abernethy, 2012). The purpose of this study was to understand the support provided by parents throughout the different stages of volleyball players' development while considering their expertise level. Thirty highly skilled (HS) and thirty less skilled (LS) volleyball players participated in a retrospective interview specifically designed to gain in-depth understanding of parental support throughout three stages of development (8-12 years, 13-16 years, 17-20 years). The data were subjected to thematic analysis. Results indicated that both HS and LS players described parents as providers of tangible support during the early stages of development (8-12 years). However, as the players progressed in sport, parents' role changed to a more emotional supportive role (13-20 years). Considering the players' expertise level, only LS players reported the overly involvement of parents in training and competitions when they specialized in volleyball (13-16 years) and how sometimes this became a way of pressure for them. Contrarily, HS players reported that, in this phase, parents were not much involved in training sessions and competitions, but they acted as an important source of emotional support. They also mentioned how parents gave them the agency to decide about their interests and the best pathway to take in their career. The findings of this study highlight the critical and different role that parents play throughout the different stages of players' development, which may have an important influence in determining the achievement of high levels of performance in sport.

*Keywords: psychosocial influences; parents; family; talent development*

## An innovative proposal from the model of sports education in primary education

**Pablo Luna, Javier Cejudo (UCLM)**

The present study was aimed at assessing the effect of a programme based on the model of Sport Education (Siedentop, 1994) about the psychological well-being in 5th year Primary Education students in a state-subsidized school. The Sport Education Model crops up in order to develop a model for teaching physical education classes that encourage authentic experiences of sport. Experiences in which all students have equal opportunities practice, become efficient (competent), experts of the sport (literate) and excited about practice (enthusiastic). Sport Education has a sporting and didactic foundation. With regard to the sporting foundation, it tries to preserve the essential aspects of sport. As for the didactic foundation, it focuses on social values, adaptation of curricular content and boosting of educational objectives (e.g. cooperative learning, autonomy, role assignment). The program was developed in three stages, totaling 18 sessions of 50 minutes each: 1. INITIAL STAGE: explanation of programme, in which the role assignment took place as well as the self-construction of materials. 2. INTERMEDIATE STAGE: formal competition and familiarizing with play. 3. FINAL STAGE: culminating celebration event and hand-over of self-constructed prizes. A quasi-experimental design of repeated measures pretest-posttest with a control group was used. The participants in the study were 108 students (n=108). Out of the sample group, 28 (25,92%) were assigned to the control group and 80 (74,07%) were assigned to the experimental group. In order to assess psychological well-being, the version of PANAS (Positive and Negative Affect Schedule; Watson, Clark and Tellegen, 1998) was used, validated in Castilian by Sandín (2003) for its use with children. The results confirmed that the programme stimulated in the

experimental groups a significant improvement in the adjustment of psychological well-being. Mainly, the programme proved to be effective in order to improve positive affectivity (PA).

*Keywords: primary education, physical education, model of sports education, emotional intelligence, education in values, interdisciplinary nature, divergent thinking*

## Multidimensional perfectionism and cortisol stress response: a systematic review and evaluation

**Michael Page, Andrew Hill, Owen Kavanagh, Susan Jones (York St John University)**

The purpose of the study was to conduct a systematic review and evaluation of published research examining multidimensional perfectionism and cortisol stress response. A literature search yielded 7 articles reporting 8 studies. Seven studies examined cortisol reactivity (CR) and 2 studies examined cortisol awakening response (CAR). Each study was rated in terms of the methodological quality and those rated as high methodological quality were classified as providing supportive, contradictory, or inconclusive/null evidence of a negative relationship between perfectionistic strivings (PS) and cortisol stress response and a positive relationship between perfectionistic concerns (PC) and cortisol stress response. In terms of CR, 1 study was rated as low methodological quality, 1 study was rated as medium methodological quality, and 4 studies were rated as high methodological quality. Of the high quality studies, one study provided supportive evidence of a positive relationship between PC and CR, and a further 3 provided inconclusive/null evidence. The only high quality study to examine the relationship between PS and CR provided inconclusive/null evidence. In terms of CAR, 1 study was rated as low in methodological quality and the other was rated as medium methodological quality. Based on our review of research, no firm conclusions can currently be drawn regarding the relationship between multidimensional perfectionism and cortisol stress response. Suggestions are provided in order to improve methodological quality of future research and to address this question appropriately.

*Keywords: personality, motivation, individual differences*

## Relationships between sports psychological profile, competitive anxiety and satisfaction of basic psychological needs in beach handball players

**Juan Pablo Morillo Baro, Juan Antonio Vázquez Diz, Antonio Hernández Mendo, Verónica Morales Sánchez (Universidad de Málaga, Spain), María Julia Raimundi (Universidad de Buenos Aires, Argentina), Jorge Jiménez Salas, Francisco Moreno Morales, Rocío Pérez López, Rafael Enrique Reigal Garrido, Fernando González Guirval (Universidad de Málaga, Spain), Luis Blanco Romero (Universidad Nacional de Costa Rica, Costa Rica), María Auxiliadora Franquelo Egea (Universidad de Málaga, Spain)**

The objective of this research was to examine the relationship between the sports psychological profile with competitive anxiety and the satisfaction of basic psychological needs in a sample of players of Beach handball depending on gender. 111 U19 and senior players aged between 17 and 32 participated in the study. The 55.90% were of male gender (n=62) and 44, 10% were women (n= 49). The psychological inventory of sports performance (IPED) was used to analyse the sports psychological profile of the participants, the inventory of the state of anxiety (PNSE) in competition-2 (CSAI-2) to evaluate the State of anxiety and self-confidence, and the scale of satisfaction of basic psychological needs to measure the satisfaction of the basic psychological needs. Through an analysis of cluster, by gender, the sample was divided into two groups based on the variables of the IPED (male: n1=24 y n2=38; female: n1= 27 and n2= 22. In both genders, the created groups were characterized by a low score in all factors of the IPED in one case and a high score in all of the factors of the IPED in another case. Comparison of means analyses indicated that men had less somatic anxiety, as well as greater self-confidence, perception of the need for competition and social relations in the group with higher scores in the IPED. In women, the results showed that girls with higher scores in the IPED obtained

better scores on self-confidence and perception of the need for competition. The data obtained in this study indicated that the analysis of the psychological profile of sports could help to better understand the athletes and to assess more accurately some psychological variables involved in sports performance.

*Keywords: psychological profile, anxiety, basic psychological needs , beach handball*

## WEDNESDAY JULY 12TH

### Posters Session 3. (9:30-10:30)

#### Psychological characteristics associated with sports performance in young elite female handball players. Differences between specific playing position

**Patricia Sosa Gonzalez, Rosa Maria Alfonso Rosa (Universidad de Sevilla)**

The psychological characteristics have received special attention from the researchers, since these usually have a great influence not only in training performance but also during competitions. Thus, the aim of this study was to determine the psychological characteristics associated with sport performance in young elite female handball players and whether there were psychological profiles differences between specific playing positions. The sample was composed of 137 young elite female handball players with a mean age of 14.25 (SD= .74) years old, which have been playing a mean of 8.66 (SD= 2.16) years, and participating in competitions during 5.10 (SD= 2.18) years. All players competed in the highest league of their sports category, were selected as the best players of their sport category, belonged to the National Sporting Training Program of the Royal Spanish Handball Federation, and commonly performed at least 3 training sessions per week plus one official match. As data collection instrument the Spanish "Cuestionario de Características Psicológicas Relacionadas con el Rendimiento Deportivo -CPRD" (Gimeno, Buceta & Pérez-Llantada, 2001) was used ("Psychological Characteristics Associated with Sports Performance Questionnaire" in English). Regards the specific playing position, 25.2% played in the back positions, other 25.2% played in wing position, 15.8% played in centre back position, 16.5% played in pivot position, and 15.1% played in goalkeeper position. No statistically significant differences were found in the psychological profiles according to specific position occupied by the young female handball players. Future studies are necessary with a larger sample size, as well as age and sex, in order to generalize these conclusions.

*Keywords: psychological profile, sports performance, handball, young female players, specific playing position*

#### Dose-response effect of acute exercise on resting-state EEG in children with attention-deficit/hyperactivity disorder

**Yu-Jung Tsai (Department of Physical Education, National Taiwan Normal University, Taiwan), Chung-Ju Huang (Graduate Institute of Sport Pedagogy, University of Taipei, Taiwan), Tsung-Min Hung (Department of Physical Education, National Taiwan Normal University, Taiwan)**

Attention-deficit/hyperactivity disorder (ADHD) is characterized by a deviant pattern of baseline cortical activity during resting state with increased theta/beta ratio. Previous studies have provided evidence to support the beneficial effects of moderate acute exercise on normalizing the cortical activity in children with ADHD; however, the moderating role of exercise intensity has not been addressed. Therefore, the purpose of this study was to investigate the dose-response relationship between intensity levels of acute aerobic exercise in children with ADHD. For 28 children with ADHD, the resting-state EEG during eyes open was recorded before and after a single bout of acute exercise at three different intensities in counterbalanced order. The results showed that high exercise intensity had lower theta/beta ratios compared to low exercise intensity in the parietal region after exercise intervention. In addition, only high exercise intensity showed a pre-post reduction in theta/beta ratio for the parietal region. These findings suggest that high exercise intensity may be more effective in normalizing the cortical activity that enhances the cognitive functions of children with ADHD.

*Keywords: exercise intensity, ADHD, EEG ratios*



## Impact of physical activity enjoyment on physical activity frequency and motor ability among Japanese children aged 6-12 years

**Yujiro Kawata, Akari Kamimura (Juntendo University), Shino Izutsu (Japan Women's College of Physical Education)**

An increase in inactive children and decline in the motor ability of young people in Japan have been public concerns because they may cause secondary problems, such as lifestyle disease at a young age. We focused on the importance of physical activity enjoyment with regard to these problems. This study aimed to clarify the impact of physical activity enjoyment on the frequency of physical activity and motor abilities among Japanese children aged 6-12 years. Participants were 370 Japanese children aged 6-12 years: 191 boys and 179 girls (Mage = 8.74 ± 1.86). We collected the data of children's demographic profiles (sex, age), physical size (height, weight), physical activity enjoyment, frequency of physical activity, and motor abilities (performance during a 50m sprint, standing broad jump, softball throwing, grip force, sit-ups, forward bending, quick jumps, and multistage fitness test). To examine the effect of physical activity enjoyment, we conducted a regression analysis considering sex, age, and body mass index as moderators. The result showed a significant effect of physical activity enjoyment on frequency of physical activity ( $\beta = .396, p < .001$ ). There were significant effects on performance of the 50-m sprint ( $\beta = -.109, p < .01$ ), standing broad jump ( $\beta = .161, p < .001$ ), softball throwing ( $\beta = .184, p < .001$ ), grip force ( $\beta = .107, p < .01$ ), sit-ups ( $\beta = .209, p < .001$ ), quick jumps ( $\beta = .232, p < .001$ ), and multistage fitness test ( $\beta = .232, p < .001$ ). However, no significant effect on forward bending was observed. These results indicate that children's physical activity enjoyment has an impact on the frequency of physical activity and motor ability; thus, we propose that fostering enjoyment in physical activity might resolve the problem of inactivity and motor decline among Japanese children.

*Keywords: physical activity enjoyment, physical activity frequency, motor ability, young children*

## Program for the development of the implicit beliefs related to the intelligence and sporting ability in secondary students

**Ricardo Martínez- Romero (Autonomous University of Barcelona, Spain; Assistant Professor University of Concepción, Chile), Viviana Espinoza Torres (University of Concepción, Chile)**

The importance of study habits, health and behaviors in the beginning of the educational processes is of crucial importance in the people's life, due to the evidence that these practices continue into adulthood. The aim was to evaluate whether the application of a 6-session program increases the score of the incremental variable in the instrument of the implicit beliefs related to the intelligence and sporting ability. The descriptive, longitudinal and quasi-experimental study with two groups: one control and another experimental of secondary students of Concepción, Chile. A program of 6 sessions was designed and then applied once a week, with a duration of 90 minutes chronological, to increase the confidence, persistence, security, the stirring of problems, among others. Then, two questionnaires were applied: Implicit beliefs of intelligence (Dweck & Leggett, 1988) and Implicit beliefs of sporting ability (Biddle, Wang, Chatzisarantis, & Spray, 2003), each instrument has two dimensions, Fixed and Incremental. The results obtained, after the application of the Questionnaire Implicit beliefs of intelligence, indicated that only the students of the experimental group, in the fixed dimension, showed difference before and after the program. On the other hand, the data cast from the Questionnaire Implicit beliefs of sporting ability, on control and experimental groups did not show significant results after the application of the program. Although the results were not encouraging, future research should include the analysis of the implicit beliefs of intelligence and ability, through longitudinal and experimental studies that provide information on how to develop the incremental belief, identifying stages of development to improve the establishment of habits.

*Keywords: ability, belief, sport, intelligence, student, incremental, fixed*

## After the final buzzer – life satisfaction and readiness for sports retirement of former elite ice-hockey players

**Pasi Roslund, Raymond Bertram (University of Turku), Niilo Konttinen (KIHU Research Institute for Olympic Sports)**

The termination of a sports career of elite sporters happens at a relatively young age. For this reason, elite sporters have to commence an alternative career after their sports career, a situation not every sporter is prepared for. The purpose of this study was to investigate which sport-related factors influence former Finnish elite ice-hockey players' post-career life satisfaction as well as the factors that determine their preparedness for career termination. The data set included 159 former Finnish professional ice hockey players who responded to an extensive web questionnaire. We used linear regression models to analyze which factors are related to life satisfaction and preparedness for career termination. The results showed that post career life satisfaction was influenced by players' subjective evaluation of athletic achievements, readiness for career termination and education level. More specifically, it was found that more achievements, better preparedness for post-career life, and higher level of education were related to greater life satisfaction. In turn, preparedness for post-career life was related to voluntariness of the retirement decision, institutional support and education level (but not e.g. athletic identity) with more voluntary retirement decisions, more institutional support (from the club and the ice hockey association) and higher level of education being related to higher degree of preparedness for post-career life. By responding to a number of open questions, the former ice hockey players suggested possible improvements to increase preparedness for post-career life. Economical guidance, mentor systems, and earlier alerting of education possibilities were offered as solutions to attenuate and/or avoid possible negative consequences of career termination in the future.

*Keywords: life satisfaction, preparedness, retirement, ice hockey*

## Links between perceived motivational climate and Greek youth basketball players' motivation

**Omiros Vlahos (University of Thessaly)**

It is well documented that coach created motivational climate has a significant impact on athletes' motivation. Therefore, the purpose of this study was to examine the links between perceived motivational climate and Greek youth basketball players' motivation. The sample consisted of 222 youth athletes (M age:  $13.8 \pm 1.41$  years) from eight Greek basketball clubs, that voluntarily participated in this study. Prior to their training session, participants completed a number of valid and reliable questionnaires measuring perceived motivational climate, behavioral regulation in sport, basic psychological needs, and achievement goals. Results showed that mastery approach climate, performance approach climate and social approval climate were positively related with the most adaptive motivational variables, that is intrinsic and identified regulation, autonomy, competence, relatedness and task oriented goal. On the other hand, performance avoidance climate was positively related to the most maladaptive outcomes, namely, introjected regulation, extrinsic regulation, amotivation and ego oriented goal. Multiple regression analyses revealed that performance avoidance climate and mastery approach climate were the most significant predictors for most of the dependent variables. Based on the above results, perceived motivational climate seems to play an important role on youth basketball players' motivation. Coaches should have the proper training, through innovative educational intervention programs, aiming to create a team climate that will emphasize personal development, social approval, cooperation, empowering interpersonal relations and enhanced athletes' autonomy.

*Keywords: climate, basketball, motivation, youths*

### Level of activación in the badminton serve

**Omar Estrada Contreras, Nicolas Fernández Martínez (CEU Cardenal Spínola), Eugenio Antonio Pérez Córdoba (Universidad de Sevilla), Enrique Cantón (Universidad de Valencia), Pablo Jodra Jiménez (Universidad Alfonso X El Sabio)**

In the research carried out by Estrada-Contreras, Barrios, Pérez-Córdoba, González, Álvarez and Morales (2013), in which the level of psychophysiological activation in fencers was registered, it emphasized the interest of measuring the real actions of athletes. The objective of this work was to measure the activation level of the serve in two conditions of greater and lesser pressure in Badminton players. A number of 30 athletes participated (Mage= 19.81 years old, SD = 7.88), divided by level of performance (high and low). The Schufried Biofeedback 2000 wireless equipment was used to measure the following variables: galvanic skin response, heart rate, peripheral temperature, motility and electromyography. The level of subjective activation was measured with a Likert scale. Another Likert scale for the subjective assessment of performance by the coach. There were different conditions for the service: Warming up, Low Pressure and High Pressure. In the results, we found that the conditions presented differences in the following variables: electromyography  $F(2.28) = 4.29$ ,  $p = .024$ , with high pressure, being more active than low pressure ( $DM = 2.36$ ,  $p = .028$ ). The peripheral temperature  $F(1.21, 17.03) = 28.78$ ,  $p < .001$ . The level of subjective arousal  $F(2.28) = 28.78$ ,  $p < .001$ . The performance  $F(2.28) = 3.89$ ,  $p = .032$ . In general, we can say that the arousal level increases as the pressure of the conditions increases, but it only does it in the variables of EMG and peripheral temperature, as well as in the subjective response of arousal, being the equipment of high performance which is more active, but it also shows a better performance. Possibly accustomed to high levels of pressure.

*Keywords: activation, badminton, serve, psychophysiological response, performance*

### Effect of verbal feedback on the psychophysiological arousal of university athletes

**Omar Estrada Contreras, Macarena del Rosario Prado Salinas, Sara García García (CEU Cardenal Spínola)**

In a research carried out by Barbero-Alvarez, Gómez, Barbero, Granda and Castagna (2008) they measured the heart rate in young indoor football players during a football match, using heart rate monitors. The objective of that study was measuring the impact of verbal feedback on the psychophysiological arousal response during the execution of the indoor football circuit. A number of 32 university athletes participated in this investigation (Mage= 20.66 years old, SD= 1.83) divided by sex (men and women) and type of feedback (positive-negative and negative-positive), There were 4 groups of 8 people each one. The feedback was administered to the subject during the execution of the indoor football circuit. The psychophysiological arousal was to measure with heart rate and subjective arousal level, in addition performance and run time were considered. In the results we found significant differences in the next variables: in heart rate  $F(2.77, 36.01) = 109.65$ ,  $p < .001$ . At the subjective arousal level  $F(3.64, 47.35) = 35.58$ ,  $p < .001$  and the arousal level of the groups  $F(3.64, 47.35) = 5.28$ ,  $p = .002$ . The time of execution  $F(4, 52) = 10.99$ ,  $p < .001$ , in addition to the time of execution by groups  $F(4, 52) = 3.218$ ,  $p = .020$ . In general, there were not differences in relation to the sex of the participants, but the feedback had an influence on the level of athlete's psychophysiological arousal as well as on the time of execution of the activity.

*Keywords: indoor football, psychophysiological arousal, heart rate, circuit*

### Comparison of group cohesion between beginner and more advanced participants in music yoga classes

**Oliver Twizell (Brunel University)**

Lewin (1939) stated that cohesion is a cornerstone of group dynamics and, without it, it is doubtful that a group could be said to exist at all (as cited in Beauchamp & Eys, 2007, p. 142). Despite substantial research on both cohesion and the physical and mental effects of yoga, the only study of note to assess the effects of group cohesiveness in yoga was by Bryan (2012), who found a positive correlation between yoga tenure and exercise adherence. The purpose of this study was to compare group cohesion between beginner and more advanced participants in music yoga classes. Based on the Bryan (2012) study and definitions of group cohesion (Bryan, 2012; Carron, Hausenblas, & Eys, 2005), it was hypothesised that group cohesion would be higher among more advanced yogis compared to beginner-level yogis. Staff at four yoga studios were approached and two teachers agreed to cooperate in terms of availing attendees at their classes. Upon verbal request, 22 yogis volunteered to participate in a “sport psychology study to assess their opinions of yoga”. Each participant was asked to rate their yoga level as well as their experience of the present class (4 beginners and 17 intermediate/advanced yogis; Mage = 21.0 years; SD = 8.9 years) and confidentiality was assured. Participants completed an informed consent form, provided demographic details and subsequently responded to the PAGEQ questionnaire prior to their yoga class. Institutional ethical guidelines were fully adhered to. In the comparison of the two levels of participants there were no statistical significance differences ( $p > .05$ ) in their perceptions of group cohesion. Therefore, the results did not support the research hypothesis, as differences between beginner and more advanced participants could not be found in a music yoga class. These results lend support to the notion that gaining inner tranquillity is a very individual process and therefore not conducive to group interaction.

*Keywords: group cohesion, yoga*

### Health psychology in university students: exercise, physical health and nutrition

**Olga Mariela Mogollon Canal, Sonia Carolina Mantilla Toloza (Universidad de Pamplona, Colombia)**

This research ended in 2015 at the University of Pamplona, Colombia. Its objective was to describe from the Psychology of health, using the belief model, the habits of exercise, physical health and nutrition in university students, in order to establish future strategies that will result in their health. The methodology used was a descriptive cross-sectional study with a sample of 836 students chosen by simple random sampling, who were given a validated questionnaire to evaluate physical health. In the statistical analysis, multiple correspondences were used. The main results were: it was found a high consumption of junk food, considerable level of stress, Low consumption of fruits and vegetables; 85% perceive difficulties in maintaining their physical health and remain sitting between 1 and 10 hours; they follow medical recommendations, walk regularly, and they drink water frequently. Half take care of their weight and believe that the context allows them to maintain it; half consider it easier to find excuses for not exercising than to do so. 46% do not eat breakfast; some women practice basketball and swimming. Some men practice tennis and soccer. 40% say that they do not do any sport, 23% do not engage in any physical activity; the preferred physical activity in women is aerobics, men prefer to ride a bicycle or walk. Most are striving to consume healthy food. The conclusions found were that behaviors that could be considered as threats to the health of university students, and others, that could offer possibilities to diminish them, were identified. It is necessary to generate strategies in the context that offer healthy opportunities and facilitate the adoption of habits of exercise and feeding in favor of their health.

*Keywords: health psychology, exercise, physical health, university students*

### Preference of leadership behaviour of coaches by by nigeria university athletes

**Olanrewaju Ipinmoroti (Tai Solarin University of Education)**

This study investigated whether gender and type of sport would moderate athletes' preference of coach leader behaviour Two hundred (200) university athletes (male = 97; female = 103) volunteered to participate in

the study. These athletes have participated at Nigeria Universities Games (NUGA). Individual/ dual sport athletes were selected from athletics, table tennis and badminton while team athletes were selected from soccer, volleyball and basketball. The Leadership Scale for Sport (LSS) developed by Chelladurai and Saleh (1980) was adapted for use in collecting data. 24 items were selected from the original 40 items of the questionnaire. The reliability coefficient is  $r=0.58$ . The data generated were analysed using mean and frequency counts as well as Analysis of Variance (ANOVA) and Pearson Product Moment Correlation (PPMC). Correlation was used to determine the relationship between the variables (gender and type of sport) and preference for coach leadership behaviour. The results showed there were significant differences in the preference of male and female university athletes in all the five coach leader behaviour. There were significant differences between individual/dual sports and team sport athletes' preference for Autocratic, Social Support and Positive Feedback coach leader behaviour. There was significant relationship in the preference of male and female athletes in all the five coach leadership behaviours. There was significant relationship in the preference of individual/dual sport athletes and team sport athletes in autocratic, social support and positive feedback coach leadership behaviour. These findings were in agreement with results of the studies of Weinberg and Gould (2003), Beam, Serwatka, and Wilson (2004); and Sharma (2015). It was recommended that university coaches should be conscious of their leadership behaviour and be willing to align such behaviours to athletes' needs.

*Keywords: preference, coach leader behaviour, individual sport, team sport, university athletes*

### **Barriers to sports participation as a means of achieving sustainable social development in Michael Otedola College of primary education**

**Olalekan Osifeko (Sport Psychology Associations of Nigeria), Bolanle Folarin (Health Educator), Christiana Osifeko**

**Abstract** During these difficult economic times, nations are looking for ways to improve their finances, preserve the environment as well as the socio-political climate and educational institutions, which are needed to increase their economy and preserve their sustainable development. Sport is one of the ways through which sustainable development can be achieved. The purpose of this study was to examine the barriers to participation in sport. A total of 1,025 students were purposively selected from all the five schools (School of Arts and Social Sciences, School of Languages, School of Education, School of Sciences and School of Vocational and Technical Education) in MOCPE. A self structured questionnaire was the main instrument and was supported with oral interview, which contains two sections. Section A sought information on demographic data while section B focused on items dealing with barriers to sports participation. The modified Likert scale with four response options from Agree, strongly agree, disagree, strongly disagree was adopted. The analysis of reliability using split-half and Cronbach alpha coefficient was  $r=0.71$ . Descriptive statistics of simple percentage, mean and standard deviation and inferential statistics of Chi Square and Pearson's Product Moment Correlation coefficient were used in analyzing the data at alpha level of 0.05. Sport facilities, funding and lecture schedules were reported as important barriers to participation in sports as a means of achieving sustainable social development in Michael Otedola College of Primary Education. It was recommended that government and college authorities should bear in mind that sustainable social development can be achieved when there is sports facilities, funding and lecture schedules.

*Keywords: funding, sports facilities, lectures schedules, state government*

### **Emotional intelligence and coping strategies in sports: A review**

**Obdulia Tejón López, Juan José Miguel Tobal, Francisco Miguel Tobal (Universidad Complutense de Madrid)**

The current study presents a descriptive review on emotional intelligence and coping strategies in sports with scientific works from 2007 to the present. This will provide information on what has been investigated and what aspects are unknown in the last decade. Little by little it is been increasing the number of articles in the area and gaining major importance for the sports psychologists who work the day by day with the athletes. A great number of articles are based on the creation of questionnaires to measure emotional intelligence as trait or ability. Sylvain Laborde and Andrew M. Lane are the authors who have done more research in the last decade studying the relationship between emotional intelligence and exercise. Also, we find studies that have begun to verify the efficiency of programs of training in the emotional intelligence. With regard to coping strategies, we find have found works that develop three types of coping (focusing on emotion, focusing on the problem and avoidance of the goal). The databases used in the study are as follows: MENDLINE, PubMed, PsycARTICLES, PsycINFO, Web of Science and Sport Discus. Keywords for the search were: emotional intelligence, coping strategies and sports. The variables used for classification are: sports, related variables, instruments, method, year of publication and language. The practical implications of our study are as follows: 1) learn about current research on emotional intelligence and coping strategies, as well as its main results; (2) more understanding of the relationship between emotional intelligence and sport for their future practical application; 3) and provide new fields of research on the basis of the results obtained.

*Keywords: emotional intelligence, sports, articles, coping strategies*

### Comparison of psychological performance strategies of elite athletes

**Nurullah Celik, Hakan Kolayis (Sakarya University), Omer Seydaogullari (Marmara University)**

The purpose of the study was to compare the psychological performance strategies of elite athletes. The research sample consists of 145 elite athletes ( $X_{age}: 19,64 \pm 4,70$ ) aged between 14-35 who took part in international sport competitions. Personal information form and "Test of Performance Strategies" inventory, which was developed by Thomas et al. (1999) and adapted to Turkish by Miçooğulları (2015), was used as a measuring tool in the study. For analysis, descriptive statistics and independent samples t-test tests were used. The statistical analysis was done by SPSS 16 packet program. According to the findings, significant differences were found between male and female athletes in emotional control sub-dimension of practice dimension ( $p=0.012$ ); emotional control sub-dimension of competition dimension ( $p=0.034$ ), relaxation sub-dimension of competition dimension ( $p=0.024$ ). Also, significant differences were found regarding branches in goal setting sub-dimension of practice dimension ( $p=0.004$ ) and emotional control sub-dimension of competition dimension ( $p=0.012$ ); regarding psychologist support in goal setting ( $p=0.003$ ), automaticity ( $p=0.019$ ) and negative thinking ( $p=0.004$ ) sub-dimensions of competition dimension. As a result, it can be concluded that psychological performance strategies differs especially in goal setting and emotional control sub-dimensions of competition and practice dimension of Test of Performance Strategies inventory regarding gender, branches and psychologist support. Thanks to this study, athletes will be provided to know the best strategies for a better athletic performance.

*Keywords: elite athletes, psychological performance, strategy*

### Impact of the basic psychological needs on well-being and physical activity in older adults

**Nuno Couto, Raúl Antunes, Diogo Monteiro, João Moutão, Luís Cid (Sport Science School of Rio Maior (ESDRM-IPSantarém), Research Center in Sports Sciences, Health and Human Development (CIDESD))**

As is known, the average life expectancy has been increasing, which leads researchers to be concerned about the way in advanced phases of life can live without health problems. Because of this, research has shown that physical activity is essential to older adults quality of life. We also know that Basic Psychological Needs (BPN) are essential to functioning, growing, integrity, being health and well-being predictors. This way, the



main goal of this work was to analysed the impact of older adults Portuguese individuals' global perception of satisfying BPN, over physical activity practice and well-being variables (subjective happiness, subjective vitality) through a structural equations model. The way as feelings of well-being differ according to the amount of physical activity practiced in Portuguese older adults, was also analysed by mean of the test Anova one-way. Participants included 311 older adults (244 females, 67 males) of Portuguese nationality who practice different levels of physical activity. Their ages range from 60 to 90 years old ( $M=68.59$ ;  $DP=6.60$ ). The obtained results show that the perception of basic psychological needs in Portuguese older adults lives are a positive predictor of subjective happiness and subjective vitality. Also, the results verified that older adults who perceive higher levels of competence practice more physical activity. Consequently, it is also possible to conclude that older adults who participate in more physical activities perceive greater levels of subjective happiness and subjective vitality.

*Keywords: aging, well-being, physical activity, basic psychological needs*

### **"CIDADANIZA" - Planning, implementation and evaluation of a citizen education program in an African-based Portuguese school: an action research case study**

**Nuno Antunes, Ana Besteiro, Alexandra Melo, Janaína Tomás (Portuguese School of Mozambique), Nuno Corte-Real (University of Oporto)**

It is believed that schools are responsible to prepare students for citizenship, and that almost every child goes through the school system. According to the Portuguese Ministry of Education, citizenship education aims to develop responsible and autonomous persons, who are aware of their rights and are able to discuss them with others, respectfully and democratically. Thus, the purpose of this study is to describe the planning, implementation and evaluation of a citizen education program that helps students to become citizens, as defined above. The Portuguese School of Mozambique adopts a class tutor system, in which transversal goals are promoted by all teachers and coordinated by the class tutor. The present action research case study follows 12 class tutors who lead groups of 20 students, aged between 10 and 12 years old. The research team is led by 2 school psychologists and 2 of the class tutors. During the period of the study, from November to June 2017, the tutors meet with the research team every two weeks. These meetings aim to plan activities, according to the feedback collected from students and the discussion between class tutors. The progressive cycle of action research determines the following activities. The program integrated goal setting, performance profiling, consensus building, jigsaw problems and negotiations. Data was collected using a research diary and a student's reflective sheet. Preliminary results reveal that the program is beneficial for the students. The study confirms the importance of collaborative planning and discussion time between teachers. Finally, the results of the study support the multidisciplinary work approach between teachers and school psychologists.

*Keywords: citizen education, positive youth development, teacher collaborative work, African-based school, action research*

### **Children's body-image in their drawings —How is the characteristic behavior of children represented in their full-length self-portraits?**

**Noriko Miyake (Tokyo International University)**

There are some psychological drawing tests. Draw-A-Man test by Goodenough(1926) is measures intelligence using drawings. Moreover, Machover, K.(1949) wrote "—Personality Projection in the Drawing of the Human Figure". I developed a technique for measuring body image using a child's full-length self-portraits and a full-length photographs of themselves. A qualitative analysis was conducted using full-length self-portraits of the frontal and side view, drawn by 151 11-12-year-old elementary school children. The characteristics of the children's behavior were identified by their class teachers. Their teachers chose 39

children who were hyperkinesis, lack of care, impulsiveness, violence, and resistance among their class. I focused on 39 drawings which were drawn by like these children. I compared their drawings with other children's drawings in the points of content analysis and features of strokes. The purpose of this study was to compare drawings made by children to the characteristics of their behavior. The characteristics of their behavior were reflected in their drawings. For example, children whom their class teachers identified to be hyperkinetic scribbled their self-portraits. Their drawings had characteristics such as curved lines, and exaggerated fingers. Their drawings indicated that they were "child[ren] of impulse"; they had features such as large heads, two legs (in side view), and exaggerated fingers. Their drawings were represented their body-image distinctly in a projective full-length self-portrait, because they drew their full-length self-portraits after they had their pictures taken. It was inferred from this study that drawings made by children represent the characteristics of their behavior.

*Keywords: body-image, self-portrait, children, characteristic behavior*

## Parental profiles and their effects on elite adolescent athletes' self-determination theory variables

**Noémie Lienhart, Virginie Nicaise (LVIS)**

Parents endorse several roles and provide emotional, financial, logistical supports throughout young elite athletes' development. However, parental involvement is not always favorable for youth elite athletes. Previous studies have only been investigated the relationship between specific parental behaviors with athletes' motivation and emotion. The purposes of the current study were to: (a) identify parental profiles of elite adolescent athletes separately for the mother and the father and (b) examine how athletes in each of parental profiles predicted 7 months later, athlete's self-determination theory variables. A total of 221 elite adolescent athletes completed the Parental Involvement in Sport Questionnaire at the start of the season, and the sport motivation, satisfaction and thwarting of basic psychological needs questionnaires at the end of the season. The latent profile analyses were used to identify three parental profiles for both mother and father. Low scores in the 4-behaviors (i.e., pressure, directive behavior, praise and understanding, active involvement) characterized parental profile 1, in contrast with parental profile 3 including high scores for all parental behaviors. The 2nd profile is represented by parent's having high praise and understanding behaviors scores, moderate directive behaviors and active involvement scores and low-pressure scores. Analyses of variance indicated that the more adaptive profile for athletes was parental profile 2. Mother's profile 2 predicted lower athlete's controlled motivation and thwarting of competence need. Father's profile 2 predicted lower athlete's controlled motivation and higher athlete's satisfaction of competence need. In sum, the parental profile approach is essential to identify adaptive vs. non-adaptive parental involvement, to be able to implement training program for parents having elite adolescent athletes.

*Keywords: mother, father, motivation, latent profile analysis*

## Mental preparation guideline and workbook for young athletes in Hungary

**Krisztina Kovacs, Noémi Gyömbér**

The most dominant part of the sportpsychological counselling is to utilize and integrate the psychological skills into the athlete's preparedness. The aim is to establish the balance and to prepare the athlete to be able to perform at the highest physical and mental level in competitions. The successful sport performance contains the ability of concentration, stress-management and anxiety reduction as well as the ability to integrate the psychological profile into the successful performance. The more younger the athlete is at the time of the sportpsychological preparation, the more likely can the athletes take advantage of it. Being a young athlete is a life-stage, which influences the behaviour and performance. As sportpsychologist we experienced,

that the earlier age we begin the mental preparation, that more effective will be the utilization of the benefits of the psychological factors. Thus, it is highly recommended to begin the sportpsychological counseling even at young age. The sportpsychology preparation should be age-specific, so we have to consider the special age-related features and problems and life-situations. Based on the research results and practical experiences we have developed a special mental preparation guideline and workbook for young athletes with several self-experience-based exercises. These exercises focus on the topics of abilities and possibilities; mental toughness; goal-setting; coping with anxiety; the attitude of winning; concentration; mental training; mental recovery; self-talk; self-confidence; routines and communication. The aim of this workbook is to provide a sportpsychological insight and basis for young athletes (especially when they don't have a chance to meet a sportpsychologist) to help them in the way of mental preparation and to develop co-operation among athletes, coaches and parents. For professional reasons a clinical children psychologist was involved in the process.

*Keywords: young athletes, mental preparation, workbook, coaches, parents*

### **Mindfulness training for Hong Kong elite athletes: A single-case designed study**

**Ning Su, Gangyan Si (Education University of Hong Kong)**

Over the last 35 years, the traditional psychological skills training (PST) was predominately used to improve athletes' performance in sport psychology, however, empirical support for the efficacy of PST was lacking. In this study, the Mindfulness-Acceptance-Insight-Commitment (MAIC; Si et al., 2014), an alternative training of PST developed by Chinese indigenous sport psychologists, was applied among Hong Kong elite athletes, and the efficacy of the MAIC was examined. A multiple-baseline single case design was applied in this study. Four Hong Kong elite athletes, who were first exposed to mindfulness-based training, were recruited from Hong Kong Sports Institute as the participants of this study. The study included three phases (i.e., baseline phase, intervention phase and post-intervention phase). Baseline phase lasted two weeks with no training, and four points data collections were conducted for all participants with their mindfulness, acceptance, commitment and training performance. Intervention phase lasted 3 weeks with training for all participants, and 6 points data collections were conducted. Post-intervention phase lasted 2 weeks with no training, and four points data collections were conducted. Visual analysis and Non-Overlap of All Pairs analysis (Parker & Vannest, 2009; Parker, Vannest & Davis, 2011) indicated that the MAIC training had medium or high effect (rescaled NAP values between .32 - 1.0) on mindfulness level, acceptance level, commitment level, and performance for all four athletes. This study demonstrated that the MAIC training was effective for Hong Kong elite athletes. It can benefit the athletes especially for enhancing their performance. In future, the author welcome more and more Chinese sport psychologists can apply and evaluate the MAIC training. Meanwhile, it is anticipated that more athletes can get benefits from the MAIC training.

*Keywords: mindfulness training, mindfulness, acceptance, insight, commitment, elite athletes*

### **The construct validity and reliability evidence of Turkish version of sport multidimensional perfectionism scale in adolescents athletes**

**Nükte Özgör, Nilay Hande Kocadag (Faculty of Sport Sciences, İstanbul, Turkey), Atahan Altintas (Başkent University, Sport Sciences Department, Ankara, Turkey), Fevziye Hülya Aşçı (Faculty of Sport Sciences, İstanbul, Turkey)**

The aim of this study was to examine the construct validity of Turkish version of "Sport Multidimensional Perfectionism Scale" (SMPS) for adolescents athletes. The scale was developed by Dunn, Causgrove Dunn and Syrotuik (2002) and includes 30 items and four subscales -personal standards, concern over mistakes, perceived parental pressure, perceived coach pressure-. One hundred and twenty five females (Mage=14.62, SD=1.56) and 102 males (Mage=14.60, SD=1.64), totally 227 adolescent athletes (Mage=14.61, SD=1.59)

voluntarily participated in this study. Confirmatory factor analysis was used to test the construct validity of SMPS since it is one of the way to test factor structure of instrument. Confirmatory factor analysis results of 30 items with four factors showed the lower fit index values ( $\chi^2/df=3.43$ ; IFI=0.59, TLI=0.54, CFI=0.58, RMSEA=0.09) and lower factor loadings for some items. Therefore, different models were tested and confirmatory factor analysis revealed adequate fit for 12 items with four factors structure ( $\chi^2/df=1.92$ ; IFI=0.95, TLI=0.93, CFI=0.95, RMSEA=0.06). The factor loadings of items were ranged from 0.51 to 0.76 for Personal Standards subscale, from 0.58 to 0.78 for Concern over Mistakes subscale, from 0.67 to 0.83 for Perceived Parental Pressure subscale and from 0.58 to 0.85 for Perceived Coach Pressure subscale. Internal consistency coefficients were 0.69 for Personal Standards, 0.70 for Concern over Mistakes, 0.77 for Perceived Parental Pressure and 0.66 for Perceived Coach Pressure subscales. The results showed that 30 items Turkish version of SMPS has no satisfactory factor structure. However, 12 items version has acceptable reliability and validity evidence. Therefore, 12 items SMPS can be used to determine Turkish adolescents athletes' perfectionism level. The validity of the scale should be investigated on another samples and by using different statistical analysis.

*Keywords: sport, perfectionism, validity, reliability*

## Development and validation of a new multidimensional measure of coach interpersonal behaviours

**Nikita Bhavsar, Nikos Ntoumanis, Eleanor Qusted (Curtin University), Richard Ryan (University of Rochester), Johnmarshall Reeve (Korea University), Daniel Gucciardi, Cecilie Thøgersen-Ntoumani (Curtin University)**

Self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2002) postulates that an athlete's behaviour reflects both, personal and socio-contextual motivational influences. To date, SDT based measures of the socio-contextual environment in sport have focused on need supportive and need thwarting behaviours of coaches. Existing measures tapping need thwarting behaviours have often included a combination of items reflecting active need thwarting behaviours as well as need neglecting behaviours, which are unsupportive, but potentially less motivationally damaging. The distinction between need thwarting and neglecting behaviours is potentially important, as the former are more likely to result in need frustration, whereas the latter are more likely to lead to need dissatisfaction, thus warranting a separate assessment of this type of interpersonal behaviour. As such, the current study aims to develop a new multidimensional measure to assess need supporting, thwarting, and neglecting behaviours of coaches in the sport domain. In Study 1, quantitative and qualitative data was obtained from 20 competitive athletes and eight academic experts in developing and providing content validity evidence for the item pool of the new measure. The final version of the questionnaire consisted of 54 items, which were deemed clear and applicable to the sport domain by athletes and academic experts. Study 2 is in progress and aims to provide evidence for the factor structure, discriminant validity and reliability of the subscales of the new measure. By demonstrating refined terminology and conceptualisation of the key constructs in this area, this new multidimensional measure can have widespread utility in examining need supporting, neglecting and thwarting coach behaviours and their independent contributions to need satisfaction, dissatisfaction, and frustration, as well as adaptive and maladaptive types of motivation, and various behavioural, cognitive, and affective outcomes.

*Keywords: self-determination theory, scale development, coach interpersonal behaviours*

## Career development of Swiss sport psychologists

**Nicola Jänsch (University of Bern)**

Although the reputation of sport psychologists is steadily growing and there is a current need for well-educated sport psychologists, only a few of the active Swiss sport psychologists invest most of their work time in this area and generate an appropriate income. This outcome was the motivation to further analyze the career development of established, practical working and, according to objective criteria, successful sport psychologists. The study was conducted in form of qualitative single-case analyses. With the help of a self-developed guideline, the semi-structured interviews investigated four areas: career choice, career development and strategies, encountered barriers and resources and self-evaluated career success. The participants (N=10) reported to become aware of the area of sport psychology due to the own experience in competitive sports or to strong interest in this field. The career development mostly covered different task areas, in practice as well as research, and also included or still includes activities in other areas outside of sport psychology. Career strategies cover proactive behaviors like acquisition of knowledge, increasing the own level of awareness and networking. The participants report mostly external career barriers like fixed-term job contracts, lacking motivation to invest money in psychological interventions, low flexibility due to family or gender stereotypes. Resources are found external in form of emotional and financial support from family, colleagues and network and professional training as well as internal in form of high adaptability and flexibility. Most sport psychologists define their career success through personal task satisfaction and high quality of interventions. The analysis indicates critical issues in a sport psychologist's career development which may be an important help for future candidates in this field as well as for the enhancement of sport psychological education and training.

*Keywords: sport psychologists, career development, career strategies*

### **Perceptual cognitive expertise and the role of anxiety in sport: A systematic review**

**Niall Kelly, Dr. Matthew Herring, Dr. Mark Campbell (University of Limerick)**

In recent years, researchers have been interested in the relation between anxiety and the execution of perceptual cognitive skills in sport. Developments in eye tracking technology have allowed us to explore the visual search of an athlete during complex motor tasks. Previous literature suggests that under elevated anxiety conditions, accuracy, response time, and gaze behaviour can be altered. However, there is a paucity of reviews synthesising the effects of anxiety on such skills. We extend the findings of a previous meta-analysis on perceptual cognitive expertise (Mann, 2007), incorporating the effect of anxiety on similar outcome measures (reaction time, response accuracy, gaze behaviour). We hypothesised that athletes would react slower and with less accuracy under elevated anxiety conditions. Further, we expected athletes would exhibit more fixations of shorter duration, and a shorter quiet eye period under elevated anxiety conditions. Last, and similar to the findings of Mann (2007), we expected experts to outperform controls specifically in the context of elevated anxiety conditions relative to novices. Relevant databases (including Psych Info, Web of Science, Google Scholar) were searched in accordance with PRISMA guidelines. Post hoc sub group analyses were carried out to explore potential expert/novice differences in response to elevated anxiety. We provide a synthesis of contemporary research on anxiety interventions in sport, and explore the influence of elevated state anxiety on the execution of perceptual motor tasks in a number of sports, and between different levels of expertise. A central aim of this review was to generate a reference for the current state of knowledge with regard to perceptual cognitive skill and elevated anxiety in sport. Findings may inform future training interventions, and contribute to our knowledge of the mechanisms by which anxiety becomes debilitating to performance.

*Keywords: gaze behaviour, state anxiety, eye-tracking, reaction time, sport*

## Physical activity attenuates negative affective responses during inactivity and hypoxic conditions

**Nektarios Stavrou (National & Kapodistrian University of Athens, Athens, Greece; Olympic Athletic Center of Athens "Spyros Louis", Athens, Gre, Tadej Debevec (Jozef Stefan Institute, Ljubljana, Slovenia), Ola Eiken (Royal Institute of Technology, Stockholm, Sweden), Igor Mekjavic (Jozef Stefan Institute, Ljubljana, Slovenia)**

Hypoxia and inactivity have both been reported to influence emotional responses. Hypoxia-related reduction in systemic O<sub>2</sub> availability provokes a number of neuropsychological impairments and affects mood, and cognitive function. Inactivity either as a result of illness or experimental bed rest has also been demonstrated to increase the negative psychological responses. The purpose of this study was to investigate the separate and combined effect of inactivity and hypoxia on affective responses and fatigue. Eleven healthy participants (age: 27 ± 6 years) underwent three 21-day interventions using a cross-over design: 1) normobaric hypoxic ambulation (HAMB), 2) normobaric hypoxic inactivity (HI) and 3) normoxic inactivity (NI). Simulated altitude of 4000 m normobaric hypoxia was used for both hypoxic conditions, while experimental bed rest was used for inactivity. Affective and fatigue responses were investigated by the Activation Deactivation Adjective Check List, and Multidimensional Fatigue Inventory, respectively, which were completed 2-days before (Pre), during (Days 7, 14, 21) and 1-day after (Post) the interventions. The most negative psychological profile appeared during the HI condition. Specifically, tiredness, tension, general and physical fatigue significantly increased on days 7, 14, and 21, as well as, during the POST measure. The levels of general and physical fatigue did not return to the initial level at POST following HI only. Additionally, a deterioration of psychological responses was noted during the NI and HAMB interventions. Hypoxia and bedrest independently induced fatigue and negative affective responses. Inactivity exerts a moderate effect on sensation of fatigue, whereas exercise attenuates the negative effects of hypoxia as noted during the HAMB condition. Our data collectively suggest that even habitual physical activity levels are sufficient to negate the fatigue responses and negative affect induced by a hypoxic inactive environment.

*Keywords: affect, fatigue, inactivity, hypoxia, bed rest*

## Examining the relationship between basic psychological needs, mental toughness, motivation and young athletes' exercise participation

**Nektarios Stavrou (University of Athens, Athens, Greece; National Sports Research Institute, Olympic Athletic Center of Athens "Spyros Louis", Athens) Nikos Spiliotopoulos, Karla Santos (Municipal Organisation of Sports, Culture and Environment, Pallini Municipality, Athens, Greece)**

Motivation for sport is a crucial phenomenon, with athletes having multiple and different motives for engagement. These motives are linked to several other psychological indices, maintaining young athletes' sport participation. Based on self-determination theory, basic psychological needs satisfaction is explicitly linked to self-determined types of motivation, which had a positive effect in exercise participation. The purpose of the present study was to examine the relationship between psychological needs, mental toughness, motivation and young athletes' sport participation. We surveyed 144 young athletes (78 boys, 66 girls) ranging in age from 9 to 12 years ( $M=9.50$ ,  $SD=1.19$ ). The athletes completed the Sport Motivation Scale-2, the Basic Psychological Needs in Exercise Scale, and the Mental Toughness Inventory based on how they usually felt during their participation in their sport. The instruments indicated acceptable validity and internal consistency indices. In addition, the young athletes indicated their duration (in years) and frequency (times per week) of their exercise participation. The correlation analysis results indicated significant positive correlations between intrinsic types of motivation and basic psychological needs (autonomy, competence) and mental toughness. Regression analysis results indicated that basic psychological needs serve as significant predictors of intrinsic types of motivation. In addition, exercise duration and frequency were positively correlated to intrinsic types of motivation (intrinsic, integrated, identified, introjected), while null correlation and negative correlations



revealed to external motivation and amotivation, respectively. The results indicated that competence and autonomy positively related to intrinsic exercise motivation in young athletes. Conclusively, self-determined types of motivation in young athletes can be helpful in the increase of their exercise sport participation, either duration or frequency.

*Keywords: motivation, psychological needs, mental toughness, exercise participation*

### **Stress, coping strategies and resilience of the Brazilian youth beach volleyball team summary**

**Nayara Malheiros Caruzzo, Lucas Motta Palermo, William Fernando Garcia, Paulo Vitor Suto Aizava (State University of Maringá)**

Sporting context is pointed out as a potential stressor to the athlete. However, there are coping strategies for adaptation to the contextual demands. The process of cognitive coping assists in the resilience development, a personal resource that explains favorable responses, even in adverse situations. The objective of this study was to analyze the stress, coping strategies and resilience of athletes of the Brazilian national under-21 beach volleyball team. All Brazilian athletes (four females and four males) participating in the U-21/2016 Beach Volleyball World Championships, were considered the most important competition of the category. It is noteworthy that four athletes were world champions. As instruments, the Recovery-Stress Questionnaire for athletes (RESTQ-76), the Athletic Coping Skills Inventory-28 (ACSI-28) and the Connor-Davidson Resilience Scale (CD-RISC). For data analysis it was used the Shapiro-Wilk test, Anova of repeated measures with post-hoc Bonferroni, to verify if there is predominance of some of the dimensions of the instrument, Paired T-test and Independent T with Cohen's D and Pearson correlation. It was verified that the predominant coping strategies were confidence and motivation ( $p=0,003$ ) and maximal performance under pressure ( $p=0,006$ ). There was a high level of resilience and a positive correlation between resilience and goal formulation ( $r=0,88$ ). There was a significant difference between the sexes, in which males showed a higher rate of confrontation with adversity ( $p=0,04$ ) and resilience ( $p=0,04$ ) when compared to females. It was concluded that these world-class athletes, use as coping strategy confidence and performance under pressure, presenting a resilient profile and better recovery levels in relation to stress.

*Keywords: stress, coping, resilience, sport*

### **Ironic or overcompensating error in golf putting: The importance of attention imbalance**

**Nataniel Boiangin, Gily Meir, Jean-Charles Lebeau (Florida State University), Itay Basevitch (Anglia Ruskin University), Christina Todd, Sicong Liu, Kimberly Cologgi, Gershon Tenenbaum (Florida State University)**

Ironic errors predicted by the Ironic Process Theory (IPT) and overcompensating errors predicated by the Implicit Overcompensation Hypothesis (IOH) under a suppressive goal were observed in golf putting. Specifically, after being told to "not putt short," novices could make either an ironic or overcompensating error by putting shorter or longer than the target. The present research aimed at clarifying this conflict between IOH and IPT by manipulating a plausible moderator, attention imbalance. Attention imbalance was introduced by placing a red dot in front of the target on the green, and by telling novices to "not putt onto the red dot." A 2 (attention imbalance or not) x 2 (suppressive goal or not) design in two sequential studies was employed. In Study 1, 76 novices were randomized into four conditions to perform 30 trials (i.e., three 10-trial blocks). The first block formed the baseline and the later blocks were coupled with cognitive load (i.e., rehearsing a 6-digit number) and condition-wise manipulations. To prevent visual feedback from confounding results of Study 1, 72 novices were collected in Study 2, where participants followed identical experimental procedures of Study 1, except that visual feedback after putting was now rendered impossible. Results of both studies revealed that, although the generation of attentional imbalance led to an ironic effect, the ironic effect was weaker than the

overcompensating effect in a way that the overcompensating tendency under the suppressive goal decreased but not eliminated or reversed compared to the control condition. This result supports that attentional imbalance is a necessary factor for observing ironic errors in motor tasks. It also implied that other moderators should be considered when predicting motor errors under suppressive goals. For example, given the support evidence of IPT in some motor tasks, the automaticity of task execution may act as another key moderator.

*Keywords: golf putting, attention imbalance, ironic error, overcompensating error, task execution automaticity*

### **Relationship of motivational climate and self-determined motivation: A study of mediation of needs satisfaction**

**Nallely Castillo Jimenez, Jeanette Magnolia López Walle (Universidad Autonoma de Nuevo León), Ines Tomás, Isabel Balaguer (Universitat de València)**

Within the framework of Self Determination Theory (SDT, Ryan & Deci, 2000), the aim of this study was to test two mediation models examining the relationship between: (1) empowering climate developed by the coach, athletes' needs satisfaction, and athletes' self-determined motivation; and (2) empowering climate developed by the coach, athletes' need satisfaction dimensions (autonomy satisfaction, competence satisfaction, and relatedness satisfaction), and athletes' self-determined motivation. The participants were 381 Mexican young soccer players ( $M_{age} = 12.41$ ;  $SD = .89$ ) who completed a questionnaire package including the variables of the study. Mediated regression analyses were carried out with PROCESS macro for SPSS (Hayes, 2013, 2015). Results from the first model revealed that empowering climate positively predicted athletes' need satisfaction ( $b=.37$ ,  $p<.05$ ) and relatedness satisfaction ( $b=-.04$ ,  $p>.05$ ) were not statistically significant predictors of self-determined motivation. Finally, the indirect effect of empowering climate on self-determined motivation through autonomy satisfaction was statistically significant ( $IE=.12$ , 95%  $BCI = [.05, .20]$ ). In sum, basic psychological need satisfaction plays a mediator role in the relationship between empowering climate and self-determined motivation.

*Keywords: motivational climate; basics psychological need; soccer, self-determined motivation*

### **The attitudes of exercisers in wellness and fitness centers towards leisure activities and the problems they encounter**

**Murat Uygurtas (Kirikkale University), Ozbay Guven (Gazi University)**

The purpose of this study was to determine attitudes of exercisers in the wellness and fitness centers towards leisure activities and to identify the problems they encountered. Secondly, we aimed to examine attitude differences in terms of some socio-demographic variables among exercisers. Total 428 exercisers ( $M_{age} = 26.39$ ,  $Sd = 6.14$  years,  $n_{women}=206$ ,  $n_{men}=222$ .) participated in this study. The participants were classified into three age groups as 18-24, 25-30, and 31 and older ages. Data were collected by using "Leisure Activities Attitude Scale (LAAS)" and "Leisure Activities Problem Questionnaire (LAPQ)" developed by the researcher in December, 2016. Besides descriptive statistics, we used independent sample t-Test, One-way ANOVA and Chi Square Test to analyse the data. t test results indicated that male participants had positive cognitive attitudes towards leisure activities than female participants ( $p<0.001$ ). Participation in leisure time activities increased cognitive attitudes and decreased affective attitudes with age ( $p<0.001$ ). Also unmarried participants had positive cognitive attitudes than married participants ( $p<0.001$ ). In particular, public sector employees were found to be in positive affective attitude compared to other occupational groups ( $p<0.05$ ). Negative behavioral attitudes have been observed in working people who are more experienced in terms of working time ( $p<0.05$ ). Chi Square Test results indicated that regarding problems encountered in participation of leisure activities, we found age group differences in subscale of time and economical problems ( $p<0.001$ ). 25-30 years of age group had higher scores on this subscale than those of other age groups. In addition, results

showed significant differences in the subscales of individualized, psychological and economic problems in terms of residence zones of participants ( $p < 0.05$ ). Regions with high socio-economic level had higher scores in these subscales than those of low ones.

*Keywords: wellness and fitness centers, leisure, recreation, attitude, problem*

## The effectiveness of aerobic exercise on improving quality of life of patients who have suffered a stroke

**Montserrat Grau (Consorci Sanitari de Terrassa)**

The amount of people who survive a stroke is increasing annually. Patients with stroke suffer neurological deficits and a physical deconditioning that compromise walking ability, basic activities of daily living (ADL) and health-related quality of life (HRQOL). The aim of this study was to determine the effects of a 12-week community-based rehabilitation program based on aerobic exercise (RPAE), among people who had suffered a stroke, on their walking speed, physical condition, activities of daily living (ADL) and health-related quality of life (HRQOL). An observational repeated-measures design was used. Participants were evaluated at baseline, post-intervention and at six months. 31 participants underwent the RPAE twice a week. Physical outcome measures assessed were: walking speed (10MWT), physical fitness (6MWT), ambulation capacity (FAC) and ADL (Barthel). HRQOL was assessed with the Euroqol-5D (EQ-5D-5L). Data analysis: The nonparametric Friedman's test was used to compare means of the three repeated measurements. The effect size was estimated using Cohen's  $d$ . Twenty-five participants completed the rehabilitation program. Improvements were significant in all outcomes measures at the end of the intervention and those were retained six months later. Comfortable walking speed increased an average of 0.16 and 0.23m/s, respectively. At the end of the intervention, all the participants achieved independent ambulation both indoors and outdoors. In ADL, 40% were independent at baseline vs. 64% at the end of the intervention. HRQOL improvements were significant. Before the intervention, participants identified important limitations that affected their HRQOL, which improved substantially after the intervention and allowed patients to accomplish a better self-perceived HRQOL. The results obtained demonstrate that aerobic exercise improves walking speed, walking independence, physical fitness, ADL independence and HRQOL of people with stroke.

*Keywords: exercise, quality of life, rehabilitation, stroke*

## Coaches' interpersonal style, frustration of the basic psychological needs, and affects in university athletes

**Monica G. Flores-Ibarra, Jeanette M. Lopez-Walle (UANL), Gilda Moheno Gurza (UACJ), Michaela Cocca (UANL)**

The Self-Determination Theory (Deci & Ryan, 1985, 2000) explains people's motivation applied to human behaviors different contexts. In the field of sports, athletes' behaviors are related to the interpersonal coaching styles, either supporting or controlling. A supporting style allows athletes to give their opinion and to choose; a controlling one is based on restraining athletes' conducts. The aim of this study is to test a structural model focused on coaches' interpersonal styles. The model studies the interaction among coaches' controlling style, composed by 4 sub-scales (controlled use of praise, negative conditional attention, intimidation, and excessive personal control), frustration of athletes' basic psychological needs (autonomy, competence, and relatedness), and positive or negative affects in Mexican sportsmen. The sample was composed by 485 university students aged 17 to 28 years ( $M = 21.19$ ,  $SD = 2.01$ ). Questionnaires were employed in order to assess the variables included in the study. Results from structural equation modeling showed acceptable indexes of goodness of fit:  $GFI = .978$ ;  $CFI = .975$ ;  $RMSEA = .095$ . The outcomes also showed that negative conditioned attention ( $\beta = .27$ ) and coaches' controlling style ( $\beta = .19$ ) act as positive predictors of basic psychological needs frustration; while

the frustration of psychological needs increases athletes' negative affects at the same time as it reduces positive affects. This research promotes the implementation of psychological intervention programs contributing and supporting coaches' work when they use a controlling style, in order to reduce future negative affects in their athletes.

*Keywords: coaches, controlling interpersonal style, basic psychological needs, self-determination theory, university athletes*

## Employment status and physical activity among Japanese mothers of preschoolers

**Mitsuhiro Amazaki (Aichi University), Chihiro Kemuriyama (Gifu Shotoku Gakuen University)**

This study examined whether the employment status was a factor that increased physical activity (PA) in Japanese mothers of preschoolers. We did a cross-sectional survey in the two municipalities of Aichi Prefecture, Japan. The participants included 1865 Japanese mothers of preschoolers, ages 18 to 52 years ( $M = 35.14$ ,  $SD = 4.89$ ). We assessed the employment status (workers: full-time or part-time job, non-workers: housewives), the time spent playing with own children (e.g., game of tag), and the International Physical Activity Questionnaire short form. The results showed that the workers had more PA levels (high, moderate, and low) than the non-workers ( $p < 0.001$ ). The time spent in sedentary behavior had a non-significant difference between workers and non-workers. However, non-workers spent more time playing with their children than the workers ( $p < 0.001$ ). In this region, the non-working Japanese mothers had low levels of PA, but they had more time to play with their children. This finding implies that the promotion of PA among Japanese non-working mothers may require a place to play with their children or keep their children in affordable temporary care.

*Keywords: physical activity, mother of preschooler, employment status, IPAQ-SV*

## Effects of internal versus external focus of attention on the learning of a balance task without and with a secondary visual task

**Miriam Palomo-Nieto (Universidad Politécnica de Madrid, Palacky University), Ludvik Valtr, Adrian Agricola (Palacky University, Olomouc)**

The advantages of external focus (e.g., concentration on intended movement effects) rather than internal focus (e.g., concentration on body movements) of attention has been shown for performance and learning of a different types of motor skills. The constrained action hypothesis (CAH) (Wulf, McNevin, & Shea, 2001) was proposed to explain the underlying mechanisms of these benefits in which when attentional focus is directed internally the automatic control processes of skill execution will be more constrained and disrupted. In contrast, when attentional focus is directed externally the automatic control processes will be more automatic and less conscious. The purpose of the current study was to test the CAH via examining the effects of external versus internal focus of attention on the learning of a balance task on stabilometer in a dual-task paradigm which test inattention blindness. Participants were undergraduate students who were randomly divided into two groups. First day they performed acquisition trials under external focus (concentrate on keeping the markers horizontal) or internal focus (concentrate on keeping your feet horizontal) instructions. Second day retention and transfer tests were carried out. For transfer test a secondary task was used in which participants were asked to count the number of bounces of same figures from the edges of screen among four different types of figures. Primary results showed some evidence for advantages of external focus compared to the internal focus group in both retention and transfer tests. The current results support CAH showing that the beneficial effects of external compared to internal focus remains constant for the learning of a balance motor skill regardless of increasing attentional load with a secondary task.

This work was supported by the Czech Science Foundation [registration number of the project 16-24281Y]

*Keywords: vision, balance, attentional focus, secondary task*

### **Athlete's path to excellence: The role of mother's sacrifice**

**Miriam Palomo-Nieto, Luis Miguel Ruiz (Universidad Politécnica de Madrid)**

The purpose of this study has been to determine the negative impact on mothers while providing support for their child to become a top athlete. The negative impact associated with this support from mothers is called 'emotional investment.' We applied a qualitative, inductive and interpretative methodology following the procedures and techniques of grounded theory. The research involved interviews with 17 mothers and their 20 top athletes sons and daughters. At the end of it, we formulated a theory which we call Mothers' Negative Emotional Investment in their Children's Sporting Excellence. Our theory relies on three main themes: 1. Pain, fear, and anxiety of the mother, 2. Negative impact on the family, 3. Sacrifice, renunciations, and effort on the part of the mother. i. These three themes are not only interrelated and hierarchically arranged, but also show a dynamic evolution along with the child's athletic and personal development.

*Keywords: family, sacrifice, anxieties, emotions, grounded theory*

### **Study on influence of the square dance to climacteric women's physical and mental health**

**Minjie Zhang, Xiadan Zhang (Inner Mongolia Normal University)**

This research has followed up 35 climacteric woman volunteers aged between 43 and 57 in Hohhot of Inner Mongolia for 20 weeks. The research items include their physical functions, body shape, and psychological healthy conditions (SCL-90 as the instrument). During the research, pretest the participants and then set up personal files for the participants; the frequency of the participants' dancing is three times a week, and 40-60 minutes each time; physical functions, body shape and SCL-90 test are done in every four weeks, and all the data is analyzed with the software SPSS22.0. The results show that the square dance is helpful in shaping the body of the climacteric women, namely, in their weight loss and BWH reduction ( $P < 0.05$ ), reducing glycemia and blood lipids ( $P < 0.05$ ) and increasing their myocardial contraction force, and effective prevention and treatment for cardiovascular disease; meanwhile, the square dance obviously improves climacteric women's respiratory system and their lung capacity is stronger than other same aged women, ( $P < 0.05$ ), even more importantly, the square dance can adjust climacteric women's psychological pressure so that they have less negative emotion. The SCL-90 results show that the levels of factors in obsession, anxiety, depression, interpersonal sensitivity are lower than normal. So, the results confirm that the square dance, as an easily learned aerobic exercise combined with music, gymnastics, and dance, is helpful in improving the climacteric women's physical functions, body shape, and psychological healthy conditions and makes contributions to the climacteric women's both physical and psychological health.

*Keywords: square dance, climacteric women, mental health*

### **Relationship between organizational stressor and athlete burnout: Regulatory effect of perceived social support and mental toughness**

**Min Wu (Dalian Ocean university), Le Wang (Dalian Ocean university), Bin Wang, Lv Ye (Central China Normal University)**

Organizational stress is an ongoing transaction between an individual and the environmental demands, individual will be stressful by various stimulating factors, which are called organizational stressors. Organizational stressors are the environmental demands, which are from leadership, culture, team, logistics and operation, interpersonal relationship and sports career and so on. Stress will cause much negative

impact on individual, such as anxiety, which will affect their performance and well-being. When the athletes fail to cope with the environmental demands of competition within their abilities and resources, they probably become burnout or drop out from the sports event. In present, organizational stress has become an important research area. The study discussed the relationship between organizational stressors and athlete burnout and the regulatory effect of perceived social support. It used OSI-IP, PSSS and ABQ questionnaires to investigate 692 Chinese professional athletes and utilize SPSS 18.0 and AMOS18.0 to make data analysis. The Result shows that there is significant positive correlation between organizational stressor and athlete burnout. Social support can negatively predict athlete burnout. Information support and emotional support, esteem support and tangible support play the role of the regulatory effect on goals and development stressor and athlete burnout. Emotional support and tangible support have regulatory effect on the relationship between logistics and operation stressor and athlete burnout. Emotional support has regulatory effect on the relationship between selection stressor and athlete burnout. Mental toughness can negatively predict athlete burnout. Regulatory effect of various dimension of mental toughness has differences in different organizational stressors. It suggests that we need to reinforce mental toughness training and cultivation for different organizational stressors, which can have better buffering effect.

*Keywords: organizational stressor, athlete burnout, social support, mental toughness, regulatory effect*

### Investigation on the influence of involvement in exercise on physical self-concept of high school student

**Min Wang**

Physical self-concept is the individual cognition and evaluation on their bodies, which is the earliest part that sprouts in individuals' self-consciousness and a critical section of self-concept. Physical self-concept is an important origin of perception of self-worth. Studies show that the participation in physical activity can lead to the improvement of physical ability, thus increasing the sense of self-worth, which can inspire the enthusiasm of individuals' involvement in Exercise. The evaluation of fitness and the interesting of activity can lead to sport participation. The adolescent period is a special time easy to become anxious in people's life, whose main reasons can be the development of the secondary sex characteristics and the confusion brought by the physical changes in the course of one's being mature. This study aims to help teenagers to establish the correct view of their bodies and exercise by discussing the relation between Physical self-concept and Involvement in Exercise. Make them know how to exercise their body through studying the relationship among sport participation and physical self-concept, thus helping them to form healthy and positive attitude towards life. Questionnaire method was adopted. 730 students were selected from four schools of Shanghai city, which consist of a grade one and a grade two in junior middle school and high school. The four schools are the attached middle school of Shanghai International Studies University, Fudan High School, No.10 High School and Yuntai High School. 730 questionnaires were sent out and 721 available questionnaires were retrieved, in which 17 were valid. The effective recover rate was 96.4%. The measure tools were The Behavior of Physical Exercise Questionnaire and PSDQ. 1. Physical self-concept of middle school students increases with the advance of age, but begins to fall in Senior 2. 2. The development of Physical self-concept of boys is higher than girls.

*Keywords: exercise, physical self-concept, high school student*

### Academy athletes' perspectives on the role of a coach-created motivational climate in their dual career pursuits

**Milla Saarinen, Tatiana Ryba (University of Jyväskylä), Noora Ronkainen (Shanghai Jiao Tong University), Harri Rintala (University of Jyväskylä)**



Recent studies on athletes' dual career suggest that when athletic and educational demands increase, youth athletes struggle to sustain high levels of motivation in both sport and school simultaneously. It has also been found that the coach-created motivational environment is an important determinant of such psychological outcomes as athletes' enjoyment, autonomous motivation and engagement. However, the impact that the coaching climate might have on young athletes' dual career behavior has not been investigated. Grounded in Duda's (2013) theoretical tenets of Empowering Coaching, this study examined how former academy athletes perceived a motivational climate created by their coaches, and whether they found the coach-created climates supportive of their dual career. In this retrospective interview study, 15 male and 7 female, Finnish cross-country skiers were interviewed about their dual career experiences in elite sport high schools. The participants, aged 22-34 at the time of the interview, had studied in ten different academies for talented athletes and coached by 19 different coaches. The semi-structured interviews were subsequently transcribed and thematically analyzed (Braun and Clarke, 2006). The results showed that the majority of the athletes in this sample perceived the coach-created environment as disempowering characterized by such ego-involving and controlling features as rivalry, unequal recognition and punishment. Coaches who provided empowering motivational climate were still not perceived as supportive of athletes' dual career. We conclude that in order for the motivational environment to be conducive of athletes' dual career, coaches need to extend their social support to school-related and vocational aspects of athletes' lives. This is especially pertinent to coaches working with talented athletes in dual career environments. Coaching education should involve more focus on dual career support from the perspective of motivational climate.

*Keywords: dual career, motivational climate, empowering coaching, adolescent athlete, coach*

### Identification of psychological markers for detecting climbing talents among young practitioners

**Miguel Santolaya (University Autonoma Madrid, Spain), Victor Rubio (Dpt. Biological and Health Psychology, University Autonoma Madrid, Spain)**

Sports climbing has proven to be a highly demanding activity. Coaches usually claim that mental skills are as important as technical and physical skills and use estimations of such variables to predict success and drop out of young practitioners. However, estimations are based on implicit expert knowledge, making difficult replicability and validity of such estimations. The aim of this study is to identify and operationalize psychological variables estimated by coaches and supposedly needed for high performance climbers in order to design a talent detection system. For that purpose, a sample of six expert climbers and coaches in collaboration with Madrid's (Spain) Mountaineering Association were interviewed and participated in a focus group. After five rounds a set of dimensions regarding physical (i.e. low body fat percentage, prehensile strength), technical (i.e. movement coordination, precision) tactical (i.e. rapid response and decision making) and psychological dimensions (i.e. motivation, spatial awareness, self-control) and their operationalized outcomes were identified. The system has been retrospectively and prospectively used for detecting talents among young practitioners. Results regarding the validation of the system, feasibility and the future trends are discussed.

*Keywords: sport climbing, psychological skills, talent detection, expert groups*

### Psychological characteristics in swimmers from Rio Esgueva Sport Performance Centre (Castilla y León, Spain)

**Miguel Aranzana Juarros, Alfonso Salguero, Olga Molinero González, Abel Nogueira, Sara Márquez (University of León, Spain)**

To optimize performance and achieve better sports marks, it is necessary to study the characteristics of athletes, their skills and their knowledge of them (Godoy-Izquierdo, Vélez & Pradas, 2009). The present

research is part of a psychological intervention program developed with 19 swimmers from the Sport Performance Centre, aged between 14 and 20 years old ( $M = 16.47$ ,  $SD = 1.775$ ). The aim of the program is to introduce swimmers to specific work, as well as to optimize psychological variables that influence sport performance. As a starting point for the subsequent intervention, an initial evaluation was carried out using "Psychological Characteristics related to Sport Performance Questionnaire" (CPRD) (Gimeno, Buceta & Pérez-Llantada, 2001), elaborating the psychological profile of each swimmer of assessed variables that influence on performance (Stress Control, Performance Evaluation Influence, Motivation, Mental Skills and Team Cohesion), and which was later compared with Spanish competitive athletes provided by Gimeno (1999), and high performance paddle players (Ruiz & Lorenzo, 2008). This assessment could be an initial overview, which showed the absence of statistical differences on the five scales scores according to the gender of our swimmers. Significant differences were found with the study by Ruiz and Lorenzo (2008) (Team Cohesion,  $p = .033^*$ ) and Gimeno (1999) (Motivation,  $p = .015^*$ ; Team Cohesion,  $p = .024^*$ ), reflecting the lack of adequacy in group and motivational aspects to desirable characteristics in high performance athletes. This preliminary assessment suggests the need to focus and improve those variables with inappropriate levels, which would facilitate the development of effective intervention strategies by the sports psychologists (Fenoy & Campoy, 2012), and it would have an effect on sports records. Our study would confirm the usefulness of this questionnaire to measure a wide range of psychological variables which determines athletes' performance.

*Keywords: swimming, psychological skills, sport performance*

## **The relationship of sport career at childhood with later sport talent —Systematic sport training at childhood—**

**Mieko Ae (Tokyo Women's College of P.E.)**

The 32nd Olympic Games will be held at Tokyo in 2020. Japanese Olympic Committee (JOC) and many sports societies have begun to train talented young athletes. Many studies pointed risks of early training. The purpose of this study is to examine effects of early training to children. Two studies were planned. Study 1: Female students majored physical education were surveyed how their sport careers were at elementary school ages. The participants were 355 females and the survey was carried out at 2016. Study 2: T Prefecture's athlete development projects were searched for recent a decade. The results in Study 1 were follows: 94% of participants started systematic sport activities, and 38% ( $n = 131$ ) of them did only one type of sports. Study 2 showed that the projects were selected about 600 children for a decade and 74 children participated in national competition games. It noted that 38% of female college student participants did only one type of sports and most of them have continued same sports. In T Prefecture's case six students became student athletes among 180 first selected members. Two results disagreed about the effects of early training. Japan representative athletes of 31st Olympic Games were examined their sport starting ages (Yoshikawa, 2016). The mean age of sport starting was 9.3 years, forty-two athletes started 15 of age, and 15 athletes started 6-years, 12 athletes were 12-years (these numbers calculated by only 275 athletes' descriptions among 338 athletes), respectively. Olympic athletes showed two important ages, 6-year and 12-year. T Prefecture tried 11-year and 12-year selected children motivated to sports. Female sport majored students who continued only one sport failed to be Olympic athletes. However, these data might not be enough to decide how we will train and develop children at elementary school age.

This study was supported by the Grants-in-Aid for Scientific Research named "KAKENHI", the number is 30192942.

*Keywords: systematic training, childhood, toraning start age*

## An exploratory study of the situations and process that evoke pride of athletes

**Midori Kondo (Osaka University of Health and Sport Sciences)**

The purpose of this study is to explore essential situations and the process that evoke pride of athletes. In Study I, 559 pride experiences in the sports were collected through an open-ended questionnaire and categorized into 64 situations. Then, each situation was evaluated by 317 college students for the degree of contribution to the process to evoke pride of athletes. Factor analysis revealed the following five factors to be essential to evoke athletes' pride. These are (1) to make oneself master of their respective sports, (2) to obtain satisfactory results, (3) to observe successful activities of team mates, (4) to belong to a team with a high-level training environment, and (5) to have a circle of friends to compete to each other. We found that athlete have the feature of evoking the pride to challenge the limit and to grow humanly. In Study II, I interviewed one college student athlete, a player in a team sport, about the process to evoke pride during his competitive career. Data were analyzed qualitatively by means of Trajectory and Equifinality Model (TEM). The results indicate that the athlete wavered between the identity of the team and that of himself, and that the pride of athlete was deeply involved in the process to harmonize the team identity and the athlete identity. This exploratory study suggests that Furthermore, an athlete player in the team sport appears to be motivated to harmonize the identity of the team and that of the player. Finally, we suggest that an athlete may try to raise the pride of player, when pride of the team is higher than that of the player, contrary to that try to raise the pride of team.

*Keywords: pride, athlete, interdependent theory*

## The relationship between mental arousal and performance

**Changzhu Qi**

The object of the paper is to explore the relationship between mental arousal and performance is one of the most important topics concerned by sport psychologists, and many hypotheses and theories focus on the topic. But the meaning of "medium strength" and "optimal arousal intensity", which have been widely used in previous models, is still unclear. Second, there are many inconsistencies in the definition and measurement of the concept of mental arousal. The present model is to clarify the concept of mental arousal and offers a new perspective and a theoretical basis for the research related to mental arousal and sports performance. This paper summarized a series of researches carried out by the authors and the research team, which focused on the concept of mental arousal and the arousal-performance relationship. The intensity-direction model indicates that mental arousal contains both intensity and direction dimensions. Mental Arousal Scale for Athlete (MASA) is developed to measure both the dimensions. Based on the model and systematic integration of previous theories related to the arousal-performance relationship, a new hypothesis is proposed: higher mental arousal is necessary for all physical activity tasks while different tasks call for different directions to enhance performance. The more delicate and complex a task is, the higher need for positive mental arousal will be. To test the model, a study about the relationship between the decision-making and mental arousal was conducted. The study found that direction (positive or negative) influences athletes' intuitive decision-making significantly. For both the expert and novice, intuitive decision-making and sports performance in positive arousal status are significantly better than negative arousal state. This result supported the hypothesis of the present model.

*Keywords: mental arousal, intensity-direction model, MASA, hypothesis*

## Impact of emotional pictures with different valence on attentional bias of tennis plays: behavioral and ERP evidence

**MengYang He**

To contrast the attentional bias characteristics of the experts tennis players and the novices players, the present study uses event-related potentials (ERP) technique which has the high-time-synchronic characteristic. The purpose is to explore tennis players' attentional bias characteristic, and reveal the brain mechanism of tennis players' attentional bias. This experiment uses 2 (group: expert-novice) x 3 (picture priming type: positive, neutral, negative) mixed design. The emotion valence is within-subject factor, and the group is the between-subject. The dependent variables were response time. Measures were recorded as response time, latency and amplitudes of N1, P1, P2. Three types of picture (positive, neutral, negative) were used in present experiment, the valences are evaluated by 40 students and they have significant differences statistically. First, Compared with novices tennis players, the expert tennis players had faster RT (reaction time). Both the experts and novices tennis players had faster RT (reaction time) toward negative words under negative pictures. Second, the experts showed smaller P1, N1, P2 amplitude and shorter latencies, which means greater ability of attention. Third, Both the experts and novices tennis players displayed smaller P1, P2 amplitude on positive and negative words following negative pictures. The novices tennis players showed a lower P300 amplitude on positive words and a larger amplitude on negative words following positive pictures. Tennis players displayed a lower P300 amplitude toward negative words following positive pictures. N1 is mainly concerned with the processing process, and its amplitude generally represents the allocation of individual attention resources. P1 is an exogenous component, which is related to the processing of visual information, and is affected by attention. Numerous studies show that the P2 was highly related to automatic allocation of attention and attentional blink.

*Keywords: attentional bias, affective priming effect, ERP, tennis player, college students, P1, N1, P2, P300*

## Chinese calligraphy practice: A new way of athletes' mental training

**MeiLing Li, Liwei Zhang, ChaoHui Zhang (Beijing Sport University)**

The best sport performance essentially required effective self-control in competitive sport (Englert, 2016). Self control training should focus on both the improvement of mental skill and the improvement of ideological level (Zhang, 2013). Previous studies have shown that Chinese Calligraphy practice could improve attentional control, emotional stability and relaxation level (Kao, 2006). In addition, Chinese Calligraphy practice contains rich humanistic ideas, which favors the training of dialectical thinking and self actualization belief. Given that, Chinese Calligraphy practice could be a kind of mental training that favors both skill and ideology. In the present study, Chinese Calligraphy practice was employed as mental training method, and one Rio Olympic Games sailboard athlete was required to conduct Calligraphy training for 6 months. The goal of training was to improve the athlete's ideological level and abilities of emotional regulation and thought control. The training process contained learning, familiarization and habituation. Quantitative and qualitative analysis were conducted, results showed that the emotional regulation, thought control and ideological level were improved, and the performance of self-control was outstanding in the adversity of Rio Olympic Games. The present finding indicates that calligraphy training can improve athletes' self control. Thus it provides a new way for athletes who need improve emotional stability, attention focusing or improve the self actualization belief under the pressure of competition.

*Keywords: Chinese calligraphy practice, mental training, self-control, case study, Olympian*

### Legitimacy of anti-doping policies - athletes as researchers

**Meike Kolb, Dennis Dreiskämper (University of Münster, Germany), Andrea Petróczi (Kingston University, UK), Bernd Strauss (University of Münster, Germany)**

The project which involves six countries (Germany, Greece, Italy, Russia, Serbia and the UK) and aims to explore the perceptions of clean athletes towards the legitimacy of anti-doping policies, their trust in organisations responsible for implementing anti-doping and the support of anti-doping policies by clean athletes in order to advance the anti-doping policies. The unique feature of the project is the active involvement of athletes as researchers in all participating countries. The present study focuses on results from Germany. Semi-structured interviews were conducted in groups of six to seven elite athletes ( $M=25.1$  years,  $SD=4.28$  years;  $N=19$ , 47.4% male; individual and team sport mixed; actual or former member of the Registered Athlete Testing Pool for example of National Anti-Doping Agency Germany). The 2h focus group interviews were recorded, transcribed verbatim and coded using qualitative data analytical software (MAXQDA) for a thematic analysis. The qualitative results indicate that elite athletes are aware of legitimacy problems of national and international sport federations regarding appropriateness and fairness in methods and procedure of anti-doping policies. At the same time the athletes say that Anti-Doping policies preserve "clean sport". They feel that they have to bring a high level of commitment to being clean which they are fulfilling although they feel that only a few supported in doing so. Individual athletes take a high level of responsibility for getting informed while team sport athletes are not as proactive and feel a gap in information. Recent scandals in doping seem to influence athletes' trust in relevant anti-doping policies. Also, their perceptions of the national federation differ to those of other countries, exhibiting the typical ingroup/outgroup bias. Such disparity in anti-doping legitimacy perceptions poses a significant challenge to globalised anti-doping.

*Keywords: legitimacy, trust, anti-doping, elite athletes, semi-structured interview*

### Effects of imagery and augmented imagery training programme on direct free kick accuracy of juvenile football players

**Mayowa Adeyeye, Kehinde Adeyemo (University of Lagos)**

One of the major challenges facing Nigeria football players is the inability to convert direct free kick at a crucial moment of most competitions. It is assumed that they lack the use of psychological skills specifically mental skills. This study therefore applied mental skills training programme to the football players' free kick accuracy training for the period of eight weeks. The mental skills training served as the independent variable while the free kick accuracy served as the dependent variable. The study test if there will be difference in the number of accuracy through goals scored when the kicks were taken by the participants in three groups (imagery:  $n = 30$ ; augmented Imagery – imagery + self-talk:  $n = 30$ ; control:  $n = 30$ ). During the eight weeks free kick training, the participants in the imagery group were exposed to an imagery training programme, while those in the augmented imagery group were also exposed to imagery training alongside self-talk training programme. The participants in the control group were not exposed to treatments but were just going through their normal free kick accuracy training. A t-test and ANCOVA revealed that the participants from the imagery group significantly performed better in free kick accuracy than did the participants in control condition while the augmented imagery group (imagery + self-talk) performed significantly better in accuracy than did the participants in the imagery group and that of control condition. These results further highlight the usefulness of augmented imagery (imagery + self-talk) as most important to accurate delivery of direct free kick during competitions.

*Keywords: imagery, augmented imagery, self talk, footballers*

## Determinants of social loafing among team-sport players of tertiary institutions in Lagos State

**Mayowa Adeyeye, Kehinde Adeyemo, Gretter Ehizibue (University of Lagos)**

This study investigated the determinants of social loafing among team-sport players of tertiary institutions in Lagos state, Nigeria. The survey research method was used for this study. Three hundred (n=300) elite university athletes who participate in active sports competition for their institutions were selected using simple random sampling technique from six state and federal tertiary institutions in Lagos state. The research instrument used for collection of data from the respondents was Social Loafing Tendency Questionnaire (SLTQ). Out of the 300 copies of the questionnaire administered, only 286 were found useable and coded for analysis. The descriptive statistics of frequency counts, percentages and bar chart were used to analyse the demographic information of the respondents while the inferential statistics of linear regression was used to test all hypotheses at 0.05 alpha level. The result revealed that the three hypotheses (group size, diffusion of responsibility, and motivation) generated for the study were rejected. This implies that the three independent variables significantly determined social loafing tendencies among team sport players of tertiary institutions in Lagos state, Nigeria.

*Keywords: social loafing, group size, diffusion of responsibility, motivation, team sport*

## The contribution of early auditory and visual information to the discrimination of shot power in soccer and volleyball

**Mauro Murgia, Fabrizio Sors, Ilaria Santoro, Tiziano Agostini (University of Trieste)**

In sport, rapidly and accurately reacting to external stimuli is important to perform effectively. In particular, in ball sports it is fundamental to be able to perceive all the information related with the ball, in order to prepare an appropriate motor response. There is a vast literature dealing with these issues, which are typically studied in the framework of interceptive actions and anticipation skills. While visual information has been widely investigated in this regard, the contribution of early auditory information is still unclear. To compare the role of the auditory and visual modalities, two experiments were conducted, in which athletes had to discriminate the shot power of kicked and smashed balls through a two alternative forced choice paradigm. The task was carried out in three conditions: Audio-video, Audio, and Video; in all the conditions, auditory and/or visual information was temporally occluded at the moment of the impact between the foot/hand and the ball. Results revealed that, for soccer, response accuracy was above chance in all three conditions, with no difference among them; concerning response times, faster discriminations were observed both in the Audio-video and Audio conditions compared to the Video condition. For volleyball, response accuracy was above chance in all three conditions, and in the Audio-video and Audio conditions participants were more accurate than in the Video condition; concerning response times, the same results described for soccer were observed. The results suggest that for discriminating the power of penalties and smashes, early auditory information would provide more relevant cues than the respective visual information. Further research is needed to evaluate if the same happens also in other sports. If so, new training paradigms could be developed and tested, to investigate whether they can promote improvements in athletes' performances.

*Keywords: temporal occlusions, early information, auditory information, visual information, shot power, discrimination*



## Comparing exercise enjoyment and preferences for interval exercise and endurance exercise among inactive adults

**Matthew Stork (University of British Columbia), Martin Gibala (McMaster University), Kathleen Martin Ginis (University of British Columbia)**

Interval exercise has been advocated as a time-efficient alternative to traditional endurance exercise. Although interval exercise training can elicit important physiological benefits, there is concern that people may find it unpleasant. Thus, psychologists should consider whether these protocols should be promoted to largely inactive populations. This study compared the enjoyment of, and preferences for, moderate-intensity continuous training (MICT), high-intensity interval training (HIIT), and sprint interval training (SIT) among inactive adults. Thirty inactive men and women ( $21 \pm 4$  y;  $BM = 63 \pm 11$  kg;  $VO_{2max} = 31 \pm 6$  ml/kg/min), unfamiliar with interval exercise, completed three acute exercise protocols: MICT (45min continuous at  $\sim 70\%$ HRmax), HIIT (10x1min bouts at  $\sim 85-90\%$ HRmax, separated by 1-min rest), and SIT (3x20-s “all-out” sprints, separated by 2-min rest). Heart rate and ratings of perceived exertion were measured throughout the exercise protocols and exercise enjoyment was measured immediately and 20 minutes following each session. Following completion of all three exercise sessions, participants rank-ordered the exercise protocols (#1-3) according to preference. There were no significant differences in participants’ exercise enjoyment between the three exercise protocols immediately post-exercise (means: MICT=83.7, HIIT=84.4, SIT=81.6 out of 126),  $F(2, 58) = 0.274$ , or 20-minutes post-exercise (means: MICT=83.4, HIIT=83.7, SIT=81.0 out of 126),  $F(2, 58) = 0.304$ ,  $ps > 0.05$ . Based on #1-ranked protocols, 43.3% of participants preferred HIIT, 33.3% preferred MICT, and 23.3% preferred SIT, with no significant differences in the frequency of #1 ranking,  $\chi^2(2) = 1.80$ ,  $p = 0.41$ . Further, there were no significant differences in overall rank-ordered (#1-3) exercise preference between the three exercise protocols,  $\chi^2(2) = 0.20$ ,  $p = 0.94$ . Inactive individuals can equally enjoy and prefer HIIT or SIT protocols as much as MICT protocols, despite the high-intensity nature of the exercise.

*Keywords: interval exercise, inactive, acute exercise, enjoyment, exercise preference*

## Sport burnout inventory — dual career form (SPBI— DC) for adolescent student-athletes: Validity and reliability

**Matilda Sorkkila, Tatiana Ryba, Kaisa Aunola (University of Jyväskylä), Harri Selänne (Mehiläinen Sports Medical Clinic, Jyväskylä), Katariina Salmela-Aro (University of Jyväskylä)**

The challenge of combining education with a sport career may make student-athletes susceptible for sport and school burnout. Nevertheless, so far there has not been an instrument for investigating sport burnout in a dual career context. The aim of the present study was to introduce a novel sport burnout measure for student-athletes which can be used in parallel to the school burnout measure, and examine its validity and reliability. Sport burnout was defined as consisting of: (a) exhaustion at sport (b) cynicism towards the meaning of sport, and (c) sense of inadequacy at sport. The participants were 391 student-athletes (51% females) who filled in a questionnaire of sport burnout and background variables in the beginning of upper secondary school. A confirmatory factor analysis was used to analyze the data. The results showed that the three dimensions of sport burnout were separate, but closely related constructs. A second-order-factor model or a three-factor model or described the data better and gave better reliability indices than a one-factor model. Convergent and discriminant validity was examined by correlating the three sport burnout dimensions with depressive symptoms, sport task values, and self-esteem. The more depressive symptoms the athletes showed the more exhaustion they reported; the higher sport interest values the athletes had the less overall sport burnout and cynicism they reported; the higher sport utility values the athletes had the less cynicism they reported; and the higher self-esteem the athletes had the less over-all sport burnout and exhaustion they reported. The SpBI-DC is a valid and reliable instrument for assessing student-athletes’ sport burnout symptoms in a dual career

context and can be used, for example, in upper secondary sport schools for early detection of student-athletes at sport burnout risk.

*Keywords: sport burnout inventory, dual career, validity, reliability*

### Action-respiration coupling in Japanese archery (Kyudo)

**Masakazu Nemoto, Kudo Kazutoshi (University of Tokyo), Hiroki Takase (Faculty of Arts, Shinshu University)**

In some sports or art requiring high concentration and precise motor control, even a small perturbation could be non-negligible (Kuznetsov, Shockley, Richardson, & Riley, 2011). For example, many instruction books and experts of Japanese archery (Kyudo) have emphasized the importance of coordinating action and breathing (e.g., All Nippon Kyudo Federation, 1953). However, only a few studies have scientifically investigated the difference in action-respiration coupling between unskilled and skilled performers. In this study, we examined the action-respiration coupling in novice and expert archers of Kyudo, Japanese archery. Ten novice archers and 12 expert archers participated in this study. Each participant shot 5 arrows at a target situated 2 meters away. The shooting motion and breathing was recorded using a motion capture system and a thermistor respiratory monitor, respectively. The whole shooting motion was divided into 6 segments (this segmentation is commonly used in Kyudo training). To define the action-respiration coordination pattern, we analyzed if more than 0.6 seconds of first 1 second of each motion segment was accompanied by inhalation or exhalation. We then analyzed if each participant took the same action-breathing pattern in 4 or more out of 5 trials. The experts showed more consistent breathing pattern in action segments when they raised their arms. It is known that thoracic movements affect shoulder range of motion (Kebaetse, McClure, & Pratt, 1999). Taking a consistent action-respiration coupling might be a strategy to reduce unanticipated error caused by thoracic movements of breathing. These results suggest that the experts' sequence of Kyudo movements is a seamless integration of limb action and respiration. It may be advantageous for coaches to mention action-respiration coupling because beginners tend to pay dominant attention to obvious limb action, but not to non-obvious respiration.

*Keywords: breathing, shooting motion, skill acquisition, expertise*

### A diary study of within-person relationships between regular distance running and well-being

**Marzena Cyprianska (University of Social Sciences and Humanities University of Poznan), John Nezlek, Karolina Jencylik (SWPS University of Social Sciences and Humanities, Poland), Karolina Chlebosz (University School of Physical Education, Poznan, Poland)**

The present study examined relationships between regular distance running and well-being. Participants in the study maintained a weekly diary with which they described their daily "runs" each week. These diaries also contained measures of well-being including the emotions people felt during the week and measures of self-evaluation. Participants: Participants were residents of Poland who were recruited via the internet and running magazines. The present analyses were limited to the 180 individuals (50% women Mage = 34.0, SD = 8.3) who provided 5 or more weekly reports (Mreports = 11.7, SD = 3.9). Each week participants logged onto a website and described how far they had run each day during the week. They also answered three questions about their well-being representing "Beck's Triad" (evaluations of self, present, and future), they described the emotions they felt that week (6 positive and 6 negative), and they answered single questions about their self-esteem, satisfaction with life, meaning in life, and how well they could meet challenges in their lives. Other data were collected that are not described in this abstract. The data were analyzed using multilevel modeling in which weekly reports were nested within persons. Participants reported running an average of 2.59 days per week, and the average run was 10.7km. The number of days people ran was positively related to all measures

of well-being (all  $ps < .01$ ). Moreover, each of these relationships remained significant after controlling for other measures, e.g., relationships between affect and days run remained significant after controlling for self-esteem. The present results suggest that increases in regular distance running are associated with increased well-being, broadly defined.

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*Keywords: training, self-evaluation, well-being, diary methods, multilevel modeling*

## Mental robustness – Concept and operationalization of a Scale (MR2B)

**Martin Klämpfl, Dieter Hackfort (Department for Sport Science, University FAF Munich)**

The action-theory concept of mental fitness considers the person-task-environment constellation in an action situation and follows concepts of physical fitness. Three potentials turned out to be essential components of mental fitness as they refer to performance, resistance and recovery. Mental robustness comprises resistance and recovery by integrating relevant constructs characterizing the cognitive and affective facets of this concept such as resilience, mental toughness, self-regulation and recovery competence. Based on this conception, the purpose of the present study was to develop and to validate an appropriate operationalization and economic instrument to capture mental robustness. The original scale comprised 13 items, designed by the combination of three adjectives. These adjectives represent three marker items of factors from various inventories including emotional stability, resilience, mental toughness, self-efficacy, self-regulation, reinvestment and the ability to recover. For validation purposes, participants ( $N = 503$ ; age:  $M = 34$  years,  $SD = 14.3$ ) completed a survey consisting of the MR2B and the inventories reflecting the facets. The repeated extraction of binary factors by means of a corresponding factor analysis using an oblique rotation resulted in a 6-factor solution. One item was removed due to ambivalent factor allocation. Consequently, mental robustness is subdivided by robustness barriers (emotional instability, recovery insufficiency) and robustness booster (self-assurance, self-esteem). The internal consistency with Cronbach's  $\alpha = .78$  is sufficient. Significant correlations between MR2B and various compatible inventories regarding convergent and discriminant validity have been proven. The developed MR2B represents an efficient and construct-validated instrument for measuring the mental robustness of a person. Test-retest reliability and criterion validity of the instrument are work in progress.

*Keywords: mental fitness, mental robustness, mental toughness, resilience, recovery, psychometric instrument*

## Study at the Pablo de Olavide University (Seville, Spain): Physical activity and healthy habits

**Marta García-Tascón, José-Angel Díaz-Cabrera, Lucía Carmona-Álamos, Jaime Torres-Pinazo, Pedro Cornejo-Daza, David Blanco-Luengo (Universidad Pablo de Olavide)**

The objective of the study is to describe the practice of physical activity in university students of the Universidad Pablo de Olavide (UPO) in Seville (Spain) related to sex, career and healthy habits. The university period is related to the abandonment of physical activity (Ruiz & García, 2007). The adolescents become part of adulthood and lose certain healthy habits (Navarro, 2008). A total of 2,014 students have participated (57.7% female and 42.3% male), with a margin of error of 1.92 and a 95% confidence level. The age is between 17-57 years old, from all degrees. For the study, was used the physical activity subscale of the "Questionnaire on lifestyles in university students" (Salazar et al., 2010). We find that 32.62% of the participating university students "always" practice their physical activity or physical activity for at least 30 minutes three times a week, while 17.18% of university students respond "never". The students of the Degree in Sciences of Physical Activity and Sport, followed of the students of Degree in Nutrition and Dietetics are those that register a greater percentage of practice to the week, in front of the students of the Degree in Social Work that obtain

higher percentage of not performing corporal practice. The 11.57% of university students have been practicing some sport with competitive ends “always” during the last 6 months compared to 58.54% of the university students that it has responded “never”. It stands out the value of 20.77% of men who “always” train to compete, compared to 4.82% of women. The students of the Degree in Sciences of Physical Activity and Sport, maybe because of the sports adherence, registered a higher percentage of competitive practice (53.7%), followed by the Degree in Economic Analysis (36.1%). In all degrees with the highest number of women enrolled, there is a lower participation in corporal practice. The University Sports Service has to alleviate these deficiencies of participation.

*Keywords: university, sedentary, lifestyle, exercise, competition*

### **The effect of emotional intelligence on collective efficacy in collegiate athletes**

**Yuki Hongo, Hideaki Takai (Nippon Sport Science University)**

Studies in the field of sports to verify the relationship between collective efficacy and team performance (e.g., Chaw and Felts, 2008), shown that increasing collective efficacy is a primary factor in improving team performance. However, in order to consider the detailed characteristics of an outstanding team, it is necessary to focus on collective efficacy together with the abilities of the individuals in the team. In addition, clarifying a definite image of these abilities may be expected to lead to the discovery of practical suggestions for interventions that will give improved collective efficacy. The present study focuses on emotional intelligence with respect to the ability to control emotions, which has recently attracted attention in the field of sport, in order to investigate the effect on collective efficacy of emotional intelligence. The survey subjects were 1,253 students specializing in physical education at A University, of which 817 students who joined a sports club with the main aim of improving competitive ability were analyzed. The survey comprised the Emotional Intelligence Scale (EQS) and the Collective Efficacy Scale. The results of partial correlation analysis showed a strong positive correlation between collective efficiency and the EQS fields of intrapersonal, interpersonal, and situational. In addition, the results of path analysis indicate that collective efficacy is influenced by the EQS fields of intrapersonal and interpersonal. The goodness of fit indices of the model were GFI=.940, AGFI=.902, CFI=.966, and RMSEA=.067. These results indicate the possibility that acquisition of the intrapersonal field, in which the athlete recognizes his or her own emotions and acts appropriately on that basis, and the interpersonal field, in which the athlete is able to communicate with others and to form and maintain good interpersonal relations, can improve collective efficacy and thus team performance in collegiate athletes.

*Keywords: collective efficacy, emotional intelligence, collegiate athletes*

### **Low objectively assessed vigorous-intensity physical activity is associated with increased adrenocortical reactivity to psychosocial stress in students with high stress perceptions**

**Markus Gerber, Sebastian Ludyga, Manuel Mücke, Flora Colledge, Serge Brand, Uwe Pühse (University of Basel)**

The pathways by which physical activity impacts on participants' health are still not fully understood. The purpose of the present study was to go beyond existing research by combining methods from survey-based and experimental stress research and by examining whether the potential of vigorous physical activity (VPA) to attenuated physiological and psychological stress responses is moderated by participants' subjective stress perceptions. The sample consisted of 42 undergraduate students (M=21.2 years, 52% women). Participants self-reported their stress and wore an accelerometer device for seven consecutive days. To examine differences in the adrenocortical, autonomic and psychological stress reactivity, salivary free cortisol, heart rate, state anxiety, mood and calmness were assessed prior, during and after the Trier Social Stress Test (TSST). The cut-offs of the American College of Sports Medicine (ACSM) were used to distinguish between students

below/above current VPA recommendations. High levels of perceived stress combined with VPA levels below the ACSM's standards ( $< 3 \times 20\text{min/week}$ ) were associated with an increased salivary cortisol response to the TSST ( $p < .05$ ). Importantly, the differences in cortisol reactivity remained after adjusting for age, sex, and BMI. No significant group differences existed for heart rate. However, students with high stress/low VPA experienced less favourable affect throughout the entire testing session ( $p < .05$ ). Our study suggests that VPA has the highest stress-protective potential among undergraduate students with high stress levels. Our findings highlight that promoting VPA in young adults seems to be a promising strategy to increase physiological and psychological stress resilience.

*Keywords: cortisol, heart rate, stress, TSST, vigorous physical activity*

## **Social identities and social identity leadership promote health-related outcomes in exercise settings: evidence from parkrun**

**Mark Stevens (University of Bournemouth)**

Emerging evidence suggests that developing a strong social identity as a member of an exercise group is associated with health-related benefits. However, real-world examinations of this effect have been lacking, while the importance of exercise leaders in enhancing members' group identification and contributing to the associated benefits is unclear. This study examined associations between group identification and key behavioural and affective outcomes in exercise groups with and without formal leaders. A model was hypothesized in which group identification was positively associated with participation, enjoyment, group cohesion, and satisfaction; and participation was positively associated with self-esteem and life satisfaction. In the leader group, positive associations were also hypothesized between identity leadership and group identification, enjoyment, group cohesion, satisfaction, and satisfaction with progress under the leader. 132 parkrunners who stated the parkrun they attend most regularly has a clear formal leader ( $M=53$ ,  $F=79$ ;  $M_{age}=43.67 \pm 12.04$ ), and 157 parkrunners who stated the parkrun they attend most regularly does not ( $M=77$ ,  $F=80$ ;  $M_{age}=44.10 \pm 9.99$ ), completed questionnaires measuring all variables except participation, which was assessed objectively. Separate path analyses were conducted for each group. All hypothesized relationships were significant except those between participation and self-esteem in both groups, and participation and life satisfaction in the no leader group. In the leader group, stronger effects were observed between group identification and participation (leader:  $\beta=.51$ ; no leader  $\beta=.17$ ), satisfaction (leader:  $\beta=.35$ ; no leader  $\beta=.19$ ), and enjoyment (leader:  $\beta=.55$ ; no leader  $\beta=.45$ ). Results suggest that developing a strong social identity as a parkrunner is associated with positive health-related outcomes. By engaging in identity leadership, parkrun leaders may enhance members' group identification and facilitate these outcomes.

*Keywords: social identity, leadership, participation, health*

## **Motives of pro-healthy behaviors of ex-athletes**

**Mariusz Lipowski (Gdansk University of Physical Education and Sport), Malgorzata Lipowska, Anna Ussorowska (University of Gdansk), Magdalena Jochimek (Gdansk University of Physical Education and Sport)**

Competitive sport is not limited to participation in training and competition, it also represents specific lifestyle. This lifestyle should be characterized by particular care for health and physical condition. However, the slogan "Sport equals health" refers rather to recreational sport activities and health-oriented training. The term "training" is typically associated with competitive sports, and its effects are evaluated in context of achieved results and won medals. Competitive training differs from the recreational one, mostly in terms of predefined goals. Sport career termination induces changes in athletes' lives, research reports indicate that transition from intensive training to recreational physical activity is typical only for part of the former athletes.

Researchers analyzing factors determining regular participation in physical exercise postulate multidimensional and general approach to the question of starting, continuing and withdrawing from physical activity. Health-seeking behaviors are determined by goals defined by an individual. Sport career termination requires reformulating goals of participation in physical activity from "championship" to "pro-healthy" ones. The study included 613 individuals (310 female, 303 male), between 24 and 45 years: 291 ex-athletes and 322 persons with no history of competitive sporting. Involvement in health-seeking practices was determined with Health Behavior Inventory by Juczyński, while motives for physical activity were measured with Inventory of Physical Activity Objectives by Lipowski & Zaleski. Ex-athletes presented different motives of pro-healthy physical activity than members of control group. Also involvement in health-seeking behaviors of ex-athletes like: proper nutrition habits, positive psychological attitudes and health practices differs them from non-athletes. The gender of participants moderates the motivational value of the specific objectives of physical activity, and persistence in action.

*Keywords: ex-athletes, objectives of physical activity, pro-healthy behaviour*

### Negative addiction scale: an evaluation of Brazilians amateur runners

**Maristela Padilha de Souza, Fernando Falavigna Vianna Falavigna Vianna (Centro Universitário Metodista IPA)**

Exercise training can induce numerous benefits to the physical health of its practitioners. Among these, the decrease in the incidence of non-communicable diseases. In addition, regular physical exercise helps modulate body composition and decrease symptoms of anxiety and depression. On the other hand, prolonged exposure to training, especially aerobic exercise may induce a pattern of addictive behavior that may be harmful mainly to amateur athletes. The Negative Addiction Scale (NAS) (Haley & Bailey, 1982) is an easy-to-apply instrument that helps to identify this condition. The purpose of this study was to verify the level of dependence on running practice and its possible association with the physical training characteristics of amateur runners of both genders. We evaluated 37 amateur runners ( $37 \pm 10$  years) of both genders, with a training history of at least two years, through a self-administered questionnaire (NAS). The SPSS-17 for windows was used to statistical analysis. The NAS mean values were  $5.8 \pm 1.8$ , with no significant difference between the genders. The highest values were positively associated with a higher frequency ( $p < 0.004$ ) and weekly training volume ( $p < 0.002$ ). Although there is no cut-off point for evaluating the values obtained in the scale applied in this study, our results corroborate those already described in the literature that relate a greater dependency behavior to the practitioner's experience. Running events have become a worldwide phenomenon in recent years, attracting more and more adepts. The observation of a correct training orientation of these individuals can minimize the possible adverse effects of a negative dependence on this sport.

*Keywords: exercise training, long distance runners, physical exercise addiction*

### Pain catastrophizing on high performance athletes

**Marisa de Mello Santiago, Camila Castro Barros Valicente, Carla Tavares, Felipe Vieira, Murillo Lemos Nogueira (Minas Tenis Clube)**

Understanding pain perception is essential in high performance sports. Catastrophizing is one of cognitive distortions proposed on cognitive behavioral theory (Beck, A., 1976; Burns, D., 1980). Links between catastrophizing behavior and perception on pain in athletes have already been the subject of different studies. Results that show connection between catastrophizing and perception of pain in athletes have been recurrent in a sequence of works conducted by Sullivan et.al. (1995, 2000, 2001). Also, catastrophizing was related to increased pain and poorer treatment outcomes in general patients (Edwards et. al 2006 and Gracely et al, 2004) and identified as a frequent result of injuries in athletes (Udrey et. al. 1997). This paper objective is to



help to understand the high performance athletes' pain perception and its connections to improve performance, in search for increasing the availability to train and compete. Throughout the 2016/17 season, the Sports Health Department of Minas Tênis Clube was responsible for evaluate 124 volleyball, basketball, futsal, swimming and judo high performance athletes - 85 men and 39 women, with average age 22.43. Along the research process, it was applied B-PCS (Brazilian version of Pain Catastrophizing Scale), SWBS (Subjective Well-Being Scale) and VAS (Visual Analogue Scale) evaluating questionnaires to the mentioned athletes. After collecting and analyzing data, it was noticed that athletes that present catastrophizing behavior showed higher levels of negative affects on SWBS (mean values=50,78±16,21) compared with non catastrophizing behavior(mean values=44,97±13,08)(p=0,045). With regards the team sports results, when considered the athletes who report pain perception, there is a bigger proportion of younger athletes than the older ones who feel pain(p=0,023). Considering individual sports, there was no significant difference between the groups. These data allow the sports psychologists to better understand and help athletes.

*Keywords: pain, catastrophizing, athletes, affects*

### High levels of kinesiophobia in painful elite athletes during competitive season

**Marisa de Mello Santiago, Camila Castro Barros Valicente, Natalia Franco N Bittencourt, Marcela Mendes Almeida Gomide Leite (Minas Tenis Clube)**

Kinesiophobia is described as an excessive fear of movement resulting from feeling of vulnerability to painful or re-injury (Österberg et al., 2013). This causes negative attitude toward the body and engaging in daily activities and sports. Chronic pain is common in athletes (ex: tendinopathy) and often cannot be only explained by tissue damage. Psychological factors might influence pain perception<sup>2</sup>. Therefore, is necessary to identify people with a continued high kinesiophobia level and then address them to specific intervention. The purpose of this study was to analyze the difference of kinesiophobia levels in elite athletes who report pain during a competitive season. 45 elite athletes (28 male and 17 female) from volleyball and basketball were assessed (age 24.4±5.9; height 188±9 cm, body mass 83±14.3 kg). They were asked if they feel pain at the moment of the data collection, and also pain intensity was measured with a numeric rating scale. Kinesiophobia was assessed with the Tampa Scale (TSK) (Wiljma et al. 2016). Athletes were classified as pain-free/ painful and kinesiophobia /non-kinesiophobia. Fisher's exact test was used to evaluate the association between pain and kinesiophobia classification significance. Statistical analysis was conducted using SPSS version 15. Painful athletes had higher TSK score than those pain-free (p=0.049). The present study showed that athletes who reported pain were classified with kinesiophobia. Kinesiophobia was also associated to patients who do not return to pre-injury sports participation level after a knee Anterior Cruciate Ligament (ACL) surgery (Lentz et al., 2014). Consequently, psychological factors related to fear of movement may influence injury recovery/ rehabilitation and pain perception (Chmielewski et al.2008). Therefore, psychological assessment might be an additional determinant of rehabilitation and pain management in elite athletes.

*Keywords: pain, kinesiophobia, athletes, injury*

### Mindfulness-based intervention program to reduce anxiety levels in martial arts athletes

**Daniel Trujillo Torrealva, Mario Reyes-Bossio (UPC)**

The practice of mindfulness is considered a high impact tool for athlete performance (Palmi & Solé, 2016). The purpose of this study was to examine the efficacy of a psychological intervention program with mindfulness component, "MFAW" (Mindfulness for Athletes Wellbeing) for the reduction of precompetitive anxiety, which was adapted from MAC and MSPE programs. The intervention consisted of 12 sessions, of 1 hour each, which also included practices of mindfullyoga and self-compassion. The sample consisted of 33 athletes of both sexes (69.7% men and 30.3% women), ranging in age from 17 to 23 years, belonging to the

martial arts selection of a Peruvian university. They were assigned, according to the level of exposure to the intervention, to a Control Group (GC,  $n = 17$ ) or to an Experimental Group (GE,  $n = 16$ ). For pre and post test measures, the CSAI-2R was used to assess precompetitive state anxiety based on three dimensions: intensity of somatic and cognitive anxiety and levels of self-confidence. The results evidenced highly significant differences and with large effect sizes in the posttest measurement of the EG, as a decrease in the levels of somatic anxiety, cognitive and an increase in the levels of self-confidence were reached. While, in the CG, no significant differences were obtained and the effect sizes were irrelevant.

*Keywords: mindfulness, self-compassion, psychological intervention, pre-competitive anxiety, sport, martial arts*

## Motivational climate and physical self-concept in equestrian jumping competition adult athletes

**Luciana Benavides-Aramburu, Jessica Vilchez Vivanco Ordoñez, Mario Reyes-Bossio (UPC)**

The basic objective of this research is to understand the relationship between motivational climate and physical self-concept in adult athletes competing in equestrian jumping of various equestrian clubs of Lima city. The participants consists of 91 horsemen and women (46 women and 45 men) aged between 19 and 74 (Media = 39.85; SD = 13.92). They written replied to a questionnaire about personal aspects of their lifes and completed the PMCSQ – 2 of Motivational Climate perceived in individual sports (Balaguer, Atienza, Castillo, Moreno and Duda, 1997) and the CAF physical self-concept questionnaire (Goñi, Ruiz de Azua and Rodriguez, 2006). It was found as main finding that greater motivational climate, task oriented, perceived by athletes, leads to greater self-concept.

*Keywords: motivational climate, physical self-concept, high-performance athletes, equestrian jumping*

## Goal orientation and mental resilience in elite sport

**Marijana Mladenovic (College of Sport and Health, Belgrade)**

It is assumed that two orientations, ego and task, depict the ways in which a person defines and experiences success and failure and evaluates personal competence (Duda, 1989). Mental resilience is defined as personal capacity to sustain cognitive self-control and overcome stress during competition (Mladenovic, 2016). Some latest research in neuroscience indicate that cognitive self-control is overrated and that sportsperson might overestimate conscious capacity to control activation level at the competition (Damasio, 2010). It is assumed that development of task orientation contributes more to mental resilience in competitive situations. The aim of this research was to explore relation between task and ego orientation and mental resilience in competitive context. The research was conducted during senior European handball championship for women 2016. Sample included 17 participants, players of Serbian national handbal team ( $N=17$ ). Applied instruments were TEOSQ and Color association method (CAM). TEOSQ consists of 13 items in the form of Likert scale. Six items belong to task orientation scale, while seven items measure ego orientation. CAM measures mental resilience during the competition by exploring subjective sense of pain, effort, fear, injury, readiness for competition and training, ability to take a risk during the match, relying on habits in sports context ([www.camethod.com](http://www.camethod.com)). Like Lüscher's color test (Lüscher, 1971), CAM is based on palette of eight colors, but combined with words. Association (James, 1890, Wundt, 1902) between certain word related to competition and color, might provide insight into non-conscious mental state. Results on CAM vary from zero to one hundred. ANOVA was applied. Results indicate significant relation between task orientation and measures of mental resilience: pain ( $F=12.280$ ;  $p<0.001$ ), fear ( $F=12.061$ ;  $p<0.001$ ), tiredness ( $F=4.260$ ;  $p<0.028$ ), injury ( $F=14.543$ ;  $p<0.001$ ), habit relation ( $F=10.707$ ;  $p<0.002$ ).

*Keywords: goal, resilience, motivation, colors*

### Imagery use in patients with chronic obstructive pulmonary disease

**Maria-Christina Kosteli , Jennifer Cumming, Sarah Williams, Nicola Heneghan, Carolyn Roskell, Peymane Adab, Sheila Greenfield, Kate Jolly, Rachel Jordan (University of Birmingham)**

Exercise imagery is potentially beneficial for insufficiently active people as a means to boosting self-efficacy and promoting physical activity (PA) engagement. Despite the fact that imagery is a successful cost-effective technique that been shown to promote self-efficacy in clinical populations (e.g., cancer, stroke), to date there are no studies that have examined exercise imagery use in individuals with chronic obstructive pulmonary disease (COPD). Twenty-six individuals between the ages of 50-89 years (Mage = 69.50, SD = 27.57; males = 15) with mild to moderate COPD were recruited from the BLISS primary care COPD cohort to participate in one of four focus groups. Thematic analysis revealed key themes, with motivation, planning, skill improvement, and relaxation identified as the most common imagery functions, and scenery, reward, goal, and health images as the most commonly reported imagery content. Interestingly, some participants felt imagery could be debilitating as they got discouraged imagining themselves doing something they used to do in the past but cannot achieve anymore (e.g., going up the stairs). Imagery would need to be carefully tailored and introduced in people with COPD to encourage rather than discourage participation in regular PA. Although imagery could be a useful technique to help people with COPD manage their symptoms, for imagery to be effective it must be meaningful and personalized to fit the specific needs of the population using imagery. Therefore, future imagery interventions should focus on what individuals with COPD can currently do (e.g., arm and upper-body movements) and help them create new experiences reflecting their skills at the present, rather than re-creating what they used to do before they got diagnosed with COPD.

*Keywords: imagery, exercise, self-efficacy, pulmonary disease*

### Factors that promote or hinder physical activity participation in patients with colorectal cancer: A systematic review

**Maria Romero Elias (Universidad Miguel Hernandez)**

Different studies of patients with colorectal cancer have shown that physical activity has positive physical and psychosocial effects. However, most patients don't comply with the recommended criteria of physical activity. The aim of the present study was to analyze, by means of a systematic review of the literature, the factors associated with physical activity participation in patients with colorectal cancer. For this purpose, we conducted a search in the databases WEB OF SCIENCE, SCOPUS and SPORTDISCUS up to February of 2016. After the selection process, 23 full-text articles were retained. The results allowed identifying four large categories of factors related to physical activity participation in this population: sociodemographic factors, health factors (specific and nonspecific to the disease), prior experience and preferences, and motivational factors. Among the results obtained, the sociodemographic factors that favor participation in physical activity in this population were: being male, white, younger, having a higher educational level and higher economic status, having a job that does not involve a very extensive work schedule, or being retired. Moreover, comorbidity (e.g., obesity, anxiety, and depression) and the receipt of adjuvant therapy (with its corresponding side effects, such as fatigue and nausea) were related to less physical activity. Variables such as positive attitude, social support from family, friends and health professionals, satisfaction of basic psychological needs, and self-determined motivation were shown to be facilitators of physical activity. It is necessary to develop programs of physical activity adapted to the particular characteristics of this population and based on motivational strategies that promote adherence to physical activity. Professionals from the sport sciences should be incorporated into the multidisciplinary medical team so that they could advise patients about the best physical activity options, and design healthy training programs.

*Keywords: physical exercise, motivation, barriers, treatment, health*

### Physical activity in health sciences students of Uruguay: Practices, motives and resources

**Flavia Vique (Universidad de la Republica Oriental del Uruguay), Maria Noel Givogre (Sociedad Uruguaya de Psicología del Deporte)**

**Introduction:** The presented is part of a larger study in which eight dimensions related to the lifestyle were investigated; One of which is physical activity. The characterization of the students is taken as an advance to develop a program of health promotion in the university. In the results in relation to this variable; practices, motives, motivation for change and the resources available to carry them out are identified. Possible interventions that arise from the analysis are considered. **Material and method:** The Universe are students of admission 2016 to careers of health sciences of a Headquarter of the Universidad de la República. A cluster sampling was made taking career and sex; and by simple random sampling the sample was defined in 226 students. It is a quantitative, descriptive, transverse and correlational design; Obtaining the data through the CEVJU-R Questionnaire. 19th version of SPSS was used for the analysis; determining frequencies and summary measures; parametric and non-parametric tests were performed in the correlation of some variables. **Results:** 50.4% of the population has unhealthy practices; being greater in women than in men. Of this population, 56.2% is distributed between the stages of precontemplation and contemplation. The main reasons for the practice are "to benefit health" and "improve mood"; The main barriers are "laziness" and "lack of time". Almost 70% of the population says that the University does not offer spaces and offers for physical activity. **Conclusions:** The results indicate low levels of practice and low perception of the risk of "sedentarismo" in this population. It's recommended to work on awareness-raising workshops on the subject, to investigate the interests of this population with regard to activities that can carry out and develop proposals, optimizing available resources (locative, curricular).

**Keywords:** *physical activity, university students, health, motivation, healthy university*

### Decisional balance, self-efficacy and it's predictive effect on the exercise enjoyment on a Mexican sample

**María Marentes Castillo, Jorge Zamarripa, Maritza Delgado (Universidad Autónoma de Nuevo León), Isabel Castillo (Universitat de València)**

Many persons know the benefits of the regular physical exercise; however, few are those who decide to benefit from this behavior. The decisional balance as a decision-making process, involves the evaluation of the pros versus cons of performing a behavior (e.g., physical exercise), It has even been shown that the predominance of advantages over disadvantages facilitates the decision to perform exercise. Considering that self-efficacy represents and individual's belief in maintaining his or her ability to achieve a particular goal despite the amount of physical exercise disadvantages, positive decision-making balance and high levels of self-efficacy are two aspects that can contribute to adherence and enjoyment of physical exercise. The purpose of the present study was to examine the predictive role of decisional balance and self-efficacy on exercise enjoyment in a sample of 530 people (48.2% males) between the ages of 11 and 76 ( $M = 33.22$ ;  $SD = 15.27$ ) from the metropolitan area of Monterrey (Mexico). The Decisional Balance Questionnaire, the Self-Efficacy for Exercise Questionnaire and the Physical Activity Enjoyment Scale were administered. We conducted a hierarchical regression analysis to predict enjoyment. The balance decisional was entered in step 1 and the self-determination in step 2. The results indicate that the decisional balance account for 27.4% of the variance ( $F=200.24$ ,  $p < .00$ ) of the enjoyment. In the step 2, the results indicated that the decisional balance and self-efficacy accounted for 33.8% of the variance ( $F=135.61$ ,  $p < .00$ ) of the enjoyment. In conclusion, developing the self-efficacy of the people involved in physical activity can predict in a significant way the enjoyment of physical activity over the decisional balance.

**Keywords:** *decisional balance, self-efficacy, enjoyment, adherence, exercise*

## The influence of motivational climate in engagement of Argentinean athletes from Youth Olympic Games

**María Julia Raimundi (CONICET - University of Buenos Aires), María García-Arabehty, Darío Hernán Iglesias, Mauro Pérez-Gaido (University of Buenos Aires), Marcelo Morillo (Universidad Abierta Interamericana), Vanina Schmidt (CONICET - University of Buenos Aires)**

Elite sports are characterized by the high degree of personal commitment necessary to achieve high levels of performance and succeed. Indeed engagement is the essence of participation in elite sports. It becomes a key issue in this level of competition because high levels of engagement prevent drop out. The social environment surrounding young athletes has an important influence on their experiences in sport because significant others (parents, coaches, professors, teammates) acquire a determining role in the enjoyment of the activity. The aim of this work is to study the influence of perceived coach's and parents' motivational climate on engagement and intentions to drop out on young elite athletes from National Teams from Argentina. Two hundred and thirty four athletes (47.9 % male, 52.1 % female) aged between 12 and 16 years ( $M = 14.48$ ,  $SD = 1.09$ ) that were selected to represent their nation in different sports at the Youth Olympic Games (YOG Buenos Aires 2018) participated in the study. They completed a sociodemographic questionnaire, the Spanish Sport Climate Questionnaire (S-SCQ), the Perceptions of Parents Scale (POPS), the Athlete Engagement Questionnaire (AEQ), the Athlete Burnout Questionnaire (ABQ) and the Intentions to Drop Out Questionnaire. Multiple linear regressions were performed to study the effect of perceived motivational climate provided by coaches and parents on athletes' engagement. Autonomy support provided by coaches has greater influence on engagement in males than in females and it has a greater influence on intentions to drop out in females. Regardless of gender, coach's motivational climate is a stronger predictor than parents' for both engagement and intentions to drop out. These results show the impact that significant others have in adolescents' participation in sport. They also help to better understand an aspect that fosters positive development thus contributing to the psychologist's work with elite sports.

*Keywords: adolescence, elite sport, engagement, motivational climate*

## Exploring participation bias in Canadian sport across competitive levels

**Lindsay McCardle (University of Ottawa, Canada; York University, Canada), Amy M. Gayman, Joseph Baker (York University, Canada)**

In high performance sport, certain segments of the population are overrepresented (e.g., Cobley et al., 2009; Côté et al., 2006). Sport policy in Canada (Cragg et al., 2016) and elsewhere (Eime et al., 2016) emphasizes inclusion and equal opportunity across levels and contexts. The extent to which participation biases in sport are found across the levels of competition is relatively unexplored. Our purpose was to explore four potential sources of bias in Canadian sport: (a) sex, (b) age (in 10-year categories), (c) income (personal and household), and (d) visible minority status. Participants ( $n = 1524$ ) were from the Statistics Canada General Social Survey of 2009-2010 and included those aged 15-80 years who indicated participating in a range of sports (e.g., basketball, ice hockey, soccer) in the last 12 months. For each potential source of bias, we compared rates of participation across four levels of competition: (a) recreational ( $n = 938$ ), (b) local ( $n = 334$ ), (c) regional ( $n = 83$ ), and (d) provincial/national ( $n = 125$ ). Chi-square analyses indicated no significant difference for sex ( $\chi^2(3) = 4.54$ ,  $p = .208$ ) or household income ( $\chi^2(12) = 17.27$ ,  $p = .138$ ), although significant differences were observed by sport level for age ( $\chi^2(15) = 90.56$ ,  $p < .001$ ), personal income ( $\chi^2(12) = 36.37$ ,  $p < .001$ ), and minority status ( $\chi^2(3) = 19.01$ ,  $p = .001$ ). Post-hoc analysis indicated self-reported visible minorities participated more frequently at recreational level than expected and the youngest participants (15-24 years old) competed more frequently at provincial/national level than expected. Surprisingly, there was a trend towards more participation at provincial/national level for individuals in the lowest personal income bracket.

Discussion centers on the implications of these findings for policy and program development that aims to reduce systemic bias in Canadian sport.

*Keywords: sport, participation, competition, bias*

## Self-regulatory processes, acculturation and sport

**Marcio Domingues (ULHT)**

Immigrants generally arrive in a new country with a strong sense of their national or cultural origin and with varying degrees of willingness to adopt the identity of their new society (Liebkind, 2001). Immigration and ethnic minority issues pose major social, political and intellectual challenges to contemporary Europe. There are important links between cultural context and individual behavioral development as migrants face the need of maintenance of original cultural identity and maintenance of relations with other groups. The main objective is to explore from a longitudinal pathway how youth migrants use sport to create socially desirable skills through immersed reciprocity and verify which personal and contextual variables created in the sport environment are decisive to their integration in the host society. The investigators will proceed with a correlational and quantitative analyses: 150 migrant athletes from different clubs and 150 non-athlete migrants; 14-17 years of age divided according to different levels of sport participation. For this purpose the researchers will employ the Self-regulation of Learning Self-Report Scale – SRL-SRS (Toering et al., 2011) and the Revised Sociocultural Adaptation Scale (SCAS-R) (Wilson, 2013). The linkage between sporting environments and positive impact to attitudes and adaptive behaviours in youth migrants has yet to be confirmed. Furthermore, sport can produce outcomes, both psychological and sociocultural that has influence on the individual's adaptation and posterior integration. Exploratory and descriptive findings tell us that there is an overgrowing number of athletes in clubs that have professional teams in Portugal and that these athletes come mainly from Africa and Brazil. Sporting context can positively influence and promote the process of learning self-regulation skills in young migrant athletes.

*Keywords: immigrants, self-regulatory skills, sport*

## Olympic athletes' development. An ecological understanding

**Marcio Domingues (ULHT)**

Recent research (Martin, McCaughy, Murphy & Kimberlydawn, 2011) brought evidences that different ecologies of practice produce different personal outcomes for the athletes who engage in competitive settings for long periods of time. What characterizes a talented athlete who further develops to an elite level? Hence, the study of ecological contexts is especially relevant in order to clarify the effects of sport engagement and to highlight the factors that can optimize the positive influences associated with sport participation. The aim of this study is to explore Portuguese youth Olympic athletes and elite Olympic athletes from two perspectives. First, analyzing the athlete's personal dispositions, researchers will try to determine their attitudes, beliefs and engagement in their Olympic project, culminating with the participation in the 2016 Lillehammer Young Olympic Games (YOG); second is related to the trickle-down effect, i.e. can the senior Olympic athletes inspire youth Olympic athletes' engagement in through their sporting success. Researchers will employ the Sports Attitudes Questionnaire (SAQ) and Perceives Motivational Climate Questionnaire (PMCSQ) to youth Olympic athletes from different Olympic disciplines and retrospective interviews to elite athletes regarding their developmental trajectories. Domingues & Gonçalves, 2014) have focused part of their work upon (a) achievement settings and talented athletes' development, (b) the impact of sport participation and context on young athletes' sport career, and (c) the construction of values and moral reasoning. The study will try to analyze the development of sport participation as a phenomenon of proximal processes and their interactions with personal attributes, ecological context and time dimensions. Researchers will attempt to identify the



properties of the environmental context who intentionally interacts within sport context regarding specifically sport attitudes and motivational climate.

*Keywords: Olympic athletes, ecology, development, sport*

### **Goal orientation, self-rated soccer abilities, and perceived coach behaviours among adolescent male and female soccer players from Germany and Japan**

**Dorothee Alfermann, Marc-Oliver Löw (Leipzig University), Guido Geisler, Yoshinori Okade, Masao Nakayama (Tsukuba University)**

The primary objective of this study was to look for differences and similarities in goal orientation, fear of negative evaluation, self-rated soccer abilities, and perceived coach behaviours between adolescent German and Japanese soccer players. The comparison was carried out within the cross-cultural framework of individualism/collectivism (Hofstede, 1991) with German players regarded as representatives of an individualistic country (cf. Oyserman, Coon, & Kimmelmeier, 2002). The Japanese players, on the other hand, were assumed to stem from a less individualistic but more competitive culture in which winning is of paramount importance. Participants were 216 male and 115 female players from U15 to U18 teams, and measures included subscales of the Task and Ego Orientation in Sport Questionnaire (TEOSQ), Fear of Negative Evaluation Questionnaire (FNE), rating scales of self-rated abilities, Perceived Motivation Climate in Sport Questionnaire (PMCSQ), Leadership Scale for Sports (LSS), and Coach-Athlete Relationship Questionnaire (CART-Q). As expected, the Japanese players reported higher ego and lower task orientation than the Germans as well as a higher performance climate, less training and instructional behaviour from their coaches, and less closeness in coach-athlete relationships. In addition, the German players rated their abilities more highly than the Japanese cohort. There were no differences in other coach behaviours and an interaction effect of Gender x Nation in FNE. Discussion of the results is based on the framework of individualism and collectivism and on the competitive ethos, both in sport specifically and in cultures overall.

*Keywords: collectivism, cross-cultural comparison, individualism, soccer*

### **Psychological well-being of athletes associated with the prevention-intervention programme for sports injuries conducted in the Academic Sports Centre in Gdańsk**

**Marcin Krawczyński (Academy of Sport Education in Warsaw, Atheneum University in Gdansk)**

The issue of sports injuries constitutes a very important subject both in theory and in practice (Blecharz, 2008). Sports injuries constitute a threat to athletes' careers and their successes. Some injuries may be slight and not have any lasting effects. However, others may finish a career and influence a sportsman's quality of life. However, not many academic research papers address this issue from the perspective of sport psychology and the holistic intervention models (in Poland e.g. Blecharz, 2008; abroad e.g. King-Chung Chang & Hagger, 2012; Podlog, Dimmock & Miller, 2011; Santi & Pietrantonio, 2013; Wiese-Bjornstal, 2014). To assess the effects of a multi-modal intervention programme, including psychological trainings, with injured athletes. Design: Longitudinal pre-experimental design with 2-weeks follow-up. The programme was designed to improve physical, mental, and spiritual well-being and incorporated rehabilitation and relaxation training, combined with seminars that addressed issues of sport psychology, philosophy of life, and social support. Programme participants (n=60) were involved in activities for 10 h a week over a period of 2 weeks and were examined two times: before the programme began and immediately after its completion. Three psychological parameters were assessed: depression (polish modified version Geriatric Depression Scale by Brink, Curran, Dorr, Janson, McNulty, Messina, 1985), hypochondria (polish modified version Hypochondriasis Scale by Brink, Belanger, Bryant, Capri, Janakes, Jasculca, Oliveira, 1978) and feelings of the purpose of life (Purpose in Life Test by Crumbaugh & Maholick, 1964). Participants demonstrated statistically significant improvements in all

measured psychological variables between the first and second assessment. Within the limitations of the research design, the programme appeared successful in improving the quality of life of injured athletes.

*Keywords: injury, prevention-intervention programme, quality of life*

### **Effect of an intervention program on motivation and basic psychological needs in School Physical Education classes**

**Marcelo Callegari Zanetti (Universidade Paulista, São Judas Tadeu University), Graziela Néspoli Feltran, Luis Felipe Tubagi Polito, Helton Magalhães Dias (São Judas Tadeu University), Angela Nogueira Neves (Physical Education College of Brazilian Army), Maria Regina Ferreira Brandão (São Judas Tadeu University)**

Motivation is a variable that influences the behavior of physical and sports activities, directly interfering with their intensity and frequency, as well as promoting positive consequences such as pleasure, fun, and well-being. The objective of this study was to verify the effect of an intervention program on motivation and basic psychological needs (BPN) in School Physical Education classes. We investigated 42 students from a state public school, divided into two different groups (Control Group (CG) and Intervention Group (IG)). The CG was composed of 18 students (mean age  $13.39 \pm 0.49$ ) and IG by 24 students (mean age  $13.48 \pm 0.49$ ). Students from both groups answered at the beginning and at the end of the intervention program two different questionnaires (BPNES, PLOCQ). After the initial application of the instruments, a weekly orientation intervention was carried out for 10 weeks only with the IG School Physical Education teacher, who sought to adapt the class in order to bring the students to the BPN (greater autonomy, competence, and social relation). After the intervention, there was a decrease in IG in three factors, with high effects sizes, indicating a high practical significance. The factors that underwent intervention in the IG were: introjected extrinsic motivation ( $t(23)=3,18$ ;  $p=0,004$ ;  $d=0,66$ ), external extrinsic motivation ( $t(23)=2,78$ ;  $p=0,011$ ;  $d=0,90$ ) and amotivation ( $t(23)=2,67$ ;  $p=0,014$ ;  $d=0,80$ ). In the CG, no significant change in the variables was observed. We also explored the percentage of variation (relative delta) of the post-test for the pre-test among the variables measured, noting that only in the amotivation variable there was a statistically significant difference between the CG and IG groups after the intervention ( $t(40)=2,06$ ;  $p=0,004$ ;  $d=0,63$ ). The program provided changes only in the dimensions of self-determined motivation (with no significant effect on BPN). The duration of only 10 weeks may have been a limiting factor of bigger effect.

*Keywords: interventional effects, motivation, basic psychological needs, school physical education classes*

### **Are motivation questionnaires inefficient to explain PA levels during PE lessons? Differences depending on how PA is assessed using accelerometers**

**Marc Yangüez Escalera, Julien Chanal (University of Geneva)**

The aim of this work was to explore the links between self-reported measures of motivation using the Self-Determination Theory perspective (Deci & Ryan, 2000), and measures of physical activity (PA) obtained through accelerometers. In a recent project, we studied the trajectories of PA and self-determined motivation during physical education (PE) lessons, and we found relationships between these constructs to be weak. Among the possible explanations, we could question either the reliability of the motivation questionnaire or how PA was assessed. Therefore, in this study, we investigated more in depth the links between PA and motivation by refining our measurement of PA during the PE lesson. 319 children aged 8 to 12 from schools of Geneva participated in this study. PE lessons were filmed and accelerometers were used to record children's PA level. The video-recording enabled us to cut the data of the PE lessons in different parts: time spent on activity vs. time spent on other situations (warming up, teachers' explanations). Students' PA levels were calculated twice: 1) for the entire lesson and 2) only during the "activity" period. Finally, we measured students' motivation via a questionnaire. Correlations between motivation and students' PA levels were obtained.

Results show strong differences depending on whether motivation was correlated with PA levels obtained from the entire PE lesson, or only during the “activity” period. More specifically, we found significant and theoretically grounded correlations between autonomous motivation and PA levels during the “activity” period for sedentary, moderate and vigorous activity. Motivation questionnaires might be a reliable tool to measure students’ motivation for PA. However, how PA is assessed may account for the link between motivation and PA levels. This work shows that such relationship is stronger when only the “activity” period is considered rather than the entire PE lesson.

*Keywords: physical education, motivation, accelerometer, physical activity*

## **Analysis of the efforts within the body movement provides new perspective of the burnout syndrome – a controlled study**

**Manuela Pfeffer (University of Graz)**

The definition of burnout syndrome is still vague, although there have been numerous scientific burnout surveys. This indicates that new perspectives are essential. One such perspective would be the body movement of burnout patients, which has not been investigated yet. The aim of this study is to arrive at a deeper understanding of burnout syndrome by obtaining knowledge of the body movement of burnout patients. Hospitalized burnout patients ( $n = 22$ ;  $\bar{M} 47,2 \pm 9,1$  years) and a healthy control group ( $n = 20$ ;  $\bar{M} 41,5 \pm 15,0$  years) who met the inclusion criteria (Burnout Inventory Scale, Geuenich & Hagemann, 2014; psychiatrists) were analyzed independently by two certified movement-analysts via video. The video shows the participants in a standardized movement sequence with verbal instructions. Laban Movement Analysis (1960), with its Effort system, was the instrument of analysis and it is also an instrument of movement therapy and behavior observation. Cohen’s kappa and Mann-Whitney U test were calculated. The inter-rater reliability was substantial to almost perfect: Kappa = .66-.92 ( $p < .001$ ), 95% CI ( $\geq .457, \leq 1.009$ ). The results illustrate significant differences between the burnout patients and the healthy control group in all four Effort elements of the Laban Movement Analysis (Flow, Space, Time, Weight). I.e. burnout patients move in a different way than healthy subjects. Burnout patients show less frequent Indirect, Light, Sustained and Bound movements. Literature (Welsche, 2010) indicates that depressive patients have also deficits in their Indirect, Light and Sustained movements, however not in their Bound movements – but they have a preference for Bound movements. Therefore our findings lead to a further perspective for investigating the differentiation between burnout and depression.

*Keywords: burnout syndrome, body movement, body language, laban movement analysis, effort system*

## **Influence of physical activity on cognitive performance and brain oxygenation in children aged 10-11 years**

**Manuel Mücke (University of Basel), Christian Andrä (University of Leipzig), Markus Gerber, Uwe Pühse, Sebastian Ludyga (University of Basel)**

Studies have shown that high physical activity in childhood can have a positive influence on higher cognitive functions and academic achievement and might enhance brain development. The objective of this study was to examine the influence of objectively measured everyday physical activity on childrens’ cognitive performance and blood oxygenation in the prefrontal cortex during cognitive tasks. In 55 children (age: 10-11 years) attending the 5th classes of 2 German high schools, moderate to vigorous physical activity (MVPA) was recorded with actigraphy over the course of one week. Subsequently, they performed a semantic and a phonetic verbal fluency test (VFT) and a mental arithmetic task (MAT) to assess cognitive flexibility and working memory capacity, respectively. Changes in cerebral blood oxygenation ( $\Delta\text{HbO}_2$ ) from a 2 min resting period to cognitive tasks were measured using functional near-infrared spectroscopy across the prefrontal cortex (PFC).

For statistical analyses, a median split was performed to differentiate between children with higher (Mean (SD): 1342 (204) min/week) and lower MVPA (Mean (SD): 810 (222) min/week). Using analyses of variance (ANOVA), cognitive performance (correct answers on VFT and MAT) and concentration changes in cerebral blood oxygenation were compared between groups. ANOVAs showed no significant differences between lower and higher MVPA group in terms of task performance and  $\Delta\text{HbO}_2$ . With regard to oxygenation of different subdivisions of the PFC during the tasks, a main effect of region in the semantic VFT ( $p=.020$ ) and the MAT ( $p=.002$ ) and an interaction of region and hemisphere in the phonetic VFT ( $p=.050$ ) were found. Our results indicate task specific increases of  $\text{HbO}_2$  in PFC regions related to cognitive flexibility (VFT) and working memory (MAT), but no influence of the amount of MVPA on PFC oxygenation or cognitive performance. Examining the effects of acute exercise may lead to different results.

*Keywords: near-infrared spectroscopy, working memory, task-switching, actigraphy, verbal fluency, mental arithmetic*

### Analyzing bad conducts in 14-16 year-old boys and girls football

**Manuel Naranjo, Joaquín Luque, Javier de la Mata, Alex Torres, Alvaro Redondo, Julian Paul (Facultad del Deporte)**

In order to fight fighting against violence, discrimination, intolerance and others negative behaviors in grassroots sports, we need to analyze the current situation. As far as we can read in newspapers and watch on television, every weekend we observe some kind of incidents and according to European Union we don't have enough data about the situation in Spain. The aim of this study is to present data of incidents in the Andalusian football League (age 14 - 16). By analyzing the Andalusian Football Federation (Spain) Computer System, where referees save the information after every game. 95 days of competition in 4 groups were examined (more than 100 hundred matches). The results demonstrate that is necessary to implement educational programs for players and parents in order to cope the negative consequences of every kind of incidents. This study is part of the European Erasmus Project PSYTOOL Sport Psychology as a strategic tool for prevention and training on grassroots sports. An educational and innovative tools based on sport psychology to promote integrity and to tackle violence, discrimination, intolerance and match-fixing, including a specific website tool providing information about the situation and procedures, offering guidelines to promote good practices as well as proposing direct instructions about how to react and make an intervention.

*Keywords: red cards, yellow cards, grassroots sports, incidents*

### Intervention procedure and protocol to reduce the number of incidents in boys and girls football matches between the ages of 14 and 16 years old

**Manuel Naranjo, Joaquín Luque, Alex Torres, Javier de La Mata, Alvaro Redondo, Julian Paul (Facultad Del Deporte UPO)**

The aim of this work is to present a protocol to reduce the number of incidents in boys and girls football players between the ages of 14 and 16 years old. Based on the analysis of the yellow, red cards and incidents of the Sevillian football league 2015-2016 (14-16 year old players, male and female) More than 85 football matches with more than 350 players have been analysed based on the Sevillian Football Federation Computer System where referees save data about cards and incidents after every game. The results suggest that a protocol to educate, learn and display fair play behaviours, and protect grassroots players is necessary. This study is part of PSYTOOL, an Erasmus + project entitled "Sport Psychology as a strategic tool for prevention and training on grassroots sports" and try to solve one problem according EU request that they don't have enough data about incidents in football at that age. The application of this protocol intend to help grassroots participants when they play football.

*Keywords: grassroots, football, intervention, protocol, incidents*

## Determinants of psychological wellbeing among active adolescents

**Malgorzata Walczak, Maciej Tomczak (University School of Physical Education)**

Quality of life depends on many different factors as its definition is quite complex. The self-determination theory relates it to general wellbeing adequate to psychological needs' fulfillment while salutogenic approach refers it to the sense of coherence. The main purpose of the research was to analyze and understand the factors which may influence one's wellbeing considered both from SDT and salutogenic perspective. Assumed as independent variables biologically determined temperament, self-assessed body image, incorrect eating behaviors and the attitude towards physical activity, were determinants potentially engaged in the process of fulfilling one's psychological needs (relatedness, autonomy and competence) or constituting the sense of coherence. The material (N=141) consisted of male and female students of University of Physical Education professionally or recreationally engaged in sports, polish adolescents. In order to assess dependent variables the Basic Psychological Needs Scale (BPNS) and the short version of sense of coherence questionnaire (SOC-13) were used. The instruments which allowed evaluating the independent variables were temperament inventories (EPQ-R and EAS), Body Esteem Scale, "My Eating Habits" questionnaire and Sport Motivation Scale (SMS). The results showed that the temperamental factors playing important role in conditioning active adolescents' wellbeing were neuroticism and extraversion referring to Eysenck's assumptions, but also activity, sociability or emotionality established by Buss & Plomin. Body self-perception, emotional eating and the attitude towards physical activity appeared to determine psychological state of young sportsmen as well, showing the possibility of multifaceted affect generated by teachers or parents in order to manage adolescents' wellbeing.

*Keywords: wellbeing, motivation, physical activity, temperament, body image, eating patterns*

## Presentation and comparison of two research-based models of sport talent development environment designed in different cultural contexts

**Malgorzata Siekanska, Agnieszka Wojtowicz (University of Physical Education in Krakow)**

There is an increasing interest in optimizing sport talent development (Martindale et al., 2011). One of the crucial factors that influence all talented athletes throughout their careers is the quality and the appropriateness of the coaching environment (Bloom, 1985; Martindale et al, 2005). Numerous research show that specific needs are associated with culture (e.g. Sproule et al., 2007). The purpose of this presentation is to describe and compare two research-based models of sport talent environment designed in different cultural contexts. In the group of 496 Polish athletes (Mage=19.32, Nf=181, Nm=315) analyses were conducted to adapt and verify psychometric properties of the scale measuring sport talent development environment (Martindale et al., 2010). The original model was designed in the UK context, and was modified due to the very low reliability of two factors: Quality Preparation ( $\alpha$ Cronbach's=0.43) and Challenging and Supporting Environment ( $\alpha$ Cronbach's=-0.013, after modification 0.31). Factor analysis showed that in Central European context the six-factor model (loads from 0.35 to 0.67) was more suitable, unlike the original seven-factor model (loads from 0.29 to 0.66). The extracted factors were: Communication (12 items), Lack of Supporting Environment (inverted, 11 items), Support Network (8 items), Individualized Approach to Athlete (11 items), Understanding the Athlete (7 items), Long-term Development Fundamentals (3 items). Cronbach's alpha for the new factors ranged from 0.66 to 0.88. This indicates a better reliability than in the original model, with Cronbach's alpha of 0.62. for two factors: Quality Preparation, Challenging and Supporting Environment. The authors of the original model suggested that there could be context-specific requirements within a talent development (Martindale et

al., 2010), what was confirmed in this study. This is particularly important for practitioners, for whom the coach-athlete cooperation has international basis.

*Keywords: effective coaching, sport talent development, social support*

#### 4 ways of thinking that can change the way of tennis training

**Maite Iriarte Rego (Flowandgrow)**

I present four distinctions and ways of thinking that open new perspectives for coaches and their athletes. These new and interesting ways of approach can make a difference on thinking, emotions, and how to act. In this way, it is possible to overcome mental and emotional limits that will bring an improvement in the quality of work as a coach and as a player. Craemer's contextual coaching model (Craemer 2014) explains what is happening when someone repeatedly has results that they don't want or when someone doesn't get the results they want. This approach is not based on changing methods of training, but rather on changing convictions and conscience, which is the basis for success and achievement of new results. Contextual Coaching® has its roots in Ellis's Rational-Emotional Theory (2005) for psychology. It is influenced by different philosophical currents such as skepticism, stoicism, epicureanism. It uses, among other philosophical methods, the famous allegory to the cavern of Plato, the Socratic dialectic, and the dialectical triad of Hegel. The aim is not to bring more methods and tools to the psychology of sports nor to mental training. The aim is to explore the personal beliefs and social convictions that prevent us from reaching the next level in our performance and results. Twenty four players were involved in contextual coaching. As a result of their involvement there was a paradigm shift (from lack, fear and distrust to abundance, love and confidence) that led to a change of consciousness and new ways of thinking. Preliminary results indicate that this change of consciousness allowed 69% of athletes to obtain new results, such as winning more desired tournaments and playing with less pressure.

*Keywords: contextual coaching, improve performance, success, new mental approach*

#### Enhanced mental strength of professional junior handball players: Experiences from a mindfulness training program

**Line Maj Nielsen, Kristoffer Henriksen (SDU), Walter Staiano, Ulrich Kirk (SDU)**

The present study investigates 8 Danish handball players' subjective experience of a Mindful Performance Enhancement, Awareness and Knowledge (mPEAK) training program. The overall study was a randomized control study. The intervention consisted of an introduction to mindfulness, a seven-week program with 20 minutes mindfulness training five days a week, and a pre and post test. The intervention training was carried out with the app Headspace. The players could do their training when it best fitted their everyday life. The players met with the practitioner and lead scientist every Sunday via Skype to discuss developments and challenges.

In this poster, we present data from a qualitative follow up study based on interviews with 8 out of the 15 male youth national team players of Danish team handball who participated in the program. To collect a representative impression in the study, the 8 players were selected after answering a questionnaire. Data was generated by applying a semi-structured interview guide. All players participated voluntarily. Deductive and inductive thematic analyses were used to systematically evaluate the data. The players experienced different improvements in relation to their sport performance, in training and game settings. They felt they could keep concentration longer and improved their decision-making. They also experienced improvement in the school setting, such as increased focus, memory and performance. Finally, they reported improvements in their private life, such as increased presence in the company of friends and partner, a decrease in stress, and better



sleep quality. The study points to the value of teaching young athletes mindfulness, and demonstrates how such skills transcend contexts and are of value for the athletes in school and private life.

*Keywords: sport, athletes, mPEAK, meditation, intervention, qualitative*

### **Burnout in young Swiss elite athletes and the role of mental toughness as a stress buffer**

**Markus Gerber, Simon Best, Fabienne Meerstetter, Sebastian Ludyga, Serge Brand (University of Basel), Renzo Bianchi (University of Neuchâtel), Sandrine Isoard-Gautheur (University Grenoble Alpes), Henrik Gustafsson (University of Karlstad)**

Among young elite athletes, competitive elite sport can be a stressful experience. The exposure to chronic athletic stress has been associated with negative consequences such as burnout. Accordingly, provisional estimates of the prevalence of athlete burnout generally range from 1-5%. However, these numbers are difficult to interpret because they are based on sport-specific burnout measures, which do not refer to clinically relevant criteria. Therefore, the aims of the present study were to estimate the prevalence of burnout in young elite athletes using an established burnout measure, and to examine whether the relationship between stress and burnout is moderated by participants' mental toughness.

A representative sample of 257 young elite athletes ( $M=16.82$  years,  $SD=1.44$ , 36% females) was recruited in Northwestern Switzerland. Burnout was assessed with the Shirom Melamed Burnout Measure (SMBM). Values of  $\geq 4.40$  were indicative of clinically relevant burnout. Subjective stress was assessed with the Perceived Stress Scale (PSS), and mental toughness with the Mental Toughness Questionnaire (MTQ). Hierarchical regression analyses were used to test multivariate relationships. In total, 31 participants (12%) reported clinically relevant burnout symptoms. Stress ( $\beta=.42$ ,  $p<.001$ ), mental toughness ( $\beta=-.19$ ,  $p<.01$ ), and the 2-way interaction between stress and mental toughness ( $\beta=-.19$ ,  $p<.001$ ) were associated with participants' burnout levels. Athletes with higher mental toughness had significantly lower burnout levels when reporting high stress compared to peers with lower mental toughness levels. If stress was low, mental toughness was unrelated to burnout. One of eight youngsters in this sample of young elite athletes reported clinically relevant burnout symptoms. Perceived stress was strongly associated with athlete burnout. Mental toughness appeared as a protective factor associated with stress resilience.

*Keywords: adolescents, athlete burnout, mental toughness, stress, Switzerland*

### **Preliminary design of a post-sports injury psychological rehabilitation program**

**María Clara Rodríguez, Laura Arenas, Lina María Rodríguez, Laura Santamaria, Lina María Urrego (Universidad el Bosque)**

Sport injuries are the study field of different kinds of sport sciences, including psychology due to the fact that it is considered a significant event and an extremely common one too during the career of an athlete. The rehabilitation process comes with physiological and psychological implications that require specialized intervention on the athlete in order to achieve optimum recovery and to be able to regain his sport's career with the same performance level or capacity as before the injury took place. The main goal of this research is to design a post-injury psychological rehabilitation program, based on four fundamental psychological components: adjustment of objectives, coping, self-efficacy and security when facing the injury; those psychological components must be transversal to the physical rehabilitation, as well as to the returning to both training and competition. The program is based on an exhaustive review of the literature and the results of focus groups performed with athletes, coaches, physicians and physiotherapists; also is based on third generation therapies, mainly mindfulness and the Acceptance and Commitment Therapy (ACT) because of its exponential development and evidence about its effectiveness. The program's duration will depend on the time of incapacity of the athletes according to the criteria of Timpka et al. (2014), which may vary between 19

and 56 sessions. Based on the results of this investigation, the aim is to offer a valid intervention program found on scientific evidence that allows athletes to return to competition successfully, given that there is not enough evidence in scientific literature of any structured programs of injury focused on psychological rehabilitation. This represents a useful and valuable input for athletes, for psychology and for sport sciences in general.

*Keywords: sports injury, psychological intervention, coping, self-efficacy, fear to a re-injury*

## Theory of planned behavior among athletes from two regions of Mexico

**Luis Alonso Rosales Delgado (Universidad de Guanajuato)**

The research seeks to understand the behavior of the high performance athlete through Ajzen's theory of planned behavior (2005). In order to guide the motivation in athletes to achieve high performance status by means of the factors of the theory that are attitude, subjective norm, perception of control and intention. The objective of this study was to evaluate the variables of the theory of planned behavior between two samples of athletes in Mexico. The first sample consisted of 166 (46.8%) athletes from Guanajuato and the second from 189 (53.2%) athletes from Baja California. Men and women, between 11 and 18 years old, participated. In order to achieve the objective, the EIARD was constructed and validated, consisting of 35 reactants distributed in five factors: (i) Perceived control, (ii) Intention to sport, (iii) Subjective rule, (iv) Attitude towards high performance and (v) Volition to be a high-performance athlete. Subsequently, the means were compared by factor according to the sex and the athlete's state of residence. Significant differences were found between the Intention, Attitude and Perceived Control factors among athletes from Guanajuato and Baja California. As well as in the factors of Attitude, Subjective Norm and Control Perceived according to the sex of the athlete. Finally, through a linear regression analysis, a new model was formed based on the theory of planned behavior, but which arises from the results of this research, which explains 35% of the variance. The factors that were significant were volition, attitude and perceived control. This information allows to understand the differences between athletes according to sex or even to the region to generate interventions specific to their particular needs and characteristics.

*Keywords: planned behavior, athletes, motivation, high performance, intention to sport*

## Analysis of a football team psychological training programme

**Juan Tomás Escudero (Universidad Islas Baleares)**

The aim of this work was to assess the effects of psychological training carried on with a young amateur players' football team of Mallorca. Taking into account theoretical frame used in similar previous studies (Weigelt, et al.; 2000; Lameiras, et al., 2014) we proposed a football situation in which a football player (football player target) received ball near the corner area. He must throw the ball closest to penalty point area allowing to a partner football player try to finish play with his head. We measured two outcomes on the team in pre-post design. These outcomes were a) football players' attentional focus while football player target throw ball and, b) football players' performance that was measured by different parameters: b.1) height that ball arrive to partner football player and; b.2) area in which he has thrown ball in order to partner football player perform it. We registered five trials at Pre and Post experimental situation to evaluated measures. Psychological training programme were five sessions where football players trained attentional focus and performance through different exercises made "ad hoc". Results have shown that players' performance improved their attentional focus ( $Z = -2.032$ ;  $Sig = .042$ ) and also tended to improved their performance related with where height ball was thrown ( $Z = -1.901$ ,  $Sig = .057$ ). These results support benefits of psychological training to sport performance. Also demonstrate to football players and football coaches that sport psychology

could improve football player performance. We also expose some aspects and considerations to bear in mind in future research lines.

*Keywords: football, psychological training, attentional focus, performance*

## Effects of mass media on high performance sportsmen. Study with Uruguayan Football Selection

**Patricia Domínguez Pérez (Facultad de Psicología de la Universidad de la República)**

The research presented was carried out within the framework of the thesis of the Magister in Psychology Applied to the Physical Activity and Sport of the University Central de Chile and University of the Islas Baleares. General Objective: To understand the effects of *mass media* on athletes of a national professional soccer team. The study's population was constituted by players of the Uruguayan Soccer Team that participated in the 2014 FIFA World Cup in Brazil. The sample, non-probabilistic and for convenience, was composed of 11 football players. The reason for choosing the members of a national soccer team were because they constitute a group that represents the highest level of professionalism; they are the focus of *mass media*, particularly on the eve of a world event. The instrument used was the semi-structured interview. The interviews were conducted at the High Performance Complex of Uruguay in May 2014, prior to the world competition. The research was determined that *mass media* affects: 1. The identity and affective bonds of the athletes. 2. The positioning of athletes in the media and in implementing of certain coping strategies. Footballers who accept to be part of the media scaffold soften the unfavorable effects of the mass media, can even benefit from them as long as they take an active stance. That is, they can establish adaptive and functional strategies for media productions and be co-managers of their own digital identity.

*Keywords: high performance sportsmen, mass media, identity, coping*

## Professional football psychological intervention in Uruguay. Club Atlético Rentistas

**María Noel Givogre (Universidad de la República)**

The central idea of this poster is to report the practical experience in a professional football team from Uruguay. The intervention went through several stages and modalities. In our country today there are no sports psychologists working in coaching staffs of the professional teams or in the national teams. The reality is quite different in the formative categories of those same clubs, where there are sports psychologists integrated to their work. The present intervention begins in 2013, responding a request of the junior categories coordinator recently hired in the referred institution. Despite being convinced of the need to have a sports psychologist, he did not have a thorough knowledge of our work, nor how it would be implemented. Thus, it began to work with two categories, the U-17 and the U-19. In 2016, seeing the necessity of the different categories that demanded the inclusion of mental training, a practice is established, from the Faculty of Psychology of the University of the Republic, with students of last year of the Degree in Psychology, that lasts the whole year and includes two students for each category. That same year, the principal coach of the main team, requested the incorporation of the psychologist to his staff. They were at the beginning of the championship in a position of descent to the second category and sought to escape from it. In 2017, a psychologist who is doing the practice to finish her master's degree in sports psychology joins the formative categories. This paper presents some of the evaluation techniques used and their results, as well as some exercises, and some conclusions of these years of work.

*Keywords: Professional practice, professional football, evaluation, intervention, mental training*

## Sports values training program linked to fair play. An experience at the Montevideo Wanderes Football Club

**Pablo Ferreira (Universidad Uruguaya de Psicología del Deporte)**

The excessive emphasis on sports results and exit are two great enemies of holistic athlete's training. Violence and unsportsmanlike conducts are regrettably common in football at the level of formative divisions. Before this panorama a multidisciplinary team conformed by Coaches, Physical Education Teachers, Sports Psychologist and Medical Team, all professionals of the Montevideo Wanderers Futbol Club, team of Football of Montevideo - Uruguay, we diagrammed a program of "Training of Values". Values are defined as the desirable transsituational goals, which vary in importance and serve as guiding principles in people's lives. These guiding principles were associated with fair play behavior standards, sports values training exercises, recreational spaces for reflection, preparation of manuals for athletes, psychoeducational meetings for parents, awards sessions among other actions. As a result of this experience, significant changes were generated at the behavioral level, registering a very good adhesion to the sports behaviors related to the fair game. The category selected for the development of the program, achieved the lowest rate of warnings of the club, among other achievements linked to comprehensive training. Aspects that will be shared in the posters session.

*Keywords: sports values, fair play, junior football players*

## Thursday July 13th

### Posters Session 4. (9.30-10:30)

#### The pictorial scale of physical self-concept for young children (P-PSC-C): A feasibility-study

**Maïke Tietjens (University of Muenster)**

Children's self-perception of motor skills and physical fitness is said to be an important mediator between skills and physical fitness and physical activity (Marsh et al., 2007). Questionnaires regarding perception of their physical competence do exist (Harter, 1981; Barnett et al., 2015), but these instruments are not linked to the concept of the multidimensional physical self-concept. To understand the development and the differentiation of the physical self-concept of children and its components an age-appropriate self-perception scale is needed. The objectives of this study were (1) to develop a pictorial scale of physical fitness for pre-school children (3-6), and (2) to describe the face validity and feasibility of the scale. The study sample included 27 kindergarten children (Mage=4.93, SD=.87). Validity was assessed through administration of the Pictorial Scale for Physical Self-Concept in pre-school age (P-PSC-C) compared with children's fundamental movement skill competency (TGMD)-3, children's perceived movement skill competence (Barnett et al., 2015), height, weight, and demographics. The face validity was favorable. Expectable negatively skewed response distributions in all items were found. The perceived physical fitness is significantly correlated with perceived locomotion ( $r=.478$ ,  $p<.01$ ) and perceived object control ( $r=.413$ ,  $p<.01$ ), whereas perceived locomotion and perceived object control correlate with  $r=.740$ ,  $p<.01$ . No significant correlations with motor performance and physical appearance were found. However, a significant positive correlation between perceived physical fitness and enjoyment in sports ( $r=.453$ ,  $p<.01$ ) was observed. The graphical illustrations within each domain facilitated children's participation in the study. The correlation pattern might represent a hierarchical and multidimensional structure (Marsh et al. 1994). But, children in this age group might not be able to accurately report their skill and fitness level.

*Keywords: physical self concept, kindergarden, test of gross motor development*

#### Physical activity and sport as a protective factor against health-threatening experiments with adulthood

**Magdalena Jochimek, Daniel Krokosz, Mariusz Lipowski (Gdansk University of Physical Education and Sport), Anna Ussorowska (University of Gdansk)**

The aim of this research is to specify to what extent goal orientation in physical activity and sports constitutes a protective factor against involvement in risky behaviors. The research group consisted of 430 eighteen-year-old high school students (Females = 203; Males = 227) who completed the Inventory of Physical Activity Objectives (IPAO), as well as a questionnaire concerning their involvement in risky behaviors such as alcohol abuse, cigarette smoking, drug abuse and risky sexual behaviors. A total of 137 individuals practiced competitive sports (Females = 39; Males = 98), 198 individuals were assigned to the physically active group (Females = 103; Males = 95), and 95 to the physically inactive group (Females = 61; Males = 34). The inactive group was excluded from the analyses regarding the motivational functions of physical activity goals. Males were more often involved in every kind of risky behavior than were females, athletes smoked cigarettes less frequently than do non-athletes (in the case of the remaining risky behaviors, no significant discrepancies were noted). It was found that the type of goal and purposeful actions have a protective role against risky behaviors. In the case of young male athletes, persistence in action was a protective factor against cigarette smoking ( $\beta = -0.29$ ;  $p = 0.020$ ) and illicit drug use ( $\beta = -0.30$ ;  $p = 0.012$ ), the latter being also associated with time-

management ( $\beta = -0,28$ ;  $p = 0,035$ ). In the case of young female athletes, in turn, the importance of heterogeneity of objectives turned out to be a buffering dimension protecting them against alcohol drinking ( $\beta = -0,38$ ;  $p = 0,030$ ). Physical activity and practicing competitive sports may constitute a protective factor, especially among young women. Further exploration of issues concerning adolescents' purposeful actions may enrich our knowledge about the prevention of risky behaviors.

*Keywords: sport psychology, self-regulation, risky behavior, physical activity, goal-oriented behavior*

### The motivational function of an objective in physical activity and sport

**Mariusz Lipowski (Gdansk University of Physical Education and Sport), Anna Ussorowska, (University of Gdansk), Magdalena Jochimek (Gdansk University of Physical Education and Sport)**

As a conscious activity of an individual, physical activity (PA) constitutes an element of the free-time dimension. The type of goal allows us to distinguish between sport and PA: sport performance vs. psychophysical health. Drawing on theory of the motivational function of an objective, this study examined the motivational function of an objective in physical activity and sport. The sample consisted of 2141 individuals: 1163 women aged 16 - 64 ( $M = 23.9$ ,  $SD = 8.3$ ) and 978 men aged 16-64 ( $M = 24.5$ ,  $SD = 9.4$ ). These were recreationally physically active individuals ( $n = 1733$ ) and individuals engaging in competitive sports ( $n = 408$ ). Participants were recruited from randomly chosen fitness and sports clubs throughout Poland. Participants completed The Inventory of Physical Activity Objectives (IPAO) (Lipowski, Zaleski, 2015), which include the following scales: 1) motivational value, 2) time management, 3) persistence in action 4) motivational conflict. There are also a questions that allow one to control for variables such as the variety of forms, duration, and frequency of PA, and socio-demographic variables. Males presented different motives of physical activity than females. Motives related to health, fit, shapely body and wellbeing were more important for female. The most important motives for male were: fulfilling the need for activity, and promoting PA by setting a behaviour example. The gender of participants moderates the motivational value of the specific objectives of physical activity, and persistence in action. With knowledge about the purposefulness of actions, it is possible to support and shape additional motivation experienced by an individual, by setting new, realistic objectives.

*Keywords: motivation, sport psychology, exercises, pro-healthy behaviour, goal-oriented behavior*

### Development of a revised self-efficacy scale for collegiate competitive swimmers

**Madoka Nishida (Tenri University), Kenta Kusanagi (Chukyo University)**

The aim of the present study was to identify factors influencing an attitude toward training of the competitive swimmers. A scale for measuring self-efficacy during training for competitive swimmers in collegiate swimming clubs was developed and factors and items of the scale were examined. A preliminary survey was conducted with swimmers ( $N = 138$ , 77 men and 61 women) and coaches ( $N = 7$ , 6 men, and 1 women) in collegiate swimming clubs. The survey inquired their attitudes to training and thoughts when they achieved their best performances. Their responses were analyzed and 66 items were extracted. A questionnaire survey was conducted with competitive swimmers in collegiate swimming clubs, by using these items ( $N=229$ , 144 men and 85 women) and factor analysis of their responses extracted three factors and 28 items. The factors were: Approaches to self-regulated efficacy, Approaches to maintenance efficacy and Approaches to autonomic efficacy. In order to examine the internal consistency of these factors, Cronbach's coefficient  $\alpha$  was calculated, which indicated that three factors had sufficient internal consistency: Approaches to self-regulated efficacy ( $\alpha$ coefficient=.89), Approaches to maintenance efficacy ( $\alpha$  coefficient = .76) and Approaches to autonomic efficacy ( $\alpha$  coefficient = .74). Moreover, the comparison of sex differences indicated that Approaches to autonomic efficacy and Approaches to self-regulated efficacy were significantly higher in women than in men.



*Keywords: self-efficacy, attitude toward training, competitive swimmer, exploratory factor analysis*

## Effect of mental and physical practice on learning motor skills in volleyball

**Madhusudhan Reddy Pothula (National Institute of Technology)**

The effect of mental and physical practice on learning motor skills of volleyball was studied by carrying out experiments with randomly selected men subjects. They were divided into three equal groups of thirty each named as group of mental practice, physical practice and control group. The subjects were administered mental practice and physical practice for duration of thirty minutes over a period of twelve weeks. The AAPHER volleyball skill test was selected as criterion variable to test the skills ability of subjects for the experiment. Mental practice and physical practice methods were found to be significantly better in improving learning motor skills i.e., volleying, serving, passing, and setup in comparison to control group. The effect of mental practice and physical practice methods on the learning rate in the motor skills of volleyball at periodic interval of first two weeks of duration of an experiment revealed that there was no significant improvement in any of the skill mentioned above due to mental practice, physical practice and control group. However significant improvement was found in all the skills performance due to mental practice and physical practice methods, from fourth week onwards. The findings revealed that there was no periodic significant improvement in volleying and serving due to mental practice method between the fourth week and sixth week, sixth week and eighth week, eighth week and tenth week, and tenth week and twelfth week. However, periodic significant improvement was noticed in passing and setup skills due to mental practice method between the above mentioned training phases. The findings also revealed that there was no significant improvement in learning of motor skills of volleyball neither over a period of twelve weeks duration nor at a periodic interval of two weeks duration in the case of control group.

*Keywords: mental practice, physical practice, imagery, relaxation, motor skills, volleyball*

## Women in refereeing: Profesional and sports career through two life stories

**M<sup>a</sup> Dolores González Fernández (COP-Galicia), Clara Selva Olid, Miquel Torregrossa, Susana Pallarès (Universitat Autònoma de Barcelona)**

The narrative of life stories has gained importance in the field of social sciences, mainly because it is understood as the ontological condition of social life (Delgado & Gutiérrez, 1999; Sparkes & Devis, 2007). Therefore, the narrative is presented as a useful tool that allows to deepen in the professional and sports career of the different protagonists in the vital and/or sports contexts. The objective of the present study is to find and expose the common points and the differences regarding the profesional career experiences of both, an international female hockey referee and an female athletics judge. In both life stories, reconstructed through interviews, each step was placed in a broader social context. To do this, the axes of analysis to which the life stories of the participants would be subjected were delimited, to know what to look for and how to structure the narrative information in thematic and temporal categories. Also, the information collected through this series of interviews was completed with other sources, such as news and press articles, systematically collected, to account for some of the events or transitions that occurred throughout their careers. The axes of analysis were: a) Sport-work reconciliation; b) Barriers in their sporting career; c) Unequal view of gender and; d) Internal and external resources. The results show differences regarding the barriers found in her career and in her unequal view of gender. In resources and challenges, the similarities between the two stories become more visible.

*Keywords: women, refereeing, sports career, life stories*



## Stressors, coping, and well-being among sports coaches: A systematic review

**Luke Norris, Faye Didymus, Mariana Kaiseler (Leeds Beckett University)**

Sports coaching can be an inherently stressful occupation because coaches must fulfill multiple roles and cope with various expectations. Stress and well-being have implications for coach and athlete performance yet there is no published systematic review that has comprehensively identified, evaluated, and summarized the research on stress and well-being among coaches. Objectives: The objective of this study was to conduct a comprehensive systematic review of literature on stressors, coping, and well-being among sports coaches. Method: Using PRISMA guidelines, thorough and systematic literature searches of PsycINFO, SPORTDiscus, and Web of Science were conducted. To be eligible for inclusion, papers had to be published in the English language between January 1994 and March 2016 and as full papers in peer-reviewed journals. Results: The final sample consisted of 38 studies that were conducted with 4,188 sports coaches. This sample consisted of 19 qualitative, 18 quantitative, and one mixed methods study. The findings demonstrate that coaches experience stressors relating to their performance and that of the athletes they work with in addition to organizational stressors. The findings also highlight that coaches use a variety of coping strategies to reduce the negative outcomes of stress. Five studies that were included in this review focused on coaches' well-being and found that basic psychological needs satisfaction, lack of basic psychological needs thwarting, and self-determined motivation are needed for coaches to be psychologically well. Conclusion: This research is the first systematic review to explore the stressors that sports coaches' experience, the coping strategies that they use, and their well-being. Future research should use longitudinal study designs and qualitative methods to explore coping effectiveness, social support, and well-being among this unique population.

*Keywords: cognitive-affective, high performance, transactional*

## Brazilian high performance athletes: A personality traits and positive psychology study

**Luiza Santos D'Azevedo, Caroline Tozzi Reppold (Federal University of Health Sciences of Porto Alegre)**

Personality is one of the most studied constructs in Sport Psychology. Previous researches indicate that athletes of different sports modalities present a typical profile in relation to personality traits and constructs from Positive Psychology. The purpose of this research is to evaluate the profile of the athletes of the Southern Brazil in relation to personality and typical constructs of Positive Psychology. The sample consisted of 86 participants, aged 14 to 24 years ( $SD = 16, 8$ ). The instruments used in the research were: Bateria Fatorial da Personalidade, the Rosenberg Self-esteem Scale, Life Orientation Test Revised, Positive and Negative Affect Scale, the Life Satisfaction Scale, the Cognitive Hope Scale and General Self-efficacy Scale. The analysis of the results indicated that the scores obtained by the athletes were significantly higher than those of non-athletes in neuroticism and lower in socialization and openness. Due to the exhaustive routine of training and importance of discipline in high-performance sports, these results are considered consistent. Higher scores than non-athletes in self-esteem and self-efficacy, showed in this research, are considered important, given the frustration that athletes spend most of the time and the high competitiveness that high-performance sport generates. We also found lower levels in optimism and hope-self than people who do not practice sports. This results differ from previous international surveys. How is this about the Brazilian context, the difference in results may be due to the difficulties and little incentive that high-performance athletes have in this country. Regression analysis was performed and its results indicated that neuroticism and conscientiousness factors explained 31% of self-efficacy. From this mapping of the characteristics of the athletes, the work of the area professionals becomes more assertive to deal with the psychological factors that can interfere in the athlete's life.

*Keywords: personality, athletes, evaluation*

### Competition trait anxiety of under-12 soccer players. Influence of competition level

**Luis M. García-López, Juan A. Simón-Piqueras, David Gutiérrez, Ricardo Cuevas-Campos (Universidad de Castilla-La Mancha)**

We have carried out a research project that has analyzed the technical, tactical and conditional difficulties of under-12 players, as well as differences in the adaptive capacity between those who have managed to play in federated competition and those who participate in local competitions. Here we show the pilot study performed in relation to this adaptive profile, measuring under-12 soccer players' ability to adapt to competitive stress. One hundred under-12 soccer players were selected from different teams in Castilla-La Mancha. Sixteen players played at the regional level, and 84 in local leagues. The players completed the Sport Competition Anxiety Test (SCAT, Martens, Vealey and Burton, 1990). Statistical analysis was performed by IBM SPSS 23.0. One-way analysis of variance was conducted to establish differences between the competition levels. The median SCAT raw scores for the total local competition group was 20.37. In the case of the regional federated competition group, the median raw score was 21.25. No significant differences were found. The levels of precompetitive anxiety found in this study indicate intermediate values and are similar to those found in other works such as those of Swain and Jones (1993), Wiggins (1998) or Guillén and Álvarez-Malé (2010). Specifically, Wiggins' work was done with young athletes from school competitions in football, swimming and athletics. In our geographic and cultural context, Pozo (2007) also analyzed competitive state anxiety in swimming and athletics. The working hypothesis, the fact that subjects with a higher level of competition had a greater capacity to assume the competition with less anxiety of trait, has not been fulfilled. It is probably due to the great youth of all subjects, which leads them to live competitive stress at similar levels, regardless of the competitive context.

*Keywords: competition, trait anxiety, soccer, under-12 players*

### Athletic identity moderating effect on social support influence on serious injuries rehabilitation process in soccer player's

**Luis González Barato, Víctor Rubio Franco, Laura Segovia (Universidad Autónoma de Madrid)**

Research has shown the influence of psychological factors on the rehabilitation process of sport injuries. Therefore, some studies have posed that the Social Support buffering effect may differ according to the type of support or the source the support come from. Nevertheless, it is hypothesized that this influence could vary depending on athletes' individual differences, particularly athletic self-concept. Thus, this study is aimed at testing whether social support effect on cognitive, emotional and behavioral responses to the rehabilitation process following a severe sport injury is moderated by the athletic identity. We postulate that athletes with high level of athletic identity take more into account sources of social support from the sport setting such as teammates or coaches than other relevant sources such as family or friends. Thirty severely injured (4+ weeks out of training and/or competition) soccer players from 18 to 27 years old were followed up from the moment they sustained the injury till the end of the rehabilitation process. Social support and athletic identity were assessed. Cognitive, emotional, and behavioral responses to sport injury and the rehabilitation were also assessed. The previous results revealed that players with higher scores on AI take more into account social support from sources like teammates or coaches. Also, these athletes showed that emotional support mainly came from the sport context. Further studies including larger samples may confirm these results, which can contribute to design specific psychological intervention programs aimed at improving the athletes' return to play after a severe injury.

*Keywords: athletic identity, sport injuries, social support, rehabilitation process*



## Recovery-stress balance and perception of internal training load in university endurance runners

**Germán Hernández-Cruz, Jeanette López-Walle (Autonomous University of Nuevo León, Mexico), José Carlos Jaenes (Pablo de Olavide University, Andalusian Center of Sport Medicine), Abril Cantú-Berrueto, Blanca Rangel-Colmenero, Luis-Felipe Reynoso-Sanchez (Autonomous University of Nuevo León, Mexico)**

Improving athletic performance in endurance runners requires coaches to increase training volume, intensity and density, resulting in an increase in athletes' physical stress. The use of instruments such the RESTQ-Sport and s-RPE to monitoring the athlete's psychological response to training load has increased in its acceptance by providing reliable and immediately information at low cost. The aim of the research was to analyze the response in the perception of the recovery-stress balance and the internal load of the training in resistance runners. 18 trained runners (age:  $20.1 \pm 2.7$  years, weight:  $64.2 \pm 7.63$ kg, height,  $174.32 \pm 6.2$ cm,  $VO_{2max}$ :  $57.54 \pm 7.34$ L), participate in tests of 800m (5), 1500m (4), 3000m steeplechase (1), 5000m (6), 10,000m (1) and 21km (2). A daily monitoring was performed during three weeks of training, in which two were of moderate load and one of intense load. The s-RPE was evaluated according to the protocol of Foster et al. (2001). The RESTQ-Sport was applied in 5 times to evaluate the perception of stress-recovery. The Shapiro-Wilk normality test was performed. A variance analysis was applied through the Friedman test, with post hoc Wilcoxon. The Spearman correlation coefficient between the RESTQ-Sport scales and the weekly s-RPE was analyzed. The results indicate that the s-RPE presented significant variations between the weeks, with week three reflecting the greater internal training load perceived. With respect to RESTQ-Sport, only the scale Disturbed Breaks (DB) shown significant differences, being this a specific scale of the sport, reflecting an increase in the perception of stress by the intensity of the training. There were no significant correlations, however, the s-RPE and the Disturbed breaks scale increased in week 3. The results coincide with other previous investigations in which the relationship between the increase in the training loads and the perception of this by the athletes.

**Keywords:** RESTQ-Sport, S-RPE, monitoring, training loads, athletics

## Active lifestyles and self-rated health in adolescents

**Luis Calmeiro (Abertay University), Margarida Matos (Faculty of Human Movement)**

The purpose of this paper is to explore the mediating role of body mass index and weight perception on the relationship between physical activity and sedentary behaviour and self-rated health. A nationally representative sample of 6026 students (mean age = 13.77 years, SD = 1.68 years) completed a wider HBSC survey which included questions related to demographic information, physical activity, electronic media use, self-rated health and weight perceptions. After controlling for gender, both physical activity (standardised beta = .90) and sedentary behaviour (standardised beta = -.051) were significantly associated to self-rated health. In addition, significant but small indirect effects of physical activity in self-rated health through body mass index (standardised beta = .012) and through body mass index and weight perception ( $\beta = .008$ ) were found. Sedentary behaviour did not have any indirect effects on self-rated health. The full model explained 13.4% of self-rated health [ $F(5,5091) = 157.41$ ,  $p < .001$ ]. Results underline the need to promote physical activity and reduce sedentary behaviour as forms of influencing quality of life. Although only physical activity influences self-rated health indirectly through changes in body mass index and weight perceptions, which related negatively to self-rated health, the perceived negative health effects of sedentariness accentuates the need to target decreases of sedentary behaviour alongside the promotion of physical activity.

**Keywords:** physical activity, sedentary behaviour, body mass index, weight perception, mediation analysis

## Healthy lifestyles and body mass index as correlates of body image in a primary schoolchildren

**Luis Calmeiro (Abertay University), Carlos Pereira (Vila Real de Santo Antonio City Council)**

Poor body image in children may be associated with negative health outcomes later in life. Maintaining a healthy lifestyle may influence children's perceptions of their own body. The purpose of this study was to explore the relationships between body image and healthy lifestyles in primary school children. A sample of 786 primary school children (mean age = 8.48 years; SD = 1.32; 48.3% girls) from a South east region of Portugal, answered a survey about their eating patterns and body image, while their parents answered questions concerning children's physical activity and sedentary behaviour. Two hierarchical regression analysis with current body image and body image discrepancy as dependent variables were conducted. After controlling for age and gender, physical activity, sedentary behaviour and adherence to a Mediterranean diet were entered in step one; body mass index was entered in the final step. Boys were reported to be more active than girls, while girls adhered more to the Mediterranean diet and reported higher body image discrepancy than boys. About 22.5% of the students who had a normal BMI considered to be overweight or obese. Lifestyle variables were not significant predictors of body image or body image discrepancy. However, age ( $\beta = .16$ ,  $p < .001$ ) and BMI were associated with body image ( $\beta = .48$ ,  $p < .001$ ). Approximately one in four children wrongly perceive to be overweight may encourage the adoption of strategies that may lead to unhealthy body composition. Also, the older the students the more likely they are to perceive to have a larger body image, either due to the growth process or the internalisation of media-driven beauty ideals. The lack of predictive power of lifestyle variables in body image and body image discrepancy may represent cognitive limitations of abstract thought. Hence, BMI emerges as the main indicator of children's body image.

*Keywords: body image, body mass index, children's health, physical activity, sedentary behaviour, diet*

## Marathon Seville: the experience as a determining reason for the volunteer's participation

**Lucía Carmona-Álamos, Jaime Torres-Pinazo, José-Ángel Díaz-Cabrera, Jesús Rico-Ballesteros (Student Science of Physical and Sport Education), David Blanco-Luengo, Marta García-Tascón (Universidad Pablo de Olavide)**

Volunteering is a social phenomenon that covers all areas of life (Observatorio del voluntariado, 2013). In Andalusia, according to Law 45/2015, October 14th, about volunteering (...) in concrete programs organized by non-profit organizations. Their implication allows the realization of great tests, the volunteer's experience and their participation can ensure their survival (Finkelstein, 2008; Koutrou, 2015). The objective of this paper is to analyse the motivation and experience of the volunteers in this type of events. The Volunteer Satisfaction Index (Vecina, Chacón and Sueiro, 2009) has been passed to 130 volunteers (38% men and 62% women) in the Marathon test (Seville-2016), analyzing the Motivation Subscale that consists of 6 questions measured in Likert Scale 1 to 7 (1 nothing according to 7 totally agree). The experience is measured in 4 items (first time; 3). Regarding the experience in the organization, 36% is the first time and less than a year that they collaborate, 37% takes between 1 and 3 years, and 27% takes more than 3 years. 66.49% would repeat the experience with a score of 5 out of 7. Volunteers between 1 and 3 years of experience, have a motivation above 6.2, while those who volunteer for the first time are the least motivated in all areas. Training, in general, is the worst rated item (5.2/7) for all groups except the group of 1 to 3 years. The volunteers who have between 1 and 3 of experience are the most motivated in the management of the organization, valuing all the items above 6/7. Volunteers with more than 3 years of experience are less satisfied with the fluency and management of the organization, feel that the tasks entrusted to them do not correspond to their previous skills or experience. The experience of volunteering in the organization must condition the planning of specific training programs and the allocation of specific competencies that guarantee the motivation of the volunteer.

*Keywords: seville, marathon, volunteers, motivation*

## Strategies to foster life skills and transfer in social inclusion programs using football

**Lucas S. Capalbo (Michigan State University)**

Social inclusion programs use football as a platform to incorporate or re-incorporate individuals into a group or society. Programs within this scope work with the resettlement of refugees, the inclusion of minorities into the mainstream society, the social re-inclusion of prisoners, and the incorporation of females into male-dominant areas or vice-versa. However, the role of football alone is limited if individuals running the program are not specifically trained to foster inclusion. Therefore, it is crucial that coaches and program leaders are trained to positively facilitate inclusion and effectively deliver necessary life skills and life skills transfer to participants. With that in mind, the goal of this study was to identify the most common life skills fostered and strategies used in programs using football for social inclusion. Thus, list the main outcomes observed by research assessing programs within this scope. After an extended review of the literature based on an inclusion and exclusion criteria, 9 studies were selected. From these studies, it was identified that the life skills taught in social inclusion programs using football included resilience, leadership, teamwork, and respect. A wide variety of strategies were found but not a single strategy was identified as the most prominent. The strategies mentioned in all studies were grouped into 7 categories under the following themes: psychological, communication, visual aid, leadership, general activities, environment, and awards. Lastly, research observed that individuals who participated in programs for social inclusion using football alleged to have obtained more opportunities in life, perceived change of mood and attitudes, increased sense of control over their lives, and engaged in more jobs. Sport and Exercise Psychology in 21st Century | Gender, cultural diversity, and social/cultural inclusion in sport and exercise.

*Keywords: life skills, life skills transfer, football, social inclusion, programs, strategies*

## Predicting moral attitudes and behaviour in young team sport athletes: A self-determination theory perspective

**Luca Mallia (University of Rome Foro Italico- Italy), Fabio Lucidi (Sapienza University of Rome-Italy), Arnaldo Zelli (University of Rome Foro Italico- Italy), Martin Hagger (Curtin University- Australia)**

The study was aimed to test the hypothesis that social-contextual (social support) and personal motivational (need satisfaction and motivation) factors are related to prosocial (keeping winning in proportion) and to antisocial (acceptance of cheating and gamesmanship) attitudes in youth sport, as well as to negative behaviors in sport. The study included a first sample of Italian young team sport athletes ( $N = 355$ ; 81.4% male;  $M_{age} = 18.98$  years,  $SD = 4.35$ ) and a second sample of Italian young male futsal players ( $N = 296$ ;  $M_{age} = 21.09$  years,  $SD = 7.56$ ). Athletes in Sample 1 completed validated measures of perceived autonomy support, basic need satisfaction, autonomous and controlled motivation, prosocial and antisocial attitudes, as well as their self-reported past (six months) cheating behaviors during their sport activity. With the exception of the measurement of perceived autonomy support, athletes in Sample 2 completed the same set of psychological and behavioral questionnaires utilized with the first sample of athletes. Athletes in the second sample also provided an additional behavioral measure by indicating the number of penalties (i.e., yellow cards) they had received during games in the last six months. This self-report measure was complemented by the actual number of yellow cards athletes received from referees during all matches in the subsequent two months. Findings from Variance-Based Structural Equation Modelling analyses supported our hypothesized relations between motivational factors (i.e., psychological need satisfaction and self-determined motivation) and athletes' prosocial and antisocial attitudes. Findings also provided important extensions on previous tests of the model evidencing that the model effects held when controlling for past behaviour. Finally, findings



concerning longitudinal prediction of actual penalties, are of significance as they indicated that early cheating attitudes contributed to athletes' later moral behaviour.

*Keywords: perceived autonomy support, needs satisfaction, motivation, cheating, gamesmanship, penalties, team sports, young athletes*

## Comparing interventions with youth and senior elite athletes: Insights from expert sport psychology practitioners

**Louise Kamuk Storm, Kristoffer Henriksen, Carsten Hvid Larsen (University of Southern Denmark), Natalia Stambulova (Halmstad University)**

Meaningful sport psychology practice requires a context-sensitive approach. Competitive youth sport and senior elite (professional) sport can be seen as two different contexts that require different applied approaches; however we know little about the differences, and we are in lack of studies that directly compare interventions from these two contexts (Henriksen, Larsen, Storm & Ryom, 2014). Literature on applied sport psychology with senior athletes is far richer than corresponding literature on working with youth athletes. The objectives were: (1) to identify key themes that expert practitioners used to communicate their experiences of sport psychology interventions, and to integrate them into an empirical framework, and (2) to explore the experiences of these practitioners in their successful and less successful interventions in youth and senior sports using the framework. Twelve internationally recognized sport psychology practitioners (SPPs) were involved in semi-structured interviews (Smith & Sparkes, 2016). The data were thematically analyzed (Braun, Clarke & Weate, 2016). The SPPs' intervention narratives contains eight themes integrated into two categories: (1) content and focus, with themes concerning e.g., adaptation of content, targeted mental skills, and beyond mental skills. (2) The organization and delivery with themes concerning e.g. the settings and ways of delivery, the nature of the athlete-practitioner relationship, the involvement of the athletes' significant others. There were significant qualitative differences between competitive youth and elite senior contexts regarding how the interventions goes beyond mental skills and in how the SPPs involved the athletes' significant others. From an overall perspective, the present study supports a key notion: talented youth athletes are not miniature versions of their elite adult counterparts. Working in these two different contexts requires specific approaches and should follow different guidelines.

*Keywords: applied sport psychology, expert practitioners, youth athletes, influential relationships*

## Stress and effort markers in sports using video from the face

**Lluís Capdevila (UAB), Andrés Cencerrado (Health&SportLab), Jordi Moreno (UAB), Juan Ramos-Castro (UPC)**

On the one hand, Heart Rate Variability (HRV) is an indicator of health status in the general population and of adaptation to stress in athletes. On the other hand, the emotions can be analysed using face recognition through computer vision systems. Our purpose is to explain both markers: (1) A system that uses standard video images of the face to estimate RR from changes in skin colour of the face. This system performs surprisingly well in a sample of 8 participants (age:  $34.2 \pm 11.1$  yr). A video of the complete face was recorded during a HRV-5min test and was saved in a non-compressed RGB format. Its analysis permits to calculate HRV parameters in a non-invasive manner with error levels comparable to those achieved by a physiological based system. (2) A face recognition system that uses video images to estimate emotions. 48 participants (age:  $22.4 \pm 1.2$  yr) were video recorded throughout 5 sessions while carrying out an effort test. Some HRV parameters and POMS scales showed correlation with some action units and emotions obtained by the video analysis. Additionally, we performed a machine learning analysis of facial expression to estimate the fatigue or effort. We tested the analysis of some classification techniques to choose the most suitable method to estimate the degree of human fatigue or effort in a completely non-invasive manner. As a result, the classification method

that presented best performance, both in accuracy and time-consumption terms, was the k -Nearest Neighbors algorithm. We conclude that the video from the face is a promising non-invasive instrument to analyse psychophysiological aspects related with stress, effort and emotions. Video based HRV analysis and face recognition could be relevant in applications that require monitoring of stress induced by effort like high performance sports.

*Keywords: stress, HRV, computer vision, face recognition, emotions, machine learning*

## Monitoring stress-recovery process and psychological aspects at real time in individual and team sports

**Lluís Capdevila (UAB), Jordi Moreno, Andrés Cencerrado (Health&SportLab), Miguel A García-González (UPC), Joan R Tarragó (Futbol Club Barcelona), Juan Ramos-Castro (UPC), Gil Rodas (Futbol Club Barcelona)**

The monitoring and the evaluation of stress indicators in a sports context present several difficulties. The diversity of these indicators, the situational conditions in which they have to be evaluated, and the difficulty of integrating these evaluation processes into the dynamics of training and competitions require innovative evaluation systems. In this sense, technologies based on mobile devices (smartphones) offer new paradigms for the evaluation and open new directions to be applied in the fields of sport and health (mHealth). We are using a mHealth system based on the integration of psychological (mood, effort and recovery perceptions), behavioural (analysis of recovery behaviours), and physiological parameters (Heart Rate Variability analysis) for the evaluation and monitoring at real time of the stress-recovery process of the athlete. The whole system is composed of two applications (Apps): 1) The first one (FitLab® Test; HealthSpotLab.com) allows individual monitoring; and 2) The second one (FitLab® Team; HealthSpotLab.com) allows multiple and synchronized recordings. Both apps permit to obtain combined recordings and analysis for psychophysiological and behavioural data at real time in sport natural situations. We will present the uses of both systems in two practical and real cases: 1) an entire season data for a basketball player of Futbol Club Barcelona, showing the stress index evolution and the recovery behaviours related with training sessions; and 2) HRV, stress index, internal load and cognitive data monitoring several training sessions for FCB basketball team. We will present detailed analysis and reports used by sport professionals (coaches, physical trainers, doctors, etc.). We will also indicate the guidelines for a correct integration of data provided by this system in the daily dynamics of trainings and competitions.

*Keywords: stress, recovery, team sports, high performance, HRV, mHealth, FitLab, basketball*

## Research of psychological variables of personality readiness for sports performance in young footballers

**Liudmila Rogaleva, Valerii Malkin, Zvezdin Anton (Ural Federal University), Kim Alla, Khon Natalia (Al-Farabi Kazakh National University)**

One of the factors determining sports performance is personality readiness for accomplishing sports activity (A.Puney, N.Stambulova). The problem of personality readiness for the sports activity has been studied less than needed. This is the reason why this problem became the topic of our research: our aim is to define criteria of personality preparedness in young footballers and to recognize the level of its development. The following criteria of personality preparedness of young footballers have been recognized: inner motivation for football playing; conscious revealing of the personality traits, which provide success in football playing; ability to adequately evaluate own possibilities and ambition for their development. 81 young footballers, 8-10 years old, from beginners groups of 4 coaches took part in the experiment. It has been revealed that in 58.0% of young footballers prevails motivation closely connected with sports activity, e.g. inner motivation, while 41.9% reveal outer motivation. It has been revealed that 60% of young footballers consider the narrow specific sports

traits (such as fully be active in the event, to control the ball, knowledge of rules of play, achievement of team goals) as the most important for sports performance. Only 40% mark as very important the following personality traits: following every advice of the coach, being strong and skillful, practicing more and not missing the practice). The data on self-esteem of the young footballers allow to conclude that only 30.9% of them show an adequate self-esteem, while 69.1% reveal non-adequate self-esteem. We can specify the current level as insufficient and conclude that the development of personality readiness should be increased via practice and event participation. Development of personality readiness for sports performance in young footballers goes spontaneously in the beginners and the coaches practically do not manage this process.

*Keywords: young footballers, the personality readiness*

## **Emotional stress of young 6-7-year-old hockey players after their participation in competitions**

***Liudmila Rogaleva, Valerii Malkin, Yuliya Tyagunova, Ekaterina Fedai (Ural Federal University)***

Over the last years hockey witnesses considerable increase of preparative training groups with the age of young athletes diminishing to 3-4 years. This trend was caused by requests from parents and the growing up rivalry in picking out talented children to study at sports schools. The goal of the research was to study psychologic emotional stress of young 6-7-year-old hockey players. Experimentation facility is the «Yunost» Children's Sports School, hockey department, city of Ekaterinburg. The research involved 20 young hockey players at the age of 6-7 having length of hockey training of 3-4 years and competitions experience of 1 year. Methods: supervision of the children, interviewing, talks and projective. The method of unfinished sentences, pictorial test. Results and discussion. It was found out that taking part in competitions causes to young athletes various emotional stresses, mostly (45% of the children) positive ones connected with expectation of victory and deserved award (cups, medals etc.) or joy (15% of the children). At the same time 30% of the children showed negative emotions connected with aggression or frustration caused by the necessity to engage the rival. It was found out that almost 100% of the young hockey players were upset after defeats, also expecting negative reaction from their coach and parents. Conclusion. Young 6-7-year-old hockey players' commitment to win and gain the upper hand in competitions creates a strong mental tension which means strong emotional stress (joy or grief), negative stresses emerging in the case of defeat, that are connected with expectation of reaction from coach and parents as well as with the competition result itself. Given that, it is needed to develop a strategy of coach and parents' behavior during young 6-7-year-old hockey players' preparation and participation in competitions.

*Keywords: emotional stress, young hockey players*

## **Exploring participation bias in Canadian sport across competitive levels**

***Lindsay McCardle (University of Ottawa, Ottawa, Canada; York University, Toronto, Canada), Amy M. Gayman, Joseph Baker (York University, Toronto, Canada)***

In high performance sport, certain segments of the population are overrepresented (e.g., Copley et al., 2009; Côté et al., 2006). Sport policy in Canada (Cragg et al., 2016) and elsewhere (Eime et al., 2016) emphasizes inclusion and equal opportunity across levels and contexts. The extent to which participation biases in sport are found across the levels of competition is relatively unexplored. Our purpose was to explore four potential sources of bias in Canadian sport: (a) sex, (b) age (in 10-year categories), (c) income (personal and household), and (d) visible minority status. Participants (n = 1524) were from the Statistics Canada General Social Survey of 2009-2010 and included those aged 15-80 years who indicated participating in a range of sports (e.g., basketball, ice hockey, soccer) in the last 12 months. For each potential source of bias, we compared rates of participation across four levels of competition: (a) recreational (n = 938), (b) local (n = 334),

(c) regional ( $n = 83$ ), and (d) provincial/national ( $n = 125$ ). Chi-square analyses indicated no significant difference for sex ( $\chi^2 (3) = 4.54, p = .208$ ) or household income ( $\chi^2 (12) = 17.27, p = .138$ ), although significant differences were observed by sport level for age ( $\chi^2 (15) = 90.56, p < .001$ ), personal income ( $\chi^2 (12) = 36.37, p < .001$ ), and minority status ( $\chi^2 (3) = 19.01, p = .001$ ). Post-hoc analysis indicated self-reported visible minorities participated more frequently at recreational level than expected and the youngest participants (15-24 years old) competed more frequently at provincial/national level than expected. Surprisingly, there was a trend towards more participation at provincial/national level for individuals in the lowest personal income bracket. Discussion centers on the implications of these findings for policy and program development that aims to reduce systemic bias in Canadian sport.

*Keywords: sport, participation, competition, bias*

### Red effect in romantic context: take sport dancers as participants

**Lina Hu (Wuhan Sports University)**

In color-in-context theory, the effect of color on humans' psychological function and behavior depends on peoples' context (Elliot, 2012). In romantic context, red signifies health, strong, and attractive, and induces approach motivation. Some study findings have shown that viewing red on or near a female to increase attraction in heterosexual males (Elliot, 2008; Roberts, 2010). Unlike combat events, aesthetic events' performance depends on athletes' movement difficulty, beauty, and temperament. It is in line with romantic context. Thus, the present study tries to examine the effect of red priming on judging sport dancers' attraction from the perspective of romantic context. 120 college sport dancers were randomly assigned to color priming of the 6 (red, black, blue, green, yellow, and white) and  $\times 2$  (female picture and male picture) between-group design. The study took place in a lab room at Wuhan Sports University. The experimental material is 2 pictures of one male sport dancer and one female sport dancer in competition uniform. After giving informed consent, participants sat in front of a computer to complete the study. Color priming used experimental instruction, which presented on 19cm $\times$ 15cm different color rectangles (red, black, blue, green, yellow, and white). Participants' reaction time of 1500ms was intended to impede rational and conscious judgment. An ANOVA was used to examine the effect of color priming and gender on the judgment of sport dancers' attractiveness. The analysis revealed a significant effect of color priming: participants in the red priming condition gave higher scores on sport dancers than other color priming conditions. There were no significant effects of gender and interaction effects of color priming and gender. The psychological effect of red color is cross-cultural. In the romantic context, red induces approach motivation. Moreover, red uniforms in aesthetic events also carry specific meanings that affect others' judgment on the attraction of athletes.

*Keywords: romantic context, red effect, sport dancers*

### The modulating effect of cardiorespiratory function on executive function induced by acute aerobic exercise: an evidence from fMRI study

**Lin Li, Qi Xiang, Jie Cui, Xiao-Yan Wang, Liu Ji (East China Normal University), Gao-Xia Wei (Massachusetts General Hospital and Harvard Medical School)**

More recently, large amounts of evidence demonstrated that physical exercise is beneficial for the improvement of cognitive performance. However, the findings are inconsistent for varied individual differences such as cardiorespiratory fitness (CRF). This study aimed to investigate if CRF modulates the cognitive benefits induced by acute aerobic exercise. Twenty-four female college students were assigned into high fitness group or low fitness group based on their performance of fitness test. During their first visit, all participants were asked to complete N-back test during scanning after a short break. After one-week interval, they were scanned for the same N-back task following a 30-minute aerobic exercise session with moderate exercise intensity. The

results showed that there were significant interactive effect of group \* time in accuracy rate during 0-back ( $F(1,22) = 4.95$ ,  $p = 0.04$ ), and 1-back task ( $F(1,22) = 5.06$ ,  $p = 0.04$ ) while no significant interactive effect of group \* time in accuracy rate during 2-back task ( $F(1,22) = 0.79$ ,  $p = 0.39$ ). It was observed from neuroimaging results that both 0-back and 1-back task activated cerebellum when investigating group \* time effect while 2-back task activated anterior cingulate cortex and pallidum in group \* time effect. Moreover, we also observed that left parietal lobule was significantly activated during 0-back and 1-back task while right superior frontal gyrus was activated during 2-back after acute exercise compared with before exercise. These findings suggested that CRF is an important variable to modulate the effect of acute exercise on cognitive function, which provided great implication for investigating the association between cognition and exercise.

*Keywords: cardiorespiratory fitness, cognition, physical exercise, superior frontal gyrus*

## The relationship between perfectionistic strivings and perfectionistic concerns and mental health among athletes

**Lilla Török (University of Physical Education)**

Several studies suggest that, perfectionism may be a risk factor for mental health problems in athletes. The study examines the relationship between perfectionistic strivings and perfectionistic concerns and mental health among Hungarian athletes (M age = 23.45 years; SD = 6.61). Athletes ( $N = 98$ ;  $N_{\text{male}} = 62$ ) completed questionnaires to assess the level of positive and negative perfectionism and mental health in terms of obsessive-compulsive, depression, anxiety, hostility and somatization. We administered some relevant subscales from the Symptom Checklist-90-R (SCL-90-R; Derogatis, 1977), and perfectionism is conceptualized as a multidimensional construct and is measured with the Multidimensional Perfectionism Scale (MPS; Frost, Marten, Lahart, & Rosenblate, 1990). Bivariate correlation analysis revealed that positive and negative perfectionism are related positively ( $r = .35$ ;  $p = 0.01$ ), but they have different relationships with mental health dimensions. Negative perfectionism positively associated with hostility ( $r = .42$ ;  $p < 0.001$ ), anxiety ( $r = .49$ ;  $p < 0.001$ ), obsessive-compulsive ( $r = .45$ ;  $p < 0.001$ ), somatization ( $r = .31$ ;  $p < 0.01$ ) and General Severity Index (GSI;  $r = .52$ ;  $p < 0.001$ ). Moreover, positive perfectionism is unrelated to the measured mental health factors, except for somatization ( $r = -.21$ ;  $p < 0.05$ ), which correlated negatively. The finding suggest that perfectionistic concerns may be a risk factor for poorer mental health in athletes.

*Keywords: perfectionism, mental health*

## The prediction of proactive personality and coaches' autonomy-support behavior on college student-athletes' career exploration behavior

**Li-Kang Chi (National Taiwan Normal University)**

This study was based on proactive motivation process model (Parker, Bindl, & Strauss, 2010) to examine the predictive utility of proactive personality and coaches' autonomy-support behavior on college student athletes' career exploration behavior. Furthermore, to examine the mediating effects of career self-efficacy, career self-determined motivation, and positive affect. After received the informed consent, 259 Division-I college student-athletes in Northern Taiwan were asked to complete questionnaires assessing their proactive personality, perceived coaches' autonomy-support behavior, career self-efficacy, career self-determined motivation, positive affect, and career exploration behavior. The results indicated that career self-efficacy, career self-determined motivation, and positive affect had partially mediating effects between proactive personality and career exploration behavior. In terms of the prediction of coaches' autonomy-support on career exploration behavior, career self-efficacy and positive affect had completely mediating effects and career self-determined motivation had a partially mediating effect. The results also found the moderating

effect of coaches' autonomy-support behavior between proactive personality and career exploration behavior. Specifically, regardless of high or low coaches' autonomy-support behavior, high proactive personality student-athletes reported more career exploration behavior than low proactive personality student-athletes. However, when perceived low coaches' autonomy-support, student-athletes who had low proactive personality reported less career exploration behavior. Based on the results, high proactive personality and coaches' autonomy-support behavior lead high career self-efficacy, high career motivation, and high positive affect and then have more career exploration behavior. Coaches are also encouraged to create more autonomy-support behavior especially helpful for student-athletes who have low proactive personality.

*Keywords: proactivity, proactive behavior, career self-efficacy, self-determined motivation, positive affect*

### Suppress or express? Irony effect of self-control in sport

**Liancheng Zhang (Tianjin University of Sport, China.)**

Two studies were conducted to test the ironic effect of self-control that refers to paradoxical or counter-intentional mental state effects arising during efforts at self control under high pressure in sport. Study 1, two experiments were used to test the effect of emotion suppression on athletes' self-control. Participants were divided into three different group to finished emotion control task for 8 minutes and 30 seconds at first, one of the three group finished emotion expression, another group suppress their emotion, the last one is a control group, and then the participants in Experiment 1 went on Stroop task, the participants in Experiment 2 finished Visual-CCPT task that can provide the missed number, the number of false, and reaction. Results showed that emotion suppression group has more error numbers of unmatched Stroop task and more the number of false of Visual-CCPT than control group and expression group. Study 2, two experiments were conducted to test the effect of thought suppression on athletes' self-control. The participants in Experiment 3 included 3 group to finish thought control task for 5 minutes firstly, one of them finish thought expression, another one carried on thought suppression, the last one is a control group. And then they went on finishing Stroop task, the participants in Experiments 4 finished Visual-CCPT task. Results were consistent with study 1. It may be inferred that suppressing emotion or thought was a worse strategy than expression, which will result in ironic effect of self-control.

*Keywords: self-control, ego-depletion, athletes, thought suppression, emotion suppression*

### Exploring flow in sport and exercise therapy with war and torture survivors

**Ley Clemens (University of Vienna)**

Refugees from conflict regions are facing various challenges, often influenced by extreme pre-, peri- and post-migration stressors. Among them, war and torture survivors have a high prevalence of mental health challenges, including posttraumatic stress and intrusive memories from past experiences. Thus, they can hardly focus on the 'here and now'. However, there are some indications that people may fade out illness-related thoughts while exercising, e.g. through flow experiences. The "Movi Kune" programme has been offering sport and exercise therapy to two groups of five to ten war and torture survivors each year. The present study focused on exploring whether and how flow occurred during the programme. Data from the participant observation of non-verbal and verbal expressions were coded and analysed for the intervention groups (2013-2016) with a category system using the software Atlas.ti. Event-focused analysis was complemented with person-focused analysis identifying the occurrence of flow and potential influencing factors. The results suggest that various participants achieved flow several times, particularly during team sports, games, movement improvisations and dance tasks. Hindering factors included task and setting-related aspects that triggered flashbacks and intrusive memories from the past, quick changes in affective experiencing and momentary well-being. Sense of safety was identified as a condition for the occurrence of flow in this study. The experience of



pleasure, the distraction and respite from illness-related thoughts and worries, the being in the present 'here and now', the experience of mastery and achievements, as well as activation and motivation for physical activity seemed therapeutically meaningful effects relating to flow. Therefore, the minimization of potential hindering factors is recommended, together with the provision of adequate tasks and a setting that facilitates flow in sport and exercise therapy.

*Keywords: mental health, refugee, trauma*

### Physical and sports activity in adolescents spa consumers

**Leonardo Eliecer Tarqui Silva (Universidad Estatal de Milagro - UNEMI)**

The present study shows the therapeutic approach based on physical and sports activities applied as reinforcer, channeler and behavioral modifier in conjunction with cognitive, socio-humanistic, spiritual, occupational, experiential and family therapies performed in adolescents using psychoactive substances (SPA) between Ages 14 to 17 years in the Therapeutic Community for Adolescent Males Hogar Crecer (CTHC), of the city of Cuenca - Ecuador; resulting in a reduction and channeling of aggressiveness levels, improvements in the area of socialization, self-esteem, academic performance and an adequate process of detoxification and direct incidence in the initial critical stage of abstinence. The results of the research are obtained through the application of clinical and sports psychological reagents; together provide the reports and diagnoses of weekly evolution of clinical staff during the 6 months of treatment in hospitalization modality administered in initial and subsequent periods of the psych educational process.

*Keywords: therapeutic, physical-sports, socio-humanistic, detoxification, evolution*

### Physical fitness and self-perceptions in teenagers

**José Guilherme (Universidade do Algarve), Conde Monserrat (GCU), Carla Martins (ISMAT), Luís Faísca, Cristina Nunes, Saúl Jesus (Universidade do Algarve)**

Self-perceptions seem to be influenced by physical fitness and gender in teenaged athletes. However, less is known about how this constructs interact in non-athletes teenagers, from both rural and urban backgrounds. The aim of this cross-sectional study was to investigate the associations between physical fitness and self-perceptions (self-concept, global self-esteem and body self-image) in teenagers. The European Portuguese versions of Fitnessgram, figures rating scale (Tiggeman&Barret,1998), Rosenberg self-esteem scale, and physical self-description questionnaire (Marsh,1994) were administered to a sample of 119 teenagers, aged between 13 and 16 years old, selected from the population of students of the public schools of Albufeira (Portugal). Results: There were significant statistical differences ( $p<0.05$ ) between the mean scores of physical fitness and physical self-concept. Additionally, greater scores of global self-esteem tended to correspond to greater scores of physical fitness (positive, strong correlation). No statistical significant associations were detected between physical fitness and body image. Physical fitness was associated to both physical self-concept and global self-esteem in this sample of Portuguese teenagers.

*Keywords: physical fitness and self-perceptions in teenagers*

### Degree of impact of psychological assessment during altitude training with elite athletes

**Leonardo Eliecer Tarqui Silva (Universidad Estatal De Milagro - UNEMI)**

The main purpose of this work in Sport Psychology, aims to identify psychological effects caused by training 21 day in height with elite athletes who practice the disciplines of swimming, mountain biking, judo, boxing and triathlon, alongside the degree of impact of psychological intervention with a program of mental

preparation during this period was subjectively evaluated. The research was done during sports training camps in height conditions in the city of Cuenca, with a total mixed sample of 45 subjects (20 men and 25 women) from different countries; during the years 2007-2012, who were applying the Perceived Stress Scale Borg, POMS (test of mood states) and Ways of Coping Check List (adapted sports) to obtain the results in terms of stress and burnout projected between the twenty-eighth day of acclimatization. The results indicate a positive psychological development in ecological stress and adaptation on day 20 assessment (retest), concluding that the mental training program directly affects athletes, improving mental processes of acclimatization. During the course of training in height, two identifiable phenomena could be observed; the first during the evaluation performed at 8 days of acclimatization where the stress and exhaustion scores indicated a high index; In the second evaluation lower values are registered in the items of exhaustion and perceived stress that is correlated between the applied tests, also detecting an increased management of psychological sports strategies such as self-application of relaxation techniques, goal setting, visualization techniques, Self-talk management, energy regulation, activation control, concentration management and positive feedback by the intervened subjects, all these processes are part of the planning of the mental training program for elite athletes adapted to the micro cycle of 21 days in height, the same that received all the athletes.

*Keywords: altitude training, stress, exhaustion, acclimatization*

## **The effect of a mental skills programme on the anxiety of track-and field athletes in secondary schools**

**Leon Van Niekerk (University of Fort Hare), Maryna Van Niekerk (University of Johannesburg)**

Youth athletes in South Africa are often under much pressure to perform well, but not always prepared mentally to deal with the pressure. Hence, many youth track-and field athletes experience too high competition anxiety. The premise of the study is that an increase in the mental skills of athletes will decrease their experience of anxiety. The purpose of this study was to explore the influence of a mental skills training programme on the anxiety of secondary school athletes during sport performance. A purposive sample of 83 athletes ranging from 13 – 19 years of age (mean age = 16.00 years; sd = 1.90) were included in the study. A quasi-experimental design was followed, with 55 athletes assigned to the experimental group and participated in a mental skills training programme over a period of six months. The control group consisted of 28 athletes, who did not receive any intervention, but were asked to continue with their regular training programme. All the participants were asked to complete the Sport Competition Anxiety Test (SCAT), as well as the Mental Skills Inventory (MSI). Statistical significance was set at .005. Descriptive analysis indicated that youth athletes have a high level of anxiety when competing in track- and field events. It was also found that they have a moderate level of mental skills, leaving much room for improvement of their mental skills. To determine the relationship between anxiety and mental skills, a Pearson product-moment correlation was done. A strong negative correlation between mental skills and anxiety was reported. A mixed (within-between) repeated measures ANOVA was done to determine the effect of the intervention. A significant main- and interaction effect was found for both the increase in mental skills and decrease of anxiety, with a large effect size (Eta squared > .14) for both the main- and interaction effect of the variables. The results indicated that the mental skills training programme decrease anxiety significantly.

*Keywords: mental skills training, anxiety, track- and field athletes*

## Motivation and sport satisfaction: analysis of the mediator impact of coach-athlete relationship from the Brazilian coach perspective

**Lenamar Fiorese Vieira, Andressa Ribeiro Contreira, Patrícia Aparecida Gaion Rigoni, Gislaïne Contessoto Rizzo, Nayara Malheiros Caruzzo (State University of Maringá), José Roberto Andrade do Nascimento Junior (Federal University of Vale do São Francisco)**

Interpersonal relationships have been constantly pointed out in literature as a key factor for developing and maintenance of motivation and satisfaction in competitive sport. The coach-athlete relationship (CART), specifically, is considered a driving force for the performance, personal growth, and wellbeing of coaches and athletes, embracing the behaviors, feelings, and thoughts of both. This study aimed to analyze the mediating effect of CART in the association between basic psychological needs (BPN) and satisfaction of Brazilian coaches. Participated a total of 182 coaches ( $40,47 \pm 9,7$  years old), both men and women, of collective and individual sports, participants in the Brazilian School Youth Games 2015. As instruments, the Coach-Athlete Relationship Questionnaire (CART-Q), the Athletic Satisfaction Scale (ASQ) and the Basic Needs Satisfaction in Sport Scale (BNSSS) were used. The structural equations modeling showed that the direct effect of BPNs on coaches' satisfaction was significantly strong ( $\beta = 0,56$ ,  $p < 0,05$ ), explaining 48% of the shared variance of satisfaction. Under CART mediation, the relationship between BPN and coach satisfaction showed a significant increase ( $p < 0,05$ ) in the total effect (0,56 to 0,71), with an indirect effect of  $\beta = 0,15$ , explaining 54% of the variability of the satisfaction of Brazilian coaches. It was concluded that, in the Brazilian sporting context, coaches who are satisfied with BPN and who establish ties of affection, commitment and respect with their athletes are more likely to increase their levels of sports satisfaction.

*Keywords: motivation, satisfaction, sport, coach-athlete relationship*

## Stress and injuries in the rhythmic gymnastics' Brazilian team for the Rio 2016 Olympic games

**Lenamar Fiorese Vieira, Renan Codonhato, Caio Rosas Moreira, Paulo Vitor Suto Aizava (State University of Maringá), Constanza Pujals (Ingá University Center), Paulo Marcio Oliveira (Federal University of Sergipe), Camila Ferezin Resende (Brazilian Confederation of Rhythmic Gymnastics), Patrícia Aparecida Gaion Rigoni (State University of Maringá)**

Sport injuries are one of the main causes of athletic careers ending, keeping athletes away from training and competition, while damaging their health. Stress is believed to be the most relevant psychological variable related to injury occurrence, also having a role in the rehabilitation process. The present study investigated the stress/recovery and injury profiles of the Rhythmic Gymnastics' Brazilian Team during its preparatory cycle for the 2016 Olympic games. Participants were the eight (08) female athletes ( $20,4 \pm 2,5$  years old), which composed the team during the 2015-2016 Olympic Cycle. Instruments used were the RESTQ-76 Sport and the team's injury records. Descriptive statistics were presented as frequency and percentage; the Shapiro-Wilk normality test, Paired T test, Pearson Correlation and Cohen's D were adopted for data analysis. Data collection happened between the 2nd semester of 2015 and the 2nd semester of 2016, in four time points that preceded the Olympic Games. Injury records had shown a total of 14 injuries, being seven (50%) minor injuries, two (14%) mild injuries, and five (36%) severe injuries; all athletes were injured at least once, and the time away from training/competition activities accounted for a total of 509 days; stress levels were low/under control at all assessments; the recovery levels were significantly greater than stress: 2015 Pan-American Games ( $p < 0,01$ ;  $d = 2,59$ ), XXXIV Rhythmic Gymnastic World Championship ( $p < 0,01$ ;  $d = 3,47$ ), Berlin and Kazan World Cups ( $p = 0,03$ ;  $d = 2,47$ ) and 2016 Olympic Games ( $p = 0,04$ ;  $d = 1,56$ ); no significant correlations were found. It was concluded that the athletes presented adequate levels of recovery, aiding in the control of stress and injuries throughout the season.

*Keywords: stress, recovery, injuries, rhythmic gymnastics*

## Understanding positive youth development in sport through the voices of indigenous youth

**Leisha Strachan (University of Manitoba), Tara-Leigh McHugh (University of Alberta), Courtney Mason (Thompson Rivers University)**

Research in the area of positive youth development (PYD) claim that structured physical activities, such as sport, are critical for development (Petitpas et al., 2005; Strachan et al., 2016). The 5 C's (i.e., confidence, competence, character, connection, caring/compassion; Lerner, 2003) are a gold standard when discussing positive outcomes for youth and these have been applied to youth sport contexts (Vierimaa et al, 2012). While these outcomes are clearly important, they are hypothesized and researched in a western context. Indigenous leaders, both at the national (Truth and Reconciliation Commission, 2015) and community levels (Maskwachees Declaration, 2005) recognize the value of sport for Indigenous children and youth. Research in sport psychology has called for more research to understand youth participation in sport and physical activity from diverse cultural perspectives (Blodgett et al., 2008; Schinke & Hanrahan, 2009). If sport is a key context for development for youth, more understanding as to what constitutes positive development for Indigenous youth needs to be explored (McHugh et al., 2013). The current study used a community-based participatory (CBPR) framework (Fletcher, 2003) to engage 43 youth aged 12-19 from central and western Canada. Talking circles were used to generate the data and Elo and Kyngas' (2008) process of content analysis was used to identify themes. The results point to unique understandings of the C's for Indigenous youth. For example, moving beyond typical western understandings of 'confidence', participants described how confidence includes concepts such as bravery and freedom. Further, participants described the interconnectedness of competence and confidence, and how they are used and understood within a sport context. Suggestions on how these C's can be used to facilitate a more equitable sport system will be discussed.

*Keywords: sport, Indigenous, youth, positive development*

## Self-efficacy as an antecedent of mental toughness, prosocial and antisocial behaviors of youth athletes in Botswana

**Mpaphi Ramolale (University of Botswana), Leapetswe Malete (Michigan state university)**

The mechanisms that underlie the development of efficacy beliefs and mental toughness in sport, such as role modeling and reinforcements of certain behaviors offer a compelling case for how behaviors develop and persist over time. This has important implications for the role sport plays in the socialization of youth into various desirable and undesirable behaviors. The purpose of this study was to examine the relationship among self-efficacy, mental toughness, prosocial and antisocial behaviors in youth athletes in Botswana. A total of 158 male (N = 81) and female (N= 77) junior and senior secondary school athletes aged 14-20 years old enrolled in Centers for Sport Excellence (CSE) in Botswana participated in the study. Participants completed a background information questionnaire, a General Self-Efficacy scale (Schwarzer & Jerusalem, 1995), a Sport Mental Toughness Questionnaire (Sheard, Golby, & van Wersch, 2009) and the Prosocial and Antisocial Behavior in Sport Scale (Kavussanu & Boardley, 2009). A significant positive relationship was established between higher efficacy beliefs and responsibility and composure items from the mental toughness scale. Higher self-efficacy was positively associated with prosocial behaviors and negatively correlated with antisocial behaviors. The differences found varied by sport type and playing experience. The findings suggest a possibility that higher efficacy beliefs play a role in regulating mental toughness and prosocial behavior with lower efficacy beliefs predicting the likelihood to display antisocial behaviors. The study also offers insight into prosocial and antisocial behaviors towards teammates, a less studied dimension in the research. Limitations and implications for future research are discussed within the context of the descriptive nature of the study.

*Keywords: self-efficacy, prosocial and antisocial behaviors, mental toughness, youth sport*

## **Incidence of environment and the personality in the development of resilience through sports in adults. Recommendations to promote it in childhood**

**Leandro Javier Lorusso (Universidad Atlántida Argentina)**

Resilience is considered a positive feature of the human personality that favors individual adaptation to adverse situations. Recently, resilience has been studied in populations of elite athletes, as it would allow them to face negative experiences of their professional and personal life that affect their performance (University Press of Murcia, 2014). However, since it is considered a useful trait in any human being, further research to determine the means of animating and reinforcing resilience in all class populations is of great value. This study assumes the existence of a relationship between regular sports practice and development at the level of resilience. Based on this, the objective is to identify a relationship between the level of resilience and environmental resources as well as the personality traits in a population of adults practicing structured physical activities in the city of Mar del Plata. First, the administration of the Argentine Resilience Scale (1993) will be carried out to the study group. Then, only those people who have achieved measures that correlate with a high level of resilience will apply an ad hoc questionnaire of socio-demographic data and a validated instrument to evaluate personality traits. Subsequently, data analysis will be performed with statistical programs and correlation coefficients. As this study is not limited to a population of high performance athletes, the results are expected to allow the development of recommended practice guidelines to promote the resilience trait in children starting sports activities. These practices will promote social integration in children, especially those exposed to socially vulnerable.

*Keywords: resilience, structured physical activities, personality, environment, integration*

## **The efficacy of affective behavioral strategies for increasing physical activity: Implications for harnessing the dual-mode model**

**Lauren Billing (University of Minnesota)**

The relationship between physical activity (PA) and decreased risk for noncommunicable diseases such as cardiovascular disease, type 2 diabetes, and cancer is well established. However, despite these benefits, only 32% of U.S. adults participate in any PA (HHS, 2011). Researchers have begun to examine the importance of affect for adopting and maintaining PA. For example, research shows that those who report feeling greater positive affect during a bout of PA report more minutes of overall PA six-months later (Williams et al., 2010). Yet few studies have examined how strategies aimed at facilitating positive affect could influence PA participation and adherence. Thus, the current study sought to teach participants how to focus on and enhance affect experienced during PA as a means to increase participation and adherence. It was hypothesized that participants randomized to the affective behavioral strategies intervention would have more minutes of PA at both post-intervention and one-month follow-up than the behavioral strategies comparison control. Healthy, sedentary adults (n=40) were randomized to either an affective or behavioral comparison condition each delivered over the telephone and lasting 12 weeks. The affective condition included topics such as visual or auditory stimuli, and rewards which were tailored to specifically emphasize the positive affect felt during PA. The behavioral comparison condition included information on the general benefits of PA, types of PA, and PA recommendations. The primary measures included the 7 - day PAR and 4 - day ActiGraph wear. Assessments were conducted at baseline, 12 weeks, and 16 weeks. Preliminary results show no significant differences between groups on weekly PA minutes at 12 weeks as measured by the ActiGraph (m=288.22; SD=328.76) and 7-day PAR(m=232.50; SD=205.47). Future research should seek large sample sizes with adequate power to detect significant differences.

*Keywords: physical activity, exercise, affect, dual-mode model, behavioral strategies, intervention*

## A depth study on the factors of slump bounce-back of professional golfers

**Seong-Hun An, JungHun Heo, Kyung Hoon Ko, YoungSik Won, Woong Tae Na (Chung-ang University)**

This study aimed to investigate in-depth causes of slump, symptoms and factors leading professional golfer's bounce-back and present phenomena and psychology in the course of time, provided that it accords to the phenomenon that professional golfers' skill sets are improved after a period of slump is defined as "slump bounce back." Subjects of study were 4 male golfers and 5 female golfers. Results were extracted from in-depth interviews. In causes of professional golfer's slump were from faulty swing, inefficient practice, lack of practice, plateau condition, injury, problems of physical strength, health issues, boredom, criticism from surrounding people, stress from comparing with fellow golfers, pride, uncertain goals, etc., and environmental causes were from financial problem, personal relations, conflict with instructors, change of environment, etc. In symptoms included continuously worsening skills; physical symptoms included insomnia, worsening health, physical exhaustion, hair loss, subjects experiencing negative emotions, psychological isolation, a drop in psychological functions, financial problem, relationship with parents, attitude from surrounding people, etc. As for the factors for depressed golfers to bounce back, it was due to continuous practice, change of methods, improved scores and techniques, physical maintenance, positive change in emotions, training in psychological techniques, financial comfort, parental support and instructor's help, fellow golfer's roles, special opportunities, etc. The results were based on case studies in which Korea's top professional golfers experienced slump, and so they are expected to be used as one of guidelines for golfers experiencing difficulties.

*Keywords: professional golfers, slump causes, slump symptoms, slump bounce-back*

## The association between physical activity wearables and athletic identity in student-athletes

**Kwok Ng, Harri Selänne, Tatiana Ryba (University of Jyväskylä)**

Self-quantification is easier with the assistance of wearable technology. Hardware devices that athletes wear, such as heart rate monitors or sports watches (HRM/SW), and integration into the user's smart phones as applications (apps) are readily available as commercial products. Despite the surge in the emergence and use of these technologies, there is a lack of knowledge of how student-athletes use these devices and if it plays a part in the identity of athletes. Therefore, the purpose of this study is to investigate the rate at which student-athletes at elite sport schools own and use HRM/SW and apps, as well as the associations between these devices and academic/athletic identity. Adolescents (n=400) in their second year of elite sport school (average age range is 16-17 years old) took part in a survey collected from 7 schools around Finland in a longitudinal mixed methods study on adolescent athletes' careers (Ryba et al, 2016) in the spring of 2017. The athletic identity measurement scale (AIMS), (Brewer et al, 1993), modified AIMS for academic context (SIMS), and items taken from the Finnish School-age Physical Activity (SPA) study (Kokko et al, 2016) regarding physical activity wearables (PAW) were included in the analysis. Analyses with descriptive statistics and MANOVA for overall sport identity and academic identity were analysed in relation to the use of apps and HRM/SW. The results from this study were able to report the proportion of student-athletes who own and use apps or HRM/SW. Differences in using apps or HRM/SW, to just owning apps or HRM/SW, were observed in relation to athletic and academic identity of the student-athletes attending elite sport schools. Sport psychology consultants may need to consider how student-athletes use wearables to shape their academic and athletic identity.

*Keywords: dual careers, technology, self-quantification, student identity*



## Passion, sport motivation and aggression among combat sport athletes

**Kuldeep Singh (Panjab University, Chandigarh, India)**

In line with Self-Determination Theory the Dualistic Model of Passion (DMP) posits that individuals are motivated to explore their environment in order to grow as individuals. In so doing, they engage in a variety of activities. Of these, only a few will be perceived as particularly enjoyable, important, and to have some resonance with how people see themselves. From these few activities one or two will eventually be preferred and engaged in on a regular basis and turn out to be passionate and it is an important source of motivational energy underlying such persistent involvement. Indeed, passionate athletes may be so involved in their sport that they are likely to be aggressive if victory is on the line. The present endeavour was planned with the aim to find out differences among different combat sport athletes on passion, sport motivation and aggression. The study was also planned to study the relationship between passion, sport motivation and aggression. For this purpose 300 male respondents (100 boxers, 100 wrestlers and 100 judo players), within the age range of 18-23 years, were selected from different colleges from Punjab state of India. Passion was measured by using the passion scale by Vallerand et al. (2003). To measure aggression, the aggression questionnaire by Buss and Perry (1992) was used. The sports motivation scale (SMS-28) by Pelletier, Fortier, Vallerand, Tuson, Briere, and Blais (1995) was used to measure seven types of sports motivation. The results revealed that F-ratios for groups on obsessive passion, harmonious passion, types of sport motivation and total aggression emerged significant. Both types of passion were found to be significantly related with types of sport motivation and aggression among the groups. These results suggest that on the whole, sports provide beneficial effects to ones passion and motivation and to the reduction of anger and "real world" aggression in youth and adolescents.

*Keywords: passion, sport motivation, aggression, boxers, wrestlers, judo*

## A systematic review and meta-analysis of relative age effects in female sport

**Kristy Smith, Dr. Patricia Weir, Dr. Stephen Cobley (University of Sydney)**

Relative age effects (RAE; Barnsley et al., 1985; Cobley et al., 2009) refer to immediate participation and long-term attainment influences in sport, which occur as a result of an interaction between one's chronological age and the dates used to logistically organize participant cohorts in a sport system. The prevalence of the RAE remains relatively undetermined for female sport contexts. Therefore, the purpose of this study was to examine female participation trends with respect to relative age in the published literature by evaluating the birth quartile distribution of athlete samples. Using systematic search procedures, 54 studies spanning 1984–2016 were identified and contained 308 independent samples across 25 sports. The overall prevalence and strength of the RAE across and within female sport contexts was determined, and moderator variables were assessed using odds ratio (OR; events versus non-events) meta-analyses, applying an invariance random-effects model. Preliminary findings suggest the RAE is generally more prevalent at pre-adolescent (< 11 years) and adolescent (12-14 years) ages (OR range = 1.14-5.40, relatively oldest in 'Quartile 1' versus the relatively youngest in 'Quartile 4'). Likewise, a RAE was more likely to be observed - and of greater magnitude - in some sport contexts requiring certain physical attributes (e.g., height in volleyball) and at higher levels of sport competition when other factors were held constant. With some sport context exceptions, RAE effect sizes seemingly reduced following maturation. These findings suggest that interactions between participant developmental stages, level of competition, sport context performance demands and sociocultural factors likely determine RAE prevalence and effect magnitudes in female sport participation. To reduce and eliminate RAE-related inequalities in female athletic development, direct policy, organizational and practitioner intervention are required.

*Keywords: birth date, annual age-grouping, maturation, selection bias, women, athletes*

## The longitudinal impact of relative age on organized sport and unorganized physical activity participation in pre-adolescents

**Kristy Smith, Laura Chittle, Dr. Jess C. Dixon, Dr. Sean Horton (University of Windsor), Dr. Mathieu Bélanger (Université de Sherbrooke), Dr. Patricia Weir (University of Windsor)**

The Relative Age Effect (RAE), whereby individuals born further from an arbitrary cut-off date are disadvantaged in comparison to their earlier born peers, has been documented in various sport and educational contexts (Cobley et al., 2009). If youth are routinely disadvantaged in daily activities, the detrimental impact of this effect could extend to other areas of their lives (e.g., proclivity to engage in a physically active lifestyle). The aim of this study was to explore the longitudinal pattern of sport and physical activity participation among a prospective cohort of pre-adolescents with respect to relative age. Self-reported data from the first twelve cycles of the Monitoring Activities of Teenagers to Comprehend their Habits (MATCH) project was included in the analysis. A detailed description of the study is available in Belanger et al. (2013). Generalized linear mixed models with binary logistic regression were conducted to assess the contextual effects of the RAE in this sample. There was a significant RAE for both male and female organized sport participants ( $p < .05$ ), with an over-representation in the second quartile of birth. This RAE pattern was consistent over the four-year span of data collection. There was no interaction between birth quartile and chronological age for organized sport or unorganized physical activity participation. However, there was a significant main effect ( $p < .01$ ) of chronological age for unorganized physical activity participation, indicating decreased involvement with increasing age (e.g., 11 year old 3.6 times more likely to participate vs. 15 year old). This study affirms that context is an important consideration when examining various forms of physical activity participation and targeting interventions for youth, as this decline was not noted among organized sport participants. Continued investigation of the factors contributing to the RAE and participation trends, and their stability over time is warranted.

*Keywords: relative age effect, sport, physical activity, participation, pre-adolescent, longitudinal*

## Students' psychological growth in high school athletic clubs: Role of students' perceptions of teacher

**Kota Matsui**

We aimed to examine students' psychological growth in athletic clubs in combination with students' perceptions of their teacher in high school. Study 1 examined the effects of students' perceptions of their teacher and teacher's feedback on students' intrinsic motivation in athletic clubs. We administered questionnaires to 1,071 students from high school athletic clubs. Items concerning their teacher were used to score trust, based on which the students were divided into groups of high and low levels of trust with their teacher. Analysis of factors in items regarding teacher's feedback confirmed the following three factors: praise, reproach, and absence of feedback. Results of multiple regression analyses suggested praise and reproach were positively correlated with intrinsic motivation in the high trust group, while a positive correlation occurred only with praise in the low trust group. Results of path analysis suggested that the effects of teacher's feedback on students' intrinsic motivation were mediated by students' perceptions of their teacher. Study 2 examined students' perceptions of their teacher and dependency on their teacher, and motivation and overcommitment in athletic clubs. We administered questionnaires to 978 students from high school athletic clubs. Items concerning their teacher had two subscales (acceptance and control); based on these scores, students were divided into four groups (acceptance, control, acceptance-control, and nonacceptance-noncontrol). Items concerning dependency on their teacher had two subscales (integrated dependency and dependence need), and motivation for their activity had two subscales (autonomy and heteronomy). On the basis of ANOVA, in the acceptance-control group, all scores were high, while it was the opposite in nonacceptance-noncontrol group. In the control group, only dependence need scores were high. In the

acceptance group, integrated dependency and autonomous motivation scores were high, while others were low.

*Keywords: student-teacher relationship, dependency, motivation, overcommitment*

### **Investigation of variables aimed at reducing depressive symptoms in collegiate athletes prior to competitions: Use of logical thinking errors and behavioral activation as variables**

**Kosuke Hirayama, Hideaki Takai (Nippon Sport Science University)**

It has been reported in recent years that collegiate athletes suffer from depressive symptoms (e.g., Wiegand et al., 2013). Such symptoms hinder optimal performance by increasing memory disorder, behavioral procrastination, and avoidance behavior, and are therefore believed to decrease overall performance (Fujita & Iwanaga, 2005). The purpose of this study is therefore to investigate variables aimed at reducing depressive symptoms by focusing on logical thinking errors, which potentially cause such symptoms, and behavioral activation carried out in order to improve such symptoms. The subjects were 133 male student athletes enrolled at A University in Japan. They were requested to respond to questions on the Center for Epidemiologic Studies Depression Scale (CES-D), which measures depressive symptoms, the Thinking Errors Scale (TES), which measures logical thinking errors, and the Behavioral Activation for Depression Scale (BADs), which measures behavioral activation, while recalling competitions in which they had felt anxiety or tension. A CES-D score of 16 points was set as the cut-off point to identify athletes with depressive symptoms; 50 athletes had a score of 16 or above while 83 athletes had a score below 16. Our analysis revealed that collegiate athletes with depressive symptoms obtained significantly higher scores in all subscales of TES, and significantly lower scores in all subscales of BADs except "Activation," than collegiate athletes without depressive symptoms. The absence of a significant difference with "Activation" alone may probably be attributed to the fact that collegiate athletes acquire active behavioral patterns through daily training. In conclusion, interventions targeting logical thinking errors and relevant BADs subscales, including "Avoidance and Repetition," "Competitive and School Impairment," and "Social Impairment," are likely to be effective in reducing depressive symptoms in collegiate athletes.

*Keywords: depressive symptoms, collegiate athletes, logical thinking errors, behavioral activation*

### **Relationship between the effective use of language during the feedback process and its impact on youth soccer athlete's exercise commitment, athletic performance, and persistence of an exercise**

**Kooin Jung, Chnaghyun Kim, Jeongjoo Kim, Deokgyu Won, Juyoung Kim (Korea National University of Education)**

This study tried to examine the relationship between the effective use of language during the feedback process and its impact on youth soccer athlete's exercise commitment, athletic performance, and persistence of an exercise. We used convenience sampling method on a sample of a middle school and high school students who were registered as an athlete in the Korea Football Association at 2016. Questionnaires were used as a research method, total of 676 questionnaires were collected, 26 of them excluded because those were trustless. Total of 650 sample data went through the statistical programs like SPSS 21 and AMOS 21ver. The results are following; first, The effective use of language during the feedback process has significant effect on youth soccer athlete's exercise commitment. second, The effective use of language during the feedback process has significant effect on youth soccer athlete's athletic performance. third, Youth soccer athlete's exercise commitment has significant effect on athletic performance. fourth, Youth soccer athlete's exercise commitment has significant effect on persistence of an exercise. fifth, Youth soccer athlete's athletics performance has significant effect on persistence of an exercise.



*Keywords: language during the feedback, commitment, performance, persistence of an exercise*

## Analysing visual behavior and its effects on decision making. An experimental study in volleyball

**Konstantinos Velentzas (Bielefeld University), Thomas Heinen (Leipzig University), Angeli Gawlik (University of Erlangen)**

Perception and anticipatory skills in high velocity sports as volleyball affect significantly performance (Velentzas & Schaper, 2016; Vickers, 2007). The present study aims to provide evidences about the relationship between perceptual strategies and decision making in volleyball and to scrutinize differences in gaze control between athletes of different levels during defending in the position "six". Reaction time is measured by keyboard entries (Presentation®) and visual behavior was evaluated by a SMI® eye-tracker. Three groups of participants (novices, intermediated and high performers; 12 participants per group) were asked to "read" a reenacted scene (58 sequences) and enter setting direction (two possible choices were given) on the keyboard as fast as possible. The video stimulus was subdivided into obvious-, covered-, and setting after bad reception presented in a random order. Reaction-time was calculated in relation to the first touch of the ball by the setter. The data analysis shows that there are no significant differences between the three groups regarding the fixations' number [(MNovices = 5.24; MInterm = 5.70; MHigh = 5.64;  $F(2, 41) = 0.709$ ,  $p > .05$ )] as well as regarding the fixations' duration [(MNovices = 341.8ms; MInterm = 264.5ms; MHigh = 257.6ms;  $F(2, 41) = 2.109$ ,  $p > .05$ )]. However, reaction time decreases significantly on increasing expertise ( $F(2, 41) = 8.46$ ;  $p < .01$ , Post-Hoc showed that high performers reacted significantly faster as both the other groups (MHigh= 2857ms : MNovices = 3142ms; MHigh= 2857ms : MInterm = 3009ms). The results of the present study match previous studies partly only. Differences in visual strategies can't be ascertained. The results indicate that experts are able collect and actualize information more efficiently by using almost the same visual-peceptual strategies as the novices, indicating at the same time that phenomena as the „looking without seeing“ could taking place during the information acquisition.

*Keywords: eye tracking, reaction time, volleyball defense, video stimuli*

## A narrative study on the psychological development of athletes through the experience of yips

**Kojiro Matsuda (Kyusyu University)**

The yips is a multi-etiological phenomenon consisting of involuntary movements during the execution of a skill. Previous research has primarily focused on the negative aspects of yips as yips have been considered a crisis as an athlete owing to their intractability and the risk of withdrawal they cause. However, from the perspective of positive psychology, research has focused on the relationship between crises faced by athletes and their psychological development (e.g., change to adaptive motivation, reduction of anxiety of competition, improvement of concentration). That is, a crisis as an athlete is considered as a turning point in his/her development, caused by a set of transitional problems (e.g., psychological conflicts, slump) that have to be resolved. Thus, the purpose of this study was to examine the psychological development of athletes who experienced yips to understand what kind of psychological development occurs on confronting a painful situation. We interviewed six university baseball players (mean age=21.14 years, SD=0.87 years) who experienced yips, using a narrative approach. The narrative data were categorized based on similarities. As a result, six characteristic narratives, "clarifying the meaning of sports activity," "understanding oneself," "independent achievement orientation," "mental stability," "understanding, accepting, and appreciating others," and "having a deep understanding of the competition" were identified. These characteristic narratives were considered to have expressed or to be related to psychological development as an athlete. These

findings clarified that the experience of yips acted as a turning point for athletes and that this experience brought about their psychological development as an athlete. Future empirical studies need to confirm these findings.

*Keywords: crisis as an athlete, turning point, narrative data, withdrawing from a competition*

## Development of a tag game to improve children's helping behavior-related self-efficacy

**Kohei Ueno (Kagawa University)**

Helping behavior is influenced by many factors, including past experiences of and feelings while helping others (Nagai, 2011; Senoo, 2001), both of which may be promoted through physical activity. For instance, team sports and physical education (PE) can promote not only athletic ability but also personal growth. Accordingly, this study investigates the effect of participation in a game of tag, which was focused on helping others, on children's self-efficacy related to helping behavior; i.e., belief about one's ability to help others (Ueno, 2014). Sixty-two elementary school students (ten to eleven years old) played one round of two types of tag in a PE class. In the first class (i.e., regular tag), students had to run around and avoid being caught. In the other, which was developed by the author and named "Nakama-oni," the catcher could touch only those students who were running alone and not those who held hands with each other (a student could hold hands with only one other student at a time). This feature of the game was intended to trigger helping behavior. Students were told before the game that there is significant value in helping others avoid the catcher without regard for personal safety. Self-efficacy related to helping behavior was assessed before and after the game with a scale developed by Ueno (2014). Two-way repeated measures ANOVA and simple main effect tests were conducted on the scale's scores. A significant interaction effect was found between timing and type of the tag. The results of the simple main effect tests showed that the scale score after Nakama-oni was significantly higher than it was either before Nakama-oni or after regular tag. These findings suggest that experiences of helping others, even in a game of tag, may enhance helping behavior in daily living by increasing self-efficacy.

*Keywords: helping behavior, pro-social behavior, physical education, tag game*

## The psychological factors of sports injury prevention

**Kento Hibi, Haruo Sakuma (Ritsumeikan University)**

The relationship between sports injury and psychological issues has been a concern in the recent times. Particularly, the psychological condition during the recovery process and the psychosocial influence on sports injury has been examined. However, there are only a few studies on young Japanese athletes regarding the psychological factors of prevention. The purpose of this study was to examine the psychological factors related to the occurrence of sports injury. One hundred and thirty-nine university students (89 males and 50 females) participated in this study. Participants were asked to complete the Stress-Response-Scale 18 (e.g., lethargy and depression-anxiety), Diagnostic Inventory of Psychological-Competitive Ability for Athletes (e.g., concentration, self-control, volition of winning and aggressiveness), and report their past experiences of sports injury. According to their past injury experiences, participants were classified into the injured group ( $n=98$ ) and the non-injured group ( $n=41$ ). The results showed a negative correlation between concentration and lethargy,  $r = .33$ ,  $p \leq .001$ . Furthermore, there was a negative correlation between self-control and depression-anxiety,  $r = .35$ ,  $p \leq .001$ . An independent t-test was conducted to compare the scores of the volition for winning between the injured and non-injured groups. There was a significant difference between the injured group ( $M=14.43$ ,  $SD=3.026$ ) and the non-injured group ( $M=13.00$ ,  $SD=3.690$ );  $t(139) = 2.41$ ,  $p = .017$ . In addition, the aggressiveness score showed a significant difference between the injured group ( $M=14.95$ ,  $SD=3.244$ ) and the non-injured group ( $M=13.00$ ,  $SD=4.071$ );  $t(66.4) = 2.78$ ,  $p = .007$ . These results suggested that concentration,

self-control, lethargy, and depression-anxiety were related to the occurrence of sports injury. In addition, there was a relationship between the volition for winning, aggressiveness, and the occurrence of sports injury.

*Keywords: sport injury, prevention, psychology*

## **The influence of self-consciousness and other-consciousness on “choking under pressure” in sports**

**Kenta Karakida (Osaka University of Health and Sport Sciences)**

According to Baumeister (1984), “Choking under pressure is defined as performance decrements under increased importance of good performance”, which is a significant problem in athletes. Previous studies (Wang et al. 2004) have reported that self-consciousness (SC) is related to “choking”. Furthermore, Tsuji (1993) has investigated other-consciousness (OC), or the tendency to attend to others. Attention from others, such as coaches, teammates and the audience cannot be avoided by athletes, and it is possible that “choking” could occur because of the conscious about these people. The aim of this study was to investigate the influence of self-consciousness and other-consciousness on “choking under pressure” in sports. The Questionnaire on Factor in “Choking” in Sports with of 7 factors and 41 items developed by Murayama and Sekiya (2012), the Self-Consciousness Scale with 3 factors and 21 items developed by Tsuji (1993) and the Other-Consciousness Scale with 3 factors and 15 items developed by Tsuji (1993) were used in this study. The sample was 136 college student athlete. First, t-tests were conducted after classifying SC and OC scores into high and low groups based on mean values by using the 7 factors of “choking” as dependent variables. Results indicated that scores of high SC and OC groups were significantly higher for all factors of “choking”. This result supported previous studies suggesting that high SC results in “choking”. Moreover, high OC also suggested the possibility of leading to “choking”. Subsequently, multiple regression analysis was conducted to investigate the influence of subordinate factors of SC and OC on “choking” factors. Results indicated significant paths from SC and OC suggesting that they are important factors in many types of “choking”. These results indicate that SC and OC influence different “choking” factors.

*Keywords: choking under pressure, self-consciousness, other-consciousness*

## **Examining the contextual factors that influence life skills transfer from sport to life**

**Kelsey Kendellen, Martin Camiré (University of Ottawa)**

The practice of sport inherently encompasses skill building (Bergeron et al., 2015). In the past decade, empirical work (Chinkov & Holt, 2016) has demonstrated how the skills developed in sport are applicable beyond sport. To appreciate the extent to which the skills learned in sport are applied in different contexts, researchers have highlighted the need to examine the particular factors influencing the transfer of life skills within these contexts (Pierce, Gould, & Camiré, 2017). The study’s purpose was to examine athletes’ experiences of transfer by focusing on the contextual factors that have influenced their ability to transfer the life skills they attribute to having developed in sport during childhood/adolescence. Interviews with 13 athletes (7 males; Mage = 21.77; SD = 2.2) were conducted at two time points and online journal entries were written by the athletes over three months. Findings illustrated how the nature of athletes’ interactions with social agents within transfer contexts influenced the type of life skills they applied. Athletes discussed how, for example, they applied at work the communication skills they developed in sport (e.g., voicing their opinion with coaches) because their managers regularly consulted them on work matters (e.g., hiring new employees). Other athletes mentioned how they rarely communicated with their managers and, consequently, had to apply in the workplace some of the problem-solving skills they had learned in sport (e.g., asking experienced colleagues for advice). The perceived reward for transfer was also identified as an important contextual factor, with many athletes discussing how they applied at work leadership skills they had developed in sport because they



perceived potential rewards for this transfer (e.g., upward career mobility). The findings elucidate how contextual factors within transfer contexts influence athletes' opportunities and motivations to apply in everyday life the skills they developed in sport.

*Keywords: emerging adults, youth, positive development, social agents, workplace*

## Development of guidance tools for cooperative skill acquisition

**Keiko Yokoyama, Yuji Yamamoto (Nagoya University)**

In collective sports, players are required to demonstrate behavioral social skills such as cooperative interaction among teammates and competitive interaction against opponent players. These behavioral social skills in sports are considered the self-organized process from the dynamical system perspective (Schmidt et al., Int. J. Sport Psychol, 1999). In this study, we revealed that the skill differences in cooperative interaction among teammates could be explained by the differences in synchronized behavioral pattern on a playing field, by using a three-on-one ball-possession task (Yokoyama & Yamamoto, PLoS Comp. Biol., 2011). We developed two types of guidance tools ("three-band" and "one-band") for acquiring cooperative skills and verified the effectiveness of these tools for novice players. Each tool comprised elastic bands that connect players and belts that are worn by players for connecting the bands and the players. The "three-band" guidance tool comprised three bands wherein each band connects two players. The "one-band" tool comprised only one long band that connects three players. We hypothesized that these tools would demonstrate effectiveness through facilitation of perception of the movements of other players by using the physical tension of elastic bands, according to interpersonal distance, and would lead to cooperative interaction. Sixteen novice elementary-school student players performed three-on-one ball-possession tasks under no-band (control), one-band, and three-band conditions for 60 seconds in each condition. The movements of all the players on a playing field were recorded by using motion capture cameras (OptiTrack Prime 17W) at 120 Hz. The players' movement velocity, interpersonal distances, and inner angles in a triangle formed by the positions of three players were analyzed. Results show that the three-band tool was significantly more effective for maintaining stable cooperative interaction than the one-band tool.

*Keywords: motor learning, collective dynamics, social skill*

## Highly skilled player's gaze behavior in basketball shootings

**Kazutoshi Kudo, Masakazu Nemoto, Ryoji Onagawa, Hiroto Tsuji (The University of Tokyo), Yuki Inaba (Japan Institute of Sports Science)**

Steady goal-gaze just before movement execution has been reported to provide extra information about motor execution parameters. It is controversial, however, whether the gaze behavior is also effective in highly skilled athletes. Therefore, we investigated gaze behavior of highly skilled basketball player in basketball shooting. One highly skilled professional male basketball player, who succeeded 99 of 100 free throw and 47 of 50 three-point shot in pre-test, performed basketball shooting under four conditions: free throw, three-point shot, turnaround jumper, free throw with eyes closed. Gaze behavior during shooting was recorded by eye mark recorder (EMR-9, NAC, Japan), and goal-gaze duration was measured. The results showed that success rates of shooting were 80% (8 of 10) for free throw, 80% (8 of 10) for three-point shot, 50% (3 of 6) for turnaround jumper, and 80% (8 of 10) for free throw with eyes closed. Steady goal-gaze duration just before execution of shooting movement was nearly one second with small variance across trials under free throw condition, and no significant duration difference was found between successful trials and failed trials ( $p > .05$ ,  $t$  test). Under three-point shot condition, the duration showed large variance among trials, and tended to be longer in latter half of trials than that of former half of trials. Under turnaround jumper condition, the duration was significantly shorter than that of free throw condition and three-point shot condition ( $ps < .05$ ,  $t$  test).

Overall, there was no significant correlation between steady goal-gaze duration just before execution of shooting movement and successful shooting. The results suggest that steady goal-gaze duration just before execution of shooting movement has a limited role in successful shooting, in case of highly skilled basketball player.

*Keywords: eye movement, motor control, expertise, free throw*

## **The characteristic of the movement task judged from the internal trouble in college students: analysis by the Landscape Montage Technique**

**Katsuhiko Kotani (Hokkaido University of Education)**

In psychological consultations with athletes, it is important to grasp their troubles as not only their performance problems but also internal problems even if they only mention the former. The purpose of this study is to examine the characteristic of the movement task from the internal trouble in students that taking lessons in the gymnastics at university. The participants were 11 college students of physical education department (male=6, female=5, mean age=19.09). About the movement task, an expert teacher judged their tasks from a state of activity in lessons of gymnastics. Their internal troubles were identified by the characteristics of pictures that they drew in Landscape Montage Technique (LMT). LMT is used as a technique to assess the client's psychological problems in psychotherapy. This study focuses on 3 students who drew impressive picture in LMT. In picture of case A (female), items were scattered, and the mountain was floating in the air. In picture of case B (male), it was a picture without the impression. In picture of case C (female), the house and the rice field were drawn narrowly between the river and the road. In particular, Case A was not able to image the order of movement in motor learning. The feature of A's picture symbolized that she had not been able to connect past experience to current activities. That is, her identity was becoming unstable. Therefore, it was considered that she can't demonstrate his ability because she can't understand how to achieve hers goal The result of this study indicated that there were similarities between the tasks in physical movements and the internal troubles in daily life. Therefore, The unnatural characteristics of LMT were considered as symbol of unstable identity of athletes. Such unstable identity made their physical movement unnatural.

*Keywords: movement task, internal trouble, college students*

## **Educational program "Sácale partido al cole" Sevilla FC SAD**

**J.M. Gamito Manzano, J. Viñas Rodríguez (Sevilla FC SAD)**

Sevilla FC presents to society its most humane and social side, approaching the youth and trying to transmit values inherent to the sport such as tolerance, respect for differences, perseverance, the pursuit of personal improvement, enjoyment of the game, compliance with the rules, etc. It is a reality the impact which Football Clubs have in the world of young people and also what their team means to them and the players who represent it, becoming true referents for their lives. This is the reason why, sports organizations should contribute with what is within their reach and so it results in an improvement in training enhancing all those qualities which must be developed in a good citizen, whether young or adult. Therefore, their involvement in this integral education of future citizens is necessary. The Sevilla FC. SAD, after more than a hundred years of history, is more alive than ever, and looks to the educational field to these young people, fans or not to the sport, offering them a series of activities that contribute to a correct formation in values. The objectives of the educational program "Sácale Partido al Cole", which meets its XIII Edition, are the contribution to the education of young people since it is everyone's task (Sevilla FC intends to contribute to that society by training young people in sports values in what is called collaborative meddling), the extrapolation to the classrooms of the socializing and educational power of football and the benefits it can bring to our young people, the

contribution of a more human and close vision of sport, where what has value is the person, their interests And their needs, and the transmission to students of values such as tolerance, respect, a healthy lifestyle or racial and cultural integration as part of our "CORDIALITY" campaign.

*Keywords: training in values, integral education, youth, Seville Football Club, socialization, modeling*

## The mental strategies of elite climbing sherpas

**Kate O'Keeffe, Ismael Pedraza , Taru Lintunen (University of Jyväskylä, Finland)**

In the research conducted on extreme sports, the focus has been on single psychological skills rather than the combination of skills. Extending this limitation, there has been no previous study examining the psychological skills of elite high altitude climbing Sherpas from the Himalayas. This research aims to describe and understand the psychological skills of these Sherpas as they tackle Mt. Everest whilst leading and supporting an expedition team. The study consisted of five male Sherpas (35-40years) whom all have attempted to climb Mt. Everest at least once, with four of them summiting between one and ten times. The study was conducted through semi-structured thematic interviews which included two interviews and a focus group. Questions were developed based on the themes of the 'Wheel of Excellence' (Orlick, 2008) which is used to measure peak performance in the pursuit of excellence. These themes included; focus, ongoing learning, commitment, mental readiness, positive images, confidence and distraction control. Interviews were conducted through English and Nepalese. Data analysis was conducted using both an inductive and deductive approach through content analysis utilizing the qualitative analysis software Atlas.ti. From the results, a model illustrating the psychological profile of a high altitude climbing Sherpa was constructed based on the main themes found. Belief is centered as the core component as it helps the Sherpas maintain confidence and trust in their God in keeping them safe and regulating their arousal through the adverse conditions. The remaining six components radiating and founded from this belief include; mental readiness, evaluation, leadership, teamwork, focus and commitment. All of these components are facilitated by positive thinking and safety which encompass the model. This study offers a valuable contribution towards understanding the psychological skills necessary for performance under pressure and in extreme environments.

*Keywords: sherpa, extreme, excellence, everest, performance, belief*

## Psychological and motor determinants of effectiveness of an individual play in football game

**Karolina Chlebosz, Lukasz Bojkowski, Maciej Tomczak (University School of Physical Education in Poland)**

The main objective of the study was to examine determinants of successful play of an individual manifested or displayed in one-on-one game . Our choice of psychological and motor determinants was based on actual literature (Seabra et al. 2014; Silva et al. 2015; Moura et al. 2016; Syander, Van Zyl 2016). Determinants significant for a player's offensive, defensive and comprehensive effectiveness are temperamental traits, types of task and ego orientation, selected motivation process and co-ordination motor abilities (Cramer, Jackschath 1998; Kraft, O'Sullivan, Zuckerman 1998; Weigand, Broadhurst 1998) 91 male football players (M=22,9, sd= 2,298) filled in a set of questionnaires, the Formal Characteristics of Behaviour - Questionnaire of Temperament (Zawadzki, Strelau 1997), the Task and Ego Orientation in Sport Questionnaire (Duda et al. 1995), and the Sport Motivation Scale (Pelletier et al. 1995). Followed by two co-ordination motor abilities tests (level of adaptability and conversion of physical activities, and a test assessing differential complex reaction time) and a test, simulation game, verifying effectiveness of individual play in one-on-one game (Ljach, Witkowski 2004). Research pointed out on the strongest mental properties that differentiated the group of players in terms of their playing effectiveness. In terms of analysis of an individual's play they were high level of briskness and low level of emotional reactivity as well as high intensity of task and ego orientation

focused on the task. On the other hand, motor abilities that determine player's level of effectiveness in one-on-one game and the level of competence in a group and team play included high level of adaptability and presentation of physical activities (in offensive play and in comprehensive assessment) and fast differential reaction time.

*Keywords: temperament, goal orientation, motivation, co-ordination, effectiveness*

### **Visual exploratory behavior in elite youth football players: A study on visual search activity and performance of players in all outfield positions at the ajax-academy**

**Karl Marius Aksum (Norwegian School of Sport Sciences)**

The general purpose of this study was to examine visual perception in young elite football players by investigating their visual exploratory behavior in real match situations. The specific aim of this study was to examine in what degree elite youth football players from one of the most acclaimed youth academies in the world, used visual exploratory activity as a tool to attain information during offensive match situations. The theoretical framework used for this study was Gibson's ecological approach to visual perception (Gibson, 1986). 45 players ranging from 14-20 years of age from the Ajax academy were observed in real match situations using 4k-cameras. Results indicate significant differences in visual exploratory behavior across various domains including; passing performance, direction of the pass, field area, pressure distance, playing position, last action taken, and age. In situations where players conducted a visual exploratory behavior before receiving the ball they made more successful passes and more forward passes than in situations where they did not explore before receiving the ball. Results also suggest clear differences in visual search activity related to playing position; in particular centre backs and midfielders explore their surroundings much more frequently than wingers, full backs and centre forwards. Further results show a clear relationship between visual exploratory behavior and playing area. In particular, there were more visual exploratory behavior instigated centrally on the pitch than on the sides. The combined results support previous research by finding evidence that suggest a positive relationship between visual exploratory behavior before receiving the ball and performance with the ball (Eldridge, Pulling, & Robins, 2013; Jordet, Bloomfield, & Heijmerikx, 2013).

*Keywords: visual perception, exploratory activity, ecological approach, football, ajax, attack*

### **Cognitive and neural mechanisms for perception of biological motion eliminated most kinematic information of gymnastics skills**

**Kana Goto, Yoshifumi Tanaka (Mukogawa Women's University)**

This study was aimed to examine the differences between expert gymnasts and novices on perception of biological motion eliminated kinematic information of body parts. Central nervous activity for perception of such biological motion was also investigated. Ten expert gymnasts and 10 novices were participated in this study. Point-light biological motion eliminated most kinematic information except for two joints were made up based on videotaped two skills ("jumping" and "cart wheel") of an expert gymnast. Each skill's biological motion was consisted of four types differing from the position of two reflective markers attached the joints of the body (A: shoulder and knee, B: wrist and ankle; C: wrist and greater trochanter, D: ankle and greater trochanter). Participants observed 80 point-light movies (two skills by four types of markers' position of 10 trials each). To measure central nervous activity, corticospinal excitability controlling the left first dorsal interosseous muscle was recorded at a time point during observation of each movie. Moreover, immediately after observation each movie, participants were requested to answer correct skill of the presented movie in form of choosing from ten alternatives on a sheet. They also answered the degree of confidence of the judgement for each movie on a scale of 0 to 5. Results indicated that judgement accuracy of experts was significantly higher than the novices in only the cart wheel biological motion. For confidence of the judgement, there was no

significant difference between experts and novices. In terms of central nervous activity, experts' corticospinal excitability was significantly larger than the novices in both skills. These results suggest that expert gymnasts perceive the presented skills correctly facilitating mirror system in the brain to compensate limited information on biological motion. It could be proposed that movies eliminated most kinematic information is more useful for observation learning in expert athlete.

*Keywords: biological motion, mirror system, gymnastics*

## Combining student and athlete roles – sleep quality and psychological functioning of academic athletes

**Kamila Litwic-Kaminska (Kazimierz Wielki University in Bydgoszcz, Poland), Martyna Kotyko (University of Warmia and Mazury in Olsztyn)**

Sleep is regarded by competitors as an important element of preparing for sports competitions (Samuels, 2008). Despite this, the interest in this subject is inadequate (Lastella, Lovell & Sargent, 2014). People who have a higher level of stress may be particularly vulnerable to inappropriate sleep behavior patterns. Such a group can be academic athletes, who must combine student and athlete roles (Wilson & Pritchard, 2005). The aim of the research was to find out if there are differences in temperamental traits, chronotype, level of perceived stress, type of stress appraisal and quality of life between academic athletes who declare problems with sleep ( $n=72$ ) and those who have no such concerns ( $n=105$ ). Following tools were used: FCB-TI (Zawadzki & Strelau, 1997), MEQ (Horne & Östberg, 1976), PSS (Cohen et al., 1983), Stress Appraisal Questionnaire (Wrześniewski et al., 2010), SWLS (Diener et al., 1985), PSQI (Buysse et al., 1989). On the basis of the U Mann-Whitney test it may be stated that athletes who reveal problems with sleep quality have a preference for eveningness than morningness ( $Z=3.47$ ;  $p<.001$ ). They most often appraise stressful situations as a threat ( $Z=-2.49$ ;  $p=.012$ ), perceive more stress in everyday life ( $Z=-4.02$ ;  $p<.001$ ) and declare lower quality of life ( $Z=2.34$ ;  $p=.02$ ). In terms of temperament traits, they are less brisk ( $Z=2.71$ ;  $p=.007$ ) and endure ( $Z=3.73$ ;  $p<.001$ ), more emotionally reactive ( $Z=-4.53$ ;  $p<.001$ ) and present higher level of perseverance ( $Z=-3$ ;  $p=.002$ ). Findings from the presented research suggest that more attention should be paid to individuals with greater emotional reactivity and perseverance and those with evening preference because they might be vulnerable to lower sleep quality. Monitoring of sleeping problems is also needed because they might potentially cause stress and reduce the quality of life. On the other hand, disturbed sleep may also result from stress experienced by an individual.

*Keywords: sleep quality, academic athletes, stress, temperament, chronotype, quality of life*

## Identification of factors predicting athletes' sport commitment: Capabilities of team unity and collective efficacy

**Kai Yamada (Hosei University)**

The sport commitment of athletes is defined as "the desire and resolve to continue participation in a sport over time" (Scanlan et al., 1993). In recent years, commitment has emerged to be associated with athletes' participation and competitive level and success (e.g., Chu and Wang, 2012), referred to as a supported factor in understanding their behavioral motivation and perseverance in competitive sports (e.g., Scanlan et al., 2013). Hence, promoting sport commitment is an optimal strategy for increasing athletes' serious attitude toward daily training and competitive performance. However, few studies have investigated methods promoting the athletes' sport commitment from the perspective of their team belonging. Therefore, the aim of this study was to examine the predictive capability of team unity and collective efficacy such as effective factors supporting sport teams' interaction against competitive sport commitment. A total of 206 university athletes (average age 19.62 years,  $SD = .82$ ) from 32 different sport types completed a survey questionnaire. The questionnaire sheet comprised the Unity Scale for Sports Teams (Yamada et al., 2013), the Psychological Performance CE Score

(Arai, 2011), and the Sport Commitment Scale (Hagiwara and Isogai, 2014). Correlation analysis indicated that relationships between team unity, collective efficacy, and sport commitment were positive ( $r = .37-.51$ , all  $p < .001$ ). Additionally, covariance structure analysis showed sufficient goodness of fit indices ( $\chi^2 (2) = 3.39$ , n.s.; GFI = .99, AGFI = .96, CFI = .99, RMSEA = .06), and team unity ( $\beta = .27$ ) and collective efficacy ( $\beta = .28$ ) also predicted sport commitment (both  $p < .001$ ). These results support the benefits of developing and enhancing team unity and collective efficacy. Further, increasing these factors may be associated with encouraging athletes' sport commitment. Thus, interventions using team building will be an effective approach in promoting athletes' sport commitment.

*Keywords: sport commitment, unity, collective efficacy, team*

### **Subjective assessment of exercise and physical activity (IPAQ-LF) in Japanese elementary school teachers and their relation to mental health: Testing a hypothetical model to management with stress experiences**

**Junichi Nishida (Kindai University), Hiroshi Matsumoto (Mukogawa Woman's University)**

The main purpose of the present study was to verify the relationship in a hypothetical model proposing that the amount of exercise and physical activities had would influence changes in that teacher's mental health through the mediating concept of the teacher's stress experiences. In this study, we refer to psychological stress model by Lazarus & Folkman (1984). A questionnaire survey was conducted with full-time teachers ( $n=300$ ) working in public schools by using the GHQ28 and the International Physical Activity Questionnaire Japanese version (IPAQ-LF). Participants included 93 men (40.3%) and 138 women (59.7%), the age range 22-63 years, and mean age was 39.8 years. The level of mental health assessed by using the GHQ was examined. Results indicated that 42% of the participants had some problems. Especially, scores of "somatic symptoms" and "anxiety and insomnia" were significantly higher in female teachers, compared to male teachers. Subsequently, the amount of exercise and physical activities was examined using IPAQ-LF. The mean amount of total physical activities was 2451.4 MET-minutes per week. Physical activities at workplaces accounted for approximately 65% of the total amount. In physical activity for "transportation" and "leisure" settings, the amount of exercise in male teachers was significantly larger than in female teachers. Moreover, effects of exercise and physical activities were examined using multiple regression analysis, which confirmed a model for female teachers in which a significant path was indicated from exercise and physical activities to "anxiety and insomnia", as well as "social dysfunction". Furthermore, a significant path was indicated from exercise and physical activities during housework and yard work to "anxiety and insomnia", "social dysfunction", and "depression", mediated by the sense of being busy. This study reconfirmed the deterioration of mental health in elementary school teachers.

*Keywords: exercise, mental health, GHQ, IPAQ-LF, teacher*

### **Development of a positive psychological capital scale for athletes**

**Eunji Kim, JungHun Heo, Jeong Dog Sul (Chungang University, Korea), Jooyoung Park (Soongsil University, Korea), Sangkook Park, Young Ho Lee (Chungang University, Korea)**

This study was designed to develop a positive psychological capital scale (PPCS) for athletes. Through literature review and focus group interviews, six theoretical sub-factors that are self-efficiency, optimism, hope, resilience, mental toughness, and psychological skills, were developed for application in the real sports environments. Based on the six sub-factors, 138 preliminary items were created and reduced into 60 items via the content validity and face validity. All of items were composed of 5 points Likert scale. Item analysis were conducted with 288 athletes. At the result of exploratory factor analysis with 55 items, 43 items in the six sub-factors at first were extracted. The factor loadings ranged from .416 to .770, the overall explanatory variable



was 55.62%, and the Cronbach's  $\alpha$  was .953. Additionally, a confirmatory factor analysis for validation was conducted and as a result, the suitability was confirmed as follows :  $Q(\chi^2/df)=1.641$ ,  $RMSEA=.047$ ,  $CFI=.945$ ,  $IFI=.946$ ,  $GFI=.907$ ,  $RMR=.030$ . Finally, there are 23 questions including 4 items of self-efficiency, 4 items of optimism, 3 items of hope, 4 items of resilience, 4 items of mental strength, and 4 items of psychological skills. In the validation process, convergent validity, discriminant validity, and predictive validity were analyzed. First, for the convergent validity test, a correlation analysis using Korean positive psychological resource scale was conducted. As a result, the correlation coefficients showed good value from .305 to .551, therefore convergent validity was verified. Next, for discriminant validity test, the correlation coefficient and the dispersion extraction index were checked. In all the 6 factors, the average variance extracted index value was higher than the coefficient of determination. Finally, for the predictive validity test, the confirmatory factor analysis and regression analysis were conducted using perceived performance / performance ability / athlete satisfaction scale.

*Keywords: resilience, positive psychological capital, self-efficiency*

### **Preliminary analysis of the psychometric properties of the perceived social support scale in mexican young athletes**

**Julio Román Martínez-Alvarado, Luis Horacio Aguiar Palacios, Ana Gabriela Magallanes Rodríguez, Agustín Negrete Cortés, Alfonso Sámano Sánchez, Angel Alejandro Herrada Garibo (Universidad Autónoma de Baja California, Escuela de Ciencias de La Salud)**

Perceived social support consists in an exchange of affective resources between at least two people where there is a provider and a receiver in order to improve the well-being of the person who receives the support (Shumaker & Brownell, 1984). It allows to face and overcome in a easier way the different circumstances that the athlete can experience in a competition. The support network perceived by the athlete is composed of both people directly related to the sport (e.g. coach, teammates) and people off the sport but who have close relations with the athlete (e.g. parents, siblings or friends). Perceived social support focused on sport is related to other psychological aspects such as the management of stressful situations, the process involved in sports injuries, Burnout syndrome, motivation or self-confidence. Recent findings show that support provided by the coach, parents and peers plays an important role in forming a positive or negative sports experience in young people (Sheridan, Coffee & Lavallee, 2014). The objective of this study was to translate and validate the scale of social support perceived in young Mexican athletes. The sample consisted of 889 young Mexican athletes of both sexes and aged between 12 and 18 years ( $M = 14.9$ ,  $SD = 1.67$ ). The factorial structure of the scale was studied by the Confirmatory Factor Analysis (CFA); while internal consistency was assessed through Cronbach's alpha. The CFA results showed an adequate adjustment of the unifactorial model ( $TLI = .95$ ,  $IFI = .99$ ,  $CFI = .99$  and  $RMSEA = .08$ ). As for the internal consistency a Cronbach alpha of .85 is shown which is acceptable. The results provided preliminary support for the use of the perceived social support scale to measure this construct with young Mexican athletes.

*Keywords: social support, team sports, psychometric properties*

### **The consequences of positive outward emotional reactions in table tennis**

**Julian Fritsch (University of Thessaly), Diana Zerdila (Democritus University of Thrace), Yannis Tzioumakis, Alexander T. Latinjak (University of Girona), Anne-Marie Elbe (University of Copenhagen), Antonis Hatzigeorgiadis (University of Thessaly)**

Research on the relationship between emotions and sport performance has almost exclusively focused on its subjective experience, neglecting its behavioral component (e.g., gestures, verbalizations, or facial expressions). Qualitative findings suggest that positive outward emotional reactions enhance one's own and

diminish the opponent's performance (e.g., Sève, Ria, Poizat, Saury, & Durand, 2007). However, initial studies looking at specific manifestations of outward emotional reactions such as gestures (Moesch, Kenttä, Bäckström, & Mattsson, 2016) or verbalizations (Zourbanos et al., 2015) have shown inconsistent findings. Based on these inconsistencies, the main purpose of this study is to shed more light onto the impact of outward emotional reactions. Given the need to study sport performance in naturalistic settings, 15 table tennis matches during the final tournament of the Greek youth championship were recorded, whereby two cameras were positioned diagonally behind the table each catching the movement of one player. The analysis of videos consisted of coding the reaction after every point into positive, negative, or neutral by two independent raters. Furthermore, each played point was classified as a winner or error of player A or player B, allowing to draw on temporally closely related performance indicators. Based on these ratings, a sequential analysis will be employed to assess the transitional probability for positive outward emotional reactions. This type of analysis can indicate whether a certain kind of point is more or less likely to follow a positive outward emotional reaction than only by chance. The findings are expected to add to the growing research looking at outward emotional reactions in the sport context.

*Keywords: emotion, sequential analysis, naturalistic setting*

### The effects of acute exercise on executive function in children of preterm birth

**Jui-Ti Nien, Tai-Fen Song, Chien-Heng Chu, Yu-Kai Chang (National Taiwan Sport University)**

Recent studies have shown that acute exercise improves executive function, a higher level of cognitive function. The positive impacts are not only observed in healthy populations, but also extend to special populations, including children with attention deficit hyperactivity disorder. However, whether acute exercise affects executive function in children of preterm birth remains unknown. The purpose of this study was to examine the effects of acute exercise on executive function among children of preterm birth. Twenty children (mean age = 10.05, SD = 2.33 years) were recruited and experienced both control and exercise treatments using a counterbalanced order. Children in the exercise treatment performed a single bout of 30 minutes of cycling done at moderate intensity, while the participants in the control group sat in chairs and watched cartoons for 30 minutes. The numerical Stroop test, which involves measuring the inhibitory process of executive function, was performed immediately after each treatment. A two-way ANOVA analysis revealed that the children in the exercise treatment had shorter reaction times in relation to neural and incongruent conditions, compared to those that underwent the control treatment. The findings suggest that acute exercise done at moderate intensity for 30 minutes could facilitate the inhibition aspect of executive function in children of preterm birth. Accordingly, it is recommended that children should engage in physical activities during periods of school recess. Further studies are suggested in order to account for the possibility of obtaining different results with an increased sample size, as well as to examine the types of executive functions, and/or the modularity of the exercise.

*Keywords: exercise, executive function, children with preterm birth, stroop test*

### The relationship between body and fitness related self-conscious emotions and goal orientations

**Judit Boda-Ujlaky (University of Physical Education), Linda Buczásnszki (Gáspár Károli University of the Reformed Church)**

Our pilot study aims to investigate the relationship between goal orientations and body and fitness-related self-conscious emotions, i.e. shame, guilt, pride and hubris. Shame is an extremely painful emotion, that attacks the self through cognitive appraisal, while guilt is a negative emotion after a certain behavior – or an unfulfilled behavior. Pride is the basis of healthy self-esteem, while hubris is the accompanying emotion of

narcissism, i.e. shame and hubris is about the worth of the whole self, whereas guilt and pride is about the worth a certain behavior. Pride and hubris has a positive, while shame and guilt has a negative valence. Goal orientation can be task- or ego-orientation, depending on what attributions and sources of success and failure the individual applies. In the study we administered BSE-FIT and TEOSQ questionnaires. There were 160 participants (104 females, 58 males, age mean=28 years, sports experience mean=14 years), with different levels of sporting activities from regular exercising (3 times a week) to Olympic Games winner athletes. In this sample task orientation correlated negatively with body and fitness-related shame ( $r = -0,237^{**}$ ), guilt ( $r = -0,260^{**}$ ) and positively with pride ( $r = 0,397^{**}$ ) and hubris ( $r = 0,279^{**}$ ), while ego orientation correlated positively with hubris ( $r = 0,171^{**}$ ). Level of athletic experience did not show any differences in our results. No gender differences were found. The results show that it is the valence and not the direction of the emotions is important, moreover, as other research show, the lack of task orientation is important factor in performance, not the presence of ego orientation. Further investigation is needed to be able to clarify the role of the sport types (aesthetic or weight group sports).

*Keywords: self-conscious emotions, goal orientation*

### **The effects of long-term soccer or futsal training on the development of perceptual skills during passing**

**Luca Oppici (Victoria University, Australia), Derek Panchuk (Movement Science, Australian Institute of Sport (AIS), Victoria University, Australia), Fabio Serpiello (Institute of Sport, Exercise and Active Living (ISEAL), Victoria University, Melbourne, Australia), Damian Farrow (Institute of Sport, Exercise and Active Living (ISEAL), Victoria University, Australia; Movement Science, Australian Institute of Sport (AIS), Canberra, Australia)**

It is known that task constraints influence an individual's coordination and the perceptual behaviour underpinning the execution of a movement. However, the long-term effect of task constraints on the development of perceptual skill is unclear. In soccer and futsal, the passing skill requires players to divide their attention between the approaching ball and the behaviour of players around them. In this experiment, we examined the influence of extensive practice with domain-specific task constraints (i.e., equipment, rules) on the development of perceptual skill associated with the passing action in soccer and futsal by assessing players' orientation of attention during passing. Soccer players ( $n=24$ ,  $13.6 \pm 1.2$  years old,  $6.8 \pm 1.2$  years of experience) and futsal players ( $n=24$ ,  $13.6 \pm 1.2$  years old,  $7.0 \pm 1.6$  years of experience) performed in modified games (5 v 5) while wearing an eye tracking device. Orientation of attention was then classified into ball or player areas to compare the scanning behaviour of each group. The two groups developed different strategies to gather information about the ball and other players at different moments during the games. Futsal players had a higher scanning behaviour during ball reception and control (40% more ball-player attention alternations) while soccer players mainly scanned the environment when they were not in possession of the ball (25% more attention alternations). Specifically, futsal players developed a strategy to control the ball while orienting their attention towards other players, which then resulted in more time to focus on other players. It was likely that the behaviour differences were promoted by extensive practice with a higher number of players in soccer and a higher game intensity with an easy-to-handle ball in futsal. This study provides new insights on the long term effects of practicing with specific task constraints.

*Keywords: attention orientation, performance, passing skill, soccer, futsal*

## Professor learning climate vs. student learning orientation as moderators of the impact of sport motivation on the importance and utility of physical education perception

**Paloma Escamilla Fajardo, Juan Manuel Núñez Pomar, Ferran Calabuig Moreno, Vicente Prado Gascó (Universitat de València)**

We live in an eminently sedentary society, which causes a lot of physical and mental problems while increasing health costs. In addition, adolescence is considered to be the stage where more people decline the physical activity levels, most of this abandon is related with the Importance and Utility of Physical Education Perception (IUPEP) on school. Literature suggest that IUPEP could be explained through Sport Motivation (SM). Although many studies had analyze this relation, no research considers the moderating effect that Professor Learning Climate (PLC) and Student Learning Orientation (SLO) could have simultaneously on this relation on adolescents. Therefore, the aims of the present research are both to analyze the impact of Sport Motivation on the Importance and Utility of Physical Education Perception, and to analyze the moderator effect of Professor Learning Climate and Student Learning Orientation on that relation. This analyses was performed using the PROCESS macro (Hayes, 2013), designed for testing the moderation by directly assessing the significance of the indirect effect of the independent variable (X; SM) on the dependent variable (Y; IUPEP) through two moderators: PLC (M) and SLO (W). Participants were 267 adolescents from 8 classes of a public school on Valencia, aged between 11 to 18 years old (Mean=14.04  $\pm$  1.64), 52.8 % boys. Results suggest that Sport Motivation explains 20% of the Importance and Utility of Physical Education Perception. In addition, a moderating effect of Professor Learning Climate but not of Student Learning Orientation is observed.

*Keywords: sport motivation, utility of physical education perception*

## Cardiovascular capacity, weight status and peer relations in students of 5th and 6th grade

**Juan Gregorio Fernandez-Bustos, Ricardo Cuevas Campos, Irene González-Martí, David Zamorano García (Universidad de Castilla La Mancha)**

It is known as the relationship between equals influences participation on physical activity. Additionally, both poor motor skills and obesity have sometimes been associated with social difficulties. However, the role of physical fitness in these relationships has hardly been studied. Therefore, the purpose of this study was to establish the relationship between cardiovascular fitness, weight status and peer relations of fifth and sixth grade Spanish students. A total of one hundred and thirty Spanish aged 10 to 12 completed the Course Navette test and the Questionnaire of Conduct and Social Experiences in Class, CESC. Datas of weight and height were collected. The results showed a positive relationship between cardiovascular capacity and positive status and prosociality, while negative with victimization. On the other hand, a higher BMI was related to victimization behaviors and lower cardiovascular capacity. These results show that children with better physical fitness are more valued and better accepted in the class-group, whereas the obese are more rejected, showing the importance of everything related to the physical in the social relations in children of Primary Education.

*Keywords: peer relation, weight status, cardiovascular fitness, primary education*

## Study + training. Dual career at the University of Seville

**Juan Gavala González, Patricia Jaenes-Amarillo, Iván Guirola Gomez (Universidad Autonoma de Barcelona)**

The aim of this study is to analyze the facilitator s and barriers in the arrangement of academic and athletic aspects in high performance athletes, following the lines of research and the models of Stambulova and cols (2014) and collaborators on the conciliation of academic and sports aspects (dual career). The sample is made up of six teen high level athletes (considered by the Ministry of Education, Culture and Sports of Spain) of different sports specialties participated that in turn develop their academic careers at the University of

Seville A qualitative study is proposed framed holistic career development model, by means of semi-structured interviews. A content analysis of the interviews was conducted in five levels from the theoretical model used: athletic level, psychological level, psychological level, academic/vocational level and financial level. These categories were analyzed in terms of two others: facilitators and barriers. Support to High Performance Athletes at the University of Seville, in particular, and in Spanish universities, in general, they are well below the minimums that are accredited in other European universities. Athletes show facilitators and barriers in sports, psychological, psychosocial, academic and financial levels.

*Keywords: dual career, facilitators, barriers, sport, education*

### **José María Cagigal's impact on the 3rd Psychology Of Sport World Congress in 1973**

**Juan Carlos Fernandez-Truan (Universidad Pablo de Olavide), Virginia Cagigal de Gregorio, Sofia Cagigal de Gregorio**

Sport Psychology in Spain starts up with José María Cagigal (1928-1983), undeniable leading figure of Physical Education and Sport, both nationally and internationally; he also invented what is nowadays known as Sport Humanism. His premature and tragic death left all the educative and social sport change in our country unfinished. Cagigal, who was a pioneer of Sport Philosophy and Sport Psychology, dignified Physical Education and Sport, as an intellectual phenomenon to which he contributed by fundamenting and consolidating it institutionally, against technological tendency leading that historical period. However, all his production was more valued and understood outside our borders than inside, what can be observed throughout his great international prestige, while inside he had to deal with great misunderstanding and several obstacles. Most sport technicians from that historical period never understood his contribution to Philosophy, Pedagogy and Psychology, as they were more occupied on stereotyped teaching. But outside the limits, he got great professional recognition, due to the high quality and profundity of his thinking, what is expressed on the great number of international organizations of Physical Education and Sport to which he not only belonged to but he also was a founder and a very active member. Among all of them, we would like to single out the International Society of Sport Psychology, to which he belonged to from 1965 as a founder under Italian Dr. Ferruccio Antonelli Presidency, participating in the first World Congress that took place at Rome that year. In 1969, at the General Assembly of the ISSP in Washington (USA), he was elected member of the ISSP Managing Council, a post he held until 1977. At Madrid's National Institute for Physical Education and Sport (INEF), that he had founded and was Director of until 1977, he organized the IIIrd International Sport Psychology Congress.

*Keywords: history, Cagigal, world congresses, sports psychology*

### **The prediction of empowering motivational climate on coach-athlete relationship: The mediating effect of psychological needs in high school basketball**

**Jo-Yun Chen, Li-Kang Chi (National Taiwan Normal University)**

The purpose of this study was to examine the relationships among empowering motivational climate, coach-athlete relational and basic psychology needs among high school basketball players. Moreover, the mediating effect of basic psychological needs between empowering motivational climate and coach-athlete relationship was also examined. The participants were 122 high school basketball players ( $M=16.94$  age,  $SD=0.81$ ) recruited from 12 high schools in Taiwan. After received the informed consent, participants were requested to complete Chinese-version of Empowering and Disempowering Motivational Climate Questionnaire, Psychological Need Satisfaction Questionnaire and Coach-Athlete Relationship Questionnaire. The results of Pearson correlation indicated that empowering motivational climate was positively correlated to coach-athlete relationship ( $r=.65$ ), competence ( $r=.35$ ) and relatedness ( $r=.44$ ); coach-athlete relationship is positively associated with competence and relatedness. Their correlations were .18 and .50 respectively.

Furthermore, the relationship between empowering motivational climate and coach-athlete relationship was partially mediated by relatedness. Overall, according to the findings of current study, coaches are suggested to create empowering motivational climate and fulfill the basic psychological needs of athletes, so that elevate the quality of coach-athlete relationship. The implication and application of the findings were discussed.

*Keywords: bootstrapping, competence, relatedness*

## **A qualitative study on the psychological process of excellent performance of Japanese athletes in international competitions held in Japan**

**Joyo Sasaki (Japan Institute of Sports Sciences), Mayu Okuno (Kurume University), Kenta Yonemaru, Atsushi Suzuki, Kunimune Fukui, Yasuhisa Tachiya (Japan Institute of Sports Sciences)**

The purpose of the present study was to qualitatively investigate the psychological processes that occur before and during the excellent performances of Japanese athletes in international competitions held in Japan. Five retired Japanese athletes (1 male and 4 females) participated in a semi-structured interview. The participants had experiences of participating in international competitions held in Japan, and performing well in the competitions. Additionally, they had experiences of participating in international competitions held in other countries, which enabled them to talk about the characteristics of international competitions held in Japan by direct comparison with those held in other countries. In the interview, questions concerning the differences they perceived between Japanese and international competitions. The taped and transcribed interviews were analyzed using the modified grounded theory approach (M-GTA: Kinoshita, 2007). The analysis yielded an integrated process model consisting of the following 16 categories: (1) a larger audience than usual, (2) more media persons than usual, (3) experiencing a sense of responsibility, (4) a tense atmosphere created by the team staff, (5) futile efforts, (6) support from credible coaches, (7) flexible responses to problems, (8) controlling the media for their own convenience, (9) assertive explorations for ways to feel refreshed, (10) feeling motivated by seeing Japanese people, (13) regulating oneself by using autosuggestions in one's own way, (14) recovering from perceived urgency, (15) entering a "challenger's" state of mind, and (16) being inspired by the cheers from the audience. Based on those results, it was considered that the process leading to high performance included not only positive events but also negative events, and the flexibility and adaptability of strategies for coping with the difficulties, which determine success or failure in the games.

*Keywords: coping skill, home advantage, home disadvantage*

## **Athlete's skills with oneself. Definition and classification**

**José-Carlos Caracuel Tubío (University of Seville), Joan Riera Riera (INEFC)**

The aim is to better define some concepts from the field of Sports Psychology. We present the concept an athlete's skills with oneself as an alternative to the inaccurately called psychological or mental skills, suggesting a succinct definition of mind as a process and proposing a functional classification for these skills: skills with oneself from interoceptive information, proprioceptive information, linking of affects, assessment of the environment and personal reflection. Lastly, we provide a representation for the interaction between the different sources of self-knowledge.

*Keywords: keywords: skills with oneself, mind, self-knowledge*



## Outcomes of the positive coach-athlete relationship: A qualitative study in youth basketball teams

**José Manuel Sánchez Galán (Universidad Francisco de Vitoria), Alberto Lorenzo Calvo (Universidad Politécnica de Madrid), Sergio Lorenzo Jiménez Sáiz (Universidad Europea de Madrid), Jorge Lorenzo Calvo (Universidad Politécnica de Madrid)**

The coach-athlete relationship has been identified as the core of the learning process in sports (Isoard-Gauthier, Trouilloud, Gustafsson, & Guillet-Descas, 2016). There are enough evidences for the impact this unique relationship has in the development of both members of the dyad (Erickson & Côté, 2015). The specific literature showed two kind of results of the relationship: a) personal consequences, b) and performance consequences (Jowett & Poczwardowski, 2007). Jowett and Poczwardowski (2007) established the effective relationship (positive personal consequences) as the desirables ones, as far as the coach and the athletes involved in those relationships report higher psychological well-being and task commitment. Grounded in the holistic approach of the coach-athlete relationship, this work aims to understand the outcomes of effective coach-athletes relationships in coaches and youth basketball players. The study was conducted through the qualitative methodology. The sample (N=24) were selected deliberately (discriminating variables such as the team's sportive level, coach characteristics, duration and quality of the relationship). In-depth semi-structured interview was used for data collection. The results provide initial evidence of the bond between the positive components of the dyad and results such as players' personal growth or sport performance. The first one arises because the coach assumes the role of mentor of young athletes. This finding is relevant because it underlines the potential of the coach in the positive youth development. With regard to sport performance, the results show that it is mainly produced due to the satisfaction and psychological well being of both the coach and the player. Overall, the results highlighted the relation between the positive components (i.e., closeness, confidence, respect) of the dyad and the positive outcomes for both members of the dyad.

*Keywords: coach-athlete relationship, youth basketball, positive youth development*

## Are careers assistances programs effective in Spain? Athletes' perceptions about difficulties to carry out a dual career

**Rubén Moreno, José L. Chamorro (European University of Madrid)**

A relatively recent concept that has captured the attention of researchers and sports organisations (USOC, 2012; Wylleman, De Brandt & Defruyt, 2017), and political institutions (EU Guidelines on Dual Careers of Athletes, 2012) is the concept of dual careers (DC). In Spain, the Spanish Olympic Committee (COE) established a career assistance program (Athletes' Advice and Information Bureau) in 2007, and two years later, a similar service was created by the National Sports Council (CSD; Torregrosa & González, 2013). The aim of this study was to explore if athletes enrolled in Spanish Career Assistance Programs (SCAP) have lower perceptions of the difficulty to carry out a DC than those who are not enrolled in these programs. Participants were classified in: a) 8 Olympic level athletes which were professionals before the implementation of SCAP (codified as PRE); b) 8 Olympic level athletes enrolled in SCAP (codified as POST); and c) 8 professional football players not enrolled in SCAP. Interviews guides were created according to the Lifespan Model of Athletes' Careers (Wylleman et al., 2013), focusing in academic/laboral level. An interpretive thematic analysis using inductive and deductive reasoning was employed to analyse the interviews (Guest, MacQueen, & Namey, 2012). Results suggest that athletes POST were not perceived more resourceful regarding to combine sport and academic careers from those athletes of the other groups. First, all of participants identified that universities and educational institutions do not offer flexible curricula. Second, athletes POST as well as football players were not feel more resourceful in relation to time management. Third, athletes PRE showed a higher intrinsic motivation than the other athletes, probably because they received less rewards for their sporting achievements than the other

two groups. Forth, athletes POST perceived that they did not receive the enough information about the possibilities that SCAP could offer they.

*Keywords: dual careers, career assistance programs, career development*

### Physical fitness and self-perceptions in teenagers

**José Guilherme (Universidade do Algarve), Conde Monserrat (GCU), Carla Martins (ISMAT), Luís Faísca, Cristina Nunes, Saúl Jesus (Universidade do Algarve)**

Self-perceptions seem to be influenced by physical fitness and gender in teenaged athletes. However, less is known about how this constructs interact in non-athletes teenagers, from both rural and urban backgrounds. The aim of this cross-sectional study was to investigate the associations between physical fitness and self-perceptions (self-concept, global self-esteem and body self-image) in teenagers. The European Portuguese versions of Fitnessgram, figures rating scale (Tiggeman&Barret,1998), Rosenberg self-esteem scale, and physical self-description questionnaire (Marsh,1994) were administered to a sample of 119 teenagers, aged between 13 and 16 years old, selected from the population of students of the public schools of Albufeira (Portugal). There were significant statistical differences ( $p < 0.05$ ) between the mean scores of physical fitness and physical self-concept. Additionally, greater scores of global self-esteem tended to correspond to greater scores of physical fitness (positive, strong correlation). No statistical significant associations were detected between physical fitness and body image. Physical fitness was associated to both physical self-concept and global self-esteem in this sample of Portuguese teenagers.

*Keywords: physical fitness and self-perceptions in teenagers*

### Burnout: An intervention performed in a handball coach

**Jose Flores Rodríguez (Universidad de Sevilla), José Manuel Martín Migez (C.M.D. San Juan), Francisco José Vela Rubio (Ayuntamiento Los Molares), José Manuel Martínez Rodríguez (Masvitae)**

Burnout is considered a three-dimensional syndrome. With respect to sports the most relevant dimensions are: physical / emotional exhaustion (PEE), reduced sense of accomplishment (RSA), and sport devaluation (SD). Due to its influence on sports performance, there has been a descriptive investigation of burnout, but few investigations are focused on intervention or prevention of the syndrome in athletes and / or coaches. So considering the dynamic systems paradigm (which performance is a consequence of the relationship of interdependence established between the different intervener elements), we present an intervention performed in a handball coach who presented burnout symptoms. The objective was to reduce burnout syndrome in this coach. For this research a male handball coach that trains players between 14 and 16 years old was asked to answer the Spanih versión of the Athlete Burnout Questionnaire (ABQ), measuring the burnout syndrome before and after the intervention. The intervention was performed during the season and during 9 weeks. He dealt with the following aspects of the training process: objectives reformulation, training load reduction (volume and intensity), coach-player interaction changes (reduction of direct command), team's tactics changes (involving players), and the training session structure (more dynamic and funny). The mean scores obtained for each of the three dimensions were: -Pretest: 3.4 in PEE, 4.0 in RSA and 4.0 in SP. -Posttest: 1.8 in PEE, 2.8 in RSA and 2.4 in SP.

*Keywords: burnout, intervention, coach, team sport, handball, dynamic systems*



## Choking under pressure in sport competition: An exploratory study based on coping “profiles” in a sample of Portuguese athletes

**José Fernando Cruz, Rui Manuel Sofia, Joana Maria Osório (School of Psychology, University of Minho, Portugal)**

The pressure of sport competition can often lead to performance failure, even among the most experienced and successful athletes. Choking under pressure can be defined as “the occurrence of inferior performance despite striving and incentives for superior performance” (Baumeister, 1986, p. 361). In sport competition, choking is often associated with high levels of perceived threat and competitive anxiety (e.g., Maxwell et al., 2006; Nieuwenhuys et al., 2016; Nieuwenhuys & Oudejans, 2010). Consequently, studies on this phenomenon should focus on how athletes cope with threat and anxiety. Indeed, coping processes are essential to understand how athletes deal with anxiety and pressure during competition (Dias et al., 2011, 2012). Therefore, the main goal of this study was to explore the role of coping processes on the tendency to choke under pressure, as well as on anxiety and threat perception. For this purpose, a sample of 121 basketball players (43.1% females), ranging between the ages of 14 and 25 years ( $M = 16.59$ ), completed self-report measures of the tendency to choke, threat appraisals, competitive anxiety and dispositional coping. A cluster analysis showed four different coping “profiles” consistent with previous studies (Doron et al. 2014; Gaudreau et al., 2004), namely: high copers, low copers, adaptive copers, and avoidant copers. Overall, results generally showed that high and avoidant copers were more likely to choke under pressure and showed higher levels of competitive anxiety and threat appraisals. These findings highlight the importance of analysing coping profiles instead of strategies in isolation (Doron et al., 2014) to further understand choking under pressure, as well as anxiety, in sport contexts. From a practical standpoint, these results suggest the relevance of promoting more adaptive and effective coping strategies to deal with the pressure of competition as an important pathway to prevent episodes of choking.

*Keywords: choking under pressure, competitive anxiety, threat appraisals, coping strategies, sport competition*

## SNK Learning System: a model of integral education through sport

**Jose Cela-Ranilla, Luis Marqués-Molíes, Enric Barri-Vilardell (Rovira & Virgili University)**

Sport activity is a very good setting and a great opportunity to develop life skills, especially in first stages of life. In Spanish context, sport programs are out-of-school activities commonly chosen by parents for their children. This fact is especially relevant considering the problems currently experienced by our children in terms of health, drop-out, disruptive behaviors, etc. Our society is giving response with sport programs whose use and management are at least questionable in several terms: philosophy, objectives' definition, early specialization, wrong management of competitiveness, coaches' formation, parents' perspectives, etc. In our context, many of these sport programs are not oriented towards the integral education of our youth. The current poster presents the SNK Learning System as a general framework/model to design and implement sport programs whose main concern is educational quality understood in terms of integral development, rather than the strictly sport skills. The presented model consists of 5 basic elements: Philosophy, Individual assets, Learning contents, R+D+I and Transfer process. The model arises from a theoretical perspective and a practical implementation. The theoretical part takes the positive youth development programs as a general umbrella, from Bronfenbrenner (1979) to Gould & Carson (2008), Petitpas et al. (2005) and the late works by Holt (2016); the practical one is based on the implementation of a specific program (in soccer) developed in the Spanish context in which all agents are becoming active participants in the model construction. This framework could also be used as a guide to develop assessment and certification processes in terms of educational quality. In sum, SNK Learning System aims to influence in the improvement of the educational quality of sport programs by promoting, strengthening and consolidating the idea of integral educational as a core requirement of these wherever its context of application.

*Keywords: sport programs, integral education, positive youth development, out-of-school activities, life skills*

## Psychological evaluation and perception of violence in football referees of lower categories

**Jose Manuel Bustamante Castaño (Bustamante Psicología), Jorge Martínez Ojeda (COPAO Almería), Nuria Santana Rubio (Clinirehab), Francisco José Trillo Padilla (Universidad de Almería)**

This project is focused on violent acts on referees that usually happen on sport fields every weekend. Too many cases are known in which referees, coaches, players of the opposing team or even team-mates are insulted or booed from the stands by parents acting like coaches who discuss, comment and demand all people around them have to do. It has been applied "Perceptual Questionnaire of Violence on Football Referees" to 150 members of Andalusian Technical Committee of Football Referees in the province of Almería. The study participants selected age between 14 and 26 years and belong to different categories: Third Division, Senior Honorary Division and Andalusian, Official and Auxiliary First Division. This study aims to investigate the perception of violence on football referees through four subscales: verbal violence, physical violence, belief in violence and perceived fear. On one hand, the results suggest an excessive verbal violence and, on the other hand, levels of fear, few violent physical situations and a moderate perception of violence.

*Keywords: violence, referee, football, fear and perception*

## Quantifying external focus of attention in sailing by means of action sport cameras

**Joost Pluijms (Vrije Universiteit Amsterdam, MOVE Research Institute Amsterdam)**

The aim of the current study was twofold: (1) to validate the use of action sport cameras for quantifying focus of visual attention in sailing and (2) to apply this method to examine whether an external focus of attention is associated with better performance in upwind sailing. To test the validity of this novel quantification method, we first calculated the agreement between gaze location measures and head orientation measures in 13 sailors sailing upwind during training regattas using a head mounted eye tracker. The results confirmed that for measuring visual focus of attention in upwind sailing, the agreement for the two measures was high (intraclass correlation coefficient (ICC) = 0.97) and the 95% limits of agreement were acceptable (between -8.0% and 14.6%). In a next step, we quantified the focus of visual attention in sailing upwind as fast as possible by means of an action sport camera. We captured sailing performance, operationalised as boat speed in the direction of the wind, and environmental conditions using a GPS, compass and wind meter. Four trials, each lasting 1 min, were analysed for 15 sailors each, resulting in a total of 30 upwind speed trials on port tack and 30 upwind speed trials on starboard tack. The results revealed that in sailing – within constantly changing environments – the focus of attention is not a significant predictor for better upwind sailing performances. This implicates that neither external nor internal foci of attention was per se correlated with better performances. Rather, relatively large interindividual differences seem to indicate that different visual attention strategies can lead to similar performance outcomes.

*Keywords: sailing, visual attention, eye-head orientation, motor control, environmental conditions*

## Roles of competence and sport anxiety on well-being among table tennis players

**JoonYoung Lee, Tsz Lun (Alan) Chu, Tao Zhang (University of North Texas)**

Previous studies have emphasized that sport athletes' well-being should be given important consideration as their athletic performance (Davis & Jowett, 2014; Lundqvist & Sandin, 2014). Given that well-being has played an important role in engaging athletes in sports, Seligman (2014) proposed a new well-being PERMA

model (i.e., Positive Emotion, Engagement, Relationships, Meaning, and Accomplishments). However, this new well-being framework has not been widely studied in sport settings. Purpose: To examine the contributions of perceived competence (competence satisfaction and competence frustration) and sport anxiety on table tennis players' well-being based on the PERMA model. Methods: Participants were 254 table tennis players (Mage = 40.23, SD = 18.24 years) from the United States (n = 185), China (n = 43), and other countries (n = 26) through a validated online survey. Pearson product-moment correlations and multiple regressions were used to examine the relations among the study variables. Results: Correlation analyses indicated that competence satisfaction was positively related to well-being ( $r = .20$  to  $.29$ ,  $ps < .01$ ), competence frustration was not significantly related to well-being ( $ps > .05$ ). Sport Anxiety was negatively related to well-being ( $r = -.13$  to  $-.15$ ,  $ps < .05$ ) except for engagement ( $p > .05$ ). Further, the regression analyses showed competence satisfaction was a positive predictor of each well-being component in positive emotion ( $\beta = .24$ , 8.4%), engagement ( $\beta = .32$ , 10.6%), relationships ( $\beta = .31$ , 10.6%), meaning ( $\beta = .29$ , 9.0%), accomplishments ( $\beta = .33$ , 12.8%), but competence frustration was a non-significant predictor of each well-being component. Lastly, sport anxiety was a negative predictor of accomplishments ( $\beta = -.15$ , 12.8%). Conclusions: Competence satisfaction was a significant predictor in all five domains in well-being. This suggests that considering competence satisfaction is important when we try to improve athletes' well-being.

*Keywords: competence, sport anxiety, well-being, table tennis*

### The last straw: Doping behavior as maladaptive coping strategy

**Jolan Kegelaers, Paul Wylleman, Nicky Van Rossem (Vrije Universiteit Brussel)**

The last decade has seen a rise in social science studies trying to understand why athletes dope. Few studies however considered the impact of negative life events and considered doping as a maladaptive coping strategy. Our study used the metatheory of resilience (Richardson, 2002) to understand how life events influenced the doping-decision of athletes. Narrative techniques were used to analyse the life stories of three world-class Belgian athletes who admitted to doping use during their career. Results show that at least two of the athletes recalled specific events that led to a disruption in their psychosocial wellbeing. The athletes perceived their decision to use doping as a direct response to these events. This study highlights the function doping can have as a coping mechanism. These findings provide important considerations for current anti-doping strategies.

*Keywords: performance-enhancing drugs, resilience, negative life events, transitions*

### Motivation factors for the practice of pole sport: applications for management

**Carmen-Gloria Ortiz-Saldaña, Jesús Fernández-Gavira, Jerónimo García-Fernández, Antonio-Jesús Sánchez-Oliver, Moisés Grimaldi-Puyana (Universidad de Sevilla)**

The practice of Pole Sport, although relying on a minority as a recreational activity, has increased exponentially in recent years (Whitehead & Kurzel, 2009). The present work aims to expose the main reasons that lead athletes to practice Pole Sport in order to a better manage of the centers where the sport is taught. For this purpose, the Spanish adaptation of Celis-Merchán questionnaire (2006) of the Scale of Measurement of Reasons for Physical Activity-Revised (Ryan's, Frederick, Rubio and Sheldon, 1997) was used. This instrument measures the reasons of sports practice in five dimensions (appearance, competition, enjoyment, fitness and social function) through 30 items (Likert 1 to 7). Taking into account that the universe of practitioners in Andalusia is approximately 600 people, through the Survio online software, the questionnaire was distributed to all athletes of the "Esther & Clara Academy", the school with the most athletes in Andalusia (322). A response was obtained from 85 athletes, of whom 80 were women and five men. The sample studied had an error of  $\pm 10\%$  for a 95% confidence level ( $Z = 1.96$ ). The SPSS 22.0 statistical program was used to perform

descriptive analyzes, exploratory factorial, and reliability. The results obtained show that the factor "enjoyment" was the main motivational factor for the practice of this sport, refuting the study of Escarti and Cervello (2008) and Martínez (2003), as well as the data of the Survey of sports habits in Spain of the year 2015 which studied the sport factors motivations in a general way. Despite this discordance, we find authors who agree with the results obtained in this work (Frederick and Schuster, 2003).

*Keywords: pole sport, motivational factors, management*

## **Constraining your actions with internal focus of attention? Evidence from event-related brain potentials**

**Lin Yu, Zhijian Huang, Thomas Schack**

Previous studies have shown external focus (focusing on the effect of movement) was more useful than internal focus (focusing on movement) in motor skill performance and learning. The Constrained Action Hypothesis (CAH) was proposed to explain such phenomena, which claimed focusing on movement consciously would impair motor planning and control. Several behavioral studies corresponded with the hypothesis, but few studies tested it with neurophysiological methods. In this study, movement-related potentials were used to examine the hypothesis in dart throwing task. 18 right-handed novices (mean age=20.31; SD=1.52; 10 females) were assigned randomly to either internal or external group. Volunteers in different groups received different verbal instructions before each block. The experiment contained 11 blocks (10 practice blocks and 1 retention block) and each block included 10 shots. The shot followed the "S1-S2" paradigm and the inter-stimulus interval was 4000 ms. Motor performance (scores) and EEG signals were recorded while they were playing. The EEG signals were analyzed off-line by using EEGLab toolbox in Matlab. After artifacts removing, filtering and average, the Contingent Negative Variation (CNV) was obtained. The criteria for EEG analysis followed the previous study (Froemer, R., et al., 2012). Behavioral results showed the external group performed better than the internal group. The accuracy of the external group was higher than the internal group. However, the neurophysiological results showed that the average amplitude of the late CNV component (time-locked to S2), which indicated motor planning and preparing, was no significant difference between internal and external groups. The results revealed that external focus was beneficial to novices during motor learning and the motor planning was not impaired by focusing internally. We suggest future research could use other movement-related potentials or other brain imaging techniques to verify the CAH.

*Keywords: Focus of Attention (FOA), motor planning; motor learning, constrained action hypothesis, Contingent Negative Variation (CNV)*

## **"Put the ball in the basket" – The paradox of shooting three-point shots in basketball**

**Ronnie Lidor (Wingate Institute)**

The purpose of the current two-phase study was to examine whether shooting success was higher in three-point shots taken free from defense compared to three-point shots taken under defensive pressure. In Phase 1, 97 elite basketball players and 12 coaches were interviewed on various aspects related to three-point shots in basketball. In Phase 2, the shooting accuracy of 378 three-point shots (145 shots made under defensive pressure and 233 free shots) was analyzed. The shots were taken by guards who played for the best four teams in the professional basketball league in Israel. The shots were collected from the 2013-2014 season. Accuracy of shots was analyzed according to a number of factors, among them the phase of the season when the game was played. Chi-square analyses were used to analyze the overall shooting accuracy of shots taken free from defense and those taken under defensive pressure. In addition, binomial tests and a logistic regression were performed. Data that emerged from the interviews with the players revealed that the players preferred to take the three-point shots when they were free from defense. Surprisingly, data analyses revealed



that accuracy of shooting was higher under defensive-pressure conditions (53.6%) than under free-of-defense conditions (29.6%). This paradoxical finding, namely that the rate of shooting success was higher when the shooter performed under pressure, was indicated in most of the analyzed situations. The findings are discussed by the Distraction Theory. This asserts that when players shoot the ball under free-from-defense situations, they start paying attention to irrelevant environmental cues, and therefore perform poorly. Practical implications for players and coaches in basketball are proposed, among them the need to practice pre-shot psychological routines to be used when they have the time to prepare themselves for the shot.

*Keywords: basketball, accuracy of shooting, distraction theory*

## **Links between sport preferences and personality dimensions: an approach to pertinent individualized sports therapy programs**

**Leif Lay-Sipf**

Conducting personality assessments can provide relevant information for designing individualized sports therapy programs aimed at improving psychological well-being of participants. This study provides an overview of the psychologically therapeutic uses of sports, explores links between sport preferences and personality dimensions and proposes interesting directions for further research. In order to explore personality dimensions relevant to sport selection and program design, a version of the Myers-Briggs test was administered to 206 participants along with an experimental questionnaire aimed at gathering information about sport preferences and behavioral and introspective aspects. Personality tests measure preferences in thinking, feeling and behaving. Assessing sports preference addresses aspects such as interaction with the outer world (contact vs. no contact, audience vs. solitary, individual vs. team) and inner world (competition with self vs. with others, internal and external locus of control, degree of emotional response). Determining factors seem to be the combination of different dimensions rather than the result of a single trait. For example, 40% of T (Thinking) respondents saw defeating the opponent (as opposed to competing with oneself) as the priority, and 70% of these were TJs (Thinkers/Judgers). Within the group that saw external guidance as an irrelevant factor, 63% were Ns (intuitive) and 78% of them were NFs (Intuitive/Feelers). Some single traits stood out in association with outer and inner world aspects (Js were less likely to feel strong emotions while playing sports; Ts were more likely than Fs to prefer sports with crowds). Conducting a personality assessment is essential for devising a more pertinent individualized sports therapy program. Further research could help determine the best approach in different situations, i.e. by tailoring a sports protocol to the participant's personality or by exposing him/her to one that stimulates less developed dimensions.

*Keywords: personality, sports therapy, Myers-Briggs, assessment, preferences, sports*

## **In-depth understanding on elite athletes' subjective-wellbeing: What's the difference between subjective-wellbeing of Chinese, Japanese, and Korean elite swimming athletes**

**Jin Hwang, Ju-Hee Moon, Han-Seung Yang, Kook Cho, Do-Young Lee (Chonbuk National University)**

Subjective well-being is a feeling about one self that is normally positive and chronically stable. While the Subjective well-being of elite athletes is somewhat below that of the general population, very little is known about the Subjective well-being of athletes and how the context of subjective well-being influences their competitive performance. As such, this studies have been conducted to explore this issue. The purpose of this study were to investigated the following questions: First, what is the awareness of the subjective-wellbeing to elite swimming athletes in Korea, China and Japan, respectively? Second, is there any difference in the subjective-wellbeing between them? The semi-structured in-depth interviews were conducted with 4 Korean, 4 Chinese and 4 Japanese 20-to-24-year-old elite swimming athletes. The interviews contents were recorded and transcribed. Transcripts of the interviews were analyzed inductively using qualitative content analysis based on

the Patton(2000) by validity committee. Study 1 results revealed that 3 nations' elite swimmers regarded subjective well-being as a satisfaction with life, lower stress, the balance of positive to negative affect, motivation, confidence over a period of time. Study 2 results revealed that Chinese swimmers showed a more tendency to be satisfied with the competition results and the Korean swimmers conceived the predictor of subjective well-being was self-trust and self-confidence. Finally we suggested the assessment tool because the well-being studies within sport psychology have been hampered by conceptual ambiguity, which makes it difficult to compare results across studies.

*Keywords: Korea, China, elite swimming athletes, counterfactual thinking*

### **A new profile display format for the monitoring of psychobiosocial states of athletes**

**Ana Beatriz Gomes Leite, Micael S. Couceiro, Duarte Araújo (CIPER, Faculdade de Motricidade Humana, Spertlab, Universidade de Lisboa)**

Psychobiosocial states are situational, multimodal and dynamic manifestations of the total human functioning. They have been conceived by Hanin et al. encompassing five interrelated dimensions: form, content, intensity, context, and time. The form dimension comprises multiple non-emotional state components, such as cognitive, motivational, volitional, bodily-somatic, motor-behavioral, operational, and communicative components. These components together, the form dimension, characterize a performance-related psychobiosocial state of an athlete (Ruiz, Hanin, & Robazza, 2016). It is measured by using an individualized profiling procedure that assesses, through verbalization, a large array of athletes' performance-related experiences. Considering suggestions identified in previous studies, it is relevant to employ a situational (state-like) version of the scale, and examine psychobiosocial states prior to, during, after performance, or after interventions (Robazza, Bertollo, Ruiz, & Bortoli, 2016). However, one needs to have the clearest and immediate view of the results in order to improve future interventions. Therefore, this work aims to present the development of a visual diagram, named PBS-SD, inspired in the radar chart and developed in MatLab. The proposed PBS-SD allows to represent 20 quantitative factors, wherein the functional (+) and dysfunctional (-) properties of each factor are symmetrically illustrated; on the upper half of the diagram is represented the functional area while on the bottom the dysfunctional. Each factor is represented as a filled region, according to its numerical values ranging from 0 (center) to 11 (edge). Although it might be seen as a simple extension of radar charts, the PBS-SD reduces the complex interpretation of a considerably large amount of factors, which is needed to compare the successful and unsuccessful profiles with other profiles generated in different moments.

*Keywords: psychobiosocial states, emotions, sports intervention, sport performance, display, visual analytics*

### **To be or not to be physically active after completing Secondary: lineal models vs. QCA**

**María Huertas González-Serrano, Ferran Calabuig Moreno, Josep Crespo-Hervás (Departamento de Educación Física y Deportiva. Facultad de Ciencias de la Actividad Física y el Deporte. University of Valencia), Vicente Prado Gascó (Departamento de Psicología Social. Facultad de Psicología. University of Valencia)**

Physical inactivity is one of the most important problems of our society. Several studies have pointed out both that adolescence is the stage where more decline the physical activity levels, and that is one of the most influential period in the acquisition of active lifestyles habits that endure to throughout life. Therefore, the present study has the aim of understand the variables that predict and influence the intention to be physically active (IPA) in high school students after they finish their schooling while comparing two different methodologies, lineal models (LM) and comparative qualitative analysis (QCA). No research has compare these methodologies on the when trying to explain the intention to be physically active in high school. 307 adolescents from 14 to 19 years old (Mean=15.64 ± 1.12), 55.5 % boys, participated on the research. To achieve

the objective of the research a hierarchical regression model with two steps (1: attitude toward the behavior (ATB), perceived behavioral control (PBC) and subjective norm (SN); 2: athletic identity (AI) and physical self-concept (PSC) and a fuzzy-set qualitative comparative analysis (fsQCA) were performed. The first step explain 26% of IPA while the addition on step to explains 65% ( $R^2 = .38$ ), AI is the most influential aspect ( $\beta = .74$ ). Considering the fsQCA results, none of the conditions is a necessary condition of IPA, although low levels of PBC seems to be the most important condition to not having IPA. Regarding sufficient, the intermediate solution indicates five combinations that explain 70% of IPA. The three most important combinations were having high levels of PSC and PBC; high levels of AI and ATB; PBC and ATB (explaining 45%; 60% and 43% respectively of the intention to be physically active). In general QCA is more explanatory than LM.

*Keywords: intention to be physically active, adolescence, secondary school, theory of planned behavior, athletic identity, physical self-concept*

### Sport specific sports psychology: a conceptual framework for Danish elite triathletes

**Ronja Højbjerg**

The development within the field of applied sports psychology is moving towards a greater contextualization. The ability to successfully develop to the highest levels in sport is dependent on a range of variables, especially an individual's ability to cope with the various challenges related to their sport. The limited triathlon specific literature available reveals only little of the psychological demands, skills and techniques needed to enhance elite performance. This study examines the national Danish Olympic triathlon team by developing a sport specific conceptual framework to reveal specific psychological skills relevant to face the challenges elite triathletes encounter. The research design takes the form of a qualitative semi-structured focus group interview study. Four group interviews were carried out investigating which sports psychological challenges influence their everyday life in training and competition. The interviews included three groups of 10 athletes in total at national and international level (21-26 years old), and one group encompassing the athletes' two national coaches and the sport director. Follow-up interviews were made with the athletes for condensation and further elaboration of specific challenges, together with an ongoing member reflections process.

A deductive and inductive content thematic analysis shows that the elite athletes perceived a multitude of sports psychological challenges both in the sporting and non-sporting domain. These findings indicate that stress factors in everyday life, training and competition, for example dealing with planning, traveling, arousal regulation, self-efficacy, confidence in the process and confidence in own skills, are reduced or eliminated by training with an established team and in a known environment on a daily basis. Final results will contribute to the sports psychologist's and coaches' work with the athletes and their ability to cope with specific challenges.

## Posters Session 5. (16:00-17:00)

### A diary study of relationships between regular distance running and goal orientations in exercise

**John Nezlek (SWPS Poznan, College of William & Mary), Marzena Cyprianska (SWPS Poznan), Joanna Sztachanska (SWPS Warsaw)**

The present study examined relationships between regular distance running and individual differences in people's goal orientations to exercise. Participants in the study maintained a weekly diary with which they described their daily "runs" each week. Participants were residents of Poland who were recruited via the internet and running magazines. The present analyses were limited to the 180 individuals (50% women) Mage =

34.0, SD = 8.3) who provided 5 or more weekly reports (Mreports = 11.7, SD = 3.9). Each week participants logged onto a website and described how far they had run each day during the week. At the beginning of the study, participants completed the GOEM (Petherick & Markland, 2008). Other data were collected that are not described in this abstract. Results: The data were analyzed using multilevel modeling in which weekly reports were nested within persons. Participants reported running an average of 2.59 days per week, and the average run was 10.7km. The analyses found that the number of days per week a person ran was significantly positively related to both task and ego orientations when analyzed separately, but only task orientation was significant when the two were analyzed together ( $p < .01$ ). In contrast, for number of km run each week, both measures were related positively when analyzed separately, but only ego orientation was significant when they were analyzed together ( $p < .001$ ). The present results suggest that ego orientation may become more important as recreational runners “put on distance” which may entail having competitive, not just health maintenance of health improvement goals.

Supported by Grant NSC 2013/11/B/HS6/01135, National Science Centre, Poland

*Keywords: Training, goal orientation, diary methods, multilevel modeling*

## Returning home after playing abroad: re-adaptation challenges of elite Swedish handball players

**Johan Ekengren, Natalia Stambulova (Halmstad University)**

In cultural sport psychology and athlete migration literature (Ryba, Schinke, Stambulova, & Elbe, 2017) there is a call for studying athletes' transnational mobility and cultural transitions out of, and back to the country of origin. This call is also echoed in the cultural praxis of athletes' careers paradigm (Stambulova & Ryba, 2013) attracting attention of career researchers. This study is aimed at exploring “back home” re-adaptation challenges of elite Swedish handball players after several years of playing professionally abroad. Eleven players (six females) were interviewed about their careers from the beginning to the end, and their narratives about the transition back to Sweden were extracted from the larger data set and thematically analysed (Braun & Clarke, 2013). Participants spent abroad for  $M=7.2\pm2.8$  years, and many of them came back having families and kids. Several informants narrated that the transition was more challenging than they expected, and they (especially at the beginning) felt themselves as strangers in their own land. Five major themes describing the transition challenges were: “to rethink self-identity”, “to renew family life”, “to re-establish links with relatives and family”, “to understand local laws and regulations”, “to keep in pace with the society”. The identity issue was addressed through a sense of being “in between” the identities of the home and the foreign cultures that elevated emotional discomfort, especially at the early phase of re-adjustment. Three themes describing coping strategies used in the re-adaptation were: “don't give up” (i.e., attempt to change own attitude and the situation to the better), “use social skills” (e.g., be alert and communicate) and “search for social support” (e.g., from a spouse and close family). Based on the findings, recommendations will be provided for pre-retirement planning of elite athletes and psychological support in their cultural transition and re-adaptation back home.

*Keywords: career experiences, cultural transition, handball, identity, re-adaptation, transnational mobility*

## Examining the “big three” coping processes in adolescent athletes

**Joan Pons, Yago Ramis, Carme Viladrich (Universitat Autònoma de Barcelona)**

Adolescence is a critical period for sport participation. Coping helps adolescent athletes to face these stressors (Nicholls, Perry, Jones, Morley, & Carson, 2013). According to cognitive-motivational-relational theory (CMRT), coping is a dynamic and recursive process composed by cognitive appraisals, emotions and coping (i.e., The “big three” coping processes). These relationships has been tested in adult athlete samples (e.g., Doron &

Martinent, 2016; Nicholls, Perry, & Calmeiro, 2014). The aim of this study was to evaluate the relationship between competitive appraisals, emotions and coping strategies in adolescent athletes. We assessed these relations in a sample of 211 adolescent athletes (practicing synchronized swimming and judo) of ages between 12 and 21. We used the Precompetitive Appraisal Measure, the Sport Emotion Questionnaire, and the Coping Inventory for Competitive Sports. Data was analyzed using network modeling analysis (Epskamp, Rhemtulla, & Borsboom, 2017) with R package. This is an exploratory analysis that allow a visual display of interrelation between variables. First, results show that cognitive appraisals positively relate with pleasant emotions and negatively related with unpleasant emotions. This indicates that both importance and perception of coping potential are relevant in determining emotional states. Second, relations between emotions and coping strategies show that pleasant emotions positively relate with task-oriented coping strategies, meanwhile unpleasant emotions negatively relate with task-oriented coping strategies. Conversely, pleasant emotions show negative associations with distraction-oriented and disengagement-oriented coping strategies, meanwhile unpleasant emotions show positive relations with them. This is congruent with and extend results found by Nicholls, Polman, and Levy (2012). As a whole, results are in the same line as CMRT and suggest that adolescent athletes' coping interacts in a similar way than in adults.

*Keywords: coping, emotions, appraisals, CMRT, network modeling*

### **Fatigue perception indicators on Dakar Rally-Raid motorcycling riders**

**Joan Palmi, Gonzalo Gil (INEFC-University of Lleida)**

The literature on the perception of fatigue shows the complexity of the concept, the difficulty of the evaluation (Loge, 2003), especially in relation to the subject of motorcycle driving (Marina, Rios, Torrado, Busquets & Angulo, 2015) and the deficiency of specific studies. Therefore, the objectives of this study were: 1) To analyze indicators perceived by riders as fatigue; 2) to assess the suitability of the selected recording instruments (scales and questionnaires) for the analysis of the fatigue perception and effort. The research design was a case study with two motorcyclists maximum level riders (TOP 5 worldwide). The research had three phases: pre-test with a test assessing physiological and psychological base (PLAB) and two field tests, with their corresponding assessments, on a circuit designed to simulate the conditions of a regular stage Dakar Rally-Raid (PC1, PC2). The instruments used were: List of indicators (ad hoc); Visual Analogue Scale-fatigue (VAS-fatigue, ad hoc); Subjective Exercise Experiences Scale (SEES, McAuley & Courneya, 1994) and Rating of Perceived Effort (RPE, Borg, 1982). The results show: 1) Indicators perceived by riders as most relevant are the loss of muscle strength, the reduction of technical mastery and control of the motorcycle, agree with other studies (Allen, 2009; Marina et al, 2015); 2) VAS-fatigue, RPE, and SEES-fatigue were suitable and sensitive to assess the state of fatigue perceived, with high correlation between them (VAS-fatigue vs. RPE,  $r=.855, p\leq.0005$ ; VAS-fatigue vs. SEES-fatigue,  $r=.878, p\leq.0005$ ; SEES-fatigue vs. RPE,  $r=.734, p\leq.003$ ). These results will use these questionnaires more tightly depending on the needs (Mateo, Rodriguez, Costa, Sanchez-Muñoz, Casimiro & Zabala, 2013).

*Keywords: fatigue perception, motorcycling, Dakar Rally-Raid*

### **Psychometric properties of the subjective vitality scale (SVS): Evidence from Chinese adolescents in Hong Kong**

**Jingdong Liu (Hong Kong Baptist University)**

Background: The subjective vitality scale (SVS) has been widely used in previous studies and has proven to be a reliable and valid instrument for measuring subjective vitality in diverse populations. However, no previous study has investigated the validity and reliability of the Chinese version of the SVS among Chinese adolescents in Hong Kong. The purpose of the present study was to examine the psychometric properties of

the Chinese version of the SVS in a representative sample of Chinese adolescents in Hong Kong. Methods: A sample of Chinese adolescents in Hong Kong was invited to participate in the study. Three measurement models of the SVS (7-item model, 6-item model, and 5-item model) were examined and compared via confirmatory factor analysis (CFA). Cronbach's alpha was calculated to evaluate the internal consistency reliability and bivariate correlations between subjective vitality with the positive and negative affect were computed to evaluate the concurrent validity. Finally, measurement invariance across gender and time-point was examined to evaluate the invariance of the measurement model of the SVS. Results: The results of CFA analyses suggested that the five-item measurement model fitted the data best compared with the other two measurement models. Results revealed an excellent internal consistency reliability with the Cronbach's alpha value above 0.70 (0.92). SVS was significantly associated with positive affect and negative related to negative affect, which provided support for the concurrent validity of the SVS. Finally, measurement invariance analysis suggested the five-item measurement model of the SVS displayed strict invariance across gender and time-point. Conclusions: Results support the five-item measurement model of the Chinese version of the SVS and show excellent internal consistency reliability. Meanwhile, the results support the concurrent validity of the instrument and demonstrate strict invariance across gender and time-point.

*Keywords: subjective vitality, psychometric properties, adolescents, Chinese, Hong Kong*

## Effects of individual and competitive goal structures on dart throwing performance and heart rate

**Jingcheng Li (Capital University of Physical Education and Sports)**

**Purpose** This study tried to compare effects of two goal structures on students dart throwing and HR. Because dart throwing is a static, accurate, and low arousal event, we hypothesis that (a) the individual goal structure had more positive effect on performance than the competitive goal structure had, and (b) participants' HR in the individual goal structure would be lower than that in the competitive goal structure. **Methods** Forty university students (20 male and 20 female, mean age: 21.2) participated in the study. Each participant was asked to throw the darts under tow goal structure. Under the condition of individual goal structure, instruction was that "your goal is to perform better than your pre-test. The person whose performance is better than pre-test will be rewarded". Under the condition of competitive goal structure, participants were grouped into two persons according to their pre-test performance, so their level of throwing darts was closed each other. The instruction was that "your goal is to perform better than your opponent. The person whose performance is better than the opponent will be rewarded". **Results** The structures of individual and competitive goal were independent variables, and dart throwing accuracy and HR were dependent variables. To determine the different effects of two goal structures on performance and HR, a covariance analysis was adopted in order to control the baseline differences. Results showed that dart throwing performance under the individual goal structure were better than that under the competitive goal structure,  $F(1,77)=5.35, p < 0.05$ . HR in test under the competitive goal structure was faster than that under the individual goal structure, but no significant difference existed. **Conclusion** The results of this study provided evidence to show that setting the self-improving goal was better for the closed skill performance like dart throwing.

*Keywords: goal structure, dart throwing, heart rate*

## An exploration of the field's demand on development of educational contents for basketball coaches of female youth clubs

**Jihye Chung, Misun Kim (Sookmyung Women's University)**



Since youth sports participation plays an important role in physical and psychological development of youth in school, the Ministry of Education in South Korea encourages youth sport participation in school. In youth sport, coaches are considered as a critical factor to make the program successful. Therefore, the purpose of the study was to identify characteristics of qualified coaches. The educational content needed for educating coaches was also explored. In addition, motivational factors of youths participating female basketball program were investigated. Nine qualified coaches were selected for in-depth interviews. Semi-structured questions were asked such as 'what educational contents are necessary for coaches in female youth basketball?' Also, open-ended questions on motivation, interest, and teaching method were administered to ninety-six youths in basketball program. Qualitative analysis was used. In results, teamwork training, passion for basketball, and team regulation were found as important for educating program. Second, coaching philosophy, physical/psychological development and characteristics of female youths, communication skills and practical basketball drills were suggested as necessary educational contents for coaches in female youth basketball. Third, the motivational factors contributing to female youths' participation in basketball club were as follows: 1) the fun and interest domain were games, basic training, and practical training, 2) the preferred education methods were stable curriculum, and low training intensity, 3) the reasons for choosing basketball club were growing their own height and interest in basketball, and 4) the factors leading to loss of interest and fun were hard physical training and repetition of movements that they do not feel confident about. These results suggested how educational program should be consisted for basketball coaches in female youth clubs.

*Keywords: female youths, basketball club, sports activation, basketball coach*

## Explore resilience of principal dancer

**Jihye Chung, Eun Choi, Misun Kim (Sookmyung Women's University)**

An ability to overcome adversity is critical to become a dancer at advanced level, which can be described as the term resilience in sport psychology. Resilience is related to higher mental toughness, lower dropout rate, less stress, as well as positive outcomes (i.e., success) in sport. However, resilience of dancers has been relatively less studied. Due to less understanding on dancer's resilience, the present study aimed to qualitatively explore the psychological construct of resilience in the dance situation, and find out psychological characteristics in terms of resilience in dancers at advanced level. We used a semi-structured in-depth interview with twelve principal dancers at advanced level, conducted inductive content, and generated 433 raw data themes. The raw data was categorized into forty categories; and then nine sub-categories as well as three general themes, such as self-regulation, positive attitude, and interpersonal relationship. Specifically, self-regulation skills were the most discussed contributors to resilience in dance, followed by positive thinking; interpersonal relation ability; emotion regulation; impulse control; gratitude; causal analysis; self-optimism; communication skills; empathy; life satisfaction; and the ability to extend the self. Overall, this study generated meaningful information regarding the understanding of resilience in principal dancers. These findings contribute to theoretical understanding of resilience in dancing, and providing practical resources in counseling dancers who cope with adversity to develop their career.

*Keywords: principal dancer, resilience, self-regulation skills, positive thoughts, interpersonal relation ability*

## Effects of mental training on reservists' fatigue in physical training

**Jifu Wang (Wuhan Sports University)**

With the increasing of information war, higher requirements of the military's training level and psychological quality were put forward, and training fatigue could seriously affect the overall training level of the troops. So this study was to investigate the effect of mental training in reducing the physical fatigue of military reservists. Fifty-four military reservists were selected and randomly divided into mental training

intervention group (27 people) and the control group (27 people), and mental training continued for four weeks. Mental training methods included progressive relaxation training, breathing training and relaxation music relaxation training, and we used MFI-20 questionnaire and the choosing reaction to evaluate reservists' degree of fatigue during the intervention process. (1) The results of MFI-20 measurement showed that the difference between before and after of fatigue scores of the intervention group was significantly higher than the control group during the mental training ( $t=5.85$ ,  $p<0.05$ ). With increased mental training, the fatigue of experienced in reservists through physical training had been slowing; and choice reaction time was gradually shortened. In short, mental training played a role in reducing the fatigue of reservists during military and physical training, in particular reducing the experience on mental fatigue.

*Keywords: mental training, military and physical training, reaction, mental fatigue, reservists*

## Sport psychology in the training process of the referee and the football assistant referee

**Jesús Chalela (SUPDE- Asociación Uruguaya de Fútbol)**

Sport Psychology in the training process of the Referee and the Football Assistant Referee. Psychological Department of the Referees Association of the Uruguayan Football Association, AUF, Montevideo, Uruguay

**Jesús Chalela (Invitado)-Gustavo Bello Abstract:** The Referee is today exposed to the demands of performance, the public, the press, athletes, leaders, managers, and of specific training. For that reason, he must devote weekly hours to physical, technical and regulatory training, in addition to holding other work or study tasks, with the wear and tear that this brings. In order that the Football Referee is able to rise to the challenge, so that he can carry out all his projects and obtain a good quality of life, it is imperative that he resorts to the benefits that PSYCHOLOGY of SPORT brings him. The objectives of the Psychological Department are: to Provide Psychological Counseling to Referees and Football Referees in activity, that the Referees have enough tools management and psychological instruments in order to achieve a better performance in the task. These instruments would provide them with the knowledge and proper use of their psychological sports abilities, such as: Attention, Concentration, Self-confidence, Self-esteem, Interpersonal Relations, Motivation, Communication Style and proper body management. The tasks of the Psychological Department are: Psychological Assistance, match preparation, Psychological Training, Advice for FIFA Tournaments, Evaluation and follow-up (RAP), Teaching (thematic workshops and classes for active and aspiring referees), Match observation, Preparation of the referee's career, Advice to the Referees' Association and School, Participation in Update meetings and in FIFA Courses, and Study and Research.

*Keywords: psychological department, referees and assistant referees, football*

## Sports educational workshops

**Jesús Chalela (SUPDE- Club Malvín de Basketball Montevideo, Uruguay)**

I consider of utmost importance for the training stage of child and adolescent athletes, the creation of sports educational workshops. These are a fundamental tool to address different issues, from a comprehensive perspective that helps the sports population to understand the process of comprehensive sports training in the long run. In order to carry out these considerations properly, it is very important that the rules are worked with all sports actors and generate spaces for them to be fulfilled. For all the above mentioned, it is very important to point to different strategies while working with children, adolescents, coaches, physical education teachers, parents, referees and leaders, to help them think about the role they should play in the whole training process. The objectives of the sports educational workshops are: Improve the quality of the sports experience, improve the level of socialization, greater participation and less absenteeism, personal training (sexuality, drugs, body care, nutrition), promote and facilitate communication and interpersonal relationships among all actors, motivate the continuity of sports practice, promote group integration and cooperation as factors that benefit

group cohesion, preparation of sports tours, training and respect for sports, institutional and community rules, respect for referees and regulation formation. The contribution of all members of a club for the benefit of children and adolescents may achieve a beneficial future as athletes and as individuals.

*Keywords: sports educational workshops, comprehensive education, sports population*

## Sports as a risk environment: homophobia and bullying in a sample of gay and heterosexual men

**Jessica Pistella, Marco Salvati, Salvatore Ioverno, Roberto Baiocco (Faculty of Medicine and Psychology, Sapienza University of Rome)**

Research on bullying and homophobic bullying has mainly focused on school contexts, with little research on bullying in sports-related contexts. Consequently, the differences between people who identify as sexual minorities and people who identify as heterosexual in terms of sports-related bullying and sports-related homophobic bullying remain even less explored. This study used a sample of 88 gay men and 120 heterosexual men to examine the frequency of bullying experiences in Italian sports-related contexts. The results showed that gay men reported more frequent bullying,  $\chi^2(1, 208) = 22.140$ ,  $p < 0.001$ , and homophobic bullying,  $\chi^2(1, 208) = 6.870$ ,  $p < 0.01$ , in sports-related contexts than heterosexual men. Gay men also reported dropping out of sports more frequently, namely due to a fear of being bullied,  $\chi^2(1, 208) = 13.914$ ,  $p < 0.001$ , and greater familial pressure to conform to masculine-type sports,  $\chi^2(1, 208) = 12.323$ ,  $p < 0.001$ . Overall, victims of bullying displayed higher levels of self-hatred than those who were not bullied in sports-related contexts,  $F(1,207) = 9.10$ ;  $p < 0.001$ ,  $\eta^2 = 0.05$ . In addition, gay men who were victims of bullying or homophobic bullying displayed higher levels of internalized sexual stigma than gay men who were not bullied in sports-related contexts,  $F(1,84) = 9.61$ ;  $p < 0.001$ ,  $\eta^2 = 0.19$ . Results suggest that gay men are more at risk of bullying and may be particularly vulnerable in sports-related contexts because these environments still represent a belief system that privileges heterosexuality, stigmatizing other, nonconforming sexual behaviors or gender preferences. This is especially true in a context such as the Italian one, where traditional gender norms and homophobic attitudes are still rife. It is necessary to promote safer sports-related contexts for people who identify as a sexual minority or who self-identify as heterosexual yet are perceived as lesbian, gay or bisexual people.

*Keywords: risk, sports, bullying, homophobic bullying, gay men, internalized sexual stigma*

## Developing a body expression program to improve empathic competence

**Jeonghee Kim (Gyeongin National University of Education)**

This research implemented the body expression program in elementary school field and tried to find out how the body expression program which was set up in elementary school influences the children's empathic ability according to the level of emotional response. Therefore, two research questions 'Compared to control group, does the experimental group that participates in the empathy education program show significant difference between empathic ability?' and 'Compared to control group, does the experimental group that participates in the body expression education program according to emotional response show significant difference between empathic ability?' were established. To verify these research questions, 6 classes of fourth grade in G elementary school were pre-tested. Two classes confirmed their similarities were selected, one of which was designated as the experimental group while the other class was designated as the control group, with the experimental group and the control group each being composed of 24 students. Sessions of the body expression program were implemented over 6 weeks, twice a week, with the experimental group while no interventions were made in the control group. After the end of the experiment, a post-test was implemented. To verify the effects of the program, SPSS program was used and Matched pair sample T-test and Analysis of Covariance was implemented. The results of response of test paper were as follows: First,

experimental group that participated in the body expression program showed significant improvement in empathic ability and low variables those are cognitive empathic ability and emotional empathic ability. Second, the high level group of emotional response about body expression program showed significant improvement in empathic ability compared to low level group. Third, the low level group of empathic ability showed significant improvement in school life satisfaction compared to high level group.

*Keywords: empathic competence, expression program, children*

### **Self-organized exercise to prevent back pain: The role of behavior regulation and self-efficacy in an athlete sample**

**Jens Kleinert, Johanna Belz (German Sport University Cologne), Heidari Jahan (Ruhr University Bochum), Levenig Claudia, Hasenbring Monika, Kellmann Michael (German Sport University Cologne)**

Back pain (BP) is a common problem in athletes (prevalences of 18-65%; Trompeter et al., 2016). Exercise to prevent BP is, therefore, an important component of both training routines and self-organized training (e.g., home-based). Whilst BP prevention exercises are frequently incorporated into the training routines (Goertzen & Zinser, 1998), less is known about the frequency and regulation of self-organized exercise (SOE) to prevent BP. Thus, the aim of this study was to assess the occurrence and the frequency of SOE to prevent BP and its relationship with both autonomous behavior regulation and self-efficacy. A total of 346 German elite athletes (42.6% female; Mage=18.3 years, SDage=5.39 years) participated in this cross-sectional study. Athletes were asked about the weekly frequency and mean duration of their SOE; also autonomous behavior regulation (12 items based on organismic integration theory) and self-efficacy (MSES; Rodgers, et al., 2008) were assessed. Self-organized exercise was reported by 50.7% of the participants. This finding can be partly explained by autonomous regulation ( $r^2=.174$ ). The likelihood of exercise increased with intrinsic regulation (OR=1.35), identified regulation (OR=1.43) and introjected regulation (OR=1.39), while external regulation showed a negative relationship (OR=0.79). Neither sex, nor age, nor occurrence of BP within the last three months (46.8%) explained SOE. Athletes exercised on average 1.9 times per week (SD=1.02) for a mean duration of 20.9 minutes (SD=15.75). Frequency per week could be explained by schedule efficacy ( $\beta=.26$ ), while mean exercise duration could be explained by intrinsic regulation ( $\beta=.23$ ) and age ( $\beta=.18$ ). These results show that autonomous behavior regulation and self-efficacy explain different aspects of the overall regulation of BP-preventive exercise, with the former seemingly more important for general decisions and enjoyment and the latter more important for implementation into daily routines.

*Keywords: back pain, prevention, motivation, self-efficacy, prevention*

### **Mechanisms of Exercise Dependence – A person centred approach to study the predictive ability of anxiety, obsessive passion and appearance orientation on exercise dependence**

**Jenny Back (Halmstad University)**

Exercise dependence is a maladaptive pattern of exercise with a craving for physical activity that results in extreme exercise that may generate mental health problems such as anxiety and depression. Previous research suggests that individuals with certain personality traits are more prone to develop exercise dependence. However, research on personality traits and exercise dependence is still limited. In the current study, predictive abilities of anxiety, obsessive passion and appearance orientation on exercise dependence were investigated. A longitudinal design was adopted to investigate if personality related factors could predict exercise dependence. The sample consisted of 206 regular exercisers (100 males and 106 females) from various exercise groups, sport clubs and sport science classes in Sweden (Mage = 28,5 years; SD = 9,97). The LPA (Latent Profile Analysis) showed that a model with two profiles provided best fit to the data, and that profile belonging at T1 could predict measures of exercise dependence at T2. Profile 1: "high risk exercisers" reported significantly higher

levels of exercise dependence, anxiety, obsessive passion and appearance orientation compared to Profile 2: “low risk exercisers”. This study highlights factors that may characterize people who develop exercise dependence. High-risk exercisers are obsessively passionate about their training and exercise may function as a tool to cope with anxiety. If the individual for some reason is prevented from training, feelings of anxiety and guilt are often experienced. Furthermore, these individuals tend to be self-conscious about how they look and appear to other people. To them, exercise may also work as a way to achieve body ideals. The results of the current study suggest plausible mechanisms of why exercise behaviours become unhealthy and uncontrollable for some exercisers whereas others manage to remain healthy.

*Keywords: anxiety, appearance orientation, exercise dependence, passion, physical activity*

### Attention, heart rate and skilled motor performance: Effects of task difficulty

**Jennifer Henderson, Christopher Ring (University of Birmingham)**

Attention is one of the most crucial yet elusive skills in sport, particularly when athletes are under pressure to perform. However, performance psychologists remain unsure of the means to achieve optimal focus. Recent research has shown that a performer's heart rate (HR) decelerates in the seconds prior to the execution of a skilled motor task. For instance, elite golfers' HR's drop about 20bpm in the 5 seconds before they putt. Although this HR slowing phenomenon is well documented, the specific features of this deceleration profile remain unclear. Under the premise that increased task difficulty requires greater concentration, the current study was designed to improve our understanding of this bradycardia, and furthermore determine its association with performance and attentional processes.

40 golfers of varying ability (20 expert, 20 novice), completed baseline and 7 counterbalanced 9-ball putting conditions on an artificial surface. Conditions were designed to manipulate difficulty, and thus attentional demands, by altering putt distance, hole size, and surface gradient. HR (electrocardiogram) and muscle tension (electromyography) were measured throughout, with performance outcome determined by the number of holed putts in each condition.

Performance was significantly affected by condition difficulty ( $P < .05$ ). Similarly, condition difficulty affected several aspects of the cardiac pattern, including peak-to-trough amplitude, peak-to-trough timing, and the rate of the HR deceleration. The latter was also found to correlate with performance.

To conclude, HR deceleration in the seconds preceding a skilled motor task was affected by variations in task difficulty, thus, improving our understanding of the attention-performance relationship. Practically, these findings help validate pre-movement cardiac deceleration as a discreet measure of attention, and lay the foundations for future biofeedback training protocols aimed at improving performance under pressure.

*Keywords: psychophysiology, attention, heart rate, skilled motor performance*

### The psychophysiological effects of pressure on skilled motor performance

**Jennifer Henderson, Matthew Bridge, Christopher Ring (University of Birmingham)**

The pressure to perform can stem from a multitude of factors. During competition, these factors can have either a facilitative or debilitating effect on performance. Although the mechanisms that cause athletes to ‘choke’ under pressure have yet to be fully established, attentional focus has emerged as a key aspect of optimal performance. Specific cardiac patterns prior to movement onset have been associated with attention. In golf putting for example, elite golfers' heart rates decelerate about 20-beats-per-minute in the 5-seconds before they putt. However, this phenomenon has never been studied for a full golf swing, or analysed in response to pressure. The current study therefore aimed to fill these gaps in our understanding of the psychophysiology of skilled motor performance. 20 expert golfers, completed 9 shots in a baseline and 5 pressure conditions (e.g. social, financial) in an indoor simulator. Heart rate (electrocardiogram) and muscle

tension (electromyography) were measured throughout, with performance determined by shot outcome. Questionnaires also measured self-reported pressure and attentional focus. Data collection is ongoing, but preliminary analyses ( $N=14$ ) indicated that expert golfers exhibit a heart rate deceleration profile in the seconds before performing a full golf shot, and that pressure had a significant effect on this cardiac pattern ( $p \leq .05$ ). For instance, condition was found to affect the peak-to-trough amplitude, the peak-to-trough timing and the rate of deceleration. To conclude, heart rate deceleration in the seconds preceding skilled motor performance was affected by pressure. If current results are confirmed, then this research helps validate the link between attention and heart rate deceleration prior to skilled motor performance. Practically, these findings could form the basis of future biofeedback training interventions, which in turn could help athletes become more robust when faced with the pressure to perform well.

*Keywords: psychophysiology, pressure, attention, skilled motor performance*

### Developing a theoretically grounded mentorship programme for women in coaching

**Jenessa Banwell, Ashley Stirling, Gretchen Kerr (University of Toronto)**

The role of mentorship in improving career development and enhancing work satisfaction has been well documented in the non-sport literature. Mentorship has been recommended within the sport context, specifically to address the lack of women in coaching and yet previously implemented mentorship programmes for female coaches have produced mixed results (Belding & Dodge, 2016; CAC, 2017; Kerr & Banwell, 2016; Robertson, 2017). One of the current gaps identified in existing programmes for enhancing the mentorship of women in coaching is that the development and delivery of these programmes have not been theoretically-informed. The purpose of this study therefore, was to develop a mentorship programme aimed at advancing women in coaching using Zachary's (2012) four-stage mentoring cycle as its grounding theoretical framework, and to evaluate the development and implementation of the programme using Stufflebeam's (1983) CIPP model for programme evaluation. This poster specifically focuses on the context and input evaluation phases. An overview of the context of women in coaching will be provided including a summary of women in coaching literature and identification of previous mentorship programmes. Addressing the input phase of programme evaluation, findings reveal stakeholder contributions and identified needs in developing the mentorship programme, theoretical considerations built into its design, and examples of how Zachary's theory of mentorship was applied to the development and delivery of a mentorship programme for women in coaching. This study adds to the current sports coaching literature by illustrating the application of Zachary's model to the design and delivery of mentorship programming, and highlights how theory can inform each stage of the mentoring process in hopes to create enhanced learning experiences and outcomes for participating mentor and mentee.

*Keywords: women, coaching, mentorship, programme evaluation*

### Goal attainment effects on cognitions, emotions, and subsequent performance in a golf putting task

**Jean-Charles Lebeau, Heather Gatten, Inbal Perry, Ye Wang, Sibak Sung, Gershon Tenenbaum, Heather Kiefer (Florida State University)**

Attaining or failing to achieve a goal affects our thinking, feeling, and behavior. Grounded in Carver and Scheier's (2003) conceptual model, the present study aimed to uncover the effects of goal success and goal failure on cognition, emotion, and subsequent performance using a golf putting task. Novice golfers (17 males, 24 females,  $M_{age} = 27.17$ ,  $SD_{age} = 8.91$ ) were randomly allocated to a goal success or goal failure condition and received a deceptive feedback of their putting scores using a 4 point system to induce goal success or goal failure. Participants had five practice putts from a distance of 1.83m to a target, and then performed six putts



without visual feedback. The score for the six practice trials was multiply by 4 to set the goal for 24 putts and participants were instructed to reach this goal. During the main task, participants completed 24 putts and received a deceptive feedback of their putting score every 6 putts, after which self-efficacy was measured. Emotions and executive functions were assessed after the 24th putt. Participants' emotions were measured using an adapted version of the Physical Activity Affect Scale. Executive functions were assessed with the Stroop task and the Pace Auditory Serial Addition Test. After completing the cognitive tasks, participants performed an additional set of 24 putts without specific goal. For this second set, participants received their real score as a feedback. Individuals in the goal success condition reported significantly higher self-efficacy and more positive emotions than individuals in the goal failure condition. Non-significant differences were revealed on either of the cognitive tasks or golf putting performances in the second set between the goal success and goal failure conditions. The results are examined in regards to previous research and the complexity in linking emotions, cognitions, and performance. Implications, limitations, and future research directions are discussed.

*Keywords: goal achievement, executive functioning, emotion, self-efficacy*

### **An evaluation of time movement anticipation among female athletes of various sports**

**Shubhda Bhosle, Jayashree Acharya, Sanchita Baruah (Lakshmibai National Institute of Physical Education, Gwalior)**

Anticipation in sport is the ability of the athlete to make decisions and to act ahead of time (Surkov, 1982). (Taylor 2016) noted that expert advantage in utilising informative cues for anticipation remains stable across sports, the cues that are most important or relevant for effective anticipation varies depending on the type of sport. Zhu (2012) mentioned that there is great potential in using technology-based assessment to overcome the limitations of traditional measurement methods. The Vienna Test System (VTS) developed by Schuh-fried GmbH (Moedling, Austria) is one such computerized system that is able to analyse many different sport psychology-related constructs. ZBA (Time/ Movement Anticipation Test) that measures time and movement anticipation ability, in which a green ball moves at a certain trajectory and suddenly disappears after a while. Participants are required to indicate where the ball hits the target line and the point on the target line where the ball will pass. The present study focused of highlighting possible differences in time and movement anticipation of visual stimuli movement. For this 45 university female athletes aged between 19 to 24 years with a mean and SD of  $22.73 \pm 2.14$  of various sports (i.e. cricket, football and hockey; N=15 from each), ZBA was measured for mean deviation time (MDT)-slow and mean deviation time (MDT)-fast. ANOVA results revealed no significant difference among female athletes of different sports when considered on the score of MDT-slow ( $F(2,42) = 2.99$ ,  $p = .061$ ). But in MDT-fast significant differences was found ( $F(2,42) = 6.98$ ,  $p = .002$ ). Post-hoc test of Tukey HSD reveals significant difference in time movement anticipation between football and hockey group, also in football and cricket group.

*Keywords: movement anticipation, time anticipation, vienna test system, movement perception*

### **The influence of performing arts practice on physical education students' motivation**

**Javier Coterón, Javier Gil (Universidad Politécnica de Madrid), Evelia Franco Álvarez (Centro Universitario Cardenal Cisneros - Universidad de Alcalá)**

Performing arts (PA) are a vast set of artistic expression media and techniques, as dance or theatre (Torrents, Balagué, & Hristovski, 2016). Self-Determination Theory is an attractive framework to promote understanding of motivational processes in this kind of activities (Quested & Duda, 2011). The aim of this study was to analyze the effect of a PA-based intervention on Physical Education (PE) students' motivational variables. The sample was composed by 148 students aging from 13 to 16 ( $M = 14.76$ ;  $SD = .86$ ). Subjects were randomly assigned to experimental ( $n = 52$ ) and control group ( $n = 96$ ). Spanish versions of BPNES and PLOC

were used and two items were created ad-hoc to measure the liking for PA activities and the intentions to take part in future activities. The intervention consisted of 10 extracurricular sessions in which experimental group prepared a PA composition to be presented at a regional event apart from the didactic unit, while control group only took part in the PE lessons. Mann-Whitney and Wilcoxon test were performed to analyze inter and intra-groups differences between pre-test and post-test. A significant increase in autonomy ( $Z = 2.26$ ;  $p < .05$ ) and relatedness satisfaction ( $Z = 2.77$ ;  $p < .05$ ), as well as in intentions to take part in PA activities were only found in the experimental group ( $Z = 2.60$ ;  $p < .05$ ); while both groups reported a significant increase in liking for PA activities ( $Z_{Control} = 2.28$ ;  $p < .05$ ;  $Z_{Experimental} = 2.91$ ;  $p < .01$ ). In line with other works (Sevil, Abarca-Sos, Julián Clemente, Murillo, & García-González, 2016) findings suggest that the use of extracurricular activities related to PA could enhance students' motivation and engagement in these contents. Further investigation would be needed to better understand the effect of this kind of interventions on different outcomes according to the contents.

*Keywords: performing arts, intervention, basic psychological needs*

## **The relationship between the ability of motor imagery and the clumsiness in exercise in university students**

***Yuko Hayashi, Haruo Sakuma (Ritsumeikan University)***

In making a motor imagery, it is known that there are two imagery perspectives which influence on the motor skills; one is internal imagery perspective in which the imager looks through by his or her eyes on their imaging experience, and the other is external imagery perspective in which the imager is looking at oneself from outside like a picture. Generally, motor imagery plays an important role in the promotion of motor learning and sports performances. In physical education, there are some students whose motor skills hardly improve due to their clumsiness despite having no problem with motor development. One of the reasons for poor motor skill is considered that they cannot make motor imagery well from their own perspectives, even before they actually do motor execution. In other words, it is supposed that controlling the perspectives of the imagery leads to improve motor skills and gain good performances. Therefore, the purpose of this study was to investigate the relationship between motor imagery perspectives and clumsiness on motor learning by assessing the electroencephalograms(EEG) and questionnaires. Participants were 14 female college students (19-21 years). The clumsiness of motor skills were measured by the questionnaire of motor clumsy scale for university student, and the imagery types were classified into internal imager or external imager by Movement Imagery Questionnaire -Revised Japanese Version; JMIQ-R. The EEG (F3,F4,C3,C4,P3,P4,O1,O2) and mental time were measured during the imagery tasks which making image of sports scenes and their movements (e.g., throwing, jumping, stepping) by internal and eternal perspectives. The alpha2 band power of EEG more activated at parietal and occipital area during internal perspective imagery tasks. Results suggested that the difference of brain activity in internal perspectives of the motor imagery was related to the performance and clumsiness.

*Keywords: motor imagery, imagery perspective, clumsiness, motor learning*

## **Who suffers more from sport pain - men or women?**

***Jan Blecharz (The University of Physical Education)***

Existing studies on gender differences in sport pain do not provide comprehensive interpretation of this phenomenon and are limited to some selective aspects of pain (Muller et al. 2016). There is a growing evidence that men and women not only tend to administer different strategies to deal with pain, but their moderation role also seems to work differently (Jones, Parker, 2015), which probably moderates analgesic effect of physical activity (Pokhrel, et al., 2013), and thus results in significant differences in performance under pain (Smeets, et

al., 2007). However, the functional difference does not explain all the variations of the result (Haddas, et al., 2015). The main aim of the study was to assess gender differences in a complex, four-stage model of pain processing, consisting of pain sensation intensity, pain unpleasantness (stage 1 affect), suffering (stage 2 affect), and pain behavior (Wade, et al., 1996) under different situational circumstances. In the study VAS, Pain Catastrophizing Scale, McGill Pain Questionnaire, Pain Coping Strategies Questionnaire were administered. The data has been collected for high level female and male athletes in training and competition situations. As agreed with previous studies women scored higher in pain intensity and unpleasantness, than men. Surprisingly, no differences in behavioral aspect has been found. The differences might be explained by administering slightly different cognitive coping mechanisms. Additionally, a moderating role of situational factor has been found. Understanding of multidimensional dynamics of sport pain sensation and its determinants is the first step to compile efficient and safe pain coping program for athletes (Birrer, Morgan, 2010) tailored to the needs of both sexes. Sport pain sensation dynamics can be highly moderated by administering effective coping strategies. It is a subject of great importance for performance improvement, quality of life and health promotion.

*Keywords: pain, gender, athletes, performance under pain*

### **Is perceived autonomy support provided by a coach related to the frequency of injury preventative behavior among elite golfers?**

**James Parker, Urban Johnson, Andreas Ivarsson (Halmstad University)**

Research has shown that perceived autonomy support can have an indirect effect on behaviors via autonomous motivation (Hagger & Chatzisarantis, 2015). This indirect effect has, for example, been found in relation to injury preventive behaviors within sport (Chan & Hagger, 2012). Overuse and acute injuries are a common problem among golfers (McHardy & Pollard, 2005) and exploring factors that might increase the frequency of preventive behaviors is warranted. The aim of the study was to investigate if perceived autonomy support from the coach has an indirect effect on the self-reported frequency of injury preventive behaviors via the level of autonomous motivation. A total of 59 elite golfers, (handicap  $M = -1.2$ ,  $SD = 4.9$ , age  $M = 21$ ,  $SD = 5.5$ ), completed a questionnaire with questions related to autonomy support from the coach, autonomous motivation for injury prevention, and the frequency of five injury preventive behaviors (e.g., how often do you ask for advice about injury preventive exercises, how often do you train to improve your physiological status). A mediation analysis, using Hayes (2012) process macro in SPSS 20.0, was performed. The results showed that perceived autonomy support and autonomous motivation could explain 45% of the variance in the frequency of preventive behaviors,  $F(1,56) = 22.71$ ,  $p < .001$ . The result showed that perceived autonomy support had a statistically significant positive indirect effect on the frequency of preventive behaviors via autonomous motivation ( $ab = .16$ , 95% CI = 0.05-0.34,  $p < .05$ ). Based on the results, coaches should consider giving feedback that supports autonomous motivation among golfers when aiming to encourage injury preventative behavior. Injury prevention programs should include strategies to improve the athlete's autonomous motivation to carry out preventive activities. Future research should investigate the relationship between estimated and the objective frequency of injury prevention behaviour.

*Keywords: perceived autonomy support, golf, self determination theory, coaching*

### **Can emotional disclosure promote sport injury-related growth?**

**Jade Salim, Ross Wadey (St Mary's University, Twickenham)**

Previous research has shown injured athletes low in resilience are less likely to experience Sport Injury-Related Growth (SIRG) than their more resilient counterparts (e.g., Salim, Wadey, & Diss, 2015; Wadey, Evans, Hanton, & Neil, 2012). This study aimed to examine the efficacy of a four-week emotional disclosure

intervention to promote SIRG with injured athletes low in resilience following their return to competitive sport. The intervention was a quantitative design and consisted of three groups: Written Disclosure Group (WD) (N = 15), Verbal Disclosure Group (VD) (N = 15), and a Control Group (C) (N = 15). For the purposes of social validation, 10 athletes from each group (N=30) were interviewed three months after the intervention. Growth was measured using the Stress-Related Growth Scale (SRGS; Park et al., 1996), pre-and post-intervention and at the 4-week follow-up. Data were analyzed using a mixed-design (Group x Time) MANOVA, whereas the qualitative data were analyzed using thematic analysis. Findings revealed a significant difference between the VD Group and C Group for SIRG. There was no significant difference between the WD Group and C Group. Both the VD and the WD Groups reported that they found writing or talking to be cathartic. However, while those in the VD Group were able to positively accommodate their thoughts and emotions that led to SIRG, those in the WD Group reported that they were unable to fully understand their emotions. The organismic valuing theory (Joseph & Linley, 2005) and the broaden and build theory (Fredrickson, 2001) are used to interpret these findings. These findings have important implications for those working with injured athletes low in resilience, by encouraging them to self-disclose in private, and in turn help them to work through the restructuring process, and enable them to identify how the outcomes obtained will be of value to their sporting performance, well-being and/or risk of injury.

*Keywords: sport injury-related growth, emotional disclosure, positive psychology*

### **Passion for teaching and burnout in Physical Education teachers: The mediating role of being a transformational leader**

**Isabel Castillo, Octavio Alvarez, Isaac Estevan, Javier Molina-García (University of Valencia)**

Grounded in the dualistic model of passion (Vallerand et al., 2003) and the transformational leadership theory (Bass, 1985) extended by Beauchamp et al. (2010) to the context of education, the main purpose of the present research was to examine the associations between physical education (PE) teachers' passion and their perception of burnout, testing in this relation the mediating role of teachers' transformational behaviours. Participants (163 PE teachers; 108 males and 53 females, Mean age = 40.59 years; SD = 8.36) were requested to complete a multi-section questionnaire consisting of the Passion Scale, the Transformational Teaching Questionnaire, and the Maslach Burnout Inventory. Teachers had been involved in their profession for 13.95 years (SD = 8.39) and had been working a median of 6.36 years (SD = 5.57) in their current school. Results of MANOVA revealed that there were no significant gender differences (Wilks' Lambda = .94,  $F(156, 4) = 2.01$ ,  $p > .05$ ), and hierarchical multiple regression analysis was conducted considering the whole sample. In order to determine the extent to which leadership contributes to changes in burnout over and beyond types of passion, the two types of passion (harmonious and obsessive) were entered first, followed by the transformational leadership variable. Results showed that harmonious passion ( $B = -.31$ ,  $p < .01$ ) and transformational leadership ( $B = -.20$ ,  $p < .01$ ) were negative predictors of burnout; whereas obsessive passion was a positive predictor of burnout ( $B = .14$ ,  $p < .05$ ). Results also indicated that transformational behaviours partially mediated the relationship between harmonious passion and burnout and totally mediated the relationship between obsessive passion and burnout. In conclusion, lower levels of burnout in PE teachers appears to be related to whether more transformational behaviours underlies their job as well as whether they feel as if they are in control of their passion for teaching.

*Keywords: physical education, teacher, passion, burnout, self-efficacy, transformational behaviours*

### **How well can children and parents' report on children's motor skill competence?**

**Isaac Estevan, Ana Queralt, Isabel Castillo (University of Valencia), Lisa Barnett (Deakin University Australia)**

Motor competence (MC) is defined as a person's ability to execute different motor acts. It is not clear whether young children can report on their own MC. Thus parents may be an alternative source of information for their children's MC. The degree to which parents and children can report on children's MC is still questionable. This study aims to analyse how well children and parents' perception of children's MC can predict children's motor skill competence. A sample of 179 children (aged  $7.5 \pm 1.8$  years) and one of their parents participated in the study. The Spanish version of the pictorial Perceived Movement Skill Competence scale was used for assessing perception of children's MC by children and parents. The Spanish version of the Test of Gross Motor Development was used for children's actual MC assessment. Two independent linear hierarchical blockwise regression analyses for children (model 1) and parents (model 2) were conducted with actual child MC as the outcome variable. In every model, the first step included children's perceived MC (model 1) and parent proxy report of child MC (model 2) as predictor. In the second step both models were adjusted for children's age and sex. Model 1 showed, in step 1, children's perception ( $\beta=0.31$ ;  $p>0.05$ ) did not predict their actual MC. In step 2, children's perception ( $\beta=0.38$ ;  $p<0.001$ ) with an effect of age (increasing) and sex (boys) predicted the 76.7% of the variance. In conclusion, children presented limited capability in explaining their MC. The study confirms previous literature in that age and sex factors accounting for most of the children's actual MC explained.

*Keywords: motor competence, perceived motor competence, parents, children*

## **Influence of applying a modified Stroop Test during postural control task in children of 4-years-old**

**Isaac Estevan, Israel Villarrasa-Sapiña, Xavier García-Massó (University of Valencia)**

This study is focused on the influence of a modified Stroop Test on postural stability task in children with 4-years-old. A sample of eighteen healthy children of 4-years-old [ $17.88$  ( $2.56$ ) kg,  $1.04$  ( $0.05$ ) m and  $16.39$  ( $1.2$ ) kg/m<sup>2</sup>] participated. The postural sway data were measured by a Wii Balance Board, from which single (ST) and dual tasks (DT) were performed in the bipedal standing position with eyes open. A reference point or a cognitive task was projected onto a screen at 2 m in front of the children at eye level, in ST and DT, respectively. A modified Stroop Test was used as cognitive task during DT. Four selected figures traditionally matched with a specific colour [i.e. i) star (yellow), ii) heart (red), iii) frog (green) and iv) smurf (blue)] were shown individually in random order with random colours (yellow, red, green or blue) on the screen. The children were asked to name the colour of the figure regardless of what they saw on the screen for the total 30 s duration of the balance task measurement. Ellipse area (EA) and mean velocity in antero-posterior (MVAP) and medio-lateral (MVML) directions were computed from postural sway data acquired. The number of correct and incorrect digit answers was used as a measure of cognitive performance. Kruskal-Wallis test was used in comparative analyses. In ST, children's EA, MVAP and MVML was lower than in DT condition. During DT, children obtained a mean of 9.5 (4) correct answers and 0 (0.25) incorrect answers. Children of 4-years-old showed lower postural control when they performed a cognitive task. Despite the amount of correct answers was high and this new modified Stroop Test could be considered as easy for children aged 4 years, in DT the cognitive task provided enough stimulus to influenced postural control.

*Keywords: postural control, dual-task, childhood, Stroop Test, stability*

## **Run about it? Psychological and personal reflections on long distance group running**

**Irit Bluvstein (Tel Aviv University)**

This poster will present reflections in regard to the psychological and social benefits following long distance running in a group. These reflections stems from my personal experience in the last four years as a long distance runner as integrated with my specialization in post-traumatic growth. While experiencing and

examining the different aspects of group running and its psychological effects, I became aware that most effects may be categorized into the five post traumatic growth themes: increased personal strength, appreciation of life, closer relationships, identification of new possibilities and spiritual change. Long distance running is usually characterized by a moderate running pace which allows talking while running. The group running is viewed as a natural group intervention with an outdoor setting and a time frame dictated by the distance and pace the group members decide to run. These conditions offer plenty of opportunities to discuss and process personal issues concerning coping with life adversities as well as opportunities to socially deal in real time with difficulties that emerge while running. Acknowledging social running as a potential psychological intervention and posttraumatic growth as an organizing theoretical framework for the psychological and social outcomes of running may further elucidate our understanding of running benefits.

*Keywords: running, posttraumatic growth, benefits, reflections*

## Relationship between personality trait of elite Latvian football players and their psychological skills

**Irina Simonenkova (Russian State University of Physical Education, Sport, Youth and Tourism, Moscow)**

Relationship between personality traits of elite Latvian football players and their psychological skills Irina Simonenkova, sport psychologist, Latvia, Phd Candidate Psychology Department of Russian State University of Physical Education, Sport, Youth and Tourism, Moscow, Russia Keywords: football player, personality trait, psychological skills, football player's efficiency The paper presents research findings of the relationship between the personality traits and psychological skills of Latvian highly qualified football players. The research population was football players from 6 Latvian Higher League teams. The empirical research sample included 90 male football players 18-35 years of age. The analysis of theoretical sources on psychological skills in sports activity and expert interviews with the Latvian Football Federation representatives, Latvian Higher League coaches and experienced football players have enabled the researchers to identify 11 most essential psychological skills. Further on, a test of psychological skills assessment was developed; the test included 93 statements rated on a 5-point scale. To measure a football player's efficiency, the method of expert assessment was applied. The research participants also included 9 experts (6 chief coaches from Higher League teams, 2 members of the Latvian Football Federation Coaching Council and 1 sports journalist, specializing in football). The research findings have made it possible to identify 5 essential psychological skills as having a statistically significant correlation with game efficiency of Latvian football players. To measure personality traits the five factor model, i.e. BIG FIVE Inventory was applied to the same sample group. Hence, the association between personality traits and psychological skills was studied, and positive and negative correlations were identified. Further research may be focused on the application of the BIG FIVE Inventory and interpretation of factor scores in the sport environment.

*Keywords: football player, personality trait, psychological skills, football player's efficiency*

## Yoga teachers' motivational trajectories from practitioner to teacher

**Ineke Vergeer (University of Southern Queensland)**

Yoga is an ancient Indian practice that has become increasingly popular in western societies in recent years. Embedded in a holistic philosophy that includes physical, mental, and spiritual elements, it goes beyond what is typically offered in traditional western exercise settings, and this may be reflected in practitioners' participation motivation. The aim of this study was to shed light on the motives associated with yoga practice, specifically those related to different phases of engagement in the lives of highly involved practitioners, yoga teachers. In-depth interviews were conducted with experienced yoga teachers (n=7; ages 47–67 years; yoga practice experience 9–40 years; yoga teaching experience 3–25 years), querying them about their motivation



for first becoming a practitioner and then a teacher of yoga. Interviews were recorded, transcribed, and subjected to a thematic analysis. Results showed that initial motives to take up yoga included the need for a suitable physical practice, an interest in mind-body integration, and/or a search for a practice that could help with the deeper meaning of life. Continued practice was reinforced by experiencing a range of benefits, including a changed relationship to one's body, growing self-knowledge and insight, gaining "tools for life", having intellectual and experiential access to yoga philosophy, and finding enhanced spiritual clarity. A strong motivator for teaching was to pass on the benefits of yoga. This was driven by a desire to share the beneficial effects one had experienced oneself, and/or by perceiving a need for yoga in modern society. Seeing a natural fit integrating yoga teaching into their profession also motivated some teachers. In conclusion, yoga teachers' motivational trajectories showed an uptake of yoga practice because of physical, psychological, and occasionally spiritual needs, while continued practice and the desire to teach were motivated by the multiple benefits gained through doing yoga.

*Keywords: participation motives, yoga, teaching*

### **Effects of acute stress and cardiovascular fitness on the shifting aspect of executive function: A pilot study**

**I-Lun Huang, Tai-Sheng Chen, Jui-Ti Nien, Yu-Kai Chang (National Taiwan Sport University)**

Stress is a major issue in public health and its adverse effects have been observed in relation to physical health and executive functions (EF). Fortunately, a higher level of cardiovascular fitness (CF) has been associated with a protective function against these adverse impacts of stress. The current study aimed to investigate the effects of acute stress and CF simultaneously on the shifting aspect of EF. Based on the Cross-Stressor Adaptation Hypothesis, we expected that individuals with higher CF would have better performance in the stress condition. 20 young males were recruited and assigned into either high-fit (HF, n=10) or low-fit (LF, n=10) groups. All participants received two treatment conditions, the stress (S) and non-stress (NS) conditions, in a counterbalanced order. The S condition includes immersing participants' feet in ice-cold water and having them solve mathematic problems. All participants were instructed to perform a Task-Switching Test immediately after both conditions. Our results revealed that both groups demonstrated significant shorter reaction time (RT) in the homogeneous task-switching condition, compare to the RTs in the heterogeneous condition. Furthermore, regardless treatment conditions, the HF group had shorter RT across both homogeneous and heterogeneous task-switching conditions, as compared to their counterparts. Finally, despite the cognitive performance of both groups was significantly impaired after the S condition, as compared to the NS condition, the HF group's performance was still superior to that of the LF group's. Our findings revealed a general beneficial effect of CF on the EF performance, reflected by the superior performance of HF in both task-switching conditions in the NS condition. Notably, our findings further illustrated the protective effects of CF on EF under the stress condition, supporting the Cross-Stressor Adaptation Hypothesis.

*Keywords: stress, cortisol, cardiovascular fitness, executive function*

### **Examining happiness, subjective vitality, aggression and depression of bodybuilders according to gender**

**Ihsan Sari (Sakarya University, Faculty of Sport Sciences, Sakarya, Turkey), G.Yasemin Aldemir (Marmara University, Faculty of Sport Sciences, Istanbul, Turkey)**

Bodybuilders just like fashion models exhibit themselves on the runway. This exhibition requires a strict diet, orderly life style, and continues exercise in which the bodybuilders push the limits of their bodies (Sugiyama, 2014). The relevant literature showed that there are mood alterations (Rossow et al., 2013) and

psychological distress (Ross et al., 1995) during preparation to a bodybuilding competition. However, there is also evidence that a range of positive mental states develop through the hard physical trainings and strict dietary practices undertaken by the competitors, (Aspridis et al., 2014). In addition, the relevant literature showed that gender might affect some psychological factors of individuals (Coulomb-Cabagno and Rasclé, 2006; Schuch et al., 2014). Therefore the first aim of this research was to reveal psychological characteristics of bodybuilders regarding happiness, subjective vitality, aggression and depression. The second aim was to determine the gender differences. 203 males ( $X_{age}=23.84\pm5.38$ ,  $X_{experience}=4.24\pm4.27$ ) and 75 females ( $X_{age}=24.21\pm6.25$ ,  $X_{experience}=4.48\pm3.74$ ) as a total of 278 bodybuilders voluntarily participated to this research. Subjective Vitality Scale, The Buss-Perry Aggression Questionnaire, The Subjective Happiness Scale and The Beck Depression Inventory were used as the data collection tools. Descriptive statistics and MANOVA analysis were used to analyse the data. Results showed that there was a significant difference according to gender  $F(7, 270) = 5.11$ ,  $p < .05$ , Wilks'  $\lambda = .88$ , Partial  $\eta^2 = .12$ . While happiness, depression and subjective vitality scores did not significantly differ, males had significantly higher scores on physical aggression. The findings of this research outline psychological features of bodybuilders with regard to happiness, subjective vitality, aggression, and depression. Moreover, as male participants' physical aggression scores were higher, some precautions might be taken for this issue.

*Keywords: bodybuilding, psychological features, gender*

### Psychometric properties of Turkish version of short form of physical self-description questionnaire

**Hülya Asçi (Marmara University), Emine Çağlar (Hacettepe University), Osman Urfa (Marmara University)**

The purpose of this study was to test the validity and reliability of the Turkish version of short form of Physical Self-Description Questionnaire (PSDQ-S) for 12-18 years old adolescents. PSDQ-S consists of 11 subscales with 40 items. The scale was developed by Marsh, Martin, and Jackson (2010) by selecting items from PSDQ long version. Two hundred and twenty-eight females ( $M_{age}=14.22$ ,  $SD=1.52$  years) and 262 males ( $M_{age}=14.05$ ,  $SD=1.62$  years), totally 490 adolescents ( $M_{age}=14.13$ ,  $SD=1.58$  years) participated in this study. We conducted confirmatory factor analysis (CFA) to test construct validity of the Turkish version of PSDQ-S and calculated Cronbach alpha coefficients to determine reliabilities of the sub-scales. The hypothesized model consisted of 40 observed variables and 11 latent variables. The hypothesized model resulted in good fit indices ( $\chi^2/df= 1.74$ , RMSEA = 0.039, SRMR = 0.054, NFI = 0.97, NNFI = 0.98 and CFI = 0.99). Standardized factor loadings ranged from 0.41 to 0.92 for the 11-factor model. These findings showed that the Turkish version of PSDQ-S had similar factor structure to the original scale's 11-factor structure. Internal consistency coefficients of the Turkish version of PSDQ-S subscales ranged from .69 (Self Confidence) to .90 (Sport Ability). It can be concluded that the Turkish version of PSDQ-S is a valid and reliable instrument to measure physical self of adolescents.

*Keywords: physical self, reliability, validity, adolescents*

### An experimental study of intermediate education mode of water safety of college student

**Hui Zhang, Rong Fan, Bin Wang, Shi Luo**

Introduction: Water safety education is one of the most efficient strategy to prevent drowning accidents. This study aims at college students who has mastered several swimming skills but with little water safety knowledge, self-saving skills and skills of saving the near-drowning. Intermediate education mode of water safety of college student is established according to the instructional objectives of "calm coping, skillful rescue". This study aims at examining the influence of the intermediate education mode of water safety of college student on college students' water safety knowledge, skill, attitude and behavior. Methods: 60 college

students are selected as participants. The experimental group and control group are randomly settled (each group is consisted of 15 female students and 15 male students). The experimental group is trained for 30 days under the instruction of intermediate education mode of water safety of college student, while the control group is trained by traditional instruction mode. 2×2×2 repeated measure mixed experimental design is applied. Experiment process (traditional swimming teaching mode and intermediate education mode of water safety) and gender (male, female) are between-subjects factor; measuring time (before, after). Results: There is no difference between the experimental group and control group in dimensions like water safety knowledge, skill, attitude and behavior before the experiment. After the experiment, the experimental group is significantly higher than control group in each dimensions; the delayed measurement (3 months after the water safety education) shows experimental group. Conclusion: (1) intermediate education mode of water safety may help improve college students' water safety knowledge, skill and attitude. It may also reduce water high-risk behavior. (2) the effect of intermediate education mode of water safety is sustained.

*Keywords: college students, the intermediate education mode of water safety, layer teaching, water safety skills, water high-risk practices*

## Development of Chinese athlete mental health scale

**Hui Li (Tianjin University of Sport)**

Up to the Dual-Factor Model of Mental Health, Chinese Athlete Mental Health Scale was developed from Common Mental Disorders and Positive Mental Characteristics.

Based on overviews of former researchers and the results of the open-ended questionnaire, 85 items were collected. The logical structure of athlete mental health was constructed by the exploring factor analysis of the 80 preliminary questionnaires and the confirmatory factor analysis of the formal scale given to 205 athlete, and Chinese Athlete Mental Health Scale was formed. At last, 40 subjects selected were retested 30 days later for the test-retest reliability Chinese Athlete Mental Health Scale was taken Reliability Analysis and Validity Analysis by many indexes.

Through above analysis, athlete mental health has two dimensional structures. They are Common Mental Disorders and Positive Mental Characteristics. Common Mental Disorders includes four factors; those are depression, hostility, anxiety and somatization. Positive Mental Characteristics includes three factors; those are strong will, social adjustment and Positive intelligence. The result of confirmatory factor analysis of Common Mental Disorders was indicated by  $\chi^2/df < 2$ ,  $GFI > 0.80$ ,  $CFI > 0.90$ ,  $RMSEA < 0.08$ ; The result of confirmatory factor analysis of Positive Mental Characteristics was indicated by  $\chi^2/df < 2$ ,  $GFI > 0.90$ ,  $CFI > 0.9$ ,  $RMSEA < 0.08$ . The Cronbach  $\alpha$  coefficient were 0.813 for Common Mental Disorders, and test-retest reliability coefficient were 0.918; The Cronbach  $\alpha$  coefficient were 0.615 for Positive Mental Characteristics and test-retest reliability coefficient were 0.971. Significant correlation ( $r = 0.3 \sim 0.8$ ) was appeared between Common Mental Disorders and SCL-90. Significant correlation ( $r = 0.2 \sim 0.8$ ) was appeared between Positive Mental Characteristics and Index of Well-being. Moderate related was present between each factor, and lower than with subscales. The scale can be regarded as fitting tool of estimating athlete mental health.

*Keywords: athlete mental health scale, common mental disorders, positive mental characteristics*

## The prediction of mindfulness on subjective vitality and athlete burnout among golfers: The mediating effects of basic psychological needs

**Hsin-Yun Chuang, Li-Kang Chi (National Taiwan Normal University)**

The relationship between mindfulness and well- and ill-being has been demonstrated to a great extent in prior studies. However, only few empirical researches explored the structure of mindfulness mechanisms

(Chang, 2015). Based on previous research, individuals' fulfillment of their basic psychological needs depends mostly on support from others, such as support from a coach in a sports team context (Adie, Duda, & Ntoumanis, 2008; Adie, Duda, & Ntoumanis, 2012). However, Chang, Huang, and Lin (2015) suggested that a possible way for individuals to fulfill their basic psychological needs is by enhancing mindfulness rather than depending on others. The fulfillment of basic psychological needs plays an important role in mediating the relationship between well-being and other antecedent variables. Therefore, based on Basic Psychological Needs Theory (BPNT; Ryan & Deci, 2000), the present study examined the mediating effect of basic psychological needs on mindfulness in predicting subjective vitality and athlete burnout. Participants were 97 golfers (54 males and 43 females). Their mean age and golf experience were 23.95 (SD = 8.46) and 10.45 (SD = 7.04) years respectively. Participants were asked to complete questionnaires which include The Five Facet Mindfulness Questionnaire, Basic Need Satisfaction Scale, Athlete Burnout Questionnaire, and Subjective Vitality Scale. The Bootstrap mediation analysis revealed that the association between mindfulness and subjective vitality was mediated by autonomy and relatedness. The association between mindfulness and athlete burnout, on the other hand, was mediated by competence and relatedness. In accord to the hypotheses, this study provides a potential way to achieve the fulfillment of basic psychological needs in golf training that could enhance golfers' subjective vitality and reduce the occurrence of burnout.

*Keywords: bootstrapping, well-being, ill-being*

### **Case study of chronic exercise effect on facial skin condition and subjective well-being**

***Dong-Seop Lee, Dong-Ho Lee, Hosang Yoo (Yeungnam University)***

The purpose of this case study was to investigate the effect of the 10 weeks of aerobic or combined exercise on facial skin condition and subjective well-being in college students. The study was conducted for 16 weeks (baseline 3 weeks, exercise intervention 10 weeks, exercise withdrawal 3 weeks) with two males and two females. One male and females participated in only aerobic exercise and the other male and female participated in combined exercise. The results of the Excel program showed that in the facial skin of all participants, the moisture content was increased and the sebum content was decreased in the exercise intervention stage compared to the baseline. The moisture content was decreased and the sebum content was increased at the exercise withdrawal stage. The positive affect which is a sub-factor of the subjective well-being was gradually increased while the negative affect was decreased over time after the exercise interventions. The life satisfaction, another sub-factor of the subjective well-being, was also found to be increased over time after the exercise interventions. In conclusion, both of aerobic and combined exercise had positive effects on the skin health and the subjective well-being that were not directly correlated.

*Keywords: single case study (ABA), aerobic exercise, combined exercise, facial skin condition, subjective well-being*

### **Dance program using kinect for education purpose affects body expression of children with intellectual disabilities**

***Hong Sunghee (Shinhan University)***

The purpose of this study was to design and implement educational dance program using Kinect through body movement of children with intellectual disabilities and to investigate whether children with intellectual disabilities have more influence on body expressions as the utilization of program was higher. The participants of this study were 32 children with intellectual disability, and the period was 5 days from December 20 to December 24, 2016. Educational dance program using Kinect included two songs translated into Korean with the musical "Les Miserables" story and 40 kinds of body expressions (body expressions without movement) that are based on movements of Laban. These body expressions were made with the skeleton body position

and it is possible to control the difficulty of various movements. If body motion is recognized in motion recognition, it will be appeared as correct answer but if not, then it will be appeared as incorrect answer. The program was set to show body expressions randomly for 3 minutes. For the evaluation method, the number (score) of motion recognized as correct will be displayed on the background of screen with sound effect. This study was conducted that when the body motion is presented, the motion of the participant appears with music using the chromakey technique in which motion of participants appears on the screen through the camera. Participants who saw this became more aggressive and showed a willingness to move correctly. Accordingly, this study shown that the educational dance program using Kinect can help children with intellectual disabilities to become more confidence with courage and willingness to express their body expression to people close to them. Based on this study, the program mitigates disadvantages of old education method of body expression. Finally, this study suggests that various dancing programs for education purpose should be developed continuously.

*Keywords: children with intellectual disabilities, movement physical activity, Kinect program*

### Isotropy bias remains regardless of experienced levels in amateur tennis players

**Hiroyuki Yamamoto, Masahiro Shinya, Kazutoshi Kudo**

Knowing own motor variance is important for motor decision making. Previous studies showed isotropy bias of endpoints (estimation of circular distribution) in reaching task. Therefore, we investigated whether the bias remains in tennis players for the ball landing positions of forehand strokes (Exp1) and whether the participants could estimate 95 % confidence interval from the random Gaussian distribution (Exp2) to test whether the bias comes from the recognition of trial-by-trial error and/or estimation of confidential ellipse from the distribution. Tennis players ( $n=31, 5.45 \pm 5.17$  yrs. of tennis experiences) participated in Exp1. The participants estimated variability in 50 landing positions by setting parameters of the distribution (SD in x and y axes and correlation coefficient) on Graphical User Interface that display the compacted tennis court and varying Gaussian dots in accordance with the parameters. Then, they hit forehand strokes fed by a ball machine. We compared the eccentricity of the ellipse calculated from estimated and observed landing positions. We analyzed the relationships between error indexes (AE, VE, CE) and the degree of the biases. The eccentricity was smaller in the estimated ellipse than in the observed ellipse ( $t(30)=10.14$ ,  $p.05$ ). These results show isotropy bias remains regardless of experienced levels for the amateur tennis players. In Exp2, participants in Exp1 ( $n=9$ ) estimated confidence interval ellipses for displayed Gaussian dots. The eccentricity was smaller in estimated ellipses than in the ellipses for the displayed dots ( $t(8)=3.98$ ,  $p < .01$ ). However, the eccentricity was smaller in the estimated ellipses in Exp1 than in the estimated ellipses in Exp2 ( $t(8)=4.58$ ,  $p < .01$ ). Overall, we found the isotropy bias includes the bias of recognizing landing position and the bias of estimating confidential ellipse from the recognized landing position.

*Keywords: decision making, cognitive bias, motor control, motor variance, estimation of variance*

### Using floor sign to promote physical activity in Japanese women's University

**Hiroshi Matsumoto (Mukogawa Woman's University), Junichi Nishida (Kindai University)**

Physical activity contributes to better health but most young Japanese women do not pursue physical activities at recommended ages. This study aimed to investigate the effectiveness of floor sign as an environmental sustainability intervention to encourage the use of stairs instead of elevators. For this purpose, we monitored the use of stairs at a women's university in Japan. A baseline period of two weeks was followed by an intervention period of three weeks, using motivating messages on the floor sign. Post-intervention data was gathered two weeks after removing the messages. The floor sign featured the message "You can change yourself and save the earth. Take the stairs!". Observation of stair use were made 24 hours by a counting

machine four days a week. During the study, 12,247 observations were made regarding the individuals who used stairs at the university. The results of the study indicated that the use of stairs increased significantly during the intervention period when the floor sign encouraging stair use were positioned at the point of choosing to use either the stairs or the elevators. The use of stairs escalated extensively between the baseline and the intervention period (+10.5%,  $\chi^2(1) = 8.22$ ,  $p < 0.01$ ). Moreover, statistically significant increases were noted during the post-intervention period compared with the baseline period (+23.3%,  $\chi^2(1) = 38.32$ ,  $p < 0.01$ ). To conclude, this intervention method was effective in encouraging physical activity in the form of the use of stairs among young Japanese women attending universities.

*Keywords: physical activity intervention, motivational sign, stair use, young Japanese women*

## Qualitative study of the process of adapting to different cultures in Japanese soccer athletes and coaches

**Hideaki Takai**

In recent years, there has been an increase in the number of athletes and coaches that aim to increase their competitive standard by moving their training centers to countries overseas where sports are well developed. At the same time, a great many of these athletes and coaches need psychological support because they are unable to adapt to the changes in living environment encountered overseas. In the present study, a qualitative investigation of the process by which Japanese soccer athletes and coaches adapt to different cultures was carried out, with the aim of developing a psychological support program for Japanese soccer players and coaches in a different cultural environment. The subjects were 6 male Japanese players and coaches in the German soccer Bundesliga. Data for the study were collected by interviews. The questions were a combination of three types: main questions, follow-up questions, and probes. The data were analyzed by a researcher specializing in sports psychology, a Bundesliga coach, and a specialist in clinical psychology. The Grounded Theory Approach was used for analysis. The results showed that language acquisition was the most important issue for Japanese soccer athletes and coaches during the initial period of their stay in Germany. At the same time, understanding and receptiveness toward foreign culture was a requirement for the cultural adaptation of Japanese athletes and coaches. Subsequently, as their stay in Germany lengthened, it became clear that there was a heightened importance attached to understanding and receptiveness toward Japanese culture. In addition, regardless of their length of stay, Japanese athletes and coaches recognized the diligence of Japanese people and sensitive concern as strong points. Furthermore, having devotion toward one's team, which is an interdependent construal of self, may be regarded as a psychological trait that allows Japanese athletes and coaches to perform at world level.

*Keywords: cultural view of self, interdependent construal of self, soccer*

## The role of teachers' controlling behaviour in physical education on adolescents' health-related quality of life: A test of conditional process model

**Henri Tilga, Vello Hein, Andre Koka (University of Tartu)**

The potential benefits of teachers' autonomy support in physical education (PE) for students' need satisfaction are well established. Still, students may also experience need frustration due to teachers' controlling behaviour. Several previous studies indicate that controlling behaviours are not the conceptual opposite of autonomy supportive behaviours. That is, individuals in a position of authority may simultaneously use a variety of autonomy supportive and controlling behaviours in various extents. In current study our main aim was to examine the indirect effect from controlling behaviour to health-related quality of life (HRQoL), mediated by the interaction of perceived need frustration and teachers' autonomy support in PE context. Therefore, we proposed and tested a conditional process model of students' self-reported HRQoL based on



Self-determination theory. Participants completed a questionnaire that included measures of perceived teachers' autonomy support, perceived teachers' controlling behaviour, perceived need frustration and perceived HRQoL. Results from a sample of 1031 secondary school students showed that the relation between the perceived teachers' controlling behaviour and students' HRQoL was fully mediated by students perceived need frustration in PE classes. This result provides support to argumentation that need frustration might be that "dark" pathway, which is activated by teachers controlling behaviour and results in students' need frustration. In accordance with our hypothesis, the indirect relation between controlling teacher behaviour and HRQoL, mediated by students perceived need frustration, was moderated by autonomy support from teachers, such as that the mediation was evident among all levels of autonomy support. These results emphasize the importance of minimizing teachers' controlling behaviour and increasing teachers' autonomy supportive behaviour in regarding to promote students' HRQoL.

*Keywords: controlling behaviour, autonomy support, need frustration, health-related quality of life, self-determination theory*

### Physical activity positively associated with psychological well-being and loneliness in finnish population sample

**Henna Hukkanen, Pauliina Husu, Kari Tokola, Tommi Vasankari**

Aim of the study was to investigate whether self-reported physical activity (PA) is associated with psychological well-being and loneliness in Finnish population sample. Participants of the Regional health and well-being study (ATH) completed health and well-being questionnaires including questions of PA (light, moderate, vigorous, muscular strength and balance training), psychological well-being (depressed mood and loss of interest) and loneliness. Odds ratios (OR) and 95% confidence intervals (CI) were obtained from survey-weighted generalized linear models adjusted for sex, age, body mass index, marital status, education years, working hours, employment status, smoking, alcohol use and sitting time. A total of 79565 adult participants (mean age 47-y, 51% women) took part of the study. Half of the participants did not meet any part of the health-enhancing physical activity (HEPA) recommendation (aerobic, muscle strength or both). Depressed mood and loss of interest were equally common (20%) among the participants and 9% had felt loneliness often. Meeting at least one part of the HEPA recommendation decreased the probability to report depressed mood (OR 0.80-0.87,  $p < 0.01$ ) and loss of interest (OR 0.67-0.80,  $p < 0.001$ ) compared to those who did not meet any part of the HEPA recommendation. Furthermore those who met either muscular strength recommendation (OR 0.80, CI95% 0.69-0.93,  $p = 0.003$ ) or full HEPA recommendation (OR 0.71, CI95% 0.60-0.84,  $p < 0.001$ ) were less likely to rate loneliness compared to those who did not meet any part of HEPA recommendation. In conclusion, meeting HEPA recommendation fully or partly indicates positive association to psychological well-being and loneliness. Even so we must notice that these results did not reveal causality of the association and thus the interpretation must be done with caution. In the future, there is a need for longitudinal studies to investigate the causal relationship of PA to psychological well-being and loneliness.

*Keywords: physical activity, psychological well-being, loneliness, questionnaire*

### Maximal handgrip strength and its control in judo athletes before and after training session

**Henrique Rodrigues Nunes, Luis Felipe Tubagi Polito, Douglas Popp Marin (Universidade Metodista do Estado de São Paulo - UMESP), Carla Giuliano de Sá Pinto Montenegro (Hospital Israelita Albert Einstein), Luciane Aparecida Moscaleski, Simone Inácio de Lima (Universidade Municipal de São Caetano do Sul), Helton Magalhães Dias (Universidade São Judas Tadeu), Yago de Moura Carneiro (Universidade Metodista do Estado de São Paulo - UMESP), Aylton José Figueira Júnior, Maria Regina Ferreira Brandão, Marcelo Callegari Zanetti (Universidade São Judas Tadeu)**

Judo is a combat modality classified as domain fight involving projections and immobilizations. During the Judo combat, the athletes should unbalance its opponents, pushing or pulling them. In this way, the athletes need have the perception of the applied strength magnitude. In scientific literature there is knowledge about the maximal handgrip strength, but there isn't much information about of the strength control.: To evaluate the maximal handgrip strength and the strength control capacity in Judo athletes. Thirteen judo athletes volunteers were evaluated ( $24.14 \pm 7.5$  years;  $1.70 \pm 0.1$  m;  $75.69 \pm 16.73$  kg). Handgrip evaluation and 50% of the maximal handgrip strength calculated (C) and performed (P) of both hands (dominant and non-dominant ones) were performed a CROWN® manual dynamometer immediately before and after the training session. Wilcoxon Test for paired samples (pre and post comparison) and Mann-Whitney Test for unpaired samples (comparison between the calculated and performed) were used ( $p < .05$ ). : In the pre-test, the following Handgrip Strength value(Kgf/kg) were found for: 100%(D)= $58 \pm 15$ ; 100%(ND)= $54 \pm 16$ ; 50% C(D)= $29 \pm 7^*$ ; 50% C(ND)= $27 \pm 8^*$ ; 50% P(D)= $36 \pm 14^*$ ; 50% P(ND)= $37 \pm 12^*$  In the post-test: 100%(D)= $63 \pm 18$ ; 100%(ND)= $60 \pm 25$ ; 50% C(D)= $31 \pm 9^*$ ; 50% C(ND)= $30 \pm 12^*$ ; 50% P(D)= $32 \pm 10^*$ ; 50% P(ND)= $32 \pm 8^*$  The Judo athletes showed a good strength control for dominant hand before the training and a good strength control for both hands after the training. Perhaps, the training session and the technical skills that occurred during the training stimulated the nervous system about the perception of strength on non-dominant hands. However, the dominant hand seems to have good control level due the most use of this hand during the fights. More studies are necessary to understand the strength control in different martial arts and for this is necessary an ecologically validated protocol to evaluate handgrip performance in Judo athletes.

*Keywords: judo, handgrip strength, strength control*

## **Coping rarely takes place in a social vacuum: The antecedents and outcomes of dyadic coping in coach-athlete relationships**

**Helen Staff, Faye Didymus, Susan Backhouse (Leeds Beckett University)**

Advances in coping literature suggest that individuals do not always manage stressors alone. Instead, they manage these demands by using their close personal relationships as a way of pooling appropriate coping resources and, thus, employing dyadic coping strategies. Despite the potential importance of dyadic coping for coach-athlete relationships, the topic is yet to be qualitatively explored in sport. Therefore, the aim of this study was to use qualitative method to explore antecedents and outcomes of dyadic coping within coach-athlete relationships. Using individual and dyadic interviews, the coping experiences of five coach-athlete dyads were explored. The exploration of both coaches' and athletes' experiences provides an opportunity to see how individuals in close working relationships form meaning and understanding through the social world. Interviews were analyzed using dyadic analysis and vignettes were used as a means of presenting the data. Four key themes that were prevalent throughout the data set were identified: (a) the lock and the key, (b) friendship and trust, (c) communication of the stressor, and (d) protection and support. The first three themes represent antecedents of dyadic coping. The fourth theme encompasses the positive nurturing environment that was discussed as an outcome of dyadic coping processes. This study advances knowledge of coping in sport by highlighting coping as an interpersonal process, rather than an individual phenomenon. The results of this study extend current research by examining antecedents and outcomes of interpersonal coping in sport. Dyadic coping processes were prevalent in adaptable coach-athlete relationships that involved elements of trust and friendship. Dyadic coping appears to have implications for relationship satisfaction and psychological well-being.

*Keywords: communal coping, intimate relationships, relational coping, social support*

## **“You’re gonna win and you’re gonna win it easy”: World-class athletes’ experiences of media expectations**

**Helen Heaviside, Andrew Manley, Susan Backhouse, Faye Didymus (Leeds Beckett University)**

Speculation about athletes who are expected to become champions is a central focus of media reporters’ attention before major sporting events (e.g., Heaviside, Manley, Backhouse, & Didymus, 2015). Despite the prominence of such expectations within media reports, little is known about the consequences they can have for the athletes to whom they refer. This study aimed to explore the consequences of these expectations by using in-depth qualitative methods to capture athletes’ experiences of performance expectations that are reported by the media. Guided by the first author’s pragmatist perspective, semi-structured interviews (78-128 minutes) were conducted with two athletes (Mage = 23, SD = 2.83 years) who met the criteria of: (a) having performance expectations reported in the media ahead of the London 2012 Games and (b) representing Great Britain within individual events at London 2012. The small sample size was purposefully chosen to facilitate rich and nuanced accounts of the athletes’ experiences. Two portrait vignettes were used to represent the data because they allow experiences to be represented in a meaningful and accessible manner (e.g., Erickson, Backhouse & Carless, 2016). The vignettes detailed cognitive, affective, and behavioural consequences of performance expectations that were constructed and reported by the media. The vignettes also represented coping strategies that were used by the athletes to manage these expectations. The findings of this study enhance understanding of multiple factors: (i) behaviours associated with media expectations that journalists might display towards athletes; (ii) cognitive, affective, and behavioural consequences that athletes may experience when faced with media expectations; and (iii) strategies that athletes have used to manage media expectations. By using vignettes, the present study exemplifies an alternative way of presenting data regarding expectations, which other researchers in this area may wish to utilise.

*Keywords: pressure, coping, expectation formation, fear of failure*

## **Psychological well-being and off-field needs of professional male South African sevens rugby players**

**Ninette Steenkamp, Heinrich Grobbelaar (Stellenbosch University)**

Rugby (in the popular sevens format) was included in the 2016 Rio Olympic Games for the first time since 1924, with South Africa’s Blitzboks winning bronze. They have also been runners-up of the annually contested World Rugby Sevens Series for the past four seasons. Whilst peak performance is paramount at this elite level there is a growing responsibility to address the psychological well-being and off-the-field needs of players both during and after their playing careers. The primary aim of a larger study was to analyse the perceived demands (physical, technical, logistical, psychological) of rugby sevens held by professional players from South Africa. This poster specifically explored the participant’s psychological well-being and off-the-field needs. Twenty professional sevens players (age: 21-33 years, number of international tournaments: 0-68) participated in semi-structured interviews (average duration: 40 minutes) conducted by the leading author. Six main themes emerged from the thematic content analysis: 1) preparation for life after rugby (e.g., shared responsibility, career guidance, mental help), 2) financial concerns (e.g., earning less than 15’s players, better financial advice, earlier contracting), 3) further studies (e.g., funding, options to further education, extra time required), 4) player well-being (e.g., more family time, mentorship needs), 5) physical needs (e.g., individualised training, diets, supplementation), and 6) professionalism and boundaries (e.g., greater exposure, keeping outsiders out, media training). This information together with the perceived physical, technical, logistical and psychological demands of the game will be used to develop an integrated sport psychological and well-being programme aimed at improving the individual and team performance of developing and elite players within the South African sevens rugby structures, as well as facilitating their psychological well-being.

*Keywords: perceived demands, developmental pathways, career termination*

### **Participation in physical activity and sport: Developmental pathways and experiences of elite male South African athletes with cerebral palsy**

**Liza Willemsen, Heinrich Grobbelaar, Jason Bantjes (Stellenbosch University)**

Physical disabilities tend to impact activity levels and sport participation negatively. Information on the experiences of elite disabled athletes (including those with cerebral palsy (CP)) is scarce. The aim was to explore the developmental pathways of five elite male South African athletes with CP. Semi-structured interviews were conducted with four track athletes (class T37-T38) and one cyclist (class C3), aged 20 to 29. Three main themes emerged from the interpretative phenomenological analysis: (1) their pathways in becoming elite athletes, (2) the role of their faith, and (3) identity and acceptance of their disabilities. The participants described common pathways; they were introduced to organised school sport in an able-bodied environment where they did not identify themselves as being disabled. This resulted in an 'extra push' to train harder in order to keep up with their able-bodied peers, seemingly playing an important role in their journeys towards becoming elite athletes. Their introduction to disability sport typically occurred during mid to late adolescence, which, in most cases, facilitated their acceptance of their disabilities. They became more successful, which portrayed strength and ability, in contrast to the stigma that disabled individuals are dependent and weak. Competing and performing in disabled sport helped them to find purpose in their disabilities, with their faith in God identified as a key factor. This information could contribute to the development of strategies aimed at increasing activity levels among disabled individuals and optimising their transitions from youth sport to elite competition.

*Keywords: disability sport, transitions, identity*

### **Evolution of the teacher's leadership and their level of self-determined motivation throughout the academic year**

**Héctor Moreno-Casado (University of Extremadura), Ricardo Cuevas-Campos (University of Castilla-La Mancha), Miguel Rodríguez-González, Juan José Pulido (University of Extremadura)**

Based on the Self-Determination Theory (SDT) and the Transformational Leadership Theory (TLT), the objective of this research was to know the evolution of variables such as leadership, level of motivation and the burnout syndrome in the teachers of secondary education throughout an academic year. For this purpose, 27 Spanish teachers (men=21; women= 6) of Physical Education of Compulsory Secondary Education, with an average of 12.7 years of working experience participated. Meeting the ethical criteria established, three measures were carried out throughout the same academic year. After carrying out a multivariate analysis of repeated measures, the results did not show meaningful differences in the analysed variables. Specifically, the transformational leadership and the professional efficiency increase lightly in the measure 2 in relation to the measure 1 and they drop again in the measure 3. As for the transactional leadership and laissez-faire, we notice a progressive drop between the measure 1 and the measure 2 and between the measure 2 and the measure 3, respectively. The autonomous motivation, controlled, demotivation and organization show an increase taking into account the three measures carried out throughout the academic year. Finally, the emotional exhaustion and cynicism drop in the measure 2 regarding the measure 1, however, they show a moderate increase in the measure 3. These results show that there are oscillations which must be considered and studied in the future with a more representative sample with the purpose of being able to generalise the data obtained.

*Keywords: academic year, teenagers, physical education, burnout*

## Characteristics of event-related potentials for open-skilled players during mental rotation task

**Haruo Sakuma, Sayaka Matsumoto, Shingo Imagawa (Ritsumeikan University)**

Open-skilled sports players are asked at every moment to perceive and response rapid situational changes faster and more accurately. Therefore, such cognitive skills are considered components of the competitive level, and cognitive skills should be assessed to provide effective instruction when coaching athletes. Several psychological operations are thought to play a role in athletes' cognitive process, of which one is mental rotation. We aimed to determine the underlying cognitive process of the skill in open-skill athletes by using rotation-related negativity (RRN), which is an event-related brain potential (ERP) elicited by mental image rotation. Skilled ice hockey players (athlete group) and non-athlete controls performed the mental rotation task by using letters from the alphabet with simultaneous electroencephalography (EEG) recording. We calculated the percentage and mean reaction time of the correct responses, and the mean amplitude of the time window when RRN was considered to have appeared, separately for smaller- and larger-angle conditions of the stimulus rotation. The athlete group responded less accurately but faster than the control group, indicating that open-skill athletes prioritized speed over accuracy. No significant group difference in RRN amplitude was found between the athletes and controls, although RRN was observed in most participants when the rotation angle of the stimulus was larger. Significant positive correlations were found between the RRN amplitude at each electrode and the change in the percentage of correct responses, which were calculated by subtracting the value in the smaller-angle condition from that in the larger-angle condition. In addition, the player position seemed to have affected the distribution of the athlete group in the scatter plots, suggesting that the goal keepers tried to maintain their accuracy, whereas the other field players prioritized making faster responses.

*Keywords: ERP, mental rotation, open-skilled*

## Leisure-time physical activity levels and the correlation with physical activity self-efficacy in Chinese university students

**Hao Liu (Shenzhen University, P.R. China)**

There is a high prevalence of sedentary habits in Chinese university students, even though they know these benefits of taking part in regular physical activity (PA). In this study, the leisure-time PA levels and its correlation with PA self-efficacy in Chinese university students are investigated. Totally 365 (200 male and 165 female) students from two universities in Shenzhen China take part in this investigation voluntarily (age: 17-23,  $M = 19$ ,  $SD = 3.1$ ). The leisure-time PA is measured using the short form version of the International Physical Activity Questionnaire (IPAQ, Chinese version); the PA self-efficacy is assessed by a scale consisting of a subscale to overcome external barriers (self-efficacy – external) and a subscale to overcome internal barriers (self-efficacy – internal)[1]. The total PA score (MET-min/week) of the male is 3082.30, with 35 students have low PA level ( $< 600$  MET-min/week), 115 students have moderate PA level ( $> 600$  and  $< 3000$  MET-min/week), and 50 students have high PA level ( $> 3000$  MET-min/week). The total PA score of the female is 2130.82, with 40 students have low PA level, 100 students have moderate PA level, and 25 students have high PA level. The result of a two-way contingency analysis to test differences in the PA levels between the female and males is  $\chi^2 = 58.62$ ,  $p < .001$ . The multiple regression analysis is used to test the predictor ability of self-efficacy for leisure-time PA. For the self-efficacy – external,  $r^2 = .13$ ,  $p < .01$ ; for the self-efficacy – internal,  $r^2 = -.20$ ,  $p < .05$ . In conclusion, results of the present study shows that (1) The leisure-time PA level of Chinese female university student is lower than that of male university students; (2) the PA self-efficacy is a reliable predictor for Chinese university students. [1] Dwyer, J. J. M., Chulak, T., Maitland, S., et al. (2012). Adolescents' self-efficacy to overcome barriers to physical activity scale. *Research Quality for Exercise and Sport*, 83, 513-521.

*Keywords: physical activity, self-efficacy, outcome expectation, Chinese university students*

## **Contextual factors influencing decision-making: Perceptions of professional soccer players**

**Hannah Levi (St Mary's University)**

To date, decision-making research has predominantly used a reductionist approach to examine each perceptual-cognitive skill in isolation, with a stronger emphasis on experimental control than ecological validity (Williams, 2009). However, with such unpredictability in sport, it has been argued that it is essential that studies begin to consider the behavioural interaction between performers and the real-life sport environment during successful performance to gain a deeper insight into understanding decision-making in sport (Travassos et al., 2013). In beginning to address this shortcoming, this study explored professional soccer players' perceptions of how match-dependent contextual, or situational factors influence decision-making in soccer. Eight professional male soccer players aged between 18 and 22 participated in individual semi-structured interviews. The interviews were recorded, transcribed verbatim and the data were analysed via an inductive thematic analysis. The following themes were identified from the data: (a) confidence (sub-themes: personal performance, winning, momentum), (b) communication (sub-themes: coming from behind, weaknesses, unfavourable communication), (c) situational pressures (sub-themes: match importance, personal pressure), and (d) preparation. This study recognises the involvement of contextual factors in soccer players' decision-making during a match. In line with previous findings, the results revealed that the situational development of the match impacts their decisions. Furthermore, the players suggested a unique finding that external contextual factors were also involved in their ability to make decisions on the pitch. The present study provides preliminary support for practical implications for soccer coaches and players.

*Keywords: context, decision-making, soccer, sport*

## **The effectiveness of group acceptance and commitment therapy for psychological outcomes among collegiate archers**

**Hanako Fukamachi, Kaori Ishii (Waseda University), Hirokazu Arai (Hosei University), Koichiro Oka (Waseda University)**

Several previous studies have adapted the Acceptance and Commitment Therapy (ACT) for performance enhancement among competitive athletes (Little & Simpson, 2000; Ruiz & Luciano, 2012). The ACT was also found to be associated with decreased depression and anxiety among waitlist students (Levin et al., 2014). Nevertheless, the group ACT intervention has not yet been examined in the sports field. Therefore, this study aimed to examine the effectiveness of group ACT protocol for psychological outcomes among collegiate athletes. The participants were 11 collegiate archers. Intervention was carried out over 8 sessions (about 60 minutes/session). The "psychological competitive ability" (Tokunaga, 2001) was used as the performance related outcome. The health related outcome was measured using the Center for Epidemiologic Studies Depression Scale (Shima, 1985). Assessments were conducted at the baseline (T1), before the intervention (T2), after the intervention (T3), and 3 months follow-up (T4). Using a range of ACT exercises, the participants were able to gain an experiential understanding of the problem of experiential avoidance to set a small goal, and to identify how to achieve it based on values and committed actions. Since we had the same participants across four trials (without having control groups), the repeated-measures ANOVA test was used to examine whether performance and health related measures were improved over the course of treatment. The ACT was found to have an effect on psychological competitive ability from T1 to T3 and T4 ( $F(3, 30) = 16.27, p < .001$ ), and an effect on mental health from T1 to T3 and T4 ( $F(3, 30) = 3.93, p < .05$ ). These findings suggest that the group ACT intervention may improve collegiate athletes' psychological outcomes. However, the contribution of each



intervention is not clear. Future studies using a randomized-control trial are necessary to identify the most effective intervention for psychological outcomes.

*Keywords: mindfulness, group intervention, archery, performance enhancement, mental health, collegiate athletes*

### Development of mental toughness scale for elite swimmers

**Hanae Ito (Juntendo University), Kai Yamada (Hosei University), Hiroaki Funahashi, Isao Uebayashi, Yoshiyuki Mano (Waseda University), Masataka Hirokawa (Juntendo University)**

The purpose of this research was to develop a swimmer-specific mental toughness inventory. In the pilot survey, semi-structured interviews were conducted with 7 Japanese individual sports Olympic medalists (4 males, 3 females) in order to identify the characteristics of elite swimmers' mental toughness using a qualitative analysis method, the KJ method, considering higher- and lower-order structures. In the main research, a questionnaire regarding mental toughness was conducted on 254 swimmers (151 males, 103 females) who met the finishing time set by the Japan Swimming Federation with the purpose of enhancing swimmers' competitiveness (assumed as elite swimmers in this study). The development of a swimmer-specific mental toughness inventory was attempted using a questionnaire developed by extracting swimmers' mental toughness characteristics revealed in the pilot survey. After excluding defective answers, 194 (117 males, 77 females) samples were included in analysis. Exploratory factor analysis indicated that the inventory consisted of five factors and three items. After scrutiny of what constituted the extracted five factors, they were named the following: "Fortitude," "Commitment to the Sport," "Psychological Conditioning," "Self-control," and "Resilience." Exploratory factor analysis was once again conducted through the maximum-likelihood method and Promax rotation and confirmed internal validity. Conversion validity and divergent validity were examined, both of which adequately fulfilled the Goodness of Fit Index and standard path coefficient. Finally, adequate criterion-related validity was verified using correlation analysis with DIPCA.3. The factors of mental toughness in elite swimmers were similar to those in other sports. Japanese elite swimmers' mental toughness characteristics were identified and a swimmer-specific mental toughness inventory was developed. This scale will be useful for coaches to understand Japanese elite swimmers' mental toughness.

*Keywords: mental toughness, swimming, japanese*

### Comparison of anxiety, motivation and imagery scores of professional football players

**Hakan Kolayis, Nurullah Celik (Sakarya University)**

The purpose of the study was to compare the anxiety, motivation and imagery scores between The Turkish Super League and First League professional football players. The research group comprised of totally 129 professional football players who play in the Turkish Football Federation (TFF) Turkish Super League (Xage: 25,44±4,11 years) and First League (Xage: 23,80±4,33 years). The participants participated in the study voluntarily. As a measuring tool, Competitive State Anxiety Inventory (CSAI-2), Sport Imagery Questionnaire (SIQ) and Sport Motivation Scale (SMS) was used in the study. In the analysis of data, frequency and percentage distribution calculations and Independent samples t test was used. The statistical analysis was done by SPSS 16 packet program. According to the findings, statistically significant differences were found in somatic anxiety, intrinsic motivation to experience stimulation, identification and introjection sub-dimensions regarding league levels (p<0.05). It was clearly revealed that predictive imagery skill significantly explained all kind of motivation through the predicted intrinsic motivation, extrinsic motivation and amotivation sub-scales. In the light of the findings of the study, using imagery skills increased the willingness of football players to show their behaviours in a self determined way.

*Keywords: anxiety, imagery, motivation, football*

## The relationship between Galvanic Skin Response (GSR) and positive psychological states of elite athletes

**Hakan Kolayis, Nurullah Celik (Sakarya University)**

The purpose of the study was to examine the relationship between Galvanic Skin Response (GSR) and positive psychological states of elite athletes. The research sample consists of 46 elite athletes (Xage:17,70±2,76) aged between 13-24. As measuring tools, a personal information form, "Abbreviated Proactivity Scale" (Akin et al., 2011), "Subjective Vitality Scale" (Akin et al., 2012), "Flourishing Scale" (Akin and Fidan, 2012) and "Subjective Happiness Scale" (Akin, 2011), which included positive psychological states in the study, were used. ProComp Infinity 5 biofeedback device was used to get skin conductance values. Just after the scales were filled in by participants, the lowest galvanic skin values values from the Procomp Infiniti device was used in the analysis. In addition, descriptive statistics and Pearson correlation analysis was used in the study. The statistical analysis was done through SPSS 16 packet program. According to the findings, negative significant relationship was found between skin conductance values and the scores of flourishing scale ( $r=-0.293$ ;  $p=0.048$ ). on the other hand, no significant relationship was observed between skin conductance values and the scores of proactivity ( $r=-0.054$ ;  $p=0.723$ ), subjective vitality ( $r=-0.053$ ;  $p=0.726$ ), and subjective happiness ( $r=0.230$ ;  $p=0.123$ ) scales. As a result, negative relationship was observed between skin conductance values and positive psychological well-being states. It can be concluded that the psychological well-being levels of athletes increase as the skin conductance levels decrease.

*Keywords: proactivity, vitality, happiness, galvenic skin response*

## Grit, perfectionism and flow among university gold medalists: Implications for performance enhancement

**Dr. Guneet Inder Jit Kaur (Department of Psychology, Jain University (J.C. Road), Bangalore, India)**

Positive psychology has helped to consolidate, lift up and celebrate human strengths, define what makes life worth living, as well as carefully delineate the areas where there is a need to know and do more. One such area, which involves the study of human flourishing and psychological growth is excellence, which thus becomes an essential area to explore. The endeavour of the present study was to examine the role of grit, perfectionism and flow among sports excellers. For this purpose, 100 (73 males and 27 females) university gold medalist athletes within the age range of 20 -26 years, were selected from three universities-Panjab University (Chandigarh), Punjabi University (Patiala) and Guru Nanak Dev University (Amritsar) (Punjab state of India). The objective of the current research was to see if Grit, Perfectionism and Flow were efficacious predictors and if they were positively related to each other in this sample of sports excellers. Results revealed that grit, perfectionism and flow were positively related to each other in the sample. Furthermore, perfectionism came out as a strong predictor of both grit and flow and more importantly, the females outdid the males in terms of being in possession of most of these psychological attributes.

*Keywords: sports excellence, grit, flow, perfectionism*

## Risk taking in chess: The relationship between an opponent's playing strength and settling for a draw

**Guillermo Mendoza (Universidad de Malaga)**

In chess tournaments, after any move of a game both players can agree to end the match in a draw. That decision can be made by taking more factors in consideration than just the actual position itself. One important factor, is the amount of risk that players are willing to take. While playing against a stronger opponent, accepting a draw can be considered a safer decision than continuing to play regardless of better position on the

chessboard. The present study, analyzed all the 793 games at the 41th Chess Olympiad that finished in a draw. We used the software Stockfish 21 for the chessboard analysis in order to get a score that determines who had a better position and therefore a better chance of winning. Thus, the objective was to analyze if the ranking (ELO) difference between players has a relationship with the Stockfish score at the end of the game. The result shows a significant negative correlation between those two variables. The more ELO points one player had over the opponent's, the worse was the Stockfish score relative to his position at the moment of the draw agreement and viceversa. These findings suggest that chess players are less eager to take risks while facing a rival with a ranking that is perceived as stronger, accepting a draw even with a better chance to win. Our discussion focused on the perception of dominance, in this case represented by the ELO ranking, and how affects the decision making process in chess players.

*Keywords: risk-taking, decision-making, chess, dominance*

### **Coping with permanent loss of physical ability and involvement in competitive sport: A qualitative analysis of experiences of Polish elite wheelchair rugby players**

**Grzegorz Wieclaw, Marzena Śniarowska-Tlatlik (University of Social Sciences and Humanities, Katowice, Poland)**

It is generally assumed that sudden loss of physical ability due to injury, disease or medical mistake influences all aspects of human functioning. It is a significant crisis-type situation that requires physical, environmental and socio-psychological adaption to new life circumstances. Although coping with permanent loss has been of interest to general psychology for some time now (e.g., Kübler-Ross, 1969), it is relatively novel to sport psychology. In the available literature on the matter, involvement in sport is considered an important adaptation factor that correlates with positive rehabilitation outcomes (Nash, 2005), resilience response (Machida et al., 2013) and a higher quality of life (Sikorska, 2014). However, the existing research has been mostly conducted in English speaking countries (e.g., Dunn & Brody, 2008). Furthermore, it has barely taken into consideration the subjective sporting experiences of athletes with acquired disabilities (White et al., 2008). In order to truly understand the role of sport in the process of coping with permanent loss of physical ability, we have set to explore the meaning given to these experiences by the athletes themselves. This study adopted a qualitative methodology. The data was collected using semi-structure interviews. The participants (N=12) were chosen with purposive sampling according to two criteria: (a) permanent loss of physical ability, and (b) current status of playing wheelchair rugby at an elite level for the Polish national team. The analysis was conducted according to the Interpretative Phenomenological Analysis (IPA) protocol (Smith et al., 2009). In the preliminary results four superordinate themes emerged from the data focusing on physical, psychological, social and existential role of involvement in competitive sport after permanent loss of physical ability. These results are discussed in detail in the light of the existing literature. Implications for further research and applied work are given.

*Keywords: permanent loss, coping, resilience, disability sports*

### **Identify psychological predictors of primary school teachers' motivating style and time allocated to physical education**

**Geraldine Escrivá-Boulley, Damien Tessier Philippe Sarrazin (Laboratory SENS)**

Physical education (PE) contributes to adoption of active lifestyle and well-being when practiced during childhood. However, sometime PE teaching could not be able to reach these benefits. Indeed, less than 10% of primary school teacher reach 150 minutes of PE prescribed by academic authorities (i.e., Burgeson et al., 2003). Additionally, they use motivating style that seems to thwart students' psychological needs (i.e., low structure and highly controlling; Haerens et al., 2013). According to self-determination theory (SDT ; Deci & Ryan, 2002),

students' engagement is all the more important and lasting longer as teachers' motivating style satisfies their psychological needs for competence, involvement and autonomy. Pressures felt, motivation and self-efficacy could be responsible for teachers' motivating style (Reeve, 2009). Among these psychological factors the aim of this study is to identify predictors of (1) time allocated to teach PE and (2) teachers' motivating style. Participants were 190 primary school teachers (79% women, Myears=42 years, Mexperience=17years). They completed an online questionnaire about PE teaching. Two dependent variables (time allocated to PE and perception of teachers of their motivating style) and eight psychological predictors [autonomous (AM) vs. controlled motivation (CM), self-efficacy (SE), and five type of pressures]. Results from structural equation modeling showed that AM, CM, SE and three out of five pressures [(1) cultural norm (i.e., belief that a teacher have to be authoritarian), (2) implicit theory (i.e., belief that student' skill in PE cannot be changed), (3) operant maximal principle (i.e., belief that more reward promised is important more motivation is important)] are predictors of time allocated to PE and teachers' motivating style ( $ps < .020$ ). These results showed that in order to increase and improve PE teaching, teacher professional development should focus on these factors.

*Keywords: pressures, self-efficacy, motivations, structural equation modeling*

### Investigation of subjective vitality and basic psychological needs in traditional dance activities

**George Mavridis, Stella Rokka, Dimitrios Goulmaris (Democritus University of Thrace, Greece)**

Traditional dance is one of the most popular activities of sports recreation in Greece. The aim of this study was to examine the extent to which the satisfaction of basic psychological needs for autonomy, competence and relatedness can predict the levels of subjective vitality of adult participants in traditional dance programs and investigate possible differences between gender and age. The sample was consisted of 336 participants (147 men & 189 women) with a mean age of  $56 \pm 8$ , 61 years and members of cultural associations of Komotini. To conduct the research was used: the Basic Psychological Needs in Exercise Scale (Vlachopoulos & Michailidou, 2006), with 12 items grouped into three factors. Answers, were given on a 5-point Likert scale from 1 (disagree) to 5 (agree very much) and the Subjective Vitality scale (Ryan & Frederick, 1997), which was modified for the Greek population by Vlachopoulos and Karavani (2009), with 7 items for the assessment of subjective energy of participants. The 'Cronbach's  $\alpha$ ' internal cohesion indicator in both questionnaires was satisfactory. Descriptive statistical analysis revealed that participants showed satisfactory averages of autonomy, competence and relationships and a higher average of vitality. Hierarchical regression analysis confirmed that satisfaction of the three basic psychological needs contributed statistically significantly to the prediction of the subjective vitality, as it explained 35% of its total variance, while autonomy and social relations contributed with the largest grade to this result. No statistically significant differences between gender and age were found. The findings of this study support that autonomy and social relations in traditional dance activities contribute to increase subjective vitality regardless of sex and age.

*Keywords: vitality, autonomy – relatedness, traditional dance activities*

### Personality characteristics of football referees from different Brazilian States

**Alessandra Monteiro, George Cunha, Marcela Mansur-Alves, Mariana Froeseler (UFMG)**

The aim of this study was to verify the existence of differences in referees' personality profile compared to the general population, to identify differences related to sociodemographic variables, and to verify the similarity between referees and other high performance athletes. The sample consisted of 285 soccer referees from the states of Ceará, Federal District, Maranhão, Minas Gerais, Pernambuco and Piauí. 144 were assistant referees and 141 central referees, ranging in age from 18 to 46 years ( $M = 31.3$  years;  $SD = 6.1$ ). 254 were males and 137 were graduated, with an average time of experience in refereeing of 6.9 years ( $SD = 5.5$ ). The

NEO FFI Inventory was used to evaluate the personality. The results indicated a statistically significant difference between referees and the general population in all five factors, being higher in Neuroticism ( $d = 0.83$ ) and in Conscientiousness ( $d = -0.90$ ). The referees also showed higher scores in Extraversion ( $d = -0.58$ ), which is similar to the profile of high performance athletes presented in the international literature. Regarding the relationship with gender, age and refereeing time variables, the results showed that the male referees are older ( $d = 0.4$ ) and present more experience in refereeing ( $d = 0.7$ ), as well as a higher score in Agreeableness ( $T = -2.5$ ,  $p < 0.05$ ,  $d = 0.3$ ) than the female referees. The refereeing time did not show a significant correlation with any personality dimensions, which can be explained by the "Selection Hypothesis" that defends that the psychological abilities are responsible to introduce and keep the athletes in the high-performance sports context. The results showed that the referee sample investigated has a personality profile (high Conscientiousness and Extraversion and low Neuroticism) that is similar to the high-performance athletes and which distinguishes the referees from the general population.

*Keywords: personality traits, referees, soccer, high performance athletes*

### Coping strategies and personality traits in Brazilian football referees

**Alessandra Monteiro, Marcela Mansur-Alves, Mariana Froeseler, Camila Cristina Fonseca Bicalho (UFMG)**

Coping strategies are coping mechanisms used by individuals in stressful situations in which they feel threatened physically or emotionally. In sports, having proper coping strategies means coping well with stress, condition that makes the athlete adapted to the environment. The international literature has shown that personality traits are predictors of these strategies, as well as of sports performance. The objective of this study was to identify the coping strategies most used by referees from different Brazilian states, as well as to evaluate their relationship with personality. The sample consisted of 225 soccer referees (113 central and 110 assistant referees), ranging in age from 18 to 45 years ( $M = 31.1$  years,  $SD = 6.0$ ), being 203 males (90.2% Sample). The instruments used were the Coping Strategies Inventory, the NEO-FFI-R Personality Inventory and a sociodemographic questionnaire. A frequency analysis revealed that the use of the four strategies occurs at similar levels. Problem-focused strategies showed significant correlations with all of the five personality dimensions. Emotion-focused strategies were only significantly correlated with N and C, as Social Support focused strategies presented a significant, but low, correlation with E. Avoidance strategies haven't show significant correlations with any dimension. Conscientiousness, Openness and Extraversion predicted Problem-focused coping, Neuroticism predicted Emotion-focused, Extraversion and the interaction of Neuroticism and Conscientiousness were Social Support focused strategies' predictors, and finally, Avoidance strategies had, as predictors, the variable gender and the interactions between Neuroticism and Conscientiousness and Neuroticism and Openness. This study points out to the relationship between coping and personality for soccer referees. Other studies are necessary to include a larger sample of referees, and to use coping instruments that are more appropriated to the sports context.

*Keywords: coping strategies; personality traits; football refereeing*

### Relationship between inhibitory control and objectively-assessed physical activity in Parkinson's disease: A neurotrophical link

**Geoffroy Boucard, Fabienne Collette, Jean-Paul Chéramy (University of Liege), Eva Skawiniak, Sophie Laloux, Joël Pincemail, Gaëtan Garraux (University of Liege)**

Parkinson's Disease (PD) is characterized by some deficits in functions relying on basal ganglia–prefrontal interaction (like inhibitory control), but the concentration of the brain-derived neurotrophic factor (BDNF) may promote the neural survival of this neural network. In normal aging, regular physical activity (PA) enhance both serum BDNF and the cognitive performance, particularly in the inhibition tasks. Although PA increases the

striatal levels of BDNF in hemi-parkinson rats, no study has ever investigated the neurotrophical benefits of PA in patients PD. The global aim of this study was to determine the associations between PA, serum BDNF and inhibitory control in normal aging and PD. Thirty-four older adults and 31 parkinsonian patients performed two versions of an inhibition task, i.e. the Go/No-Go task (a manual task and an original foot task). Physical activity measures were obtained from the GT3x actimeter (worn for 7 days). Serum BDNF levels were quantified using an enzyme-linked immunosorbant assay (R & D Systems). For the older adults group, there were no effects of PA. For the parkinsonian patients group, results revealed a mediator role of BDNF between PA and inhibition, after controlling for confound variables (disease duration, motor state, dopaminergic medication): serum BDNF predicted the "foot mean reaction time" (foot RT) ( $R^2 = .17$ ), energy expenditure (PAEE) predicted both serum BDNF ( $R^2 = .29$ ) and foot RT ( $R^2 = .24$ ), but the effect of PAEE on foot RT was no longer significant after controlling for serum BDNF ( $R^2 = .04$ ). These findings shed light on the potential of PA in PD: regular PA may upregulate striatal BDNF, which in turn may optimize the network interconnecting the prefrontal cortex and the striatum, resulting in a better inhibitory control. Although it is challenging to found treatment strategies aimed at neuroprotection in PD, regular PA may be a good candidate.

*Keywords: Parkinson's disease, BDNF, inhibitory control, physical activity, actigraphy*

### Changes of rating of perceived exertion (RPE) and mood state in the different freestyle swimming training sessions

**Gao Zhiqing Gaozhi, Zhao Zhiguang (Beijing Reaserch Insititute of Sports Science), Hu Jing (Suzhou University)**

Purpose: To monitor the exercise load during on-land strength training and specialized training in freestyle swimming by using the blood lactic acid (BLC), the ratings of perceived exertion (RPE) and the mood index (Befindlichkeits-Skala, BFS). Method: 3 male freestyle swimmers from Beijing swimming team (average age of 20 years, average height 184.6 cm, average weight 72 kg, 5-6 years of training years). The RPE scale, the BFS mood scale and the blood lactic acid were used as monitors in both in-water training and on-land strength training. Results and Discussion: 1) After strength training, the scores of positive subscales were reduced and there was no significant difference in positive subscales except the elation. There were almost no changes in negative subscales. It shows that the strength training has positive effects on the evaluation of the mood and does not cause the increase of the negative mood. 2) After specialized training in water the scores of positive subscales were increased while there was no significant difference. The scores of negative subscales were reduced. It shows that the specialized training in water also has positive effect on the evaluation of the mood. 3) In 11 training units, the percentage of swimmers feeling light was 18%-37%, feeling somewhat hard was 27%-37%, feeling hard was 18%-27%, feeling very hard was 9%-15% and feeling very hard was 9%. The mean RPE was  $13.7 \pm 2.28$ . The trend of the RPE scores were basically the same. There were some difference after all training units except the 6 75m swimming units. 4) The correlations between RPE and the blood lactic acid were significant in all training units except the 6x150m unit and the 3x1000m unit. Conclusion: In this study, we used BFS mood scale, RPE scale and lactic acid to monitor the exercise load during the training units in one week. The results show that the mood and RPE could be used to monitor and control the training load.

*Keywords: Ratings of Perceived Exertion (RPE), mood, training load, swimming*

### Motivation for sport activities and phisical self-concept in students

**Galina Domuschieva-Rogleva (National Sports Academy)**

Sport and physical activity has become a major subject of interest to the extent that it affects the quality of health, contributes to physical and psychological well-being. Physical Self-Concept is an important mediator in physical activity. The aim of the present study is to reveal the characteristics of the motivation for sport activities and their influence on the physical Self-concept in students and the differences between women and



men. We have used Bulgarian adaptations of the Participation Motivation Questionnaire (PMQ) (Gill et al., 1983), measuring motives: achievements, teamwork orientation, energy release, emotions and challenges, skills, affiliation, fitness orientation and Physical Self-Description Questionnaire (PSDQ-S) (Marsh, H. W., Martin, A. J. & Jackson, S., 2010) – measuring Physical self-concept through nine specific and two general components - global physical self-esteem and global self-esteem. Subject of the study were 160 Bulgarian students (82 women and 78 men), from the technical and economic sciences in Sofia, mean age 20.6 +/- 2.4, who participate in sport activities twice a week for one year. Main motivations for sport activities are fitness, improvement of skills, affiliation. Both measurements of the Physical self-concept show that main components are global physical self-esteem and appearance. The comparative analysis (Mann-Whitney criteria) shows significant differences between women and men regarding health ( $U=2,37^{**}$ ), appearance ( $U=2,47^{**}$ ) and strength ( $U=2,33^{**}$ ) in the beginning of the study. In the end of it those differences are shown between women and men regarding health ( $U=2,77^{**}$ ), appearance ( $U=2,93^{**}$ ) and flexibility ( $U=3,06^{**}$ ). A significant improvement (Wilcoxon criteria) is examined in the end of the study in health ( $T=2,91^{**}$ ); and coordination ( $T=2,31^{*}$ ) indicators. The results may facilitate our understanding of the role of exercise participation and physical activity on the positive physical Self-concept of students.

*Keywords: motivation, physical activity, global self-esteem, self-concept*

### Sensation seeking and coping with stress for the participants in the Antarctic expedition

**Galina Domuschieva-Rogleva (National Sports Academy), Tatiana Stancheva (Iancheva), Aleksander Metodiev (Shopov)**

The security need refers to the basic motivation of personality and is one of the parameters that affect the behavior of the major strategies in situations of danger and risk. Sensation seeking is often viewed as the key to researching motivation for participation in adventurous and highly risky activities. The XXV Bulgarian Antarctic expedition on the Livingston isles, which included scientists and alpinists, began in November 2016. The aim of the present research is to study security need and sensation seeking and to find a relation with the participants' preferred strategies for coping with stress in highly risky activities in an extreme climatic and social environment. Subject of the study were 21 participants in the XXV Bulgarian Antarctic expedition, mean age 27 and 70. We have used: Security need scale (Velichkov A., et al. 1998); Scale for assessment of Psychic Instability and Sensation Seeking Scale (Radoslavova & Velichkov, 2005) – based on Zuckerman's scale (1994) for sensation seeking and Dickman's impulsiveness scale (1990) and the Bulgarian adaptation of Coping Orientations to Problems Experienced scale – COPE 1. Low levels of Security need are established. The leading subscales of the Sensation Seeking Scale are those of sensation seeking, followed by dysfunctional impulsiveness. Functional impulsiveness is characterized with the lowest values. The cognitive engagement coping strategies are the main ones, whereas cognitive and emotional disengagement strategies are the least used. The results from the regression analysis show that the high levels of sensation seeking influence negatively the use of the strategic behavioral disengagement. The present study adds to the understanding the role of security need and sensation seeking being a motivational power of human behavior, which is in the base of the desire to participate in difficult and challenging missions in extreme conditions in highly risky activities.

*Keywords: security need, sensation seeking, risk-taking activity, coping*

### Association between profile variables and sport-confidence of Brazilian gymnasts and football players

**Gabriela Frischknecht (UFSC), Andréa Duarte Pesca (CESUSC), Roberto Moraes Cruz (UFSC)**

Sport-confidence is considered by coaches, athletes and professionals as a key ability to be successful in sports. It's characterized as the athlete's conviction that he/she will obtain success in sports. Scientific

literature states that, in general, male athletes and athletes that practice individual sports tend to present higher levels of sport-confidence. This research aimed to investigate the association between profile characteristics of athletes and sport-confidence levels. This research was composed by a sample with 47 artistic gymnasts, 93 rhythm gymnasts and 239 football players, with ages between 12 and 22 years old. They answered the “Questionário de Autoconfiança no Esporte” (Frischknecht, Pesca & Cruz, 2016). This is an adapted version of Sport-Confidence Inventory (Vealey, 2003). Data analysis was made by parametric and nonparametric statistics, according to normality distribution of variables. Results: Results showed that male athletes and football players present higher levels of sport-confidence. Significant levels of association between sport-confidence and educational level, age, age that started in training and competitions were not found. But it was noticed that athletes that started to practice sports before 6 years old and the ones that started to participate in competitions between 6 years and 10 years 11 months years old present higher levels of sport-confidence. Results reinforce the scientific literature about comparison of sport-confidence levels between sexes. Educational level does not seem to be directly associated to sport-confidence, but scientific literature suggests that education may affect sports performance. Future researches could deepen the investigation about start ages in trainings and competitions and relate self-confidence with personality and other profile characteristics.

*Keywords: sport-confidence, profile characteristics, athletes; gymnastic, football*

### **Developmental trajectories of individual and team sports participation during childhood (ages 6 to 10): Distinct associations with psychosocial outcomes**

**Francois Poulin (UQAM), Anne-Sophie Denault (University Laval)**

Participation in organized sports during childhood is associated with beneficial psychosocial outcomes such as reduced externalizing and internalizing problems (Eime et al., 2013). However, most of the existing studies are cross-sectional or do not include repeated assessments of sport participation. Heterogeneity could potentially be observed in children's patterns of sport participation over time. Moreover, individual sports (IS) and team sports (TS) offer different forms of social experiences (Denault & Poulin, 2007) and might thus present distinct associations with psychosocial outcomes. The goals of this study was : 1) to identify developmental trajectories of IS and TS from ages 6 to 10 based on annual assessment; 2) to investigate the psychosocial outcomes (externalizing and internalizing) associated with these trajectories. A sample of 1095 children was recruited in kindergarden and followed longitudinally up to age 10. Each year, parents listed the number of organized IS and the number of TS in which their child participated. At ages 6 and 10, teachers reported on the child's externalizing and internalizing problems (70 items; ISSQ, 2001). Two trajectory groups were found for TS : Low and increasing (74% of the sample) and High and increasing (26%). Two trajectory groups were found for IS : Low and stable (70%) and High and stable (30%). Using ANCOVAs, TS trajectory groups were compared on age 10 externalizing and internalizing including the age 6 score as a covariate. Same analyses were conducted for the IS groups. For TS, results showed that children in the High group presented reduced levels of internalizing problems compared to the Low group; no difference emerged for externalizing. For IS, no difference were found between the groups. These findings suggest that the positive association between sport and lower internalizing problems is found only for TS and for children who maintain high participation levels throughout childhood.

*Keywords: childhood, psychosocial outcomes, team versus individual sport*

### **Transactive memory as a mediator of the association between cohesion and and collective efficacy in professional sport**

**Francisco M. Leo, Inmaculada González-Ponce (University of Extremadura)**

The relationship between cohesion and collective efficacy in sport is well established, despite which, few studies have investigated the mechanism through which cohesion improves collective efficacy. In this regard, cohesion can foster players' greater knowledge of each other, the creation of coordinated and specialized functions and greater credibility among team members (Filho et al., 2015). These factors, linked to transactive memory—defined as the knowledge stored in each individual's memory combined with metamemory containing information about the different teammates' domains of expertise (Wegner, 1995)—, are variables that can help to achieve greater collective efficacy (Peterson et al., 2002). Thus, the aim of this study was to examine whether transactive memory serves as a mediator between cohesion and collective efficacy in sport. Participants were 581 soccer players, 356 males ( $M=25.30$ ,  $SD=4.57$ ) and 225 females ( $M=22.23$ ,  $SD=4.59$ ), who participated in a professional league. They completed the Group Environment Questionnaire (Leo et al., 2015), the Transactive Memory System Scale (Leo et al., 2016) and the Football Collective Efficacy Questionnaire (Leo et al., 2014). Following Holmbeck's (1997) suggestions, structural equation modelling was employed to test mediation. Overall results indicated that transactive memory mediated the relationships between task cohesion and collective efficacy whereas transactive memory did not mediate the relationship between social cohesion and collective efficacy. In summary, these findings clearly indicate the importance of transactive memory for professional players. Task cohesion in particular seems to be crucial to improve collective efficacy through transactive memory. Findings imply that coaches and sports psychologists who want to increase collective efficacy will not only have to foster cohesion, but also take advantage of this cohesion to create specific, credible and coordinated shared memory systems among players.

*Keywords: group processes, high performance, mediating effects, transactive memory*

### **Examining the motives for participating in dance activities, using the “Behavior Regulation in Sport Questionnaire” (BRSQ)**

**Filippos Filippou, Aikaterini Koupani, Stella Rokka, Evangelos Bebetos**

The main aim of the study was to cross-validate the “Behaviour Regulation in Sport Questionnaire” (BRSQ) (Lonsdale, Hodge & Rose, 2008) in a Greek dance context. Secondary, the research study focused on the various motives people nominate for engaging in theatrical dancing activities as well as if factors such as the sex and dance's kind differentiate their participation motives. Study's participants were recruited from ten groups offering lessons of Greek traditional dance and six schools offering classic and modern dance's lessons. The sample of the study consisted of 390 dancers, 89 male and 301 female. From participants, 249 coming from traditional dance and 141 from non-traditional dancing forms. The following statistical analyses were performed: Descriptive statistics, Confirmatory Factor Analysis, Reliability analysis, and One Way Anova. The fit indices which were considered are: namely minimum discrepancy, degrees of freedom, minimum discrepancy divided by the degrees of freedom, Root Mean Square Error of Approximation, Standardized Root Mean Square Residual, Comparative Fit Index, and Normed Fit Index. The results of this study obtained in the confirmatory factor analysis demonstrated that the hypothesized model produced a significant  $\chi^2 (390, 558) = 1528.31$ ,  $p < .05$ . The NFI, CFI, RMSEA, and SRMR value were found to be 0.92, 0.93, .067 and .044 respectively. From the analysis, we came to the following conclusions: a. The Greek version of BRSQ supports its use in Greek dancing context. b. The participants are mostly internally motivated. c. Gender is a differentiation factor for motive participation with men being more internally motivated. d. The kind of dancing is a motivation factor for participating with traditional dance participants being more internally motivated than the one who participates in non-traditional dances.

*Keywords: cross-validate, traditional dance, classic and modern dance*

## Youth sport coaches' perceptions on the value of positive youth development within coach education courses

**Fernando Santos (Portuguese Field Hockey Federation, Portugal), Martin Camiré (School of Human Kinetics, University of Ottawa, Canada), Dany MacDonald (University of Prince Edward Island, Canada), Henrique Campos, Manuel Conceição, Ana Silva (Portuguese Field Hockey Federation, Portugal)**

Positive youth development (PYD) is a strength-based approach that aims at promoting a successful transition from childhood to adulthood through appropriate environments and support from influential adults. Past research has indicated how coaches play important roles in facilitating PYD through sport and yet, PYD-related material remains largely absent from mainstream coach education courses (CEC). The purpose of the present study was to examine youth sport coaches' perspective on PYD and its worth in mainstream coach education courses. Two research questions guided the study: (a) What place does PYD occupy in the participants' coaching philosophy? and (b) What do the participants' believe is the worth of PYD-related material in mainstream CEC? The participants were twelve Portuguese youth field hockey coaches who coached athletes between four and eighteen years of age. The data were collected through semi-structured interviews and a hybrid (i.e., inductive/deductive) approach to thematic analysis was utilised to organize codes into low and high order themes. For the first research question, most participants appeared to understand the importance of including PYD principles in their coaching philosophy. However, the perceived amount of attention that ought to be directed to the technical/tactical aspects of field hockey versus PYD was markedly influenced by athletes' age and competition level. Coaches working with elite athletes in late adolescence (i.e., 15-18 years old) elaborated further on technical training, while coaches working with athletes in childhood and early adolescence (i.e., 4-14 years old) focused on enjoyment, respect, and inclusiveness. For the second research question, the participants indicated the need to prioritize PYD in mainstream CECs, integrate an explicit approach, and use informal types of coach training. The findings have practical implications for coach educators:

*Keywords: life skills, philosophy, field hockey, coaching practice*

## Using object visual research (Lego Serious Play®) to evaluate a life skills program

**Fernanda Serra de Queiroz, Stephanie J. Hanrahan (University of Queensland)**

Interviews and surveys that rely on participants giving quick replies often assume that these answers are reliable accounts of participants' thoughts, feelings, and attitudes. Nevertheless, often participants' quick replies in interviews and surveys do not originate from a reflective process. Visual methods are often chosen as a research tool because they can facilitate the communication of content that may be subconscious, or under social or psychological inhibitions. A 3D visual research method that has been gaining momentum in the last decade is Lego® Serious Play (LSP). LSP is defined as a thinking and problem-solving approach, where individuals build metaphors as a response to challenges using the traditional Lego® bricks. The aim of the present study was to evaluate LSP as tool to investigate the effects of a life skills program for at risk youth. According to Lego® a LSP session should be divided in to three phases: challenge, building, and sharing. During the challenge phase the session's facilitator formulates a question based on the session purpose. This question or challenge prompts participants to respond using Lego® bricks. Finally, during the sharing phase participants have the opportunity to share the meanings they have assigned to their Lego® models. The experience of using LSP to evaluate a life skills program showed that LSP could be a useful evaluation tool when working with youth in a situation of social vulnerability. Low literacy levels are often a barrier to completing written evaluation for this population. This barrier was especially true in this research context, where participants were from a school for students who had disengaged from mainstream education, and had low literacy levels. Participants' answers to the Lego® challenges provided a more in-depth account of their perceptions of the life skills program than their written feedback.

*Keywords: visual research, youth, program evaluation, life skills*

## **The influence of cognitive effort on the efficiency of tactical behavior of young soccer players**

**Felippe da Silva Leite Cardoso, Felipe Ruy Dambroz, Israel Teoldo da Costa (Centre of Research and Studies in Soccer)**

The pupillometry technique has been used to evaluate the activities of the nervous system, in different tasks. Research shows that small changes in pupil diameter occurs in responses to mental activity. Researchers have demonstrated in a numerical recall experiment that the pupils progressively dilate as a greater degree of cognitive effort (CE) is requested and, as the requirement effort becomes smaller, the pupils gradually return to their resting size. In sport, this pupillometry technique has been used to evaluate CE during tasks that measure the abilities of decision making, anticipation, knowledge, among other cognitive components. However, studies about the relationship of CE and the tactical component of the game need to be investigated, so this study aims to investigate the influence of CE on the efficiency of tactical behavior (ETB) of young soccer players. The sample comprised of 52 male youth soccer player of the first division in Brazilian Championship (Mean age = 14.89, SD = 1.42). The ETB was measured through the System of Tactical Assessment in Soccer (FUT-SAT). The conceptual structure of FUT-SAT is based on the ten core tactical principles of soccer. For the evaluation of the CE, tests of video simulations using Mobile Eye Tracking-XG were used. After data collection, players were divided into two groups based on the amount of CE during the task. Statistical analysis was performed using the Kolmogorov-Smirnov tests. The independent t test for comparison of the ETB between-groups with higher and lower CE. The results suggests differences in the ETB of players based on the amount of CE  $t(50)=7.522$ ,  $p<0.001$ ,  $r=.72$ . Players with less ETB presented greater CE during the task. It is concluded that the CE influences the ETB of soccer players, with the less CE the better ETB.

*Keywords: soccer, cognitive effort, efficiency of tactical behavior, evaluation*

## **A low-intensity psychological intervention to prevent sport injuries: the adaptation of the “Mental Warmup for Athletes” program to Spanish young soccer players**

**Felipe Turbay, Victor Rubio (University Autonoma Madrid, Spain)**

This study presents the Spanish adaptation of the “Mental Warmup for Athletes” program (Brewer, 2006). The program consists of a low-intensity intervention based on stress management and attention focus in order to reduce the prevalence of sports injuries (SI). SIs are a multifactorial phenomenon involving different variables. Psychological factors have also shown to be strongly related to the vulnerability to sustaining an injury. Particularly, stress response has been pointed out as responsible for making athletes more vulnerable to sustain an SI. According to the Stress and Injury Model (Andersen and Williams, 1998), two mechanisms mediate the relationship between stress response and SI: muscle tension and the attention deficits. There have been several attempts to reduce the prevalence of SI using psychological interventions, but results were inconclusive partially due to implementation issues. In light of the fact that many sports and/or categories, particularly among young athletes, still do not have psychologists to provide such mental training and contribute to the prevention of sport injuries, the program designed is a non-facilitated and guided self-help low-intensity intervention where the coach supports the activities and several online self-help materials, including scripts and videotapes, are provided. The script presented includes techniques such as Mindfulness, Diaphragmatic Breathing, Progressive Muscle Relaxation, and Visualization. Implementation is conducted to reduce the anxiety levels and increase the attentional focusing of young players right before the competition. Results of a pilot administration of the program are shown.

*Keywords: prevention, sports injuries, psychological intervention, mental warmup*

## Visual search strategy of soccer players according to positional roles

**Felipe Dambroz, Guilherme Machado, Felipe Cardoso, Teoldo Israel (Center of Research and Studies in Soccer)**

Visual search strategy (VSS) has been considered one of the most important aspects within the process of decision making in soccer. The literature shows that there are differences on VSS between different competitive levels but in relation to positional roles, further investigation is necessary due to differences demands for positional. The sample comprised 17 U-13 youth soccer players. The instrument used to collect and analyze VSS was the Mobile Eye Tracking – XG. The players were grouped according to the following positional roles: defenders, midfielders and forwards. The video stimuli were the same as the one employed by video based test. VSS stimuli was classified in five categories: “player in possession of the ball”; “ball”; “teammates”; “opponent”; “space”. The number of fixations made by players, in each stimuli category was analyzed. Data distribution was verified by Shapiro-Wilk's test. One-way ANOVA was performed to compare mean values. The “ball” category displayed significant differences between midfielders ( $15.50 \pm 5.85$ ) and forwards ( $27.80 \pm 7.36$ ). Other significant difference found was in “teammates” category, between midfielders ( $22.00 \pm 5.62$ ) and forwards ( $34.60 \pm 1.81$ ). These findings may be related to the specific task of each positional role in the game. Forwards tend to focus their actions on receiving the ball and therefore are more likely to look at the ball while midfielders need to focus on different stimuli to read the game. Other of forwards' task is to create space in order to enable the team to advance up the field. Thus, it is necessary that the forwards are aware of their teammates' movements and that they are able to make the best decisions. These findings are important for coaches and researchers to know how VSS changes according to positional roles, in order to provide their athletes with proper feedback.

*Keywords: visual search strategy, positional role, youth soccer*

## How do individual team members regulate their behavior to achieve spatiotemporal collective behavior?

**Feigean Mathieu (University of Bern)**

This study aimed to analyze processes of the emergence of collective behavior patterns. Collective behavior, considered as self-organized, emerges from individual activities that interplay as the activity unfolds. The purpose of the present study was to explore how co-agents actively (co-)regulate their involvement to contribute to the emergence of collective behavior on-site. To this end, we aimed at describing the variety of ‘modes of regulation’ achieved by team members during a soccer game. One team of expert soccer players (i.e., national level) participated in this study. We video recorded a complete official game using a drone. A sequence of ten minutes was selected, based on which phenomenological data was collected for all of players through individual self-confrontation interviews. The verbal data obtained were transcribed verbatim, from which we reconstructed the visual perception and the associated behavioral adjustment as players can comment it for each instant of the activity under study. Then, a thematic analysis helped to identify patterns of meanings within verbalization data, leading to the characterization of various modes of regulation. These modes were then re-positioned within the course of the experience of each teammate, so that co-regulation modes could be identified at each instant of the game. The results showed the amount of typical patterns of regulating activity carried out by participants, going from a mode of ‘local couplings’ to one of ‘couple through grasping a global picture’. When associating each identified mode of regulation with a degree of ‘collective adoption’, that is the probability to simultaneously appear across the various participants involved in the collective behavior, the results showed that all the team members were able to share the same mode of regulation at the same time. Occasionally, one or several members switched to another mode of regulation, thus helping to avoid the disruption of collective behavior.



*Keywords: collective behavior, emergence, mode of regulation*

## **Effects of the Teaching Personal and Social Responsibility Model (TPSR) through sport on youths' perception of positive development**

**Federico Carreres (University of Alicante), Amparo Escartí (University of Valencia)**

An increasing number of studies have demonstrated that TPSR Model is effective in creating a positive learning environment (Wright & Burton, 2008), increasing responsible behavior among youth (Escartí, Gutiérrez, Pascual y Wright, 2013), and encouraging youth to explore the application of TPSR goals and life skills in other life domains (Walsh, Ozaeta, & Wright, 2010). This qualitative study examined the effects of youth participation in an out of school sport program based on TPSR Model. Participants were 17 male adolescents who played football as extracurricular activity in a city of Alicante (Spain) aged between 14 and 16 years old (M age= 15,12; SD= 0,72). The implementation of the TPSR model took place over six months, three days per week during the sport training sessions that lasted 90 minutes each. The coach of the intervention group received an initial 30 hours course to implement the TPSR and an ongoing meetings 2-hr biweekly seminar, focused on the practical aspects of TPSR implementation. The units of analysis were: (a) Learning acquired, in regard to the program's impact on their demonstration of responsible behaviors, and (b) Transfer of acquired learning, in regard to the program's impact on other domains of youth life. Each adolescent participated in one semistructured interview (Patton, 2002) that lasted approximately 20 min. Questions included: "What effects has the TPSR program on you?" "What have you learned through the TPSR program?" "What lessons have you transferred in your life due to participation in the TPSR program?". The results are related to an increasing in personal and social responsibility, better time management and concentration techniques as learning acquired through the program. The transfer of acquired learning appears to indicate family relationship improvements and better academic and sport performance. These findings provides the importance of the qualitative approach to assess TPSR impact in youths' lives.

*Keywords: TPSR, positive youth development, qualitative study, out-of-school sport*

## **A study of quiet eye's phenomenon in the shooting trial of combined event**

**Andrea Chirico, Dario Fegatelli, Federica Galli (University of Rome), Stefano Pecci (Coaching Education Unit Italian Modern Pentathlon Federation), Fabio Lucidi (University of Rome)**

The aim of the study was to analyze Quiet Eye's phenomenon during the shooting section of "Combined Event" of Modern Pentathlon, that consists in shooting and running. The study involved 18 experienced athletes of the Italian National Team of Modern Pentathlon ("élite" group) (mean age= 24.3; SD= 4.76) and 13 non-expert athletes of a local Pentathlon club ("novice" group) (mean age= 15.7; SD= 1.53). Participants performed, in ecological conditions, five trials of four series of shootings (as it occurs in the combined event competitions), for a total of 20 series. During the shooting trials athletes worn a mobile Eye Tracking System (SMI-Eye Tracking Glasses (ETG)-version 2.0) to record eyes movements (saccades, blinks, and fixations). The Quiet Eye Duration (QED), the Performance (Shooting duration and Accuracy) as well as the Relative QED were considered as key measures of the study. The results showed that athletes during the best shoots had a shorter QED then in worst shoots ( $F(1,29)= 16.79$ ,  $p < .001$ ). Furthermore, overall the novice athletes showed a longer QED than the élite athletes. However, when the shoot duration were considered, the non-élite showed a longer Relative QED during the best shoots than during the worst shoots ( $F(1,29)= 7.26$ ;  $p=.012$ ). Again, the Quiet Eye Onset's results showed that novice started later when performed worst shoots than the best shoots ( $F(1,29)= 16.22$ ,  $p<.001$ ). Whereas, the élite did not show significant differences. But, the experts started the QE earlier than novice. Regarding inter-shots fixations the results showed a lower number of fixation's novice before the best shoots than the worst shoots ( $F(1,29)= 5.99$ ,  $p=.021$ ). The experts showed the same number of

fixations before the best and the worst shots. These results provide insightful information about different cognitive and perceptual processes involved in Modern Pentathlon's athletes' performances at both elite and non-élite level.

*Keywords: quiet eye, eye tracking system, modern pentathlon, combined event*

## **The role of perceived autonomy support and needs satisfaction in the intention to do exercise and physical activity of older adults**

**Federica Galli (University of Rome), Luca Mallia (University of Rome, "Foro Italico"), Andrea Chirico, Laura Girelli, Fabio Lucidi (University of Rome)**

The health benefits of physical activity and physical exercise for older adults have been widely acknowledged. Recent studies approached to this field integrating the tenets of Self Determination Theory (SDT) and Theory of Planned Behaviour (TPB). The purpose of the present study is to investigate, through a mediation model, whether perceived autonomy support, and satisfaction of basic psychological needs (autonomy, competence, relatedness) predict intention to do physical activity or exercise in older adults, through TPB variables (attitude, subjective norms, perceived behavioural control). Therefore, using a longitudinal design, the study also estimated intention in predicting actual behaviour both directly and indirectly, through its relationship with planning. The study evaluated two different samples: the first (i.e. exercising group attending regularly an exercise course) comprised 145 old people (mean age=70.39; SD=6.34); the second (i.e. people reporting regularly spontaneous physical activity) comprised 101 old people (mean age=76.21; SD=7.30). Structural equation models (VB-SEM) were used to test the study hypotheses. The VB-SEM exhibited a good fit with the physical exercise behavior (GoF = .510; APC = .321,  $p < .001$ ; ARS = .287,  $p < .001$ ; AFVIF = 1.964), and physical activity (GoF = .487; APC = .352,  $p < .001$ ; ARS = .288,  $p < .001$ ; AFVIF = 1.767). The model confirmed its validity in predicting the hypothesized relationships showing also some differences between the two groups.

*Keywords: integrated model, older adults, physical activity, exercise*

## **The contribution of early auditory and visual information to the anticipation of volleyball serves**

**Fabrizio Sors, Mauro Murgia, Alessandra Galmonte, Tiziano Agostini (Universitu of Trieste)**

Within the research framework of interceptive actions and anticipation skills, previous studies highlighted that visual information has a key role in ball sports, as its correct interpretation fosters accurate predictions concerning ball motion. Other research revealed that auditory information provides important cues in various sport situations. The present study combines these two lines of research, with the aim to investigate the contribution of early auditory and visual information in anticipating volleyball serves. To this purpose, overhand serves were audio- and video-recorded from the perspective of a defence player. The recordings were edited to create two kinds of stimuli – auditory and visual – lasting 1250 ms (1000 ms before the hand-ball impact and 250 ms after it). Seventeen volleyball players competing in amateur leagues were recruited as participants for the experiment. Their task was to predict the landing zone of the serves on the basis of their length, relying either on auditory information (Audio condition), or on visual information (Video condition). A within subjects design was used, with the two conditions administered in a counterbalanced order among participants. The results revealed that, as concerns response accuracy, participants performed above chance in the Audio condition, but not in the Video condition; moreover, accuracy was higher in the former condition than in the latter one. As concerns response times, no difference was observed between the two conditions. The results suggest that for predicting the landing zone of volleyball serves on the basis of their length, early auditory information would provide more relevant cues than the respective visual information. Future studies should

further investigate in this direction, considering also other sports, to better understand the contribution of auditory and visual information in anticipating ball motion; the outcomes would be useful from both a research perspective and an applied one.

*Keywords: early information, auditory information, visual information, temporal occlusions, anticipation, volleyball serves*

### **Impact of doping control experience and learning on anti-doping knowledge of Japanese sports university students**

**Yuka Murofushi, Yujiro Kawata, Masataka Hirose (Juntendo University)**

The aims of this study were to understand the experience of Japanese sports university students taking a doping control and learning about Anti-Doping and to examine the impact of this Anti-Doping learning experience on the knowledge they gained about Anti-Doping. We collected data from 1,266 Japanese sports university students (574 male, 692 female;  $M = 19.70$ ,  $SD = 1.36$ ). We asked them about their experience in undergoing the doping control and the education on Anti-Doping they received; we then assessed the Anti-Doping knowledge they gained by this experience using World Anti-Doping Agency's ALPHA test. The percentage of correct answers on the ALPHA was taken as the ALPHA score. The results showed that 3.71% among them had undergone a doping control and 54.42% of them had undergone Anti-Doping education. We conducted the t-test to compare ALPHA score. Results showed that comparing the ALPHA scores of students with/without test experience revealed no significant differences. Comparing ALPHA scores of students with/without Anti-Doping education revealed a significant difference. Students with Anti-Doping education obtained significantly higher ALPHA scores ( $t(1165)=4.92$ ,  $p < .001$ ). Doping control experience is not correlated to gaining knowledge about Anti-Doping. However, Anti-Doping education is associated with knowledge gain, suggesting that students who have received this education have more accurate Anti-Doping knowledge. This indicates the need for Anti-Doping education to be provided to students involved in competitive sports.

*Keywords: anti-doping education, doping control, ALPHA, sports university students*

### **Adaptation and validation of Physical Activity and Leisure Motivation Scale (PALMS) to assess motives for participation leisure time physical activity and sport in Finnish high school students**

**Ezgi Aypar, Montse C. Ruiz (University of Jyväskylä, Finland), Tony Morris (College of Sport and Exercise Science, Victoria University, Australia)**

To understand adolescents' motives for participation in physical activity is crucial for the development of interventions or preventive measures of health problems that may emerge during adulthood. Therefore, it is important to have a valid measure for adolescence. The Physical Activity and Leisure Motivation Scale (PALMS; Morris & Rogers, 2004) consists of a 40-item self-report measure of motives for participation in physical activity and consists of the following eight subscales: (a) mastery, (b) physical condition, (c) affiliation, (d) psychological condition, (e) appearance, (f) others' expectations, (g) enjoyment, and (h) competition/ego. The aim of this study was to develop the Finnish version of the PALMS to examine the different motives to be physically active in a sample of high school students. Participants ( $N = 285$ ,  $M$  age = 16.74; 55% female) completed the Finnish version of the PALMS. Back translation procedures and expert review were utilized to develop the Finnish PALMS. Exploratory factor analysis (EFA) was conducted to examine the factor structure of the scale. Results supported a solution that included 34 items loading onto six factors, namely, intrinsic motivation, competition/ego, appearance, psychological condition, physical condition and affiliation. Mastery and enjoyment items loaded into the same factor (intrinsic motivation), while others' expectations subscale revealed low loadings into its factor. Cronbach's alpha coefficients were acceptable, ranging from mastery ( $\alpha =$

.88) to affiliation ( $\alpha = .93$ ), except for other's expectations ( $\alpha = .53$ ) subscale. Significant mean differences in specific motives were found across groups and gender. The findings support the use of the Finnish PALMS to assess adolescents' motives for participation in physical activity, with the exclusion of the others' expectation subscale, or using its items in an individual manner. The future study will discover factor structure with confirmatory factor analysis.

*Keywords: motivation, leisure, self-determination theory, adolescents, factor analysis*

## Being a rollerskater in Barcelona: Putting the focus on lifestyle sports' passion & experiences

**Andres Chamarro (Universitat Autònoma de Barcelona), Mateu Capell (Club Patí Barcelona)**

Urban skating has been consolidated in cities like Barcelona. As a lifestyle sport, its practice can influence on the construction of personal identity. Despite the growing interest in this phenomenon, research into urban skating and practitioners' engagement is still scarce. Several studies have shown that passion, a complex motivational concept imbricated in the identity, could play a central role on sports participation. The dualistic model of passion (Vallerand et al., 2013) proposes that individuals can have two distinct types of passion toward an activity, a harmonious passion (HP) or an obsessive passion (OP), leading to more or less adaptive outcomes, respectively. The aim of the present research was to investigate the differential role of passion toward skating experiences and outcomes. Participants were 522 urban skaters, who answered a questionnaire accessible through social networking sites. The questionnaire asked for socio-demographic and socio-sportive variables, included the Spanish version of the Passion Scale (Chamarro et al., 2015), and a scale for measuring urban skating experiences and outcomes. Results show a high prevalence of passion among roller skaters (85%). ANOVAs show a differential pattern of passion with respect to skating modalities: experienced skaters and those who practice intensively (i.e., more than 10 hours/week) or practice the more risky modalities (i.e., descent) experience higher OP. Novice, recreational and competitive skaters experience higher HP. Both high engagement and the practice of those modalities connected to the subculture of skating seem to be associated to OP. In contrast, we remark that urban skaters are passionate, that implies that their identity is built with skating as a central point, and that HP leads to positive experiences. Overall, the present findings highlight the importance of distinguishing HP from OP for emerging urban sports.

*Keywords: lyfestyle sports, urban sport, passion, identity, skating*

## The role of perceived autonomy support from coaches and basic psychological needs in determining motivation of girl soccer players

**Aydan Gözmen Elmas, Nurgül Keskin, F.Hülya Asçı (Marmara University)**

The aim of this study was to investigate the role of perceived autonomy support from coaches and basic psychological needs in determining sport motivation of girl football players. One hundred twenty-one ( $M_{age}=15.24 \pm 1.72$ ) girl soccer players voluntarily participated in this study. "Personal Information Form", "Perceived Autonomy Support Scale (Coaches Form)", "Sport Motivation Scale" and "Basic Needs Satisfaction in Sport Scale" were administered to adolescent soccer players. Descriptive statistics and hierarchical regression analysis were conducted to analyze data. Hierarchical regression analysis indicated that both basic psychological needs and perceived autonomy support from coaches were not significant predictors of intrinsic motivation and amotivation ( $p > 0.05$ ). Perceived autonomy support was significant and positive predictor of both identified ( $R^2=0.11; \beta=0.33; p < 0.05$ ). In conclusion, perceived autonomy support from coaches of motivate girl soccer players externally and considering personal gains. On the contrary, basic psychological needs in sport have no influence motivation.

*Keywords: autonomy support, basic psychological needs, motivation*

### **Influence of parental support in anger levels in athletes**

**Higinio González-García, Antonia Pelegrín, José Luis Carballo (Universidad Miguel Hernández de Elche)**

Parental support for physical activity has shown a huge influence on sport practice. Thus, higher levels of support are related to greater physical activity practice. In addition, parental education has been linked to psychosocial development in all areas of life. There are many variables that influence in anger levels and it can be divided into personal variables and environmental variables. In this case, parental support is included into environmental variables. There are no previous studies that have examined the relationship between parental support and anger levels in athletes. Therefore, the aim of this study is to determine if parental support influences in anger levels of athletes from different sports. The total sample consisted of 502 athletes. In order to measure the different variables were used, an ad hoc Sociodemographic questionnaire, the Oviedo Scale of Infrequency Response (INF-OV) and the Trait-State Anger Expression Inventory (STAXI 2). The results showed significant differences in internal anger expression ( $p<.05$ ) and temperament ( $p<.05$ ), in benefit of athletes who perceived parents support in sport career. Finally, to determine the predictive value of the statistically significant variables in the t-test, a binary logistical regression was performed using the introduce method ( $X^2=181,54$ ;  $R^2$  Nagelkerke=.53). The results showed that internal anger expression ( $OR=.81$ ;  $p<.01$ ) is linked with didn't perceive parents support in sport career. It was concluded that athletes who perceived parental support in sport career have higher levels of internal anger expression and temperament. Furthermore, there is a predictive relationship between internal anger expression and didn't perceive parents support in sport career.

*Keywords: parents, emotion, sport, sport career*

### **Influence of parental education styles in athletes satisfaction**

**Higinio González-García (Universidad Miguel Hernández de Elche)**

Parental educational styles have been related to physical activity and sport. In addition, studies have shown the relationship of democratic parents with life satisfaction in general and the satisfaction with educational career. In this case, there are no studies that examined the relationship between parental educational styles and satisfaction with sport career. Parental education has been linked to psychosocial development in all areas of life. Therefore, the aim of this study is to determine if parental education styles influence in athletes satisfaction in sport. The total study sample consisted of 502 athletes. In order to measure the different variables were used, an ad hoc Sociodemographic questionnaire, the Oviedo Scale of Infrequency Response (INF-OV) and the "Multifactor Self-Assessment Test of Child Adjustment" (TAMAI). The results showed significant differences in authoritarian father ( $p<.01$ ) and permissive mother ( $p<.05$ ), in favour of athletes who were satisfied with sport career, who obtained lower levels. On the other hand, democratic father ( $p<.05$ ) obtained significant differences in favour of athletes who were satisfied with sport career, who obtained higher levels. Finally, to determine the predictive value of statistically significant variables in the t-test, a linear regression was performed ( $F2=118$ ;  $R^2=.23$ ). The regression analysis showed that democratic father ( $p<.01$ ) influenced in satisfaction with sport career of athletes. Consequently, democratic father is linked with athletes satisfaction in sport career. It was concluded that athletes who felt satisfaction with sport career have greater levels of democratic father and lower levels of authoritarian father and permissive mother. In addition, democratic father influenced in sport career satisfaction.

*Keywords: parents, sportsman, wellness, sport career*

## Measuring states of goal involvement in specific achievement situations: Development and validation of a 6-goal questionnaire

**Hervé Le Bars (Western Catholic University of Angers), Anne Teboul (University of Montpellier), Arthur Pineau (Western Catholic University of Angers), Christophe Gernigon (University of Montpellier)**

The latest refinements of achievement goal theory (Elliot, Murayama, & Pekrun, 2011) led to distinguish six goals: task-approach, self-approach, other-approach, task-avoidance, self-avoidance, and other-avoidance. A French questionnaire measuring these goals in terms of motivational orientations (general tendencies) has been recently developed by Mascret, Elliot, and Cury (2014). However, given the proximal role of states of goal involvement in the determination of motivational patterns, there is a need to measure such states as they are here-and-now activated. Hence, the present research aimed to develop and validate a French questionnaire that measures states of involvement in the six goals in specific achievement situations: the Achievement Goal Involvement Questionnaire (AGIQ-6). A 40-item preliminary version was created from previous achievement goal questionnaires. Confirmatory Factorial Analyses (CFA) were then computed on the answers of 442 high school students having to learn a specific motor skill in a PE lesson. The CFA supported Elliot et al.'s (2011) six-factor structure ( $\chi^2/df = 2.45$  ; CFI = .95 ; NFI = .92 ; RMSEA = .057) and led to the selection of 18 items (3 items per goal). The internal consistencies were acceptable for short scales ( $.66 \leq \text{Coeff. } \alpha \leq .86$ ). A follow-up study intended to test the congruent validity of the 18-item AGIQ-6 was conducted on 317 other high school students confronted with a similar PE task. Approach goals were found to be associated with an adaptive motivational pattern including perceived competence, incremental theory of competence, absorption in the task, and intrinsic motivation. Other-avoidance goals were associated with a maladaptive pattern as they were positively related to entity theory of competence and anxiety, and negatively related to entity theory of competence. These findings show that the AGIQ-6 is a valid questionnaire that opens new avenues of research regarding the dynamics of goal involvement.

*Keywords: achievement goals, motivational states, competence, valence*

## The psychological skills inventory for footballers

**Henrique Martins (Maia University Institute, Portugal), Pedro Teques (Polytechnic Institute of Maia, Portugal)**

Debates continue with regard to the assessment of psychological skills, and studies of measuring instruments specific to each sport have become evident over the last decade (e.g., Dosil, 2006). The present study describes the development of a new multidimensional scale that measures five dimensions of psychological skills specifically developed for footballers. The first version of the Psychological Skills Inventory for Footballers (PSIF) consisted of 87 items of widely varied content based on specific psychological skills referred in the literature as the most important for football, such as cohesion, self-confidence, motivation, anxiety management, and concentration (Freitas et al., 2013). Participants were 285 professional men footballers participated in the study, aged between 18 and 36 years ( $M = 24.01$ ,  $SD = 5.31$ ). Footballers' completed the paper and pencil questionnaires during training camps of the teams, or before the training sessions. Confirmatory factor analysis (CFA) revealed that the measurement model [ $\chi^2(160) = 360.11$ ,  $p < .001$ , CFI = 0.96, TLI = .95, RMSEA = 0.04 (CI = 0.04, 0.05), SRMR = 0.04] indicated a good fit to the data (Hair et al., 2010). A final version of 20 items showed moderate to strong factor loadings ranging from 0.535 to 0.859. All factors also show reliability (values ranging from 0.71 to 0.85), and most part of them show convergent (Average Variance Extracted values from 0.38 to 0.59) and discriminant validity (Maximum Shared Variance < Average Variance Extracted). In many instances, a global measure of psychological skills such as that provided by the CPRD (Gimeno et al., 2001), PSIS (Mahoney et al., 1987) or ACSI-28 (Smith et al., 1995) total score is sufficient, but in others, investigators need a measure of specific and relatively distinct psychological



characteristics for football. This measure is our attempt to provide a psychometrically sound measure that can meet both needs.

*Keywords: psychological skills, assessment, football, confirmatory factor analysis, reliability, validity*

## **The organization of sports psychology in Brazil: structuration and training in the sports training center of the federal university of Minas Gerais**

**George Cunha, Camila Bicalho, Talita Santos, Franco Noce (UFMG)**

The Sports Training Center of the Federal University of Minas Gerais (STC/UFMG) is a training site for basic and high performance athletes regarding Track & Field, Judo, Swimming and Taekwondo. In the STC/UFMG the sector of Sport Psychology was structured on three pillars. The "Applied Sport Psychology" pillar (1) refers to the continuous monitoring of coaches and athletes during the sports season, with emphasis on the mental preparation associated with training and competition routines. On the other hand, the "Clinical Psychology" pillar (2), refers to the individualized care of the athletes considering their personal demands. Lastly the third pillar - "Career Orientation" (3) - refers to group and individualized counseling for athletes whose, for the purpose of (vocational) and career orientation, assisting in the present and future (re) organization of their careers inside or outside sport. This symposium will present in detail the actions related to pillar 1 - "Applied Sport Psychology". The field of sports psychology is composed of physical education professionals (research position) and psychologists (research and practice), both with specific training (lectures for all members and internship program for psychology students) in Sport Psychology field. It is organized into groups by sports modality to meet all needs of the STC-UFMG. The sport psychology actions are developed on three stages: team diagnosis/profile (1), composing the preliminary or entry evaluation, laboratory and field evaluations (training / competition); Instruction/orientation of the technical committee, composition, presentation and explanation of evaluation results, guidance on interpretation and application of results, field orientation (training/competition) (2); Intervention involving individual treatment on athletes/teams and field service (training/competition) (3). Both the evaluation instruments used and the intervention techniques are adapted to each modality and group profile.

*Keywords: applied sports psychology, sports center training –UFMG, Olympic sports, sports psychology in Brazil*

## **The role of alexithymia and competitive emotions in predicting flow in athletes**

**Duygu Karadag, F. Hülya Asçi (Marmara University)**

Flow is a state in which people become completely immersed in an activity. Alexithymia and competitive emotions may be important emotional variables that may influence flow since alexithymia is a subclinical phenomenon characterized by the that reduced ability to describe one's feelings, difficulty in distinguishing feelings from the bodily sensations of emotional arousal, impaired symbolization. The aim of this study was to examine whether or not alexithymia and competitive emotions predict flow in elite athletes. 150 females (Mean = 24.63; SD = 4.80 years), 150 males (Mean = 24.88; SD = 5.15 years), totally 300 (Mean = 24.76; SD = 4.97 year) elite athletes voluntarily participated in this study. Personal Information Form, Turkish versions of Toronto Alexithymia Scale-20, Emotion State Profile and Short Form of Dispositional Flow Scale were administered to all participants. These scales are valid and reliable for Turkish sample. Hierarchical regression analysis was conducted to test the role of alexithymia and competitive emotions in determining flow. Gender, year of sport experiences and type of sport were a control variable in Step 1 and 2 respectively. In Step 3, alexithymia and in Step 4, competitive emotions were included to the model. Hierarchical regression analysis, controlling gender, type of sport and year of sport experiences, indicated that alexithymia didn't predict flow in athletes ( $R=0.09$ ; Adjusted  $R^2=-0.000$ ;  $F(4,299)=0.57$ ;  $p>0.05$ ). Competitive emotional states were significant predictor of flow ( $R=0.40$ ; Adjusted  $R^2=-0.14$ ;  $F(8,299)=6.89$ ;  $p<0.01$ ). Analysis revealed that N- emotion was

negatively correlated with flow( $\beta=-0.27;p<0.01$ );N+ ( $\beta=-0.20;p<0.01$ );P- ( $\beta=-0.29;p<0.01$ );P+ ( $\beta=-0.12;p<0.05$ ) were positively correlated with flow. Results showed alexithymia has no influence on flow state in athletes, but competitive emotional state plays an important role in understanding flow experiences in athletes. This indicated that regulation of competitive emotion is important for experiencing flow in elite athletes.

*Keywords: alexithymia, emotional state, flow, elite athletes*

## Friday July 14th

### Posters Session 6. (9.30-10:30)

#### Intention to be physically active in low motivated Physical Education students

**Evelia Franco Álvarez (Centro Universitario Cardenal Cisneros - Universidad de Alcalá), Javier Coterón (Universidad Politécnica de Madrid), Valeria Gómez (Universidad de Flores), Jorge Brito (Universidad de Cuenca)**

One of the Physical Education (PE) major goals is to develop students who will engage in physical activity (PA) during their extracurricular time and will keep practicing it in the future. A concept deemed critical and strongly associated with this engagement is motivation (Wang et al., 2016). An area of limited inquiry has been focused on those students with low levels of motivation (Perlman, 2015). The aim of this study was to test a predictive model of intention to be physically active through motivational variables in a sample of low motivated PE students. Questionnaires were administered to 483 high school students aged 14-16 years. Spanish versions of the PE adaptations of TEOSQ, intrinsic motivation factor of the PLOC, DFS-2 and the Intention to be Physically Active Questionnaire were used in Spain. These all questionnaires were adapted and validated to be used in other participant countries. A model widely accepted among adolescents was tested through a structural equation model. Multi-sample invariance testing revealed that the proposed model was not invariant across students showing different motivational patterns. A new hypothesized sequence was tested in low motivational students in which the effect of intrinsic motivation on intention was deleted and the direct effect path from task orientation to intention was added. A new structure equation model supported the new predictive model and a multi-sample invariance test revealed that it was largely invariant across different countries. Findings suggest that underlying motivational processes behind PA engagement are different between high motivated and low motivated students in line with previous works pointing differences between motivated and amotivated students (Haerens et al., 2010). This study contributes to the body of knowledge of physical activity engagement by demonstrating the existence of a different motivational sequence for students with low forms of motivation.

*Keywords: amotivation, intention, invariance*

#### Effects of the language use on students' motivation within a bilingual physical education setting

**Evelia Franco Álvarez (Centro Universitario Cardenal Cisneros - Universidad de Alcalá), Cássia Hess (Universidade Estadual de Campinas), Javier Coterón (Universidad Politécnica de Madrid), Eliana de Toledo (Universidade Estadual de Campinas)**

Over the last few years bilingual education has been increasingly implemented in Spain. Physical Education (PE) is one of the subjects which has more frequently been selected to be taught in English language. The nature of this new PE setting could influence perceptions students have about this subject as well as their motivation towards physical activity (Baena-Extremuera & Granero-Gallegos, 2015). In the present study the effect of a bilingual methodology on motivation was analyzed. The sample consisted of 94 students aging from 12 to 14 ( $M=13.76$ ;  $SD=.86$ ). Experimental group ( $n=46$ ) was formed by two classes with different bilingual programs (high and low English level) and control group ( $n=47$ ), by two equivalent classes. Achievement Motivation to learn in Physical Education Test and intrinsic motivation factor of the Perceived Locus of Causality in Sport were used. The intervention lasted for 12 weeks and consisted in the implementation of different language uses. While the teacher only used English language in the control condition, sessions in the



experimental condition were taught interchanging English and Spanish by using code-switching. After the intervention a significant decrease in intrinsic motivation was found in the high English level experimental group. In line with other studies which have reported associations between intrinsic motivation and task challenge (Standage, Duda, & Ntoumanis, 2005), it is suggested this could be due to students in this group were used to take their lesson entirely in English and the use of code-switching (interchanging English and Spanish) could have made the classes not challenging enough and triggered the decrease in intrinsic motivation. No more significant differences were found. Findings suggest that the use of a monolingual or bilingual methodology does not have a great influence in the studied variables. Further investigation would be needed to better understand the effect of bilingual PE on motivation.

*Keywords: physical education, bilingualism, intervention*

### **Reliability and validity of the “Student Interest-in-the-Arts Questionnaire” (SIAQ) in Greek elementary traditional dance educational context**

***Evangelos Bebetsos, Aikaterini Koupani, Stella Rokka, Filippos Filippou***

The aim of this study was to confirm the “Student Interest-in-the-Arts Questionnaire” (SIAQ) (Brandon & Lawton, 2013) in a Greek elementary traditional dance educational context. The internal consistency of the SIAQ was also examined. The sample of the study consisted of 304 male and 348 female elementary school students of the 4th, 5th and 6th class all over Greece. For the data collection was used the Greek version of SIAQ. The questionnaire’s validity and reliability were checked by performing a confirmatory factor analysis, and an internal consistency analysis. Descriptive statistics, t-test for independent samples and One Way ANOVA analysis were used for the data statistical process. The fit indices which were considered are: namely minimum discrepancy, Root Mean Square Error of Approximation, Standardized Root Mean Square Residual, Comparative Fit Index, and Normed Fit Index. The results of this study obtained in the confirmatory factor analysis demonstrated that the hypothesized model produced a significant  $\chi^2$  (134.82)  $p < .05$ . The NFI, CFI, RMSEA, and SRMR value were found to be 0.98, 0.99, .080 and .028 respectively. From the analysis we came to the following conclusions: a. The Greek version of SIAQ has shown stable psychometric properties, which partially support its use in Greek elementary traditional dance school context. b. The students show a moderate interest in participating in Greek dance classes and there were statistically significant differences in interest concerning gender and school class. c. Gender is a differentiation factor for interesting with girls being more interesting than boys. d. 6th grade’s students showed more interest in traditional dance than those in the 5th and 4th.

*Keywords: traditional dance, learning theories, learning style, teaching method, motivation*

### **The factor structure and reliability of the Movement Imagery Questionnaire for Rehabilitation Settings-Second Edition (MIQ-RS2): A multi-trait, multi-method approach**

***Eva Monsma (Professional), Ali Brian (Professional), Samantha Weber (Student), Brian Seiler (Professional), Ryan Sacko (Student), Roger Newman-Norlund (Professional)***

The factor structure and reliability of the Movement Imagery Questionnaire for Rehabilitation Settings-Second Edition (MIQ-RS2): A multi-trait, multi-method approach Injury rehabilitation outcomes are an understudied area in the motor imagery literature. Aligned with the approach that established the factor structure of the Movement Imagery Questionnaire-3 (MIQ-3: Williams et al., 2012), this study extended the two-factor structure of the Movement Imagery Questionnaire for Rehabilitation Settings (MIQ-RS2: Monsma et al., 2016). The extension involves assessment of both internal and external visual imagery abilities along with kinesthetic imagery ability. Healthy participants (N=400) completed the MIQ-RS2 along with the MIQ-3 and the Vividness of Movement Imagery Questionnaire-2 (Roberts et al., 2008) which measure the same three imagery

abilities. Alpha coefficients ( $\alpha > 0.87$ ) and within-scale Spearman correlations for internal ( $r=0.73, 0.72$ ), external ( $r=0.77, 0.75$ ) and kinesthetic ( $r=0.69, 0.77$ ) abilities demonstrated internal consistency and convergent validity, respectively. The three scales were not multicollinear ( $r=0.47$  to  $0.61$ ), supporting the three abilities were related, but separate constructs. A multitrait-multimethod confirmatory factor analysis, with gender invariance was conducted to examine the factor structure of the MIQ-RS2. Results indicated the best fitting model was the correlated-traits correlated-methods model ( $CFI = .845$ ;  $SRMR = .069$ ;  $RMSEA = .111$ ), while displaying gender invariance but did not fit the data. Results are discussed in terms of employing bootstrapping procedures and the effects of completing three questionnaires which improved model fit to some extent. Subsequent studies should examine rehabilitation participants prior to making any model modifications.

*Keywords: injury rehabilitation, motor imagery, psychometrics*

### Physical activity and quality of life: focus group interviews with korean immigrants

**Eungwang Oh, Diane Gill, Youngsun Lee (UNCG)**

Quality of life (QoL) serves as a principal motivator and benefit of physical activity (PA) across cultures. However, previous research seldom included participants' perspectives of PA and QoL or ethnic minority populations. As a follow-up study of a larger investigation of PA and QoL in Korean immigrants residing in the U.S. (Oh, Jang, & Gill, 2016), this study examined patterns and trends of older generation and younger generation Korean immigrants using a multiple-category design with focus group data. Cross-group comparison was based on previous research which showed age as a moderator of the relationship between PA and QoL. A total of six focus groups of 5-6 participants each were conducted, which were audio-recorded, transcribed, and organized to main themes corresponding to the research questions. Interview questions included current PA behaviors, meaning of QoL, role of PA in QoL, and difference of PA experiences in the U.S. and Korea. The data were checked by a three-member research team and further reviewed by a second author. Research procedures following Framework Analysis offered clarity, transparency, and an audit trail. The findings indicated that while both generations reported positive benefits of PA in multiple dimensions of QoL, preferred types of PA and the role of PA in QoL differed. Concerning the meaning of QoL, both groups had similar responses. On the relationship between PA and QoL, both groups highlighted mental and emotional health benefits. Participants' different PA experiences between Korea and the U.S. were viewed as both advantages and disadvantages. The younger generation saw more advantages being in the U.S. than the older generation did. Also, cultural assimilation and gender may play a critical role in the relationship between PA and QoL.

*Keywords: quality of life, physical activity, culture, focus group interview*

### Analysis and evaluation of psychological skills associated with performance in rhythmic gymnastics

**Estefania Lopa Peralto (Universidad Pablo de Olavide), Patricia Jaenes-Amarillo (Universidad de Sevilla), Rafael Peñaloza Gómez, María del Pilar Méndez Sánchez (Universidad Autonoma Nacional de México), Alejandro Parejo (Universidad Pablo de Olavide)**

Analysis and evaluation of psychological skills associated with performance in Spanish rhythmic gymnastics Rhythmic gymnastics, psychological skills, performance, evaluation Summary: The main goal of this research project is to discover, when using the Questionnaire of Sports Performance related Psychological Characteristics (CPRD in Spanish) (Gimeno, Buceta, y Pérez-Llantada, 1999, 2001) the level of psychological skills associated with performance in Spanish rhythmic gymnastics, a sports specially considered very difficult to cope with from a psychological point of view. The CPRD has a very acceptable reliability level (Cronbach alpha coefficient = 0.85). 86 female gymnastic who participate in national competitions: Group A: successful: 36

subjects, and Group B: 50 subjects who was working under an intervention program with Sport Psychologist, unsuccessful gymnastics –they didn't have intervention-, who participate in local competitions. Age between 8,1-17,2 years old (Mean 12,04, SD 2,3) and may be useful to explain behaviour observed and to help in direct and indirect interventions. Results shown significant differences between successful and unsuccessful it points to differences between pre-elite (group A) and non-elite groups (B). The gymnasts who work with sports psychologists as part of their training obtain higher scores in Stress Control (SC), Performance Evaluation (PE), Mental Ability (MA).

*Keywords: rhythmic gymnastics, psychological skills, performance*

### Impact of received and perceived social support upon athlete's psychological well-being

*Eriko Katagami, Kahori Tsujita, Hironobu Tsuchiya (Osaka University of Health and Sport Sciences)*

Recently, the importance of social support in sport has been broadly recognised. While the correlation between received social support and sport performance related factors such as self-confidence, the relationship with well-being has not been fully examined. The current study aimed to examine the impact of received support and perceived support on athletes' psychological well-being. Furthermore, the relationship between received social support, perceived social support was investigated. Two hundred and thirty-nine Japanese university student athletes (Mean=19.69±1.01years) completed the questionnaires regarding social support and psychological well-being. The Athlete Received Support Questionnaire (Freeman et al., 2014), Social Support Scale for Athlete (SSSA: Tsuchiya, 2012), and Psychological Well-Being Scale (PWB: Nishida, 2000) were used to measure athletes' social support and psychological health. The results demonstrated that received support and perceived support were positively correlated each other. In addition, the results showed that an aggregate psychological well-being was positively correlated with received support ( $r=.31$ ,  $p<.01$ ) and perceived support ( $r=.31$ ,  $p<.01$ ). Specifically, it was shown that there was a positive correlation between 'personal growth' and received support ( $r=.30$ ,  $p<.01$ ) and perceived support ( $r=.28$ ,  $p<.01$ ). Also, 'positive relationship with others' was positively correlated with received support ( $r=.44$ ,  $p<.01$ ) and perceived support ( $r=.51$ ,  $p<.01$ ). In addition, multiple regression analysis reveal that received support positively predicted athletes' psychological well-being ( $\beta=.36$ ,  $p<.01$ ), while perceived support did not significantly predict it when we assumed psychological well-being as an outcome variable ( $\beta=.12$ , n.s.). In conclusion, received support can be a salient predictor of athletes' psychological well-being.

*Keywords: social support, psychological well-being*

### SERVQUAL for the evaluation of the quality of the educative service for the class of health and physical culture in high school in México

*Erika Gadea (UANL)*

At present day, mechanisms of quality evaluation in the academic institutions become more necessary at the different levels of education. Providing quality education is more complex and implies the update of the mechanisms of evaluation. These mechanisms require to be innovative and with a high reliability and fiability to allow the application and comprehension of the academic authorities. Given that, the objective of the current research is to analyze the psychometric properties of the questionnaire applied in the Mexican society. On this work, the SERVQUAL questionnaire, which is known as the deficiencies model, was applied. Through the questionnaire, the statistics and data were intriduced into the LISREL program. SERVQUAL was adapted to the Mexican scholar Context like the one made in Spain made with the secondary school and college levels. The test sample collected a total of N=1038 students, with a range age level of 15 to 18 years old, students of 8 different academic institutions of Universidad Autónoma de Nuevo León in the state of Nuevo León, México. After the results obtained from the factorial analysis confirmatory of the two scales (expectations and



perceptions) it can be considered that there are recommended scores to accept the model. As for the fitting criterion indexes, there are located superficially 0.90 (0.99 for the Comparative Index of Adjustment CFI; 0.95 for the Index of Fitting criterion AGFI and 0.99 for the Index of Kindness GFI). The error indexes place for below 0.10 (RMSEA=0.0, RMR=0.05, RMR =0.052) for the expectations and the indexes of fitting criterion of the scale of perceptions, there are located superficially 0.90 (0.99 for the Comparative Index of Adjustment CFI; 0.99 for the Index of Fitting criterion AGFI and 0.99 for the Index of Kindness GFI). The error indexes place for below 0.10 (RMSEA=0.0, RMR=0.052, RMR =0.052) The SERVQUAL questionnaire can be considered as a tool for evaluation of educational services-

*Keywords: quality, educational service, mexican service educative, highschool, physical education and health, education*

### **The contribution of coping related variables and vagal tone on working memory performance under pressure**

**Emma Mosley (Southampton Solent University, Bournemouth University), Sylvain Laborde (German Sport University, University of Caen), Emma Kavanagh (Bournemouth University)**

Skill failure under pressure is closely linked to excessive load on working memory (WM). Recently a combined approach to this phenomenon has been examined including facets of psychophysiology such as personality traits, stress appraisals and vagal tone, inferred from heart rate variability measurement. Therefore, the aim of this study was to assess the predictive role of personality traits (trait emotional intelligence and reinvestment), challenge and threat appraisals and vagal tone on WM performance under low (LP) and high pressure (HP) conditions. 49 participants (28 male, 21 female; Mage:  $24.1 \pm 6.5$  years) completed the personality questionnaires: Decision Specific Reinvestment Scale, Movement Specific Reinvestment Scale and the Trait Emotional Intelligence Questionnaire. They were invited to the laboratory on two occasions and completed a working memory task in LP and HP conditions, which were counterbalanced. During the task vagal tone measurements were taken at baseline, task and recovery for 5 minutes with stress ratings via a visual analogue scale. After testing self-report measures of motivation, stress appraisal, attention and pressure were taken. Stepwise regressions were run for vagal tone WM performance prediction. Baseline vagal tone predicted levels of vagal tone at task ( $p < .001$ ) and recovery ( $p < .001$ ) in HP and this was mirrored in LP for task ( $p < .001$ ) and recovery ( $p = < .001$ ). The change from baseline to task in the HP condition was predicted by a challenge appraisal ( $p = .004$ ). There were no salient predictors for WM performance, although correlation results suggested lower vagal tone in HP impaired performance ( $r = -.47$ ,  $p < .001$ ). From a theoretical perspective the findings support the notion that resting vagal tone can predict changes in vagal tone and subjective appraisal can influence physiological reactions to HP. Overall, this study provides scope for future research combining psychophysiological facets in differing pressure situations.

*Keywords: working memory, vagal tone, heart rate variability, pressure*

### **Basic psychological needs in exercise and exercise motivation among elderly candidate and elderly people**

**Alev Aktürk, Emine Çağlar (Hacettepe University, Ankara, Turkey)**

We investigated exercise motivation and basic psychological needs in exercise among elderly candidate and elderly people. Total 476 Turkish exercisers (Mage = 58.23, Sd = 6.14 years) participated in this study. The participants were classified into three age groups as 50-54, 55-64, and 65 and older ages. The participants younger than 65 years were considered as elderly candidates. Data were collected by using Behavioral Regulations in Exercise Questionnaire (BREQ-2), Basic Psychological Needs in Exercise (BPNE) and Borg Scale and were analyzed with independent sample t-Test and One-way ANOVA. We found statistically significant

gender differences on the competence and autonomy subscales of BPNE and on the intrinsic regulation, external regulation and introjected regulation subscales of BREQ-2 ( $p < 0.05$ ). Female participants had higher scores on these subscales. We also found significant age group differences on the both scales ( $p < 0.05$ ). Tukey test revealed that 65 years of age and older participants' scores of both scales significantly differed from than those of the other age groups. The scores of all BNPE subscales and Internal regulation and Introjected regulation subscales of BREQ-2 were lower in the 65 years of age and older participants, while their scores of External regulation and Amotivation were higher. Furthermore, we obtained significant RPE group differences only on the Relatedness subscale ( $p < 0.05$ ). Tukey test yielded that light RPE group significantly differed from hard and very hard RPE group. The light RPE group had lower scores on the Relatedness subscale. Regarding exercise motivation, results showed significant differences in the Introjected regulation and External regulation subscales of BREQ-2 among RPE groups. The light RPE group had lower scores than the moderate and hard RPE group. It can be concluded that female participants internally motivated and felt more autonomous and competence in exercise. Additionally, 65 years of age and older.

*Keywords: autonomy, competence, relatedness, elderly people, exercise motivation*

## How do illness stories shape physical activity experiences? Insights into arthritis as redemption and contamination

**Emily Hunt, Anthony Papathomas (Loughborough University)**

Although regular physical activity is often considered therapeutically beneficial for people living with arthritis, most still lead inactive lifestyles. Efforts to understand physical in/activity in arthritic populations have been limited to descriptive accounts of barriers and facilitators, which give no insight into how these factors are constructed within the context of the whole life. In this narrative inquiry, we explore the life stories of participants with arthritis to gain a holistic perspective into why some people overcome barriers to exercise and why some people do not. We conducted open-ended life story interviews with 6 men and 14 women aged between 24 and 79 years ( $M = 57$ ,  $SD = 14.4$ ), who were diagnosed with inflammatory and degenerative arthritis. Participants told their story of arthritis, with particular emphasis on their experiences of physical activity. Interviews lasted between 56 and 159 minutes, with a total of 34 hours of data collected. We transcribed the interviews verbatim and carried out an analysis of narrative structure and content. Participants' stories were told through contamination and redemption narrative structures. As part of the contamination narrative sequence, participants felt negative or ambivalent towards exercise, perceived greater barriers to exercise and emphasised negative exercise experiences. Alternatively, when narrating a redemption sequence, participants described personal growth, overcoming barriers to participation and were able to relate to exercise in a more positive manner. We suggest that how people story their lives with illness (through contamination or redemption) plays a role in shaping their physical activity experiences. Identifying the type of story a person with arthritis lives by can provide an insight into how they interpret and approach inevitable barriers to exercise. Practical implications consider how working with stories can support physical activity promotion efforts.

*Keywords: narrative analysis, exercise medicine*

## Relaxation techniques in stress control

**Pedro Reynaga Estrada, Elvia Alexandra Valadez Jiménez, Ivonne Michel Jiménez Ortega, Christopher David Flores Tello (Universidad de Guadalajara), Rossana de Fátima Cuevas Ferrera (Universidad Autónoma de Yucatán)**

The psychophysical response of stress, not being effectively confronted, can cause an impact on the nervous system that generates biochemical and hormonal changes with repercussions in the endocrine and



immunological systems. So using the right relaxation techniques is critical to stress management. A quasi-experimental study on the use of different relaxation techniques was carried out, the objective of the study was to analyze the effect of different relaxation techniques on the electrical response of the skin and the peripheral temperature. A total of 92 students and professors participated in the undergraduate degree in physical and sports culture at the University of Guadalajara, with a mean age of 24 years, of which 42.4% ( $n = 39$ ) were men and 47.8% ( $n = 44$ ) Women, 9.8% ( $n = 9$ ) refrained from specifying their sex. All the participants were given psychophysical indicators using the Psicotronic EDG-1500 Electrothermodermometer, through this device the participant obtained an instant visual and / or auditory biofeedback. The work session consisted in measuring the electrical response of the skin and the peripheral temperature in three stages: baseline, self-regulation and controlled relaxation where the participant had to choose one of three relaxation techniques. No statistically significant differences were found between baseline and use of different relaxation techniques. However, a statistically significant correlation was found between the peripheral temperature and the electrical response of the skin at the baseline. Based on the results it is concluded that the relaxation techniques do not generate significant changes in the psychophysical indicators of stress. Probably because the time intervals are insufficient to modify psychophysical measures so it will be necessary to deepen this variable in future investigations before discarding the effectiveness of relaxation techniques with biofeedback in this population.

*Keywords: relaxation responde, stress, biofeedback*

## Public shaming of professional athletes through social media

**Ellen MacPherson, Dr. Gretchen Kerr (University of Toronto)**

This study sought to explore the nature of public shaming practices directed towards professional athletes by sport fans through social media. Public shaming refers to social acts intended to express disapproval when an individual behaves in a way that violates perceived societal norms (e.g., Braithwaite, 1989; Massaro, 1997). The rise in social media use has given sport fans opportunities to connect with athletes on an individual basis, which fosters “unprecedented access to professional athletes and their personal and social lives” (Hambrick et al., 2010, p.455). While there are benefits that may be gleaned through this communication, little is known about the potential harmful interactions that may occur between fans and athletes. As a result, this study was designed to explore the nature of public shaming of professional athletes on social media when athletes violate perceived legal, social, or sport-related norms. A content analysis of fans’ tweets, photographs, and online posts on Facebook, Instagram, and Twitter toward ten professional athletes who had engaged in a perceived norm violation was conducted. The norm violations ranged from disappointing sport performances and the use of performance enhancing drugs to various criminal charges. The data were analyzed thematically and revealed that fans’ interactions with professional athletes on social media following norm violations included: expressing one’s withdrawal of support for the athlete, personal attacks on sport-specific character and desired consequences for the athlete as a result of his/her perceived norm violation. Moreover, the findings indicated that the fans’ interactions varied according to the athlete’s gender and level of performance success. This study highlights the importance of social media as a vehicle by which strangers may interact with and potentially harm professional athletes, thus presenting a new challenge for the well-being of these athletes. Future directions will be discussed.

*Keywords: social media, public shaming, content analysis, professional athletes*

## Investigating the relationship between authentic leadership and follower outcomes in sport: A cross-sectional study

**Ella Malloy (University of Birmingham)**



Authentic leadership (AL) is a newly recognized style of leadership which could have promising outcomes in sport. Authentic leaders are genuine and show consistency between their behaviours and personal values, possess high moral values, which are mirrored by their followers, and are concerned with their followers' development (Avolio et al, 2004; Gardner et al, 2005). Only two studies have been conducted on AL in sport and found that AL is positively related to athletes' enjoyment and commitment and these relationships were mediated by trust. This study sought to investigate the relationship between coach AL and athlete commitment, drop out, wellbeing and moral behaviour, and whether these relationships are mediated by trust and the team coach created climate. Participants were 400 male and female adult and adolescent athletes, recruited from various team sports teams in the West Midlands. Data collection is ongoing but we expect to find a positive relationship between authentic leadership and followers commitment, morality and well-being and a negative relationship between AL and athlete drop out. Team climate and trust are expected to mediate these relationships. These findings will mean AL could be key to creating more positive follower outcomes which could help to address the issues of low sport participation levels and antisocial behaviors in sport.

*Keywords: morality, commitment, trust, well-being, drop out, team climate*

### **Development and transfer of life skills in high level skating: Comparison of the experiences of female coaches and their skaters**

***Elise Marsollier, Christiane Trottier (Université Laval, Québec)***

The coach-athlete interactions are essential in the process of life skills development and transfer (e.g., Gould & Carson, 2011). Few studies have simultaneously considered the experiences of athletes and their coaches to examine the development and transfer of life skills, and even fewer have focused on female athletes and coaches. The aim of this study was to compare how elite female figure skaters and their female coaches experienced the development and transfer of life skills. We used a qualitative multiple-case study approach (Yin, 2014), with each case representing one coach and two of her skaters. In total, six coaches and 12 skaters aged 14 to 21 years were interviewed twice about the life skills thought, learnt and transferred during the last year. First, the content of each transcript was analyzed deductively and inductively (Miles et al., 2014; Yin, 2014). The deductive analysis was based on the literature, including Pierce et al.'s (2017) model. Second, the six cases were cross-analysed. All coaches and athletes reported that the demands of the sport largely explained the development of life skills such as perseverance, commitment, and stepping out of one's comfort zone. There were also discrepancies across cases. Some coaches reported teaching life skills such as maintaining focus or other life skills important for healthy development (e.g., self-esteem, respect), and some athletes reported learning life skills that differed from those that the coaches reported teaching. Furthermore, the athletes explained that, with time and experience, they underwent personal improvements through the learned life skills. The coaches reported that they rarely focused on life skills transfer, believing this to be the athletes' or their parents' responsibility. Overall, the athletes and coaches described an indirect development of life skills, with mostly implicit transfer, and the athletes appeared to be the key actors in this transfer.

*Keywords: life skills, elite figure skating, implicit transfer, demands of sport, identity change, female coaches*

### **Integration of psychological and physiological activity during fencing competition: consequences on mental preparation**

***Elisabeth Rosnet (UFRSTAPS, University of Reims), Philippe Dedieu (IRFSS Croix Rouge Française), Michel Salesse, Maxime Bourdageau, Eric Srecki, Olivier Hanicotte, Jean-Pierre Philippon (Fédération Française d'Escrime)***

Characterization of psychological and physiological activity during competition is of high interest to better understand elite performance and to help to define more efficient training applications. A fencing match

include offensive and defensive actions with repeated back and forth movements (Lavoie and al., 1985; Bottoms and al., 2011) before and during the final action leading to hit. These movements are of high intensity and are mixed with lower intensity level periods allowing recovery (Bottoms et al., 2011). The issue of this study is to explore the possible relationships between heart rate, lactatemia and psychological states during performance in a competitive context. 37 fencers (international level) aged between 18 and 20 years old participated to the study during 6 national level competitions in U20 or adult category, one for each weapon and gender (foil, epee, sabre x male and female). Lactates were determined from 20 µl of capillary blood. Heart rate was registered all day long with a heart rate monitor. Psychological states include perceived stress, perceived activation, perceived fatigue, and perceived stake and were rated with 10 cm visual analogic scales. Measures were done when arrival on site, at the end of warm-up, before and after each match during the pool phase (only before and after the whole pool for the psychological data), and before and after each match during the direct elimination phase. A log book of the matches (time, duration, pauses, score evolution) was written for each participant. Analyses are presented according to weapon, gender and opponent's level (rated by national and international rankings). They show significant relationships that may highlight and reinforce the processes explaining the efficiency of mental preparation techniques and explain from a different point a view some phenomenon like "fear of victory".

*Keywords: mental preparation, fencing, lactatemia, competition, performance*

## Comparison of athletic identity levels between athletes from collective and individual sports

**Walan Robert da Silva, Elisa Ferrari, Fernando Luiz Cardoso (Santa Catarina State University)**

Athletic identity (AI) can be understood as the way in which the subject-athlete constructs the notion of him/herself in relation to the emotions of his/her interpersonal conviviality and his/her interactions from sports practice and environment. The objective of the present study was to compare the level of AI among athletes of collective sports (CS) and individual (IS) between both biological sex (men and women). To measure the AI it was used the Brazilian version of Athletic Identity Scale Measurement (AISM). The study included 197 athletes, 71 from individual sports (athletics and judo) and 117 from collective sports (indoor soccer and handball), 110 women and 70 men. In order to verify the differences among the athletes, the t-test was used for independent samples and a significance level of 5% was adopted. Significant differences were found in AI levels between sports types ( $t = 4.38$ ,  $p = 0.001$ ), with IS` athletes presenting an average of 40.1 scores ( $sd = 3.8$ ) and CS` athletes mean of 37, 4 ( $sd = 4.37$ ). Regarding the comparison between the sexes, men presented higher levels of AI (39.5;  $sd = 3.6$ ) when compared to women (37.8;  $sd = 4.7$ ) ( $t = 2.42$ ,  $p = 0.016$ ). The results found in this study may be related to gender culture issues perceptions in sport, besides of aggressiveness and competitiveness perception` factors that characterize the sports studied.

*Keywords: athletic identity, collective sports, individual sports, gender culture*

## Mental training in the management of anxiety and self-confidence in selected athletes in Chile

**Eliot Brito (Instituto Nacional de Deportes)**

This work consisted in a program of Mental Training in the management of Anxiety and Self-confidence, in selected Chilean national discus throwing and javelin. Its aim is to be an efficient instrument for all those athletes who suffer problems at motor, physical and physiological level, which added to the loss of self-confidence, feel as their sports level has decreased. The sample that configures this proposal is 5 participants ladies, whose Ages range from 14 to 17 years. It was not possible to find some type of study in relation to the control of the anxiety and the increase of the self-confidence in athletes who threw the disc, the javelin or the

hammer. It was only possible to collect information from other individual sports that related to these psychological variables, as well as bibliography related to the variables indicated above. With the objective of increasing management in the control of anxiety through the application of relaxation techniques and improving self-confidence through the application of cognitive restructuring techniques. For data collection, we used tests that measured STAI anxiety and LOHER and ACEP self-confidence. STAI, score less than 28 in 4 of them and one of 31, a low state anxiety type. ACEP in all athletes the level of self-confidence is less than 50%. The first objective was to work with Jacobson's progressive muscle relaxation technique and Visualization, yielding a decrease in anxiety and trait status. For the second objective, cognitive restructuring sessions were performed, obtaining improvements in the results. ACEP, raised their score and LOHER, three athletes gets 150 out of a total of 210, and two gets 158 out of a total of 210. Changes were observed in the athletes through the information collected by the tests and mainly in the results at the competition level, that three of the athletes achieved gold medal in South American sub 18 (discus throw) and South American school in javelin and discus throw.

*Keywords: mental training, anxiety, self-confidence*

### **Match-Fixing: a threat to the values of sport. Representations of the phenomenon among Italian League B football players**

***Eleonora Reverberi, Eloisa Cianci, Diletta Gazzaroli, Caterina Gozzoli (Catholic University of Sacred Heart)***

Today, Match-Fixing (MF) is a phenomenon of great relevance and, unfortunately, more and more widespread in sport context; it originates from the failing of morality and in the non-application, or the lacking safeguard, of those values that characterize healthy sport (McNamee, 2013). Moreover, despite the existence of a significant amount of policy implementation lines related to MF, at both national and European level, the scientific literature from psychological, relational and organizational point of view, is still very limited (Hill, 2009; Huggins, 2017). The aim of this contribution is to present what professional football players belonging to the second division of Italian professional Football League (League B) know and think about MF and their disposition toward it. The purpose of this study, therefore, has been to fill the abovementioned gap in literature, trying to understand 1) player's personal and socio-relational characteristics, 2) their knowledge about MF and 3) their behaviour toward MF. For this purpose, a structured questionnaire has been developed and proposed to 283 professional players members of the 22 Teams belonging to Italian Football League B. Due to the explorative nature of this project, it has been done descriptive analysis of collected data. Results show that players have a great awareness of MF. However, when players perceive their possible, or effective, involvement in an illegal situation, as "members of a team", they deal with the situation by keeping it limited into the sport context, without involve others actors from outside this context, generating a situation of "code of silence" about it. This research represents the first step of an ongoing project granted by the European Union, aimed to increase our knowledge of the MF phenomenon and its social and relational dynamics.

*Keywords: match-fixing, values in sport, football*

### **Validation of the portuguese version of the work motivation scale in sport coaches**

***Eduardo Jorge Brazão Vacas de Sousa da Silva (Universidade Lusófona, Lisbon), David Sánchez-Oliva (University of Extremadura, Universidade de Lisboa, Lisbon), António Labisa Palmeira (Universidade Lusófona, Lisbon)***

The Motivation at Work Scale (MAWS, Gagné et al., 2010) was developed in accordance with the multidimensional conceptualization of motivation postulated in Self Determination Theory (SDT). Research in different domains (e.g., Sports), has supported that autonomous motivation leads to positive motivational consequences, whereas controlled motivation should be associated with negative outcomes, which could lead



to the use of need thwarting strategies as a coach. The aim of this study was to develop a validated version of the Portuguese MAWS, in Sport Coaches. Participants were 369 coaches (males = 288; age: 18–67 years,  $M=32.4$ ,  $SD=11.04$ ) from various sports. Factorial, discriminant and nomological validity were analyzed. The Confirmatory Factor Analysis obtained acceptable values, with high factor weights ( $\lambda \geq .500$ ) and appropriate individual reliabilities ( $\lambda \geq .25$ ). The adjustment indexes were: TLI = .889; CFI = .916; GFI = .915; SRMR = .069 and RMSEA = .077. Cronbach's alpha [.646-.810] and composite reliability [.650-.833] scores were acceptable. Regarding discriminant validity, Intrinsic, Identified and Introjected motivation were negatively related with Amotivation and positive related with each other. Weak positive associations between Intrinsic and Introjected and Extrinsic motivation were observed. In nomological validity, the correlations between MAWS and the Portuguese version of Coach Motivation Questionnaire (CMQ: McLean et al., 2012) were moderate positive between autonomous regulations and weak positive between autonomous and controlled regulations. Amotivation had a weak negative relation with the three more autonomous regulations and had a moderate positive relation with External. This study suggests that the Portuguese version of MAWS is a promising, parsimonious questionnaire to assess work motivation on the sport coaching context, even though its development remains a work in progress.

*Keywords: motivation, work, validation, coaches, confirmatory factor analysis*

### Validation of the Portuguese versions of the need satisfaction and need frustration scales in sport coaches

**Eduardo Jorge Brazão Vacas de Sousa da Silva (Universidade Lusófona, Lisbon), David Sánchez-Oliva (University of Extremadura, Universidade de Lisboa, Lisbon), António Labisa Palmeira (Universidade Lusófona, Lisbon)**

Coach motivation may have a cascade effect on the athletes' motivation. The Basic Needs Theory (BNT), a mini-theory of Self-Determination Theory (SDT) posits that individuals possess three innate psychological needs which, when satisfied, provide the necessary nutrients for psychological growth and wellbeing. The aim of this study was to develop validated versions of the Portuguese version of Basic Psychological Need Frustration Scale (BPNFS: Chen et al., 2015) and Basic Psychological Needs at Work Scale (BPNWS: Sánchez-Oliva et al., 2016) in sport coaches. Participants were 369 coaches (males = 288; age: 18–67 years,  $M=32.4$ ,  $SD=11.04$ ) from various sports. Factorial, discriminant and nomological validity were analyzed. The Confirmatory Factor Analysis obtained acceptable values for both scales, with high factor weights ( $\lambda \geq .500$ ) and appropriate individual reliabilities ( $\lambda \geq .25$ ). BPNWS and BPNFS had respectively the following adjustment indexes: TLI = .887 and .860; CFI = .913 and .892; GFI = .914 and .918; SRMR = .051 and .065 and RMSEA = .095 and .087. Cronbach's alpha [.748-.841], [.724-.759] and composite reliability [.758-.850], [.728-.780] were good. The discriminant validity was also demonstrated through the interfactor correlations (BPNWS = .536-.720; BPNFS = .405-.461). Lastly, the nomological validity was evaluated through the associations with the Portuguese version of Coach Motivation Questionnaire (CMQ: McLean et al., 2012). A weak negative association between the needs frustration and autonomous regulations was found, as well as a weak positive relation with controlled regulations. This study suggests that the Portuguese versions of BPNFS and BPNWS are promising, parsimonious questionnaires to assess need satisfaction and frustration on the sport coaching context, even though its development remains a work in progress.

*Keywords: basic needs, validation, coaches, confirmatory factor analysis*

### Peer leadership, cohesion and team performance in intramural football

**Edson Filho, Alex Toward (University of Central Lancashire)**



The majority of research on leadership across domains of human performance has been focused on coaches and managers rather than on peer leaders (see Hiller, DeChurch, Murase, & Doty, 2011). To advance research beyond this known “leader-follower dichotomy”, we explore the relationship among peer leadership behaviors, cohesion and team performance in an intramural college 5-a-side football tournament. Seventy-two players (40 male and 32 female; Mage = 20.58; SD = .73) participated in the study. The participants completed a demographic questionnaire and surveys on peer leadership (Revised Peer Sport Leadership Behaviour Inventory; Shipherd, 2013), cohesion (Group Environment Questionnaire; Widmeyer, Brawley, & Carron, 1985), and perceived team performance (Team Outcome Questionnaire; Coleman, 2011). Objective performance scores (i.e., percentage of total points) were obtained from the official league website. A backward stepwise regression analysis was conducted with subjective performance as the dependent variable. Noteworthy, subjective performance correlated highly with objective scores ( $r = .88$ ;  $p \leq .01$ ), thus attesting for the predictive validity of this psychometric measure. The final parsimonious regression model accounted for 85.1% of the variance of performance scores. Character ( $\beta = .45$ ;  $p < .01$ ) was the only peer-leader trait predicting performance. Group-integration task cohesion scores ( $\beta = .52$ ;  $p < .01$ ) were also positively related to performance, as well as the age ( $\beta = .10$ ;  $p = .04$ ) and gender (dummy coded 0/1 variable;  $\beta = .20$ ;  $p < .01$ ) of the players. Together, these findings suggest that, at this level of competitive play, character is the most valued peer leadership trait. Furthermore, in addition to peer leadership style, players’ personal characteristics (e.g., age and gender) and team-level processes (e.g., cohesiveness levels) should be taken into account by practitioners working towards improving team dynamics and performance in sports.

*Keywords: peer leadership, cohesion, team dynamics*

### Self-esteem and empathy toward obese people in university students of exercise sciences

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Self-esteem and empathy toward obese people in university students of exercise sciences

**Objective:** to determine the level of self-esteem in university students of exercise sciences and their empathy toward obese people. **Methods:** A total of 80 exercise sciences university students of the National University of Chimborazo, Ecuador ( $22.1 \pm 2.09$ -years;  $BMI = 22.4 \pm 1.49$  kg/m<sup>2</sup> normal-weight; 81.3% men y 18,7% woman) participated in this study. Emotions versus obese people was studied through the Bason empathy scale, which contains 8 emotions (sympathy, compassion, tenderness, affection, repugnance, kindness, pity and contempt), with a score scale from 1 to 7 (1=nothing; 7=much). Self-esteem was measured by the Rosenberg self-esteem scale (categorized in high, medium and low self-esteem). Comparisons between percentages of self-esteem categories were analyzed by Chi-2. Descriptive analysis of emotions percentages was performed. Student t-test was used to compare by gender the mean score of Bason empathy scale. **Results:** Low levels of self-esteem were shown for the 73.8% of the sample ( $\chi^2 = 0.03$ ). Only 7.7% of men showed high level of self-esteem versus 0% of women. Independently of the gender, tenderness and contempt were the emotions with the highest score percentages (26.3% and 30%, respectively). There were statistical differences between gender for all emotions except, sympathy and compassion. Women presented higher score than men ( $p < 0.05$ ) in all emotions versus obese people, except in kindness. Affection, pity and contempt presented the highest differences in score between women and men (Affection: women =  $5.7 \pm 1.4$  versus men =  $4.8 \pm 1.3$ ,  $p < 0.001$ ; Pity: women =  $6.1 \pm 1.1$  versus men =  $4.9 \pm 1.5$ ,  $p < 0.001$ ; contempt: women =  $5.4 \pm 1.4$  versus men =  $3.9 \pm 2.1$ ,  $p < 0.001$ ). **Conclusions:** Most exercise sciences university students presented low levels of self-esteem. There are important gender differences related to the empathy emotions toward obesity in this population

*Keywords: obese people, emotions, self-esteem, exercise sciences students, empathy*



## For sport versus through sport: The role of the coach in youth athletes' moral character development

**Eoin Murray, Susan H. Backhouse, Nicholas Stanger (Institute for Sport, Physical Activity and Leisure, Leeds Beckett University, UK)**

Sport has been promoted as a vehicle for moral character development in young people. However, the coaches' role in the moral development of youth athletes across both performance (e.g., academy) and participation (e.g., local level) domains has not been investigated. Accordingly, this research explores the perceived role coaches' play in facilitating moral character development in youth soccer players across performance and participation domains. Semi-structured face-to-face interviews were conducted mid-season with seven performance and seven participation domain coaches of boys' soccer teams. Interviews were transcribed verbatim and analysed using thematic analysis. Though developing moral character in youths was perceived important by both performance and participation coaches, the rationale and approaches employed differed between domains. Performance domain coaches placed more emphasis on promoting moral character to benefit sports performance (e.g., encouraging respect amongst team mates to improve on-field performance), whereas, participation domain coaches sought to discourage undesirable behaviours (e.g., antisocial acts) and promote desirable (e.g., honesty) behaviours to benefit athletes moral character through sport. Coaches across both domains drew upon previous experiences to inform their approach to player moral character development and expressed several domain-specific challenges (e.g., parental involvement). Moreover, the approaches used by participation coaches were predominantly reactive in nature (e.g., consulting parents following antisocial acts), whereas performance coaches employed more expectation based approaches (e.g., emphasised responsibilities within the club). In sum, our findings suggest that greater emphasis is placed on developing moral character "for sport" in the performance domain and "through sport" in the participation domain. This insight provides further justification for tailored domain-specific coach education programs.

*Keywords: coach education, morality, positive youth development*

## The use and application of mental-imagery in triathlon

**Heeju Kim, Duksun Chang (Korea National Sport University)**

The purpose of this study was to investigate the use and application of mental-imagery among Triathlon athletes. For this study, in-depth interviews were conducted with 10 male and female athletes who were national team members and participated in international competitions. From the interview, a model for the use and application of mental-imagery of elite triathlon athlete model was constructed. First, A total of 215 raw data and 13 sub-areas were classified from the interviews that were on the mental-imagery types prior to a competition. Major areas were categorized into five, such as operational mental-imagery, goal mental-imagery, positive mental-imagery, video mental-imagery & routine mental-imagery. Second, A total of 128 raw data were classified from the interviews that were on the mental-imagery types during competitions.. This data was classified into 7 sub-areas, including game strategy, knowing opponents, preparing for the game, understanding game situation, negative mind and positive mind control. Third, A total of 110 raw data were classified from the interviews that were on the mental-imagery types after competitions. This data was classified into 5 sub-areas, including replay mental-imagery, regret, review, positive image, and scenario reconstruction. Fourth, A total of 51 raw data were derived from the interviews that were on the mental-imagery(M-I) types in transition. This data was classified into 6 sub-areas including position-preoccupancy M-I, sport switching M-I, group formation M-I, equipment arrangement M-I, root M-I and penalty M-I. Finally, we found that the purpose of the athletes' M-I was to improve their performance. The M-I was being conducted before, during, after the game and transition M-I that were related to peak performance. A comprehensive model that maximize the technical and self-care M-I on better imagery practice was presented.

*Keywords: triathlon, transition, experience imagery, utilization imagery*

## Motivational climate and youth beliefs about sport

**Marcio Domingues (ULHT)**

Past research (Pensgaard & Roberts, 2002) tells us that the motivational climate is essential for youth athlete development. The purpose of the study was to characterize the clubs with different goal achievement regarding their coaches and to analyse the effects of the climate in sportsmanship and goal orientation variables. In Study one we examined the results associated with the training environment resulting from the Task and Ego Orientation and Sports Attitude Questionnaire (SAQ). We sampled 132 football youngsters with ages 13-16 years old, six coaches from the two clubs in the centre and north region of Portugal an elite club and a regional club. In study two we investigated the context effect on the relationship between perceived motivational climate questionnaire (PMCSQ) and social-moral functioning (SAQ) in a group of young male Portuguese football players from a professional club and a regional club. A cross sectional quantitative study of 125 male football players (aged 13–17 years) was conducted. The results from study one point out a difference in goal attainment in the perspective of the coaches and to the existence of an environment effect on the dependent variables (higher in the elite club). Both clubs showed similar results in ego orientation which could be conducive of different ego orientations as an expression of different sporting contexts. Also, Study two shows higher scores both in moral attitudes (Sage, Kavussanu & Duda, 2006) and perceived motivational climate for the youth athletes from the professional club with clear task orientation and a more prosocial acceptance of sport (Pensgaard & Roberts, 2002). Conclusion: Findings illustrate the importance of studying contextual cues in order to determine motivational climate and provide an understanding of perceived coach created climate. A mastery oriented climate poses as an imperative on youth sports development and can be considered a possible implication in future studies.

*Keywords: goal achievement, motivational climate, context, sport*

## Integrated mindfulness-based intervention to enhance performance-relevant psychological skills of elite badminton players

**Doron Julie (French Institute of Sport (INSEP), France), Rouault Quentin (French Institute of Sport (INSEP), France; University of Nantes) Jubeau Marc (University of Nantes), Bernier Marjorie (University of Western Brittany Brest, France)**

While the application of mindfulness in the sport domain and its enhancement has exploded in recent years, mindfulness-based intervention programs for elite performers need further development and validation with the scientific rigor, appropriate openness, and sport-specific relevance (Sappington & Longshore, 2015). This study aimed to design an integrated program, drawn heavily on MAC approach (Gardner & Moore, 2007), that suited the characteristics of the elite athletes and the specific demands of badminton. Specifically, the purpose was to evaluate the efficacy of an integrated mindfulness-based intervention (MBI) on the self-regulation attentional skills and performance of elite badminton players. 25 young elite badminton players from two French Badminton Federation's National Training Centres were recruited for this study. They were assigned either to the experimental group (MBI program;  $n = 13$ ,  $M_{age} = 16.15$ ,  $SD_{age} = 1.34$ ) or to the active control group (Relaxation program;  $n = 12$ ,  $M_{age} = 16.58$ ,  $SD_{age} = 1.24$ ). All participants completed the online questionnaire (Mindfulness Inventory for Sport, Thought Occurrence Questionnaire for Sport, subjective performance) one week before the intervention (lasting 8 weeks) and two weeks after the end of it. The results of MANOVA yielded a significant multivariate effect of the intervention on the delta scores of self-regulation attentional skills (Wilk's  $\eta^2 = .35$ ,  $F(6, 18) = 5.57$ ,  $p < .01$ , partial  $\eta^2 = .65$ ). The results of univariate ANOVAs indicated that delta scores of refocusing ( $F(1, 23) = 4.03$ ,  $p = .06$ ) and task-irrelevant thoughts ( $F(1, 23) =$

13.05,  $p < .01$ ) differed significantly across the two programs. MBI may be a useful mental training intervention for improving self-regulation attentional skills. Considering that the elite sport is quite different from others contexts, applying and integrating mindfulness-based interventions that successfully meet the demands of elite athletes and sport seems crucial.

*Keywords: mindfulness-based-intervention, elite sport, badminton, performance-relevant psychological skills, performance*

### **Aerobic exercise training ameliorates craving and inhibitory control in methamphetamine dependencies: A randomized controlled trial and event-related potential study**

**Dongshi Wang, Chenglin Zhou (Ningbo University, P.R.China)**

Methamphetamine (MA) usage has been recognized as a prominent substance-abuse issue. While exercise training reportedly improves fitness and mental status in the MA-dependent, how exercise training affects addiction and cognitive deficiency has yet to be established. The current study aimed to determine the effects of aerobic exercise training on both MA-associated cravings and inhibitory control among those with MA dependencies. Design: A 12-week randomized controlled trial. Sixty-two people with MA dependencies recruited through the Drug Rehabilitation Bureau were assigned to either an aerobic exercise or attentional control group, with 50 participants completing the trial. The aerobic exercise program involved three 30-min sessions of moderate-intensity exercise per week. Along with a pre-test assessment, craving levels were evaluated every three weeks, and data on neutral and MA-related inhibitory control as well as its elicited neuroelectric activation were collected at the end of the intervention. Compared with the control group, the exercise group experienced attenuated MA craving levels after 6 weeks of the exercise program, and the decreased trend was maintained until the termination of treatment. In the post-test, the exercise group also demonstrated more accuracy in behavioral inhibitory control as well as greater N2 amplitude in the Nogo condition of both the standard and MA-related tasks than those in the control group or pre-test. The current study provides the first evidence that aerobic exercise training may be efficacious for MA-associated cravings and inhibitory control from behavioral and neuroelectric perspectives among MA-dependent individuals.

*Keywords: aerobic exercise, executive function, ERP, methamphetamine, rehabilitation*

### **Repetitive transcranial stimulation on the somatosensory and premotor cortices modulates the level of kinesthetic perception**

**Dong-Chan Huh, So-Hee Shim (Sungkyunkwan University)**

The effects of repetitive transcranial magnetic stimulation on kinesthetic perception, when applied to the somatosensory and motor parietal cortices, were examined. Further, the facilitatory and inhibitory effects of repetitive transcranial magnetic stimulation (rTMS) using different stimulation frequencies were tested. For the somatosensory cortex stimulation experiment, six female and nine male participants were asked to perceive the tendon vibration illusion of the left wrist joint and to replicate the illusion with their right hand. When comparing changes in the corresponding movement amplitude and velocity after three different repetitive transcranial magnetic stimulation protocols (sham, 1 Hz inhibitory, and 5Hz facilitatory rTMS), both movement amplitude and velocity were found to decrease with the inhibitory rTMS, while there was no increase of both variables when the facilitatory rTMS was applied. Next, the identical protocols were used to stimulate the premotor cortex experiment. Another group of 15 subjects (8 female, 7 male) participated for this experiment. The results showed significant increase and decrease of kinesthetic perceptions for both variables. Decrease of the movement perception is possible by simply limiting the source of somatosensory information during the early stage of the somatosensory processing pathway. However, to perceive the increased amount of movement sensation, this type of perception should be available. Therefore, with the existing somatosensory



information processed by the somatosensory cortex, only the facilitation of the pre-motor cortex could generate the increased amount of movement perception. These contrasting results from 2 experiments suggest that, while the somatosensory cortex functions as a primary input pathway for the somatosensory processing, the pre-motor cortex is the cortical area where the perception of movement (kinesthetic perception) is generated.

*Keywords: kinesthetic perception, tendon vibration, transcranial magnetic stimulation*

## Bioenergetics and psychological profile of an ultra-endurance walker

**Donatella Di Corrado (University Kore of Enna)**

Ultra-endurance non-stop walking provides athletes with significant physiological and psychological challenges. In this study ultra-endurance walking races are intended as events where the participants have to cover the largest distance within a given time, usually 24, 36, 48 hours, or longer, keeping the pause time within 5% of the total walking time. The aim of the study was to evaluate the metabolic, bioenergetics, and psychological characteristics of a world record ultra-endurance walker during three different non-stop ultra-endurance events characterized by different durations (36h, 48h and 70h non-stop). The participant investigated in this study is an experienced male (age 41 years; mass 69 kg; height 173 cm), who walked using always the Nordic walking technique. During the 70h event, our walker broke the "Longest Marathon Nordic Walking" Guinness World Record covering 274 km in 70h. An overall time-dependent increase of oxidative stress, as assessed by lipid hydroperoxide levels, was observed over all of the three events. Speed and metabolic cost of walking decreased rather linearly with walking time over all the three events. The results of the psychological response demonstrated that the participant reported significant fluctuations in emotions during each event. Nevertheless, the results show how the walker was able to apply "energy-saving strategies" allowing him to reach the goal of the completion of each non-stop event.

*Keywords: endurance, walking, exercise intensity*

## Health risk perception and perception bias by the physical activity level among middle-aged adults

**Dojin An (SeoulTech), Hyunmyung Chang, Youngho Kim**

The study was to identify the differences between individuals' own health risk perceptions and those of others at the same age. Moreover, this study tried to explore the differences in perception bias toward health risks by gender and the physical activity level. Three hundred fifty questionnaires were initially distributed to company employees and sports center members. Among them, total 332 were finally used in this study (male: 166, female: 166, Mage=49.32 years). Self and other risk judgment profile was revised into Korean and applied in the study. Frequency analysis and independent t-test were carried out by SPSS 23.0. Results indicated that middle-aged adults tend to have unrealistic perceptions of their vulnerability to most health risks and perceive their own likelihood of encountering all health risks events as lower than that of others. In addition, the finding revealed that there were significant differences in perception bias toward health risks by gender and the physical activity level. The significance of this study lies in the fact that it made a unique contribution to the existing knowledge about middle-aged adults' health risk perceptions.

*Keywords: health risk perception, perception bias, physical activity, middle-aged adults*





## Effects of a physical fitness program on fear of failure, physical self-perception and physical fitness in physical educational classes

**Marco Correia (University of Lisbon, Portugal), Diogo Teixeira (Lusófona University, Portugal)**

Properly designed physical conditioning is an effective method for developing childrens' health-related physical fitness. However, changes in fear of failure and in physical self-concept levels of school students due to an intervention of a fitness program are limited and sparse. The purpose of this study was to assess the short-term effect of a physical fitness program on fear of failure, physical self-concept and physical fitness among school students. An experimental 8-week program was developed in Physical Education (PE) classes with a sample of 218 students, randomly divided in two groups (Control: M=12.03 years, SD=1.234; 61 M/43 F; Experimental: M=11.99 years, SD= 1.109; 57 M/57 F). Fear of failure (Performance Failure Appraisal Inventory), Physical self-concept (Physical Self-Description Questionnaire) and physical fitness (FITESCOLA battery tests) were measured at the beginning and end of the intervention. Descriptive and inferential analyses were extrapolated to identify possible differences across time and groups. Main results show an improvement in physical fitness in both groups, being more evident in the experimental group. Regarding fear of failure and physical self-concept, no reported differences were found over time. However, general fear of failure in the last fitness test evaluation was strongly and positively correlated with several fitness scores, in the control group. General fear of failure presented a strong negative correlation with sports competence, general physical competence, flexibility and resistance subscales at baseline. Overall, results presented in this study identify: a) the importance of short term specific fitness programs in physical educational classes; b) a correlation between fear of failure and fitness testing score, and; c) a negative correlation between fear of failure and perceived self-concept. Consequently, PE teacher should be aware of such findings when planning physical activities and in-class fitness programs.

*Keywords: physical fitness, physical education, fear of failure, perceived competence*

## Understanding motivational determinants of enjoyment and intention to continue in competition of persistent Portuguese swimmers

**Diogo Monteiro, João Moutão, Raúl Antunes, Nuno Couto, Luís Cid (Sport Science School of Rio Maior)**

The aim of this study was to analyse the hypothetical causal relationships of a model that integrates self-determination theory and achievement goal theory in order to understand the impact of the motivational climate, basic psychological needs, motivational regulation and enjoyment in the intentions to keep swimming. The present study is different, regarding other's studies that have been using the same sequence, because included the enjoyment as antecedent of intention the future practice. This study included 799 participants (450 males, 349 females) who were swimmers with at least six years of practice and aged between 12 and 22 years. The data was collected using reliable questionnaires: MCSYSp; BRSQp, BPNSSp, PACESp and three items for assessed the intencions) , all translated and validated for the Portuguese language, and analysed through structural equation modelling. For the purpose of cross-validation, the participants were split in two samples: calibration sample (n=400) and validation sample (n=399). For the gender invariance the sample was split by gender. The obtained results support the model's fit (final model) in both samples: calibration sample: (S-B  $\chi^2=618.45$ ; df=185; p=.001; SRMR=.079; NNFI=.901; CFI=.908; RMSEA=.071; CI90%=.071-.084) and validation sample: (S-B  $\chi^2=516.45$ ; df=185; p=.001; SRMR=.071; NNFI=.927; CFI=.937; RMSEA=.068; CI90%=.061-.075), showing that a task-involving climate has a positive and significant effect on the basic psychological needs satisfaction ( $\beta=.58$ ; .67); basic psychological needs satisfaction has a positive and significant effect on the autonomous motivation; autonomous motivation has a positive and significant effect on the enjoyment ( $\beta=.39$ ; .50); and finally, enjoyment has a positive and significant effect on the intentions to keep swimming ( $\beta=.39$ ;  $\beta=.50$ ). In total, the model explains 26% and 34 % of variance in the intentions to keep swimming both in calibration and validation samples. Besides that, the model s.

*Keywords: motivation, swimming, achievement goal theory, self-determination theory, enjoyment, intentions*

### **Differences between leadership behaviour of coaches and the perceived and preferred leadership behaviour of their young table tennis players**

**Diana Zerdila, Stella Rokka (Democritus University of Thrace), Ioannis Kordoutis (Municipality of Kalithea), Giorgos Mavridis (Democritus University of Thrace)**

Leadership behaviour of sports coaches is one of the most important topics in sport psychology. The relationship between athletes and coaches is very important because it has a tremendous impact on the quality of training and on their performance in competitions (Conroy & Coatworth, 2007). Moreover, the leadership behaviour of a coach can have a great impact on the emotional, psychological, and physical condition of the athlete (Duda, 2001). The main purpose of this study was to examine the differences between the leadership behaviour of table tennis coaches in Greece and the perceived and preferred leadership behaviour of their young table tennis players and secondly to investigate possible differences related to gender, competition league and years of practice. The sample consisted of 162 table tennis athletes from Greece with a mean age  $15,3 \pm 1,52$ . Data was collected through Leadership Scale for Sports (LSS: Chelladurai & Saleh, 1980), in its three versions. The statistical methods included reliability analysis, t-test and one-way analysis of variance. The results indicated that table tennis coaches evaluated themselves with higher scores than their athletes in training and instructions, positive feedback, social support and autocratic behavior. For both players' perceived and preferred leadership behaviours, the highest scores were found in training and instructions and positive feedback and the lowest in autocratic behaviour. Significant differences were also found between all dimensions of players' perceived and preferred leadership behaviour. Results also indicated that boys perceived more autocratic behaviour from their coaches. These findings can help table tennis coaches to adapt specific behaviours, so they can be more effective and have better results. Table tennis coaches especially of young athletes should be more objective of their own leadership behaviours by increasing their self-knowledge and self-criticism.

*Keywords: perceived, preferred Leadership behaviour, table tennis players*

### **Factors associated with success in high-performance sports**

**Diana Vázquez, Cecilia Silva Gutiérrez (UNAM), Eugenio Pérez Córdoba (Universidad Sevilla)**

Studying the factors influencing athletes holds great relevance to be able to improve the intervention strategies for them. Meseguer (2009) mention that self-efficacy relates to performance, while Medina (2007) points out that emotional management plays an important paper, Cáceres (2013) remark the great relevance of goal-establishment, Velásquez (2007) signals coping strategies as indispensable, and Weinberg & Gould (2015) highlight the importance of situational and external factors. Aiming to know the factors that impact athletes' success, 104 high-performance athletes from 12 to 22 years old ( $x=16$ ,  $S.D.=2.19$ ) were assessed with the following instruments: Perceived General Self-Efficacy Scale (Baessler & Schwarzer, 1996); Goal-achievement in Sport Questionnaire (Cáceres & Nieto, 2013); Coping Styles (Sotelo & Maupone, 2000), Approach to Coping in Sport Questionnaire ACSQ-1. (Kim & Duda, 2003); Skills for Life Instrument (Alfaro, 2010); Psychological Performance Inventory (Loehr, 1986); State-Trait Anxiety Inventory (Spielberger & Díaz-Guerrero, 1975) and the Situational and External Factors for Athletes Scale (Vázquez & Silva, 2015). Two groups were formed based on the results from the National Olympics: the first group was called "successful" ( $n=52$ ) and the second group named "unsuccessful" ( $n=52$ ); a Student's t- test for independent samples was carried out. Results show that successful athletes cope better with uncertainty (Successful  $\chi = 20.89$  Unsuccessful  $\chi = 18.90$ ), anger (S.  $\chi = 16.27$  U.  $\chi = 14.60$ ) and anxiety, have a lower expression of negative emotions (S.  $\chi = 11.94$  U.  $\chi = 14.54$ ) and greater coping skills, specifically greater active planning (S.  $\chi = 18.34$  U.  $\chi = 16.54$ ), and take



greater risks than their low performance peers ( $S. \chi = 10.28$  U.  $\chi = 9.04$ ). Finally, a factor analysis was performed to investigate how these variables aggregated, revealing a two-factor structure: "Pro-activity" and "Emotional". These findings will help to design better interventions.

*Keywords: sports, sports psychology, success, performance*

### Sports psychology: Intervention with children who practice american football

**Diana Vázquez Cruz, Alfonso Ignacio Martínez Samperio (UNAM)**

Proper child development in sports is achieved through programs that favor the learning of positive experiences. Interventions in sport psychology emphasize both human development and improvement of sport performance (Weinberg & Gould, 2010). A correlational research was carried out (Sampieri, 2014) via a repetitive measures design (Coolican, 2005). The project was divided into two phases. The first one resulted in a purposive non probabilistic sample (Kerlinger, 2002) of 12 participants (within a range of 7 to 13 years of age), which served as a diagnostic pretest to elaborate the intervention plan, prior obtaining parental consent. The second phase of the study involved the application and assessment of the intervention program, which included the following variables: attention, group cohesion, motivation, emotional control, self-esteem and communication. Sessions were conducted twice a week, over a period of ten weeks. While self-report measures were used, due to the participants' age, psychologists assisted them during the application. The following instruments were used: Questionnaire of Psychological Features Related to Sport Performance, adapted for Mexican athletes (Ramírez, Tobías & Alba, 2010), and the Approach to Coping in Sport Questionnaire, ACSQ-1 (Kim & Duda, 2003). A Wilcoxon signed-rank test for related samples was performed, considering a significance level of  $p > .05$ . Results revealed statistically non significant differences. Nevertheless, qualitative differences were observed in team work: team members interacted more and were more supportive, communicative and respectful of one another. Even though we did not find quantitative results in performance variables, we found growth in the values that are necessary for the integral development of children athletes (Buceta, 2004), such as discipline, respect and punctuality. It is concluded that work with kids should focus on the development of values rather than on the promotion of sport performance.

*Keywords: sports psychology, children, intervention program, football*

### Perceived motivational climate, attitudes to moral decision making and prosocial and antisocial behavior in youth team sports: examination of relations

**Bahri Gürpınar, Merve Ayvalli, Serefcan Çalli, Berkant Özmen, Hüseyincan Göçmen (Akdeniz University, Faculty of Sport Sciences)**

The purpose of this study is to explore the relationships of motivational climate on attitudes to moral decision making and prosocial and antisocial behavior in youth sport. The questionnaires were applied to 378 (118 female 260 male) team sport athletes from 5 different types of sports. The students were aged between 11-19. The mean age was  $15.48 \pm 2.37$ . The mean sport experience was  $3.53 \pm 2.64$ . Turkish versions of Perceived Motivational Climate in Sport Questionnaire (Seifriz et.al, 1992), Attitudes to Moral Decision Making in Youth Sport Questionnaire (Lee et. Al, 2007) and Prosocial and Antisocial Behaviors in Sport Scale (Kavussanu and Boardley, 2009) were used as data collection tool. In the analyses regression analyses were used. When the bilateral and partial correlations between the variables are examined, there is a positive moderate correlation ( $r = .32$ ) between the mastery climate and keep winning in proportion. There is a positive-low level of correlation ( $r = .255$ ) calculated between the mastery climate and prosocial behavior to the teammate. The scores on mastery climate show a moderate and significant relationship together with variables of keep winning in proportion, prosocial behavior to the opponent and prosocial behavior to the teammate ( $R = 0.377$ ,  $R^2 = 0.142$ ,  $p = .000$ ). At the same time, there is a positive moderate correlation between the performance

climate and acceptance of cheating ( $r=.323$ ), acceptance of gamesmanship ( $r=.338$ ), antisocial behavior to the teammate ( $r=.385$ ) and antisocial behavior to the opponent ( $r=.329$ ). The scores on performance climate show a moderate and significant relationship together with variables of acceptance of cheating, acceptance of gamesmanship, antisocial behavior to the opponent and antisocial behavior to the teammate ( $R=0.441$ ,  $R^2=0.194$ ,  $p=.000$ ). Besides, there were also moderate level correlations determined between the subscales of AMDYSQ and PABBS. As a result, some variables predict motivational climate.

*Keywords: motivational climate, moral decision making, prosocial and antisocial behaviors, youth team sports*

## The influence of psychological factors on pain levels among circus arts students

**Diana van Winden (Codarts Rotterdam)**

Literature suggests psychosocial factors influence the stress response and, thus, the likelihood of injury occurrence. The daily training load of circus artists is associated with maximum stress. A better understanding of causes of injuries can have a positive impact on the artists' health and performance. However, there is a lack of studies focusing on the association between stress and coping and pain levels in Circus Arts. Therefore, the aim of this study is to examine the association between pain and the independent variables stress and coping resources by using a prospective cohort design. 33 Circus Arts students (1st & 2nd year, 54.5% male, 51.5% freshmen, mean age =  $22.39 \pm 2.50$  years) from Codarts University of the Arts Rotterdam were followed for three months during the academic year 2014-2015. At baseline, participants completed the Athletic Coping Skills Inventory-28. Additionally, participants completed the Subjective Units of Distress and the Self-Estimated Functional Inability because of Pain (a measure of how much current pain is limiting activities, ranging from "very well" to "cannot work in the production because of pain" for 14 body areas) every two weeks. One-way Spearman correlations and regression analyses were used. Pain ( $M=4.2 \pm 9.00$ ) was significantly associated with stress ( $M=34.14 \pm 15.58$ ;  $r=.56$ ,  $p<.000$ ). Stress could predict 28.2% of the variance in pain ( $F(1,31)=12.16$ ,  $p<.001$ ). Furthermore, pain was significantly related to the total coping score ( $M=38.88 \pm 8.75$ ;  $r=-.34$ ,  $p<.05$ ). Specifically, scores of concentration ( $r=-.29$ ,  $p<.05$ ) and freedom from worry ( $r=-.34$ ,  $p<.05$ ) were significantly correlated. High stress levels are associated with high pain levels, while high coping resources are correlated with low pain levels. To prevent injuries it can be useful to lower stress levels of students by teaching them stress management skills. In addition, lectures about coping and other mental skills can be taught to raise the coping resources of students.

*Keywords: injury, stress, coping*

## Difference in visuo-spatial cognition as a function of physical activity in children

**Dennis Fung, Shu-Shih Hsieh (National Taiwan Normal University), Heng Tsai (Jinwen University of Science and Technology), Yu-Kai Chang (National Taiwan Sport University), Chun-Ju Huang (University of Taipei), Tsung-Min Hung (National Taiwan Normal University)**

Children with insufficient amount of physical activity might have learning difficulties in school, because it is assumed that a sedentary lifestyle may negatively affect the function of attention and working memory, which both are important cognitive functions that work complimentary in learning. Therefore, this study is designed to examine how daily physical activity levels is associated with visuospatial attention and working memory in children. Thirty-two children, aged 8 – 11 years, who voluntarily participated in the current study were classified into an active or inactive group based on their amount of physical activity as measured by an accelerometer. Visuospatial attention and working memory were measured by the Non-delay (attention) and Delay (working memory) Matching-to-sample test, with response accuracy and reaction times serving as performance indices. Data analysis revealed that the active group had significantly higher accuracy rates for attention and working memory relative to the inactive group. For reaction times, no significant difference in

attention was observed, whereas a significant group difference was found on working memory. Our findings suggest that children with higher levels of physical activity could be associated with better visuospatial attention and working memory. While childhood PA could be associated with visuospatial attention and working memory, the cognitive benefits of higher PA could be more comprehensive to working memory.

*Keywords: attention, working memory, accelerometer, children*

## **"I am really good at sports!" The physical self-concept of children in Kindergarten and primary school**

**Dennis Dreiskämper, Lena Henning (University of Muenster), Christine Graf, Nina Ferrari (German University of Sport Sciences), Till Utesch, Maïke Tietjens (University of Muenster)**

The physical self-concept is related to several factors of childhood development like physical activity behaviour or global self-worth (Babic et al., 2014). Harter (1999) describes that the physical self-concept develops throughout childhood becoming more differentiated, organized and hierarchical. However, it still remains unclear in which age stages children are able to make valid statements regarding their physical self. Research question of this study is, if children in kindergarten and primary school differ in the quality of their self-assessments and how the physical self-concept is differentiated and organized in different age groups. In a project funded by the German ministry of education children from kindergarten (n=376), primary school class 1 (n=429) and class 3 (n=434) participated. Physical self-concept was measured using the P-PSC-C (Tietjens et al., subm., eight items on a 4-point pictorial scale) in class 1 and kindergarten (one by one interviews) and the PSC-C (Dreiskaemper et al., 2015, 22 items on seven subscales on a 4-point-Likert-scale) in class 3. Objective motor ability data was assessed by using the Dordel-Koch-Test (Dordel & Koch, 2004) with five (Kindergarten) respective seven (school) items. Rank correlations (Kendalls- $\tau$ ) showed no substantial correlations between motor items and physical self-concept items in Kindergarten ( $-.10 \leq \tau \leq .11$ ) and with one exclusion (strength:  $\tau = .24$ ) in class 1 ( $.01 \leq \tau \leq .10$ ). In class 3 Pearson-correlations showed significant relations between self-perception and motor items ( $.14 \leq r \leq .39$ ). Boys in class three had a higher physical self-concept than girls ( $t(299.04)=3.15$ ,  $p=.002$ ,  $d=0.36$ ), whereas no gender differences were found in kindergarten and class 1. The results show that children in the first two age groups are not able to make valid judgements about their motor abilities. Their physical self-concept seems neither to be differentiated nor realistic due to missing experiences and comparisons.

*Keywords: physical self-concept, childhood development, motor abilities, kindergarten, primary school*

## **Psychological intervention with recreational runners at Valencia Marathon expo**

**David Peris Delcampo (Spanish Federation of Sport Psychology. Valencia, Spain.), Eva M. Agea-Pérez (Psychological Association of Sport of the Valencian Community, Valencia, Spain), J. Joaquín García-Lluch (Psychological Association of Sport of the Valencian Community, Valencia, Spain), Larumbe-Zabala Eneko (Clinical Research Institute. Texas Tech University HSC. Lubbock, Texas, USA)**

A team of 22 volunteer sport psychologists performed a brief psychological intervention with recreational marathon runners at 2016 Valencia Marathon (Spain), which had a participation of more than 19,000 runners. Counseling was delivered at the marathon expo during 2 days prior to competition. The objective of this cross-sectional study was to describe familiarity and preferences regarding counseling delivery, and psychological performance in association to performance level, broken down by demographics. The number of participants was 162, aged  $M=39.5$  years ( $SD=10.2$ ), 16% females. Median experience as a runner was 6 years ( $IQR=3-10$ ), although 37% did not run a marathon before. Training was described as 4 days per week ( $SD=1.3$ ); 65% followed a training program, and 26% had a coach. Personal best time ranged 2h 25 minutes to 5 hours (Median=3h 40 minutes). Less than 10% of runners had previous experience with a sport psychologist. The instruments used



were a demographic survey and the Podium questionnaire, in order to assess self-perceived motivation, self-confidence, fitness, social support, and anxiety; each runner had the opportunity to get a report and interview with a specialist. The intervention procedure included information brochures and posters, administration of a demographic survey and the PODIUM questionnaire, and an interview of about ten minutes, which included counseling. The results indicated that psychological variables were within expected values: very high motivation and self-confidence; high fitness and social support; moderate somatic and cognitive anxiety. This counseling model has been shown to be efficient to provide useful assistance to the runners. A half of the participants reported no previous contact with sport psychologists, and just a minority considered counseling with a specialist. Both the practical implications of our findings and the possible ways to optimize service delivery are discussed.

*Keywords: psychological intervention, recreational runner, marathon, psyching team*

### Key points for the efficient coaching application as a tool for the psychological intervention in sports

**David Peris Delcampo (Spanish Federation of Sport Psychology, Valencia, Spain)**

The psychological intervention in sports requires more and more quality and efficiency. The professional of psychology should offer adjusted tools to the aiming population (sportsmen, teams, leaders, coaches...) to whom this intervention is dedicated. Therefore, it's necessary to use these tools in an adequate way, by the indicated professional and in adequate conditions. The term coaching is often used in sports as a synonym of psychological intervention without employing the necessary conditions to this purpose; it is known by the scientific literature as well as by the professional experience to be an important tool, if used adequately for the psychological interventions in sports, offering efficiency, quality and adaptability to the aiming population. The main scientific and practical conclusions are summed up in this paper as a psychological strategy in sports, defining the professional roles on which this methodology and conditions should be applied in order to be really efficient in the psychological intervention in this working field. It's only in this way, how a correct application can be achieved and how this tool and in the sight of the professional role could really be useful for the different sports agents.

*Keywords: coaching, psychological intervention, sports, performance*

### Case report on a clinical sport psychological intervention for a rugby player

**David John Edwards, Stephen David Edwards (University of Zululand, South Africa)**

Clinical sport psychology is a differentiated and specialized discipline, requiring appropriate adaptations in helping relationship and chosen interventions (Edwards & Edwards, 2016). Recovering from injury can be a challenging time (Brown & Brughelli, 2014). The goal of this case study was to evaluate an integrated, clinical, sport psychological intervention for a 24 year old, male, professional rugby union player, who self-referred to a 24 hour rugby helpline service owing to depression and anxiety experienced following a rugby injury. The 15 month intervention covered Person Centered, Cognitive Behavioural Therapy, Psychological Skills Training, Mindfulness, Flow and HeartMath Techniques. A mixed methods, quantitative and qualitative approach, including appreciative inquiry, was used. Coherence scores ranged from 0.4 to 5.20 with a mean of 2.73 (SD = 1.04). Achievement scores ranged from 2.0 to 193.0 with a mean of 90.79 (SD = 44.72). Analysis of variance comparisons indicated a significant learning effect over time for both coherence ( $F = 13.46$ ,  $p = .00$ ) and achievement ( $F = 19.51$ ,  $p = .00$ ). Intervention was experientially positive, appreciated and recommended. The case study is instructive with regard to (a) integration of theory and practice of clinical and sport psychology (b) integration of different types and modes of intervention.





*Keywords: clinical sport psychology, case study, cognitive behavioral therapy, psychological skills training, HEARTMATH*

## Case study on hypertension, physical exercise and psychophysiological coherence biofeedback

**Stephen David Edwards, David John Edwards (University of Zululand, South Africa)**

Hypertension is a serious stress related disorder, typically requiring pharmacology and health promotion including physical exercise, diet, specific lifestyle and/or psychophysiological techniques (Oberg, 2009). This case study describes treatment of a hypertensive crisis in a 63 year old woman with special reference to relevant, optimal, physical exercise and psychophysiological, heart rhythm variability, biofeedback interventions. Standardized blood pressure recordings were taken after both 30 physical exercise and 30 HeartMath practice sessions. Physical exercise sessions, measured on Borg scale, consisted of 16 walks, 5 individual sessions of tennis, 3 yoga, 3 shopping and 3 house cleaning. HeartMath biofeedback tool, Inner Balance, recorded coherence and achievement. Quantitative findings provided highly significant ( $p < 0.1$ ) support for the hypothesis that both physical exercise and HeartMath interventions would be individually associated with blood pressure improvements. Qualitative, diarized experiences strongly endorsed quantitative findings. As is typical in case studies, healing included many specific and non-specific, bio-psycho-social-spiritual variables, such as support of family and friends, the relaxation response and biofeedback function of the blood pressure monitor. Mixed and integrative, qualitative and quantitative, methodologies have unique advantages. Single case study methodology has the particular advantage of readily elucidating the typically holistic, multifactorial nature of aetiology, diagnosis and treatment (Edwards, 2016).

*Keywords: introspection, case study, hypertension, blood pressure, physical exercise, HeartMath, psychophysiological coherence*

## Identifying information for anticipation in complex sport actions

**Alfredo Higuera-Herbada, David Travieso, Jose A. Navia, David M. Jacobs**

The development of modern motion tracking systems has encouraged many studies of biomechanically complex actions and of the anticipatory information contained in the actions (Troje, 2002). This type of studies is especially relevant for fast sports tasks, where, due to temporal constraints, performance often relies on information from the opponent's body movements. The large amount of data that is to be analyzed in sports performance has led to the extensive use of dimensionality reduction algorithms, such as Principal Component Analysis (PCA). Recording a human walker or runner, for example, usually takes about 16 markers with 3 Cartesian coordinates each. The recordings therefore result in a  $3 \times 16 = 48$  dimensional dataset, with many frames recorded per second for each dimension. PCAs reduce the redundancies that biological movements contain. The use of PCAs has allowed the description of complex, high-dimensional sports actions like tennis groundstrokes with only 4 to 6 dimensions (Huys, Smeeton, Hodges, Beek, & Williams, 2008). Nevertheless, PCAs by themselves fail to identify the sources of information about crucial features of the actions under study, such as the direction of handball or football penalties (Bourne, Bennett, Hayes, & Williams, 2011). In the present study, we propose that combinations of dimensionality reduction techniques (i.e., PCA) and pattern recognition algorithms (i.e., Linear Discriminant Analysis, LDA) are better suited to identify informational variables contained in the biomechanics of sports actions. We have applied this combination of techniques to registered football penalties. Whereas the left-right differences in the penalties were distributed over all PCA dimensions, our LDA successfully concentrated them in a few dimensions. Our belief is that this approach will lead to a deeper understanding of the informational basis of anticipatory behavior and that it will therefore facilitate the development of training programs.

*Keywords: anticipation, biomechanics, linear discriminant analysis, training*

## **Tramadol effects on physical performance and sustained attention during a 20-min indoor cycling Time-Trial**

**Darias Holgado, Thomas Zandonai, Mikel Zabala, Daniel Sanabria (University of Granada)**

The purpose of the present study was to test the hypothesis that acute oral administration of tramadol improves exercise performance during a 20-min cycling Time-Trial (TT) in a group of cyclists (Experiment 1). Furthermore, given the common side effects reported followed the consumption of tramadol, we tested if sustained attention would be impaired during the 20-min TT while the participants perform an Oddball sustained attention task (Experiment 2). Indeed, tramadol might enhance cycling performance but at the expense of reducing the ability to stay focused, i.e., to sustain attention. This study is a clinical trial using a placebo-controlled, double-blind, within-participants, counterbalanced methodology. In total, were recruited 56 cyclists; Experiment 1: 19 males and 9 females. Experiment 2: 30 males. A single dose of 100 mg of tramadol or placebo were administered to participants 120 min before starting the 20-min TT. The Psychomotor Vigilance Task (PVT) was performed prior to and after the cycling TT. We also obtained measures of rate perceived effort (RPE-6-20), Profile of mood state questionnaire (POMS) and a Visual Analog Scale (VAS) for mental fatigue. Electroencephalography measures (EEG) were recorded throughout the cycling exercise and at rest. In Experiment 1, power output was higher under tramadol condition than under placebo condition. However, in Experiment 2, there was an interaction of tramadol and time during the TT. The power output during the second half of the TT was higher for tramadol, while no differences were observed in the first part of the TT. Overall, under tramadol condition, participants were slower in the PVT task. Tramadol may improve performance, but it may be mediated by fatigue (as we have seen a difference in the second half of Experiment 2). Tramadol does not seem to impair cognitive performance during exercise in an Oddball task, but it may affect reaction time during a PVT task.

*Keywords: analgesic, sport performance, cognitive performance, EEG, athletes*

## **The relationship between the sport moral disengagement and the athletes' pro-social and anti-social behavior in sport: The meditation of moral identity**

**Dapeng Zhu (Wuhan Sport University)**

**Purpose** The moral disengagement in sport has important influence on the athletes' pro-social and anti-social behavior in competition. The purpose of this study is to (1) examine the relationship between sport moral disengagement and pro-social and anti-social behavior in competition, and (2) the mediate effect of the moral identity on the relationship between sport moral disengagement and pro-social and anti-social behavior in competition. **Method** Participants 267 athletes participated in this study. Participants were male ( $n = 173$ ) and female ( $n = 94$ ) athletes competing in soccer, basketball, volleyball and handball. measures Pro-social and Antisocial Behavior in Sport Scale (PABSS). (Kavussanu & Boardley, 2009). Moral disengagement. Moral Disengagement in Sport Scale (Boardley & Kavussanu, 2008). Moral identity. The moral identity scale (Aquino & Reed, 2002). **Results** The results suggested that: (1) the moral identity has significant negative correlation with moral disengagement and anti-social behavior in sport, and has significant positive correlation with pro-social behavior in sport; the moral disengagement has significant negative correlation with pro-social behavior in sport, and positive correlation with anti-social behavior in sport; (2) the moral identity has significant positive influence on the athletes' pro-social behavior in competition, and has significant negative influence on the athletes' anti-social behavior in competition; (3) the moral identity has significant mediate effect on the relationship between sport moral disengagement and pro-social and anti-social behavior in competition. **Conclusion** The sport moral disengagement has significant influence on the athletes' pro-social and anti-social



behavior in sport, and the moral identity of the athletes can mediate the relationship between the moral disengagement and moral behavior in sport.

*Keywords: moral disengagement, pro-social and anti-social behavior, moral identity*

## Comparison of the motivational productivity of Brazilian elite soccer athletes in different conditions

**Daniella Paína, Varley Costa (Universidade Federal de Minas Gerais)**

Motivation is a psychological variable that interferes in the performance of elite soccer athletes in an objective task of achievement motivation. However, little is known about the variation of motivational productivity, for same task but under different situational conditions, in elite soccer athletes. The objective of this study was to compare the motivational productivity of elite soccer athletes during the same task, but under different situational conditions. Forty six male athletes (M age= 23.97 years, SD= 3.73), from an elite club of the first division of Brazilian soccer participated in the study. The test used was the Objective Achievement Motivation Test (S1/Vienna Test System SPORT®). This test consists of three situations (subtests): task-related effort (TE), motivation through goals (MG), motivation through competition (MC), in which athlete performs 10 runs in each subtest. The statistical procedures adopted were: mean (M) and standard deviation (SD), the Shapiro Wilk and ANOVA with repeated measures ( $p_{TE} (p=0.001)$ ,  $MC > MG (p=0.025)$ ,  $MG > TE (p=0.001)$ ). In conclusion for this sample, the athletes presented a higher motivational productivity in the task where they were submitted to the competition than in task-related situations or goals.

*Keywords: motivation, soccer, elite athletes, Vienna Test System Sport®*

## Burnout and coping among elite athletes: a longitudinal perspective

**Daniel Pires (Federal University of Pará), Herbert Ugrinowitsch (Federal University of Minas Gerais)**

Burnout is a psychological syndrome of reaction to chronic stress. One technique to prevent and control the syndrome is through coping, which is the ability to use specific strategies to deal with stressful situations. One of the main recommendations for a better understanding of burnout is the elaboration of longitudinal studies that can describe the syndrome development process. The study aimed to: investigate burnout and coping characteristics over time in elite athletes; and analyze the relationship between the burnout dimensions and the coping strategies during a sport season. Seventy-four Brazilian high level volleyball and judo athletes were investigated into three groups (general, volleyball and judo) and completed paper-and-pencil measures of burnout (Athlete Burnout Questionnaire) and coping (Athletic Coping Skills Inventory). Data collection occurred in four moments: preseason and three competitive moments. In order to answer the first objective, Friedman test and Dunn post hoc were used, whereas Spearman coefficient was used to answer the second objective. The results showed increment of the reduced sense of sport accomplishment and sport devaluation perceptions during the season in volleyball and general groups. Regarding coping perceptions, differences were observed in confidence/motivation dimension in judo and general groups. Finally, the analysis of correlations showed a significant, moderate and inverse correlation between burnout dimensions and coping strategy confidence/motivation in all moments of the season. Increase of burnout perceptions in volleyball and general groups could be explained by the accumulation of training and competition, as well as the requirement for high performance in the season's key competitions. The study also pointed out the relevance of the motivational factor in the emergence of burnout. Overall, the findings suggest that burnout perceptions increase as the season progresses.

*Keywords: burnout, coping, athletes, sport, season*

## What are the psychological changes during the final round in female sport pistol?

**Daniel Mon (Universidad Politécnica de Madrid, Spain)**

Several anxiety levels can be defined according to different situations, during which stress levels can vary, such as training or actual shooting conditions. Furthermore, different level shooters show different levels of anxiety: higher anxiety values have been reported in lower level shooters. Anxiety can lead to a significant impairment of the performance in Olympic shooting, as influences the goal-directed attention of the shooters [1]. The objective of the study is to identify the changes in psychological parameters during the final round in female 25m pistol modality. Twenty three female shooters, who competed at a national Spanish Olympic shooting championship, participated in this study. The shooters completed a demographic and a CSAI-2 questionnaire 10 minutes before each competition stage. The competition consisted of one qualification round and one Olympic rapid fire final round. Performance was significantly lower during the finals in comparison to the qualifications round ( $Z=-1.97$ ;  $p<0.05$ ). The results showed that, during the qualifications round, the shooters' performance was not affected by pre-competitive anxiety, although a tendency of inverse correlation could be observed between performance and somatic/cognitive anxiety. The inverse correlation between performance and anxiety became, however, significant, during the final stages of the competition. The results of the present study also revealed that the trigger time is also influenced by anxiety, in accordance with other studies.

*Keywords: pistol, anxiety, performance*

## Anxiety effects on trigger timing in female elite sport pistol shooters

**Daniel Mon (Universidad Politécnica de Madrid, Spain)**

Shooting performance can be influenced by many parameters, both physical and psychological ones. Anxiety has been identified as a very important psychological parameter that influences performance in Olympic shooting. Evidence suggests that anxiety caused by highly stressful conditions (competition) can cause differences in trigger times between novice and experienced athletes [1]. The objective is to analyse the effects of pre-competition and competition anxiety in female pistol shooting during the qualification and the final round. Twenty three female shooters, from whom 5 were elite, who competed at a national Spanish Olympic shooting championship, participated in the study. The shooters completed a demographic and a CSAI-2 questionnaire 10 minutes before each competition stage. Performance was measured by the use of electronic targets during competition. The competition consisted of: One qualification round and one Olympic rapid fire final round. Performance was found to be inversely correlated with somatic anxiety during the final round ( $F_{1,6}= 8.93$ ;  $P<0.05$ ). The trigger times as well as the shooters' cognitive anxiety were significantly increased before entering the finals ( $Z=-2.17$  and  $Z=-2.37$ ;  $p<0.05$ ). The results showed that, during the qualifications round, the shooters' performance were not affected by pre-competitive anxiety, although a tendency of inverse correlation could be observed between performance and somatic/cognitive anxiety[1]. The inverse correlation between performance and anxiety became, however, statistically significant, during the final stages of the competition. The results of the present study also revealed that the trigger time is also influenced by anxiety, in accordance with other studies.

*Keywords: anxiety, elite, shooting*

## Establishing linkages between emotional intelligence, efficacy beliefs and coaches' competitive behaviors

**Daniel Duarte (Polytechnic Institute of Maia), Pedro Teques (Polytechnic Institute of Maia)**



The purpose of this study was to determine whether coaches' efficacy beliefs mediated the relationship between EI and coaches' reactive behaviors during a game. 75 male head coaches of soccer volunteered to participate in this study during a youth football tournament. Participants ranged in age from 21 to 66 years old ( $M = 33.05$ ,  $SD = 10.69$ ). To obtain a more holistic understanding of the coaching environment, naturalistic observations were carried out in a football field (Smith et al., 2007). Subsequently, coaches were approached at the end of the game to participate in the study. Four sets of multiple mediation analyses (Preacher & Hayes, 2008) were conducted: one for each EI dimension of self-emotions appraisal, others-emotions appraisal, regulation of emotion, and use of emotion were used as independent variables. Coaching behavior was entered as dependent variable. In all sets of analysis, the coaching efficacy beliefs, such as game strategy efficacy, motivation efficacy, technique efficacy, and character building efficacy were considered as mediators. Findings suggest that the indirect and direct effect of motivation efficacy were significant between others-emotions appraisal and regulation of emotion, and positive coaches' reactions during game, suggesting a full mediation. Moreover, the indirect and direct effect of motivation efficacy and character building were negatively significant between others-emotions appraisal and regulation of emotion, and negative coaches' reactions during game, suggesting a complementary mediation (partial). In general, findings of this study suggest that coaches' efficacy beliefs that they have the capacity to affect the learning and performance of their athletes transfers the effects of EI competencies on coaching reactive behaviors in competitive settings. These findings may help practitioners in making interventions to improve coaches' EI and to enable them to deal with environmental difficulties in competitive settings.

*Keywords: emotional intelligence, efficacy beliefs, coaching behaviors, multiple mediation analysis, soccer*

### **Athletic trainers' views on psychosocial issues and referral practices**

**Damien Clement (West Virginia University), Monna Arvinen-Barrow (University of Wisconsin-Milwaukee)**

Research has highlighted athletic trainers' (ATs) lack of access to sport psychology consultants (SPCs; Clement et al., 2013) and their desire for increased access to SPCs' services (Arvinen-Barrow & Clement, 2015). Coupled with the increased evidence regarding the psychological distress, sometimes reported by injured athletes, the NATA Executive Committee for Education revised its educational competencies to include psychosocial (PS) content to ensure that ATs are better prepared to deal with these issues. As a result, the purpose of the study was to: (a) identify the range of injury and non-injury related psychosocial and /or mental health issues athletic trainers typically discuss with athletes; (b) gain an insight into athletic trainers' level of comfort, perceived competence, and perceived responsibility in discussing psychosocial and mental health issues with athletes; (c) understand the frequency of mental health referrals; and to (d) further explore availability and perceived effectiveness of allied health professionals. A cross-sectional research design using an online survey consisting of quantitative items was utilized in the study. A total of 132 ATs ( $n = 60$  males;  $n = 72$  females) representing a response rate of 13.2% completed the survey. Results revealed that ATs discussed a number of injury and non-injury related psychosocial issues with their athletes and felt comfortable, competent, and perceived it was their responsibility to discuss some of the mental health issues associated with the PS content area. Athletic trainers did make referrals for injury and non-injury related issues primarily to medical doctors/physicians, physical therapists, and school counselors and on average, perceived these professionals to be effective in dealing with psychosocial and mental health referral needs. These findings appear to be positive with regards to the changes set forth by the Executive Committee for Education while also highlighting gaps in existing education.

*Keywords: psychosocial, preparedness, comfort, competence*



## Investigating the influence of intra-individual changes in perceived stress symptoms on injury risk in competitive soccer: a prospective study

**Damien Clement (West Virginia University), Andreas Ivarsson (Center of Research on Welfare, Health and Sport (CVHI), Halmstad University), Ulrika Tranaeus (Performance and Training Unit, The Swedish School of sport and health sciences GIH and dMusculoskeletal & Sports Injury Epidemiology Center (MUSIC), IMM, Karolinska Institutet, Stockholm, Sweden), Urban Johnson (Center of Research on Welfare, Health and Sport (CVHI), Halmstad University), Andreas Stenling (Department of Psychology, Umeå University)**

Research has shown that high levels of stress and stress responsivity can increase the risk of injuries. However, most of the research that has supported this notion has focused on between-person relationships ignoring the relationships at the within-person level. In an attempt to address this gap in the literature, the objective of this study was to investigate if within-person changes in perceived stress symptoms over a one month time period could predict injury rates during the subsequent three months among competitive soccer players. A prospective design with two measurement points (Time 1 – at the beginning of the season and Time 2 – one month into the season) was utilized. A total of 121 competitive soccer players (85 males and 36 females; Mage = 18.39, SD = 3.08) from Sweden and the United States of America completed the Kessler Psychological Distress Scale (KPDS) and a demographic sheet at Time 1. The KPDS was also completed at Time 2 and all acute injuries that occurred during the subsequent 3-month period were recorded. A Bayesian latent change scores model was used to determine if within-person changes in stress symptoms could predict the risk of injury. Results revealed there was a credible positive effect of changes in stress symptoms on injury rates, indicating that an increase in reported stress symptoms was related to an increased risk for becoming injured ( $\beta = 0.18$ , [0.04, 0.35]). Finding that within-person changes in stress symptoms highlight the importance of preparing soccer players prior to their competitive seasons for both the physical and psychological demands especially during the first month of their season. Emphasis should also be placed on increasing sports medicine personnel and coaches ability to help athletes improve their ability to deal with stressors without experiencing strong stress responses.

*Keywords: stress, psychological, sport injury, athletes, soccer, stress management*

## The difference of the perceived competitive environment in Japanese college athletes from the view of dysfunctional family

**Daisuke Takeda (Tokai University), Kosuke Sasaki (Ryutsu Keizai University)**

A common focus of research attention has been the real and perceived violence to young athletes from coaches in Japanese sport clubs. Typically the culture in Japanese sport clubs values dominance and rigidly. Some young athletes feel that they cannot resist a coach, or authority figure, and thus they have low feelings of self-worth. This profile is analogous to those of youth brought up in dysfunctional families, sharing four characteristics: denial; isolation; rigidity; and shame. An adult with these is so-called adult children of dysfunctional families (AC). It's important to investigate whether these psychological characteristics are reflected in sports settings as well as in dysfunctional family settings, because this knowledge may add an alternative viewpoint how sports contribute to the personality formation. Thus, the purpose of this study was to examine differences in perceived competitive environment (PCE) and the tendency towards AC in Japanese college athletes. 309 athletes answered the questionnaire including the perceived competitive environment scale (PCES), Adult Children Scale (ACS) and the Dysfunctional Family Scale (DFS). The PCES consisted of two factors: a feeling of fear, and self-disparaging. Participants were classified as high dysfunctional family (HDF), middle dysfunctional family (MDF) and low dysfunctional family (LDF) based on their DFS score. ANOVA and Tukey's post hoc comparisons were conducted to confirm significant difference. Results showed that HDF and MDF perceived higher a feeling of fear than LDF. There was no significant difference between HDF and MDF. Thus in the HDF group reported higher self-disparaging than LDF, but no significant differences in other



measures. These results suggest the possibility that a family environment structure may be comparable in some ways to a competitive sport, especially, a feeling of fear. These findings suggest there is a risk that competitive environment develops tendencies towards AC.

*Keywords: college athletes, competitive environment, adult children of dysfunctional family*

## Coach-athlete relationship: Gender differences at professional and amateur competition level

**Cristina Sanz-Fernández (Universidad del País Vasco (UPV/EHU))**

Coach-athlete relationship is a social bond that impacts positively in the athlete's sport performance (Lafrenière, Jowett, Vallerand, Donahue, & Lorimer, 2008; Jowett, 2007). It has been described as characterised by three elements: Closeness, Commitment, and Complementarity (Jowett & Ntoumanis, 2004). Athlete's gender is a variable that could be hypothesized to make a difference in the way this relationship shapes, especially in the Closeness dimension, and in relation with the competition level. However, no empirical study has been conducted hitherto to examine this issue. The aim of the study was to examine gender differences in the three dimensions of coach-athlete relationship taking into account two possible level of competition (professional vs. amateur). The sample was made of 133 Spanish athletes practising a wide range of sports (48.12% women; years ranging from 16 to 59; 52 professionals and 81 amateurs). Multivariate Kruskal-Wallis tests were conducted for the three relational dimensions. Results showed an interaction effect between gender and competition level in the Closeness dimension, but no differences were found for the other two dimensions. Professional sportswomen are closer with their coaches than professional sportsmen and amateurs in general. These gender and competition level differences point out to interesting suggestions for training plans.

*Keywords: coach-athlete relationship, CART-Q, closeness, gender differences, competition level*

## Ratings psychological in hockey

**Cristina Reche García (UCAM), Verónica Tutte Vallarino (UCU)**

There are few relationships between burnout, resilience and optimism studies in sportive context. It becomes even more difficult to find literature to flesh out these concepts in team sports. The aim of this study was to describe the prevalence and relationship between the symptoms of burnout, resilience and optimism in women hockey players. And its relationship with variables such as age and dedication of sports. Study participants were 130 (age 13 to 19;  $M = 18.5$ ,  $SD = 4.3$ ). Spanish version of Resilience Scale (Ruíz, De la Vega, Poveda, Rosado y Serpa, 2012), Inventario de Burnout en deportistas revisado (IBD-R; Garcés, De Francisco y Arce, 2012), and Life Orientation test (LOT-R; Scheier, Carver y Bridges, 1994) were administrated. The results show that 4.6% of the athletes score burnout and a 50% shows symptoms, the 8.5% high resilience, and a 66.2% optimism in the moderate and high level. The age of the athletes seems to be an indicator of vulnerability to the possibility of suffering from burnout, as it presents statistically significant differences in two of the three subscales, being the younger players that have higher risk. More experienced athletes are those that appear as more likely to suffer burnout symptoms, to be less optimistic and to have a lower acceptance of oneself and life, pointing to a lesser resilience. Sports dedication appear as a risk factor to suffer sports burnout and maturity as a protection against sports burnout factor. Finally, we found that who have burnout symptoms have a lower resilience and optimism. These results show psychological indicators that can be evaluated by a sports psychologist for early detection and intervention in athletes of different levels and dedication, contributing sports resources, coping strategies, provide an adequate handling of adversity, as well as the ability to transform unfavorable situations in challenges.

*Keywords: resilience, optimism, burnout, hockey, athletes*

### Spanish version of the Athlete Engagement Questionnaire: Psychometric properties

**María del Pilar Vélchez (Catholic University of Murcia (UCAM)), Constantino Arce (University of Santiago de Compostela), Cristina De Francisco (Catholic University of Murcia (UCAM)), Mar Graña (University of Santiago de Compostela)**

The Athlete Engagement Questionnaire (AEQ) was developed by Lonsdale, Hodge, and Jackson (2007) in order to measure engagement among athletes. It comprises 16 items distributed equitably among four subscales: confidence, dedication, vigor and enthusiasm. Confirmatory factor analyses (CFA) showed good fit indices, and one second study using an independent sample cross-validates the AEQ. Correlations among the four dimensions were significant and ranged from .84 to .89. The purpose of this research was to adapt the AEQ into Spanish because in this context there is not appropriate instrument for measurement of athlete engagement. Firstly, the questionnaire was translated into Spanish (with verification by back-translation). Then, after verifying that the content and writing of the items was properly understood by a focus group, the questionnaire was applied to a sample of 509 athletes of both sexes. A standardised protocol was carry out to, so that all participants received the same instructions. The data were submitted to a CFA, performed with AMOS software. The four-factor model was specified, with four items per factor, using the maximum likelihood estimation method. All the estimated factor loadings were significant, such as estimated correlation coefficients among the four factors. The factor structure was replicated and reasonable overall fit of the model was obtained:  $\chi^2_{295} = 296.607$ ; quotient between  $\chi^2$  and the degrees of freedom was 3.12; GFI, CFI and NNFI reached values of 0.93, 0.95 and 0.93, respectively; and the values of RMSEA and SRMR were 0.06 and 0.05. Corrected item-total correlations and internal consistency supported the composition of four items per theoretical dimension:  $\alpha_{\text{confidence}} = .805$ ;  $\alpha_{\text{dedication}} = .853$ ;  $\alpha_{\text{vigor}} = .822$   $\alpha_{\text{enthusiasm}} = .852$ . Therefore, Spanish version of AEQ presents similar psychometric properties to the findings in original version. This version will allowed carry out research in Spanish context to identify personal and situational fact.

*Keywords: AEQ, engagement, athletes, psychometrics properties*

### Reduced Spanish version of participation motives questionnaire for exercise and sport: Preliminary psychometric properties

**Cristina De Francisco, María del Pilar Vélchez (Catholic University of Murcia), Constantino Arce (University of Santiago de Compostela)**

Many researches have studied why people exercise and practice regular physical activity. There is a scale widely used about motives of practice called Motives Questionnaire (PMQ) by Gill, Gross and Huddleston (1983). However, there is no psychometric support for some factors about due to a low internal consistency. A Spanish version is currently available but it is necessary to look in depth at the psychometric properties because five of eight dimensions that emerged after exploratory analysis also didn't get over minimum value proposed by Nunnally (1978). Moreover, it is importance to have reduced versions of the measurement instruments in sport context, which it should requires less time to complete due to conditions that are usually completed by athletes in training. The purpose of this research was to obtain an effective reduced Spanish version of the PMQ, with more reliable measurements. So, initially a Spanish version of PMQ was applied to 515 Spanish athletes of different sport modalities. The data analysis was performed in two sequential stages. Firstly, an exploratory factor analyses of the 33 items of the PMQ was made with approximately half of the sample ( $n = 264$ ) using the SPSS statistics program. The second stage was aimed at confirming the previous model with confirmatory factor analyses performed with EQS software with the other half of the sample ( $n = 251$ ), which provides fit indices for the model. The final model with 22 items (which represented the contents



of the original scales) measures seven dimensions (Competition, Status, Teamwork, Energy release, Family/peers, Skill development and Health/fitness) and showed the following fit indices:  $\chi^2/df = 1.29$ ; RMSEA = .034; NNFI = .950; and CFI = .959. The analysis of items and of internal consistency supported the composition of seven dimensions. Cronbach's Alpha were between .713 and .879. In conclusion, the reduced Spanish version of PMQ presents good values of validity and reliability.

*Keywords: participation, motives, reduced version, PMQ, psychometric properties*

### A pilot study about compulsive exercise and risk of eating disorders in Spanish adolescents

**Cristina Cuesta-Zamora, Irene González-Martí, Luis Miguel García-López (Universidad de Castilla-La Mancha (UCLM))**

Despite practising exercise has health benefits, sometimes it could be harmful for health. In this sense, exercise might be a risk and an etiological factor in the development of an Eating Disorder (ED) when it is realised as a compulsive and rigid way in order to control body shape and weight, and to alleviate negative emotions. Even though the risk factor of compulsive exercise in ED, it has never been studied in Spanish adolescents. Therefore, this is a pilot study to evaluate the associations between compulsive exercise and risk of ED in Spanish adolescents. The study sample consisted of 114 adolescents (59 boys and 55 girls) of Castilla-La Mancha, aged 11-17 years old ( $M = 14.38$ ,  $SD = 1.07$ ), completed the questionnaires of: Compulsive Exercise Test (CET), Drive for Thinness (DT), Body Dissatisfaction (BD) and Bulimia (B) subscales of the Eating Disorder Inventory-3 (EDI-3). The results showed that Compulsive exercise was significantly associated with DT ( $r = .47$ ,  $p < .00$ ) and with the total score of the EDI-3 ( $r = .31$ ,  $p < .00$ ). In addition, linear regression found that compulsive exercise accounted for 9% of the variance of the EDI-3 total scale. Finally, compulsive exercise also accounted for 17% of variance of DT. This preliminary results are in line with the previous literature, suggesting that compulsive exercise may contribute to the development of ED in adolescents. For this reason, future research with varying samples (different ages and adolescents and adults diagnosed with ED, etcetera) is needed to clarify the relationship between compulsive exercise and ED in Spanish adolescents.

*Keywords: eating disorders, drive for thinness, compulsive exercise, risk factor, adolescents*

### Well-come back! A qualitative study of psychological readiness to return to competitive sport following injury in elite basketball players

**Cristiana Conti, Selenia Di Fronso, Laura Bortoli, Claudio Robazza, Maurizio Bertollo (University of Chieti-Pescara)**

Psychological readiness to return to sport following injury has been attracting increased attention during last years, likely because of the growing economic interest in elite and professional sport. Despite this augmented interest and its importance for athletes' performance and well-being, a lack of conceptual clarity remains about the psychological features (Podlog, Wadey, & Hannon, 2015). The purpose of this study was to examine the athlete's perceptions and experiences of being physically and psychologically ready to return to sport following an injury. Ten elite level basketball players (age-range 22-33 years) participated in the study. The interviews focused on what is said (Podlog, 2015) about the period between the first competition after injury and the debilitating event. All tape-recorded interviews were verbatim independently transcribed by two investigators who deductively and inductively analyzed the transcript (Patton, 2002). Meaningful sub-themes and higher-order themes were highlighted (Scanlan, Ravizza, & Stein, 1989). Extending previous investigation results (Podlog et al., 2015), our findings revealed the following general theme: confidence in returning to sport, motivation and volition (determined, brave, persistent), low level of fear, orientation of internal thought (i.e., focus on actual performance avoiding thoughts about injury), performance expectations, modification and improvement of body perception, optimal arousal level. Examining the athletes' psychological past can provide

coaches and sport professionals with a better understanding of athlete's experience of injury and the key factors for a proficient return to sport. The individual zones of optimal functioning and the related psychobiosocial states (Robazza et al., 2016) can be a useful framework in identifying those athletes who are ready to return to competition, and support the athletes and staff in the decision-making process.

*Keywords: psychological readiness, injury, psychobiosocial states*

## Psychological intervention with neurofeedback support

**Claudia Rivas (Solcpad/AMPDAF)**

Today, different authors such as Alexandre García Más and Claudia Rivas talk about teamwork, group cohesion, and more specifically the influence of cooperation on sports on performance results in any team sport. Cooperation on sports, understood as the decision of at least two people, acting together to achieve a goal, comes up to make an effort in order to clarify the different interactions that are established between the players of a team in the competition, and the Decision-making process in which players choose to collaborate with their teammates in solving the different moves of the game (García - Mas, 2001). This investigation parts of the meaning of identifying the level of cooperation on sports in the categories of the basic forces of a football club, overall and by factors; Later it makes an analysis of the global cooperation on sports of the categories all together according to the age of the players and the time that they have been inside the club. The poster shows the punctual way that cooperation on sports and the factors it makes up. It points out the methodology of research used and ends with schemes that exemplify the obtained results.

*Keywords: golf, applied, psychology, neurofeedback*

## Burnout in professional soccer football referees

**Jazmin Rivera (Solcpad/AMPDAF), Elsa Chincoya (SOLCPAD)**

One of the most well-known and followed sports worldwide is soccer football, which has a number of people who are linked on and off the court, among them stand out the referees that in every game can not fail to carry out the party to which they are appointed. Burnout syndrome is a problem that can occur in professionals who work in personal contact with other people, either directly or indirectly, in the case of a soccer referee, they are more likely to suffer such syndrome, this is the case when they are affected by: negative interactions with peers, excessive pressure by athletes, pressure from the public and the media, an inadequate relationship with their leaders or when they perceive very little social support (family) on their performance. With this in mind, the mental training area of the commission of referees of FEMEXFUT made three applications of the Maslach Burnout inventory to 50 Mexican referees of professional soccer, whose results obtained are shown taking into account the three variables that measure the inventory of Burnout, In the three applications of the reports presented in the variable of Emotional Exhaustion, low levels in a range of 70 to 90% are presented; In the variable Depersonalization they presented a low level in a range of 80 to 90%, whereas in the three applications of the personal accomplishment variable in the work, the percentages were high in a range of 70% to more, it should be mentioned that it is evident that they does not obtain Percentages at 100, in the three variable ranges from 7 to 24% of medium responses, which makes the burnout syndrome present and that is why it should be taken into account.

*Keywords: burnout, football soccer referees, peak performance, emotional exhaustion, depersonalization and realization at work*

## Psychometric properties of the Spanish version of the Weight Pressures in Sport

**Clara Teixidor Batlle, Carles Ventura Vall-Ilovera, Ana Andrés Valle (National Institute of Physical Education (INEFC) - Barcelona)**

In the attempt to explore and assess pressures to meet sport-related physique ideals within the sport environment - such as from coaches, teammates, performance and uniforms- the Weight Pressures in Sports for Males (WPS-M; Galli et al. 2013) and Females (WPS-F; Reel et al. 2013) were developed. The aim of the present study was to validate both mentioned questionnaires into Spanish population. Participants were 538 college students from Sport and Exercise Science degree at five Catalan universities, 407 male [M=20.49 years; SD=2.727] and 131 female [M=19.66 years; SD=1.744]. WPS-M and WPS-F were back-translated to obtain a Spanish version of the questionnaires. The psychometric properties of both WPS-M and WPS-F Spanish versions were examined in terms of item-total correlation, Cronbach's alpha, internal consistency, and exploratory factor analysis (EFA) using Oblimin rotation. Results showed that item-total correlation was adequate ( $\geq .40$ ) for measuring weight pressures in sport, and could be improved in items 10, 11, 12 from WPS-M ( $r=.234$ ;  $r=.253$ ;  $r=.171$ ) and items 12, 13, 14 from WPS-F ( $r=.275$ ;  $r=.240$ ;  $r=.326$ ). EFA supported the original three and two factor-solution for the 12 WPS-M and 18 items WPS-F, respectively. Total percentage of variance explained in the WPS-M was 57.03% and 48.52% in the WPS-F. All item loadings were higher than .35 in both versions. Cronbach's alpha coefficient was greater than 0.7 in all WPS-F subscales (.753-.893), whereas ranged from .508 to .843 in the WPS-M. Internal consistency of whole scale was adequate for both male (.797) and female (.877) versions. The present study confirms the internal structure of the scales found in previous literature, but suggests the revision of several items. However, the internal consistencies of the scales were adequate, which suggests that WPS-M and WPS-F are useful tools to specifically assess weight pressures in the sport setting.

*Keywords: eating disorders, sport weight pressures, Spanish validation, exploratory factor analysis, psychometrics, reliability*

## Relationship between the Weight Pressures in Sport questionnaire (WPS-F & WPS-M) with SATAQ-4 and BSQ questionnaires

**Clara Teixidor Batlle, Ana Andrés Valle, Carles Ventura Vall-Ilovera (National Institute of Physical Education (INEFC) - Barcelona)**

With previously good psychometric properties confirmed of the Spanish version of Weight Pressures in Sport for Males (WPS-M) and Weight Pressures in Sports for Females (WPS-F) we have examined the convergent validity of both mentioned versions. Participants were 538 college students from Sport and Exercise Science degree at five Catalan universities, 407 male [M=20.49 years; SD=2.727] and 131 female [M=19.66 years; SD=1.744]. In order to analyse relationship between sport weight pressures, sociocultural influences and body dissatisfaction, WPS male and female versions (Galli et al.2013; Reel et al.2013), SATAQ4 (Llorente et al.,2015) and BSQ (Raich et al.,1996) questionnaires were applied. The entire self-report survey was completed online via SurveyMonkey. Results showed that in the case of females, pressures regarding appearance in sport is significantly correlated to all SATAQ subscales (ranged from .307 to .518;  $p<.0001$ ), except between coach and media pressure. The correlation between weight pressure in sport and body dissatisfaction in males' case were similar with female results. However, in both versions coach pressure was not related to body concern subscale. The present study showed that WPS were strongly related to pressure from body-ideal internalization and body-weight and appearance concerns. Positive relationship is suggested between sociocultural pressures and sport weight pressures.

*Keywords: eating disorders, sport weight pressures, correlation, convergent validity, Spanish validation*

## Predicting fluid intake before exercise among athletes: a theoretical integration perspective

**Chunxiao Li, Fenghua Sun (The Education University of Hong Kong), King Chung Derwin Chan (University of Hong Kong), Liancheng Zhang (Tianjin University of Sport), Xi Wang (The Education University of Hong Kong)**

Fluid intake before exercise is an important healthy behavior for maintaining athletes' sports performance and even health. This two-wave prospective survey aims to test an integrated model (i.e., integrate psychological constructs derived from theories of self-determination and planned behavior) in understanding fluid intake prior to exercise among athletes. University athletes ( $N = 148$ ) from China completed a survey form consisting of measures from self-determination theory (i.e., autonomous and controlled motivation) and the theory of planned behavior (i.e., attitude, subjective norm, perceived behavioral control, and intention) at baseline, and one behavioral measure one month after the baseline. Path analysis showed positive effects of autonomous motivation on intentions via subjective norm and perceived behavioral control. Controlled motivation only positively predicted subjective norm. Intention positively predicted fluid intake behavior before exercise. The integrated model is useful for understanding university athletes' fluid intake behaviors before exercise. The research findings can help practitioners to prepare intervention programs to promote healthy fluid intake behaviors in university athletes.

*Keywords: self-determination, planned behavior, intention, beverage consumption, sport*

## Associations among Internet use, physical activity, and physical fitness of elementary school children

**Chung-Ju Huang, Su-Hui Yang (University of Taipei)**

Internet and computer use are increasingly common leisure-time sedentary behaviors, which have the potential to influence negatively on children health. This study investigated the reciprocal relationships among internet use, physical activity, and physical fitness of elementary school children during a period of 6 months. Five hundred and twelve students (276 boys, 236 girls, mean age  $11.3 \pm 0.8$  years) were recruited as participants from an elementary school located in an urban area. All participants completed a set of questionnaires including compulsive internet use, frequency of internet use, and 7-day physical activity recall. Additionally, physical fitness and body mass index (BMI) 3 months prior to and after the questionnaire administration were collected. The analysis indicated that the BMI levels 3 months ago could positively predict the severity of compulsive internet use ( $\beta = .13, p < .05$ ) and the frequency of internet use ( $\beta = .18, p < .05$ ). The frequency of internet use, in turn, could positively predict the BMI levels 3 months later ( $\beta = .14, p < .05$ ). Further, it was interesting to observe a positive correlation between internet use frequency and physical activity. These findings suggest that the relationships between high leisure-time internet use and overweight in children are reciprocal. It may be necessary to decrease time spent in leisure-time internet and computer use in order to reduce the prevalence of overweight and obesity among children. The frequency of internet use behaviors may not diminish the levels of physical activity if children can be highly active in their limited leisure time.

*Keywords: computer use, sedentary behavior, overweight*

## Effects of acute aerobic and resistance exercises on the stroop test: An electrophysiological and biochemical study

**Chun-Chih Wang, Chien-Heng Chu, Yen-Shan Chang, Yu-Kai Chang (National Taiwan Sport University)**

Studies have found the beneficial effects of acute exercise on cognition. Nevertheless, meta-analytic studies have shown that the range of effects size, regarding the results of acute exercise on cognition, is wide and that some factors would possibly moderate the relationship. In addition, mechanisms underlying



improvements in executive functions elicited through acute exercise have received only scant attention. Therefore, the purpose of this study is to explore the effects of acute aerobic and resistance exercise on the Stroop Test, and to further examine the roles of the N4 components of ERP and cortisol within the relationship between acute exercise and executive functions. 37 young adults were recruited and randomly assigned into aerobic exercise, resistance exercise, and reading control conditions where were counterbalanced. All participants performed a Stroop Test and simultaneously a measurement of their N4 components of ERP following the cessation of treatments. The salivary cortisol was collected before, after, and at 30 minutes after the treatments. The findings showed that the shorter response times were found in the all Stroop conditions, after the exercise treatments, compared to the reading treatment. The benefit of response times was not significantly different for either of the exercise modalities. In addition, a larger N4 amplitude after acute aerobic exercise compared to the resistance and reading treatments was observed. However, cortisol levels were not significantly changed after exercises, compared to the reading treatment. These findings suggested that the beneficial effects of the acute exercise on both basic information processes and inhibition were found, regardless of the exercise modalities. Notably, the increased N4 amplitude was only found following the acute aerobic exercise, implying that the improvement of the Stroop performance might have been influenced through better semantic integration relative to the aerobic exercise.

*Keywords: acute aerobic exercise, acute resistance exercise, cortisol, executive function, Stroop Test*

### **Obesity and multiple aspects of cognitive functions in adolescents**

**Chun Xie, Chenglin Zhou (Shanghai University of Sport), Yu-Kai Chang (National Taiwan Sport University)**

This study examined the relationship between obesity and cognitive function in adolescents. A total of 63 adolescents were recruited and divided into either obese or normal weight groups. The Flanker task is a method to measure cognitive function, including congruent (i.e.,  $\rightarrow\rightarrow\rightarrow\rightarrow\rightarrow$  or  $\leftarrow\leftarrow\leftarrow\leftarrow\leftarrow$ , 50% probability) and incongruent (i.e.,  $\rightarrow\rightarrow\leftarrow\rightarrow\rightarrow$  or  $\leftarrow\leftarrow\rightarrow\leftarrow\leftarrow$ , 50% probability) stimulus conditions. The task was to press either the right or left button as quickly and accurately as possible based on the direction in which the middle array is facing. The congruent and incongruent condition results were reflected by the response time and accuracy used to respectively assess the basic and high-order cognitive functions. Analysis was also employed to examine the correlation between BMI and two cognitive functions. The outcomes showed that 1) the response time of the obesity group was significantly slower than the normal weight group in both congruent and incongruent stimulus conditions ( $ps < 0.01$ ), 2) There were significant positive relationships between BMI and congruent response time ( $r = 0.45$ ) as well as BMI and incongruent response time ( $r = 0.51$ ) ( $ps < 0.01$ ). This study indicated that obese adolescents performed worse than normal-weight adolescents in relation to the basic cognitive functions and the high-order cognitive functions, reflecting that a negative influence of obesity on cognitive functions in general. In addition, the level of obesity would negatively correlate with the results of these two cognitive functions.

*Keywords: obesity adolescents, cognitive functions, cognitive control*

### **Pluralistic ignorance: the psychological explanation of academic underachievement among Taiwanese student-athletes**

**Chu-Min Liao (National Taiwan Sport University, Taiwan), Shuo-Fen Fan (New Taipei Municipal Jia Lin Junior High School, Taiwan)**

Levine, Etchison, and Oppenheimer (2014) suggested that, in the USA, student-athletes' underperformance in academics might partially due to pluralistic ignorance. Student-athletes mistakenly believed that other student-athletes disvalued academic achievement and undermined their own motivation in academic efforts. The purpose of the study was to test if this pluralistic ignorance was also a possible



explanation for the academic underachievement of Taiwanese student-athletes. Participants were college student-athletes from either sports departments ( $n=332$ ; 223 males; 109 females; mean age=18.96) or general academic departments ( $n=203$ ; 138 males; 65 females; mean age=20.29). A Chinese version of the questionnaire used in the work of Levine et al. was administered to test the participants' perceived value of academic achievement and their efforts (hour/week) putting into study and their perception of teammates and student-athletes as a whole in related matters. In addition, 58 varsity team coaches' perceived value of academic achievement for student-athletes and their belief of other coaches' perceived value were also measured (38 males; 20 females; mean age=45.00). Mixed-design ANOVAs found that pluralistic ignorance did exist among student-athletes, especially for those from sports departments. Paired t-tests showed that coaches' reported academic value for student-athletes was significantly higher than their belief of that of other coaches. It appears that pluralistic ignorance is a plausible explanation for academic underachievement of Taiwanese student-athletes and the role of coaches in reinforcing/inhibiting this pluralistic ignorance is worth further attention.

*Keywords: pluralistic ignorance, student-athletes, academic achievement*

## The influence of early life competitive sport involvement on later life experiences

**Christopher N. Sellars (University of Wolverhampton)**

Through participation in sport some people become to define themselves, at least in part, as 'athletes'. But what happens to their 'athletic identity' (Lantz & Schroeder, 1999, p.547) as they move through life and how does this changing athletic identity affect other areas of life experience? The research interest here is to what extent those who have significant involvement in competitive sport at a young age (adolescence and early adult life) maintain an athletic identity (Brewer, Van Raalte & Linder, 1993), albeit renegotiated, that may in turn shape various aspects of life and life's decision-making in middle-age and beyond. Whilst the role of athletic identity on transitions in sport has been examined (e.g., Grove, Lavalley & Gordon, 1997), the life-long influence of prior competitive sport involvement in adolescence and young adulthood on later life behaviours is under-researched. Therefore, through the lens of Identity Theory (Stryker & Serpe, 1982) and adopting a story analytic methodology (Smith & Sparkes, 2009), six purposefully selected over-45 former national- and international-level athletes' life stories (narratives) illustrate the significance of early life sport involvement in framing identity and shaping life experience. Employing a structural analysis of diachronic data (the stories told), through a process that yields theoretical propositions and categories, the research yields a number of prominent themes concerning later life sport involvement, but also regarding areas such as education, careers, leisure and family time, places chosen to live, relationships, and planning for later adulthood and retirement. How this information contributes to better understanding of life-long habitual physical activity behaviours and to maintaining desirable mental health outcomes, via such self-concepts as self-esteem and self-confidence, will be highlighted, framed by identity and life transition theories.

*Keywords: athletic identity, identity theory, life story, story analyst*

## Diagnosis and modelling of basic motor competencies and their development

**Christian Herrmann (University of Basel), Christopher Heim, Fabienne Ennigkeit (University of Frankfurt), Harald Seelig (University of Basel)**

Basic motor competencies, understood as achievable levels of physical capability, ensure that children can actively participate in sports and exercise. The aim of this longitudinal study was to explore the development of basic motor competencies over one school year and to examine potential influence factors. Within the project "Schulkids in Bewegung" (SKIB),  $N=1031$  first and second graders (54% boys,  $M=6.83$  years,  $SD=0.44$ ) were tested in the competence areas object-control and locomotion (Herrmann, Gerlach, & Seelig, 2015) in October



2014 (t1) and in June 2015 (t2) using the MOBAK test instrument (MOBAK = Motorische Basiskompetenzen; German for basic motor competencies). Additionally endogenous (sex, BMI, age) and exogenous factors (SKIB-project, sports club participation) and the children's leisure physical activity were measured using questionnaires to test potential influences on the changes in MOBAK. Basic motor competencies clearly improved over one school year. Structural equation models revealed that boys showed bigger development in object control, whereas the development in locomotion was stronger for girls. Children with a high BMI showed less increase in competencies compared to children with a low BMI. Engagement in team sports positively influenced the development of object-control. Engagement in individual sport had a positive influence on the changes of locomotion. The MOBAK test instrument showed good construct validity and measurement invariance and therefore enabled to adequately display changes in basic motor competencies. At the beginning of primary school, the development of motor competencies is strongly influenced by certain endogenous and exogenous factors.

*Keywords: motor development, motor skills, physical education*

### Influential factors of individual career management of Chinese coaches

**Chonghui Zhang, Hong Hu (Chonghui Zhang)**

Individual career management is a hot topic of research in the field of organizational behavior. A great number of researches on this topic have been conducted in western countries. However, it is questionable to apply those findings directly to China, especially for Chinese coaches, because of social-cultural differences. Based on former indigenous researches on career development of Chinese coaches with grounded theory, this study further investigates the influential factors of coach's individual career development (CICM) with quantitative methods. Study I utilizes factor analysis to conceptualize the coach professional environment (CPE) and CICM, test the reliability and validity of CPE, CICM and achievement (AM) and make sure that they are psychometrically acceptable. CPE refers to the general environment sports teams provided for the coaches to cultivate elite athletes. Three aspects are involved in CPE, namely team support environment, event management environment, and athlete professional environment. CICM consists of three factors including caring information, professional exploration, and self-disclosure. Study II is a large-scale investigation with 328 Chinese national and provincial coaches (age:  $37.44 \pm 8.867$ ). Confirmatory factor analysis shows that CPE has significant positive effects on CICM ( $r=0.77$ ,  $p<0.01$ ) and coaches' professional titles and AM have significant effects on CICM ( $p_1<0.01$ ;  $p_2<0.01$ ). Hierarchical regression analysis indicates that team support environment and AM have significant interaction effects on CICM ( $p<0.01$ ). Thus, combining the former indigenous researches and this research, it can be concluded that in Chinese cultural background, professional title, AM, CPE and interaction effect of AM and CPE have significant impacts on CICM.

*Keywords: individual career development, social-cultural differences, indigenous research*

### How team sport athletes cope with shared stressors: A communal coping perspective

**Chloe Leprince (French Institute of Sport (INSEP), Paris, France), Fabienne D'Arripe Longueville (University of Nice Sophia-Antipolis, Laboratory LAMHESS, Nice, France), Julie Doron (French Institute of Sport (INSEP), Paris, France)**

Although sport psychology research has mainly focused on stress and coping as an intrapersonal process, stressful circumstances are often experienced in social groups and coping emerges as a combination of individual and group effort (Lyons et al., 1998; Tamminen & Gaudreau, 2014). Based on the communal coping model proposed by Lyons et al., the present study aimed to address the lack of knowledge about stress and coping as an interpersonal process. Consequently, the nature of the communal coping strategies used by team sport athletes to deal with shared stressors during competitive encounter was explored. Individual semi-



structured interviews were conducted with 10 team sport athletes (7 males, 3 females; Mage = 26.3 years, SDage = 7.67, range 15-38) who participated in different team sports (football, rugby, volleyball, ice hockey, basketball). Data were analyzed using inductive analysis. The results revealed 143 meaning units related to shared stressors. Specifically, team sport athletes reported communal sources of stress appraised as “our” problem related to social pressure issues (35%,  $n = 50$ ), relationship between teammates issues (32.8%,  $n = 47$ ), performance issues (28.7%,  $n = 41$ ), or logistical and organizational issues (3.5%,  $n = 5$ ). They revealed 129 meaning units related to communal coping. The identified communal coping strategies can be regrouped into four main communal coping dimensions namely: Problem-focused communal efforts (30%,  $n = 39$ ), Relationship-focused coping (29%,  $n = 38$ ), Communal management of emotions (22%,  $n = 28$ ), and Communal goal withdrawal (19%,  $n = 24$ ). The results provide empirical support to the communal coping model (Lyons et al., 1998) and extend understanding of coping processes as defined initially by the Cognitive-Motivational-Relational Theory of emotion (Lazarus, 1991, 1999, 2000). They lead to understand how stressors are apprehended in team sports and how athletes can collaborate to deal with these shared stressors.

*Keywords: shared stressors, communal coping, team sports, interpersonal perspective*

### Examining athletes' superstitious in sports: A qualitative approach

**Ching-Wen Ko (Chinese culture university & St.john's university, Taiwan), Frank Jing-Horng Lu (Chinese Culture University, Taiwan), Shu-Ching Wu (Ling Tung University, Taiwan), Fu-Shu Hsu (Fu Jen Catholic University, Taiwan), Fu-Ching Hsu (Chung Yuan Christian University, Taiwan)**

Superstitions exist almost in every culture (Burger & Lynn, 2005). Athletes may engage in superstitious behavior as a coping/secondary control strategy in stressful situations (Bleak & Frederick, 1998; Ofori, Tod & Lavallee, 2016). Although past research has investigated and discussed its contents of and influences on athletes (Sin Bal et al., 2014; Ofori, 2013; Wann et al., 2013), very few studies deeply examined its' antecedents and consequences. The Purpose of this study was to explore the antecedents and consequences of superstitious behavior in competitive sports. Totally, 11 division-I athletes and five coaches were interviewed. All transcribed verbatim, combined with field observations notes and focus-group interviewed transcripts, were analyzed by grounded theory (Strauss & Corbin, 1990). There are two major resources---internal and external factors in formulating athletes' superstition. The internal factors include religious belief, attributions, and sports skills while external factors include culture, games' nature, and assigned task. The consequences of superstitions comprised two major dimension: positive and negative influences. The positive aspect of superstition includes persistence, goal- setting, stress-relieving, and performance enhancement. The negative influences include three dimension: psychological barriers, negative thinking, and attribution bias. Sports superstitions can be an effective psychological strategy in reducing stress, enhancing confidence, performance, and persistence. Future research may adopt different theories in examining how sports superstition influence athletes' psychological responses.

*Keywords: sports superstitious, qualitative research, competitive sports, coping strategy*

### The effects of an outdoor activity on the life skills of Japanese university students

**Chihiro Kemuriyama (Gifu Shotoku Gakuen University), Mitsuhiro Amazaki (Aichi University)**

Outdoor activities are effective for alleviating the stress response and improving mental health of university students (Gushiken et al., 2007; Nishida et al., 2000). Moreover, life skills which are the ability of adaptive action that enables us to deal effectively with daily living requirements and challenges of everyday life can be improved by outdoor activities (The Japanese ministry of education, 1996). This study aims to investigate the effects of an outdoor activity on the life skills of Japanese university students. Forty-three Japanese university students who participated in outdoor activity for three days completed two questionnaires

(a face sheet and a daily life-skills scale for college students) twice—pre test and post test. The results of paired samples t-tests showed that the scores in the post test were significantly higher than those in the pre test in “Leadership ( $t(42) = 2.358, p < .05$ ),” “Planning ( $t(42) = 5.072, p < .001$ ),” “Empathy ( $t(42) = 7.831, p < .001$ ),” “Self-esteem ( $t(42) = 3.532, p < .01$ ), and “Positive thinking ( $t(42) = 2.951, p < .01$ ).” These results suggested that the outdoor activity improved the life skills of university students. In future research, a long-term outdoor activity should be considered.

*Keywords: outdoor activity, life skills, university students*

## Relationships of fitness and obesity levels in influencing inhibitory control

**Chih-Han Wu, I-Lun Huang, Tai-Sheng Chen, Yu-Kai Chang (National Taiwan Sport University)**

Cognitive function status is moderated by several factors. The purpose of the study was to explore the relationship between fitness levels and obesity as potentially factors to influence cognitive performances in younger adults. Forty-one young college students were recruited and assigned to one of three groups: high fitness-obese group (i.e., maximal oxygen uptake,  $VO_{2max} > 48.2$  mL/kg/min; body mass index, BMI  $> 27$  kg/m<sup>2</sup>), low fitness-obese group, and high fitness-normal weight group. The inhibition abilities of their respective cognitive functions were measured via a numerical Stroop test including congruent, neutral, and incongruent conditions. The results showed that the high fitness-normal weight group exhibited shorter reaction times than the low fitness-obese group; and the high fitness-obese group performances were not significantly different compared the high fitness-normal group. These findings suggest that high fitness is associated with higher cognitive performances, regardless individual with obese and non-obese of weight status. Nevertheless, our relative small sample size and cross-sectional design would limit the interpretation. Further research is encouraged to consider increasing sample size and applying intervention to explore the factors that moderate the status of cognitive function.

*Keywords: body mass index, fitness, cognitive function, inhibition*

## Relationship between motor coordination and interference control ability in children with attention deficit /hyperactivity disorder

**Chi-Fang Lin, Chien-Lin Yu, Yu-Jung Tsai, Chung-Ju Huang, Tsung-Min Hung**

Previous studies have reported a relationship between fundamental motor ability and inhibition performance in children with attention deficit /hyperactivity (ADHD) disorder. However, these studies were limited by either a small sample size or lack of control for potential confounding factors, such as physical activity and fitness. Therefore, the purpose of this study was to investigate the relationship between motor skill and inhibition in children with ADHD children by controlling moderate-to-vigorous physical activity and fitness in a larger sample size. A total of 80 participants underwent a motor ability assessment measured by the Movement Assessment Battery for Children (MABC), a fitness test, physical activity measurement by accelerometer, and inhibitory ability measurement by the modified Eriksen’s flanker task. The results indicated that the higher MABC score was significantly associated with a shorter reaction time and a smaller RT/Acc, and the better Manual dexterity skill was significantly associated with a higher accuracy in both of the congruent and incongruent conditions. These findings suggested that a better motor coordination, especially fine motor skill and balance, may be positively associated with interference ability in children with ADHD.

*Keywords: ADHD, motor skill, inhibition*



## Effect of acute exercise mode on serum brain-derived neurotrophic factor (BDNF) and task switching

**Chiao-Ling Hung (National Taiwan University, Taiwan), Chung-Ju Huang (University of Taipei, Taipei, Taiwan), Tsung-Min Hung (National Taiwan Normal University, Taiwan)**

Previous studies have consistently revealed positive effect of acute exercise on cognition, executive function in particular. However, most of studies have focused on the aerobic and resistant forms of exercise. To further our understanding on the relationship between acute exercise and cognition, it is necessary to investigate other forms of acute exercise. Previous studies have suggested that enriched environment can enhance the expression of brain-derived neurotrophic factor (BDNF), which can have diverse functions in brain development and plasticity. Therefore, the purpose of this study was to compare the effect of open-skills exercise, a form of exercise that presume cognitive stimulating, with closed skill exercise on BDNF and task switching performance. Twenty young adults were recruited and administered both closed (running) and open (badminton) skill exercise sessions in a counterbalanced order in separate days. The acute exercise consisted of 5 min of warming up followed by 30 minutes of running or badminton. The exercise intensity was set at 60% ( $\pm 5$ ) heart rate reserve (HRR) and HR was monitored by wireless heart rate monitor. Blood draw and task-switching paradigm were performed before and after each exercise session. Task switching paradigms have been used extensively to examine the working memory, inhibition, and mental flexibility aspects of executive function. This task included two conditions; the pure condition required participants to perform the task on the same rule (e.g., AAAA or BBBB) whereas the mixed condition required participants to perform the task on two alternating rules (e.g., AABBA...). The results showed no differences on the serum BDNF and task-switching performance in pre-test. However, badminton exercise has resulted in significantly higher serum BDNF and marginally smaller global switching cost than that of running exercise. Although the BDNF measured by serum blood in this study is simply a proxy for the level of BDNF in the brain.

*Keywords: switch cost, executive function*

## What inhibits “loss of spirit?” A qualitative study of losing and not losing spirit in competition

**Chiaki Raima, Hiroshi Sekiya (Hiroshima University), Akane Ogawa (Nishi-nippon Junior College, Hiroshima University)**

Japanese athletes often use the phrase “I lost my spirit” when negatively evaluating their feeling and performance during competition. Avoiding loss of spirit (LOS) can help improve psychological condition and performance. Our purpose was (a) to clarify the elements and mechanisms of LOS and ways to inhibit LOS during competition, and (b) to identify the preventive factors for LOS. We interviewed 18 athletes (F=7, M=11; mean age=21 years) and analyzed the interview transcripts by the following steps: (1) creating tags: we divided the text of each transcript into text segments containing information about LOS or ways to inhibit LOS, and (2) creating categories: we gathered tags with similar meanings and labeled the cluster of tags to briefly indicate the topic (Côté et al., 1993). Results revealed that the phenomenon of LOS had the following three phases: (1) cause of LOS (e.g., tide of the game, negative emotion), (2) condition of LOS (e.g., poor concentration, losing the will to fight, bad game situations), and (3) response after the game (e.g., undesirable result). The phenomenon of inhibiting LOS had the following five phases: (1) cause of nearly experiencing LOS (e.g., tide of the game, negative emotion), (2) condition nearly of experiencing LOS (e.g., decrease of concentration, losing the will to fight), (3) opportunity to escape from LOS (e.g., positive words and actions of others, heightened the fight), (4) condition after escaping from LOS (e.g., improvement of performance, arising of positive emotion), and (5) response after the game (e.g., evaluation of the game). Furthermore, a comparison of these phenomena revealed that high motivation before the game, positive words and actions of others, heightened





fight, reframing one's thought, improving the game situations, preservation of stamina, and keeping the fight in a situation in which LOS is nearly experienced may inhibit LOS.

*Keywords: motivation, concentration, qualitative research*

### **Association between exercise modality with different physical and cognitive demands and executive function**

**Chi Lin (Ta Hwa University of Science and Technology); Li-Yen Chang (National Taiwan Sport University); Yu-Min Ho (Hsiuping University of Science Technology); Yu-Kai Chang (National Taiwan Sport University)**

Previous studies have documented that a beneficial influence on cognitive functions may increase following the degree of cognitive demands. Additionally, recent literature had also indicated that exercise with different demands might affect cognitive functions. The purpose of this study was to further this research by examining the relationship between exercise modality and two aspects of executive functions. Specifically, two types of exercise were compared: basketball (i.e., exercise involving both physical and cognitive demands) and billiards (i.e., exercise involving more cognitive demand, but low physical demand). Also the inhibition and planning aspects of executive functions were examined. Thirty-nine young adults were classified into basketball (n = 13), billiards (n = 13), and control groups (n = 13). Each participant was instructed to complete two cognitive tasks, the Stroop Test and the Tower of London Task. The Stroop Test involved congruent and incongruent conditions, and the Tower of London Task involved moving performance. Our results revealed that while there was no significant group difference under both conditions of the Stroop Test, the two exercise groups had better total move scores on the Tower of London Task, relative to the control group. These findings suggested that exercise, regardless exercise modality, may have a selective beneficial effect, based on the task characteristics, and that the exercise effects may be especially sensitive relative to the planning element of executive functions.

*Keywords: stroop test, tower of london task, basketball, billiard*

### **A student-athlete's experience of life: An exploratory study from a meaning of life perspective**

**Cheng-Hui Yang, Chu-Min Liao (National Taiwan Sport University)**

This study was part of an ongoing long-term research project aiming for describing the adaptation and psychological development of student-athletes based on the theoretical framework of meaning of life. In this study, we interviewed a female senior college student-athlete who had been going through several major difficulties in her life as playing the role of both a student and an athlete. She chose to be a heptathlete when she was in junior high school in spite of her parents' strong disapproval and was not fully supported by the family. As in her senior year, she was facing the upcoming career transition and unfortunately had a serious car accident recently which might end her career as a heptathlete. We used a visual narrative method (Busanich, McGannon, & Schinke, 2016) in the interview by which the heptathlete was asked to create a visual image regarding the relationships of her school work, sports, and other activities with a circle which represented herself. The interview was then conducted and analyzed based on the concepts of meaning (Heintzelman & King, 2013 ; Mackenzie & Baumeister, 2014), the meaning of life (George & Park, 2016; Martela & Steger, 2016), and meaning-making model (Park, 2010). Results showed that the heptathlete was well adapted to the changes and conflicts in life, and the processes of adaptation was validly described by the theoretical framework of meaning of life. Her narratives was in line with the three essential components of coherence, purpose, and significance in meaning of life, and the process of reducing the inconsistency between the global meaning and situational meaning in meaning –making. This study was exploratory in nature, but it provided a

basic support for future investigations to the understanding of the adaptation and psychological development of student-athletes from a meaning of life perspective.

*Keywords: student-athlete, meaning, meaning in life, meaning-making model*

### **Difference of visuo-spatial working memory capacity in table tennis players with different levels of skill: an ERP study**

**Chen Kuan-Fu (National Taiwan Normal University), Huang Chung-Ju (University of Taipei), Chen Tai-Ting, Chueh Ting-Yu, Hung Tsung-Min (National Taiwan Normal University)**

The main purpose of this study was to compare the differences in performance of visuospatial working memory task at the behavioral and neuroelectrical levels in table tennis players with different skill levels. Seven expert, eight sub-expert table tennis players, and eight novices participated in this study. All participants were administered a 3s delayed and non-delayed visuospatial working memory task while their behavior and event-related potential (ERPs) were recorded. Results showed that both expert and sub-expert players had shorter reaction time and larger Fz-P3 amplitude in delayed and non-delayed tests than novices. Additionally, experts exhibited larger Cz-P3 amplitude at delayed condition, compared to sub-experts and novices. These findings suggest that participation in table tennis is associated with better visuospatial working memory. Participants with higher skill levels may have an extra benefits in neural resource allocation during working memory tasks.

*Keywords: ERPs, working memory, P300, athlete*

### **The acute effect of running on pupil size in middle-distance runners**

**Masahiro Kokubu, Tatsuki Sogabe (University of Tsukuba)**

Pupil size is considered to reflect psychological and physiological states. Recent studies have shown increased parasympathetic activity in endurance-trained athletes assessed by pupillometry (Capão Filipe et al., 2003; Kaltsatou et al., 2011). Effects of cognitive demands in motor learning (White and French, 2016) and dynamic ergometer exercise (Hayashi et al., 2010; Ishigaki et al., 1991) on the pupil size of nonathletes have also been examined. However, it is still unclear whether the change of pupil diameter reflects acute physical activity in athletes. Measuring pupil diameter in athletes is considered to be important for evaluating the psychological and physiological states during exercise. The aim of the present study was to evaluate the acute effect of running on pupil size in endurance-trained runners. Ten male university middle-distance runners (age,  $20.6 \pm 1.2$  years;  $VO_{2max}$ ,  $65.0 \pm 4.2$  ml/kg/min; mean  $\pm$  SD) participated in the present study. The participants underwent 3 min of treadmill running at 85%  $VO_{2max}$  ( $15.8 \pm 0.8$  km/h) three times. Pupil diameter of the left and right eye was recorded with an eye-tracking system (EMR-9; NAC Image Technology Inc.) at a sampling frequency of 60 Hz and then calculated as the median value before running, during the first and second halves of the running period (90 sec, respectively), and recovery period. Results showed that the pupil diameter during the first and second halves of running period was significantly larger than that before running ( $p < .01$ ) and recovery period ( $p < .05$ ). There was no significant difference in pupil diameter between the first and second halves. The change in pupil diameter was not different between the left and right eye. The present results indicated that pupil diameter in both eyes acutely increases during running even for endurance-trained athletes. The monitoring of pupil size could be used as a marker of psychological and/or physiological demands in endurance exercise.

*Keywords: pupil diameter, endurance-trained athletes, eye*



### Psychophysical stress indicators and burnout in sports trainers

**Elvia Alexandra Valadez Jiménez, Pedro Reynaga Estrada (Universidad de Guadalajara), Ma. de los Ángeles Vacio Muro (Universidad Autónoma de Aguascalientes), Isaac Uribe Alvarado (Universidad de Colima), Juan Carlos Arturo González (Universidad Autónoma de Nuevo León)**

Sports coaches have to constantly deal with stressors as part of the activities they must perform. When these stressors exceed their adaptive resources and stress coping strategies are inadequate they can develop various conditions associated with chronic stress such as Burnout syndrome. The study of this problem arising in the coach acquires a double dimension, due to the consequences that have on the biopsychosocial health and the negative effect that the trainer who presents these characteristics has for the athletes, being determinant in the permanence or abandonment in the sport in these last. To measure the effect of an intervention program on psychophysical levels of stress and Burnout in the sports coach of the state of Jalisco. A quasi-experimental design will be used, with a pre-test, post-test and re-test application in two parallel groups: experimental group, which will receive the intervention; and a waiting control group to which a neutral stimulus will be applied during the duration of the intervention. Participants will be sports coaches that belong to the State Council for Sports Development (CODE) of the State of Jalisco, selected through non-probabilistic sampling. An adapted version will be applied by the trainer of the Maslach Burnout Inventory, the Brief COPE-28 to identify the coping styles and the psychophysical indicators will be taken by means of a Psicotronic EDG-1500 Electrothermodermometer that records the peripheral temperature and the conductance of the skin.

*Keywords: psychophysical stress indicators, burnout, sport trainers*

### Pre-performance routines of elite competitive Brazilian volleyball athletes: an exploratory study

**Alexandro Andrade, Danilo Coimbra, Pedro Casagrande, Guilherme Bevilacqua, Alexandre Nascimento, Fábio Dominski, Fabiano Pereira, Rodrigo Batalha, Guilherme Vilarino, Miguel Flores, Giovanna Vietta, Ricardo Steffens (UDESC)**

Pre-Performance Routines (PPR) are cognitive and behavioural strategies which an athlete engages before training or competition to improve his physical, technical or psychological performance (Cotterill, 2010). Some routines such as listening to music, use of motivational keywords and visualisation techniques are applied in PPR increasing concentration and decreased negative thoughts (Cotterill, 2008). In the recent years, Brazilian volleyball has achieved success in international competitions, and the National Super League of Volleyball it is considered one of the most competitive in the world. However, to date, no studies have been found investigating PPR in Brazilian volleyball players. Verify if competitive Brazilian volleyball athletes are using PPR and which are the most applied routines. This is a descriptive and exploratory study. The sample consisted of 31 competitive elite volleyball athletes (mean age of  $27 \pm 6$  years and time of experience in volleyball of  $13 \pm 2$  years). They are athletes of three teams that participate of National Super League of Volleyball. It was used the Questionnaire Characterization of High-Performance Athletes - Volleyball (QCAAR-VB). Through the instrument it was used the item: Do you use any strategy or routine before training or competitions? If so, which one? The research was conducted through an online research portal, which guarantees the confidentiality of the responses. The data (mean, standard deviation and percentage) was analysed in Excel. Of the 31 athletes investigated, six reported that are using some type of PPR. The most frequently cited routines were listening to music and use of mental visualisation. In our study, few elite competitive Brazilian volleyball athletes use PPR. These results are worrying, considering that at this level of competition, neglecting psychological techniques can reduce performance and may influence on victory or defeat.

*Keywords: team sport, mental practice, pre-task, sport psychology*

## Students' perceptions of their self-confidence in Physical Education lessons through the practice of sports according to the gender and formal practice experience

**Cristiana Bessa (FADEUP)**

Physical Education (PE), not only gather the conditions for the development of physical literacy and the adoption of healthy lifestyles, but also it is recognized its impact on students' personal and social development (Hellison, 1973; Taggart, 1988; Mesquita, 2012). Particularly, the practice of SPORTS (team and individual sports) in PE promote positive and successful experiences increasing the self-confidence (Hall & Kerr, 1997; Magyar & Feltz, 2003; Hastie & Mesquita, 2017). By other hand, self-confidence increase the commitment with the sport activity and show a great influence on sports success, and amount of effort to be spent (Loerh, 1986, Callow & Lardy, 2001, Robazza & Bortoli, 2007). The purpose of this study was to analyze the students' perceptions of their self-confidence in PE lessons through the practice of sports according to the gender and formal practice experience. The sample consisted of 450 Portuguese high-school PE students (206 male and 224 female, aged from 15 to 18 years old), who completed the self-confidence items of the Portuguese version (Vasconcelos-Raposo, 1995) of the CSAI-2 (Martens, Burton, Vealey, Bump & Smith, 1990). The main results revealed that male students presented higher values of self-confidence when compared to female students and students with formal practice when compared with students who do not have any type of formal practice in a club. This study highlighted that gender and the type of sporting practice experience seem to influence the self-confidence levels of students in the PE lessons within the team and individual sports activities. Further studies are suggested to be applied using a deeper approach from qualitative analysis in order to obtain a clearer understanding about the reasons of this results.

*Keywords: self-confidence, Physical Education, personal and social development*

## Effectiveness of authentic leadership in the context of sport: athletes' commitment and enjoyment and the mediating role of autonomy and trust

**Comille Bandura (University of Birmingham)**

Researchers have shown interest in studying leadership in sport. However, there is scant research on the concept of Authentic leadership (AL). AL is a value-based leadership approach developed in the organisational context which aims to reduce unethical behaviour. Research in organisational, medical and educational setting has demonstrated that AL is associated with positive follower outcomes such as satisfaction, commitment, and trust. In this study, we examined whether athletes' perceptions of coach AL were associated with their commitment and enjoyment and whether trust in coach and perceived autonomy mediated these relationships. Participants were 435 (female = 211) athletes aged 18-44 years (Mage = 19.94, SD = 2.08) from team (e.g., football, hockey; n = 338) and individual sports (e.g., boxing, swimming; n = 97) who completed questionnaires about perceived AL of their coach, perceived autonomy and trust in their coach, and their enjoyment and commitment. Structural equation modelling (S-B $\chi^2$  (727) = 1240.00,  $p < .001$ ; CFI = .93; SRMR = .07; RMSEA = .04 (CI = .03–.04), revealed that athletes' perceptions of their coach AL were positively related to their enjoyment and commitment and these relationships were mediated by perceived autonomy and trust. Coach AL explained 56% of the variance in trust and 14% in autonomy, and in turn, AL, autonomy and trust explained 23% of the variance in commitment, and 30% of the variance in enjoyment. The findings suggest that authentic leadership in coaches may facilitate satisfaction and commitment of athletes, and this may occur via athletes' perceptions of autonomy and trust.

*Keywords: coaching effectiveness, integrity, positive athletic development*



## Winning attitude as a state competitive anxiety predictor

**Christos Katsikas, Maria Psychountaki (University of Athens)**

Winning attitude is the translation into training or competition of athletes' positive thoughts and feelings. The present study examined the link between athletes' winning attitude and state competitive anxiety. Since state competitive anxiety often affects athletes' performance, it is important to explore its relationship with athletes' attitude. 131 soccer and table tennis athletes completed the trait anxiety, the winning attitude (self-concept, motivation & mental toughness) and the CSAI-2 (cognitive and somatic anxiety and state confidence) questionnaires. The trait anxiety and winning attitude questionnaires were administered during training sessions, while, the state competitive anxiety ones were given 30 minutes before a game. Results revealed significant differences between athletes' competitive levels (amateur and professional) in their state confidence ( $t=6.36$ ,  $p<.001$ ) and winning attitude factors [winning attitude total score ( $t= 4.64$ ,  $p<.001$ ), self concept ( $t=6.42$ ,  $p<.001$ ), motivation ( $t=2.78$ ,  $p<.01$ ), and mental toughness ( $t=2.71$ ,  $p<.01$ )]. Three separate regression analyses showed that: (a) Cognitive state anxiety can be predicted by trait anxiety and winning attitude,  $F(4,108)= 9.56$ ,  $p<.001$  (adj.  $R^2= .23$ ). Winning attitude factors that were significant predictors were motivation ( $\beta= .23$ ) and mental toughness ( $\beta=-.24$ ), (b) Somatic state anxiety can be predicted [ $F(4,110)= 7.24$ ,  $p<.001$  (adj.  $R^2 =.18$ )] by trait anxiety ( $\beta= .27$ ) and motivation ( $\beta= .30$ ), and (c) State competitive confidence [ $F(4,109)= 24.81$ ,  $p<.001$ , adj.  $R^2= .46$ ] was mostly predicted by self-concept ( $\beta= .54$ ). Both trait anxiety and winning attitude contribute to athletes' state competitive anxiety. Motivation and mental toughness can affect both cognitive and somatic state competitive anxiety, while, self-concept determines athletes' state competitive self-confidence. A developed winning attitude dimension can facilitate control and better demonstration of competitive condition.

*Keywords: competitive anxiety, winning attitude*

## The influence of cardiovascular fitness, and obesity, on executive function in a Stop-Signal Task: An electrophysiological study

**Chein-Heng Chu, Jen-Hao Liu, Chih-Han Wu, Chun-Chih Wang, Yu-Kai Chang (National Taiwan Sport University)**

Prior research has suggested that cardiovascular fitness (CF) and obesity have significant positive and negative impacts on executive function (EF), respectively. Nevertheless, the interaction of these two combined factors on EF is less well understood. Therefore, the purpose of this study was to investigate the influence of the CF of young adults with or without obese conditions, on the inhibitory aspect of EF, regarding both behavioral and electrophysiological activities. 96 young adults, aged 18-25, were recruited. Based on their CF and body mass index (BMI) values, they were assigned into the following four groups: high CF in normal BMI range (NH), low CF in normal BMI range (NL), high CF in obesity range (OH), and low CF in obese range (OL). The performance of the Stop-Signal Task (SST) was utilized as the index of inhibition, and the N2 and P3 components of event-related potentials were analyzed offline. The higher CF participants (NH and OH groups) demonstrated superior behavioral performances compared to their lower CF counterparts (NL and OL), as reflected by shorter reaction times (RT) and higher accuracy. Additionally, a shorter stop-signal ST (SSRT) associated with the higher CF participants was observed. Furthermore, larger P3 amplitude and shorter N2 latency were observed among the participants with higher CF, relative to the lower CF groups. Collectively, participants with a higher CF are associated with superior ability to allocate larger amounts of attentional resources, as well as faster evaluation speed toward the stop-signal, and these results might consequently be attributed to their better inhibitory performance. The present study provided first-hand evidence of the importance of CF on the inhibitory aspect of EF, and the detrimental effects of obesity that might be overcome by an improvement of CF.

*Keywords: obesity, cardiovascular fitness, executive function, stop-signal task, SSRT*

## Posters Session 7. (14.30-15:30)

### The revision and factorial structure validation of the sport psychological capital scale

**Chen Chien-Wei**

Based on Luthans and Youssef (2004)'s positive psychological capital, self-efficacy, hope, optimism and resilience play important roles in organization behavior. Studies have indicated that these factors influence athletes' performances respectively in the sport field. However, few sport psychologists combine these four concepts as psychological capital to investigate the influence towards other variables. Therefore, the purpose of this study was to develop and validate the sport psychological capital scale by testing its factor structure, reliability and validity. In study 1, participants conducted in exploratory factor analysis (EFA) were 306 college students (159 males, 147 females) with different sport type with average age 21.18 years (SD = 2.29), average training time 4.07 years (SD = 2.90). Principle component analysis and oblique rotation were conducted in study 1 (eigenvalue more than 1), delete the items that factor loading is less than .40 sequentially or when cross-loading has occurred. In this criteria, four items were deleted, 4 expected dimensions with 23 items were in the final version of the questionnaire. Coefficient of internal consistency Cronbach's  $\alpha$  of four factors were .88 (hope), .92 (self-efficacy), .92 (resilience) and .90 (optimism), explained variance were 70.7%. In study 2, confirmatory factor analysis (CFA) were conducted, a sample of 300 collegiate tennis players (115 males, 185 females) recruited from different colleges with average age 20.72 years (SD = 2.01), average training time 3.37 years (SD = 2.13). Model fit summary: CMIN/DF=3.71, GFI=.89, SRMR=.05, AGFI=.86, RMSEA=.067, NFI=.92, RFI=.91, IFI=.94, TLI=.93, CFI=.94, PGFI=.70, PNFI=.80, PCFI=.81, the model provided acceptable fit to the data. The sport psychological capital scale demonstrated good reliability and validity through EFA and CFA which can be directly applied to all sport fields, coaches will then use this scale to understand the degree of sport psychological capital.

*Keywords: self-efficacy, hope, optimism, resilience*

### The prediction to sport performance and self-handicapping of collegiate tennis players' sport psychological capital and coach-athlete relationship

**Chen Chien-Wei**

According to Luthans and Youssef (2004)'s positive psychological capital, sport psychological capital scale which contains four constructs demonstrates good reliability and validity through EFA and CFA, and can be directly applied to all sport fields. The purpose of this study is to investigate the relationships of sport psychological capital, coach-athlete relationship, sport performance and self-handicapping among college tennis players. In addition, it also examines the causal model. In this model, sport psychological capital not only can directly predict self-handicapping and sport performance, but also can predict them through coach-athlete relationship. A sample of 606 division1 and division2 collegiate tennis players (274 males, 332 females) with average age 20.95 years, average training time 3.72 years, completed questionnaires prior to one hour of their matches to measure their sport psychological capital, coach-athlete relationship and self-handicapping. Also measure the sport performance evaluated by the players after one hour of their matches. Sport psychological capital was significantly positive related with coach-athlete relationship and sport performance, but negative related with self-handicapping. Represented that the players have higher sport psychological capital, prone to have better coach-athlete relationship, sport performance and less self-handicapping. Modified causal model demonstrated acceptable fit index. Sport performance and self-handicapping was predicted by sport



psychological capital through coach-athlete relationship as a mediator. Conclusion: The results generally matched the hypothesis, sport performance and self-handicapping was predicted by sport psychological capital through coach-athlete relationship as a mediator. Practical implications and directions for future research were also recommended.

*Keywords: self efficacy, hope, optimism, resilience*

### **The influence of cardiovascular fitness, and obesity, on executive function in a Stop-Signal Task: An electrophysiological study**

**Chein-Heng Chu, Jen-Hao Liu, Chih-Han Wu, Chun-Chih Wang, Yu-Kai Chang (National Taiwan Sport University)**

Prior research has suggested that cardiovascular fitness (CF) and obesity have significant positive and negative impacts on executive function (EF), respectively. Nevertheless, the interaction of these two combined factors on EF is less well understood. Therefore, the purpose of this study was to investigate the influence of the CF of young adults with or without obese conditions, on the inhibitory aspect of EF, regarding both behavioral and electrophysiological activities. 96 young adults, aged 18-25, were recruited. Based on their CF and body mass index (BMI) values, they were assigned into the following four groups: high CF in normal BMI range (NH), low CF in normal BMI range (NL), high CF in obesity range (OH), and low CF in obese range (OL). The performance of the Stop-Signal Task (SST) was utilized as the index of inhibition, and the N2 and P3 components of event-related potentials were analyzed offline. The higher CF participants (NH and OH groups) demonstrated superior behavioral performances compared to their lower CF counterparts (NL and OL), as reflected by shorter reaction times (RT) and higher accuracy. Additionally, a shorter stop-signal ST (SSRT) associated with the higher CF participants was observed. Furthermore, larger P3 amplitude and shorter N2 latency were observed among the participants with higher CF, relative to the lower CF groups. Collectively, participants with a higher CF are associated with superior ability to allocate larger amounts of attentional resources, as well as faster evaluation speed toward the stop-signal, and these results might consequently be attributed to their better inhibitory performance. The present study provided first-hand evidence of the importance of CF on the inhibitory aspect of EF, and the detrimental effects of obesity that might be overcome by an improvement of CF.

*Keywords: obesity, cardiovascular fitness, executive function, stop-signal task, SSRT*

### **Where are football players paying attention to when viewing football fields: Evidence from eye movements**

**Chang Huang (Beijing Sport University), Zipeng Yang (University of York), Jie Li (Beijing Sport University)**

In football games, it is necessary for players to search the fields rapidly to find the key information for their ongoing actions. Here, using eye tracking technique, we studied how football players distribute attention when viewing scenes of football games for decision making. Twenty football players, who were certified as second or higher level players in China, and 20 non-players participated in the experiment (15 valid data in each group). Participants were required to view football scenes as an offensive or a defensive player, and judge to which direction the player holding the ball would pass. Each picture was divided into several areas of interests (AOI), including the ball, the player who was holding the ball, the other offensive players, the defensive players, the spaces unavailable for passing (the spaces between the player holding the ball and the defensive player right in front of him) and available for passing. The hypothesis was that the experts could quickly discriminating the useful and useless areas, so that they would not spend much time looking at the spaces unavailable for passing when they were attacking. Repeated measures ANOVAs were performed on the percentage of viewing time in each type of AOIs, with the type of participants (player, non-player) as the

between-subject variable and the role of the viewer (offensive, defensive) as the within-subject variable. The results revealed a significant interaction on the percentage of viewing time in the spaces that were unavailable for passing, which was due to that, when viewing as an offensive player, the players spent less percentage of time than the non-players fixating the spaces unavailable for passing. The results indicate that the experts could quickly discriminating informative and uninformative areas, and spend less time paying attention to less useful information for the action at the moment, while the amateurs would continuously waste attention and time on useless information.

*Keywords: football players, eye movements, AOIs, attention distribution*

### **Association of 2D: 4D digit ratio with frailty and MMSE in community-dwelling older adults and Human Development**

***Celina Gonçalves (Sport Sciences Departament - Polytechnic Institute of Bragança, Portugal), Nuno Rocha (Laboratório de Reabilitação Psicossocial da Escola Superior de Saúde do Instituto Politécnico do Porto e Faculdade de Psicologia e Ciências da Educação da Universidade do Porto, Portugal)***

The 2D:4D ratio is an indicator of prenatal testosterone exposure (Fink, Manning, & Neave, 2006) and it is a fairly stable one (Anders, 2007). While there are some studies about the role of testosterone on frailty (Srinivas-Shankar & Wu, 2009) and cognitive decline (Moffat, 2005) in older adults, very few analyze the impact of prenatal testosterone exposure (Halil et al., 2013). Our aim was to understand the relation between 2D:4D ratio, frailty and cognitive decline in community-dwelling elderly people. 175 community-dwelling elderly people were recruited. We included the following instruments: Tilburg Frailty Indicator; Survey of Health, Ageing and Retirement in Europe; Mini-Mental State Examination; scanner assessment of 2D and 4D fingers lengths of each hand; Barthel Index; and Lawton and Brody scale. Statistical analyses were conducted using software SPSS Statistics (v.23.0, SPSS Inc, IL) and were based on Pearson correlations and regressions. We did not find any correlations between 2D:4D ratio and frailty measures, but we found a significant correlation between 2D:4D ratio and MMSE scores in the women sample. It is not possible to ascertain any contribution of prenatal exposure to androgens to the frailty status of community-dwelling elderly people, but we found that reduced prenatal exposure to testosterone in women may contribute to prevent cognitive decline in elderly women.

*Keywords: testosterone, cognitive decline; elderly people, frailty*

### **Habitual physical activity and social support in adolescents**

***Celina Gonçalves (Sport Sciences Departament - Polytechnic Institute of Bragança), Vítor Pires Lopes (Sport Sciences Departament - Politechnic Institute of Bragança; Research Center in Sports Sciences, Health Sciences and Human Development (CIDESD), Portugal)***

The support of parents and friends seems central to the involvement of young people in physical activity (PA) (Atkins et al., 2015). The purpose of this study was to analyze the importance of social support on PA levels in adolescents. 864 adolescents of both sexes were included. Participants were divided into two groups, Group 1: 12-15 years (Girls n=225; Boys n=202) and Group 2: 16-18 years (Girls n=226; Boys n=209). To determine PA and sedentary behaviour (SB), the short version of the International Physical Activity Questionnaire (IPAQ) was used; the specific types of PA assessed were walking (W), moderate (MPA), vigorous (VPA) and total score (TPA); a question about sitting time was included to determine SB. Perception of social support for PA was assessed with an adaptation of the Friend Support Scale for Portuguese language (Jago, Page, & Cooper, 2012). Statistical analyses were conducted using software SPSS Statistics (v.23.0) and were based on Spearman correlations. In group 1, the girls showed a significant correlation between TPA and the friends in general, best friend and parents support. In boys there was only significant correlation between MPA and best friend



support. In group 2 the girls VPA shows significant association with friends in general and the best friend support. Also in girls the TPA was associated with the support of friends in general. In boys, the VPA and TPA are associated with friends support in general. SB doesn't show association with any of the social support studied. Consistent with the literature, social support from parents, peers, and best friends plays a key role in PA levels in adolescents. However, parents, friends and best friends seems to play different roles in PA social support.

*Keywords: parents, friends, best friend, sport*

### Expert-novices differences in decision-making skill in soccer referees

**Cecilia Duarte Eroles, Rossana Cuevas Ferrera (Universidad Autónoma de Yucatán, México.), Duarte Araújo (CIPER, Universidade de Lisboa, Portugal)**

The referee is always making decisions and has to take them with a minimum of time (Murguía Cánovas, 2010; Díaz Pérez, 1990; García-Aranda Encinar, 2011). The aim of this study was to compare expert with novice referees' decision-making skill, according to the competences described in the Naturalistic Decision Making approach (Klein, 1997). The sample consisted of 35 soccer referees with experience between 2 months and 30 years. The diagnosis was made with interviews, video recording and an adapted version of the Decision Making Questionnaire for Trainers (Guia & Araújo, 2009). The results show that the most used competence by all these referees is the Cognitive Adaptability to the Context and the less used is the Strategies to Manage the Uncertainty of the Context. Also, expert referees seem to use more the competence of Evaluation of the Situation; nevertheless, the competence that seem to be the less used for the expert referees is the Realization of Mental Simulations to Choose a Course of Action. The referees affirm that the context and the experience in similar situations helps them to develop new abilities, confirming findings from other studies (Sánchez López, Fernández, Silva Pereyra, Martínez Mesa, Moreno Aguirre 2014; Araújo, Davids & Serpa, 2005; Carvalho, et al., 2011; Kanheman & Klein, 2009).

*Keywords: referee, decision making, competences*

### Does athletes' perception of leadership differ according to goal achievement and sport success?

**A. Rui Gomes (University of Minho, School of Psychology, Portugal), Catarina Morais (University of Kent, School of Psychology, United Kingdom)**

Coaches influence athletes' well-being by the way they evaluate and respond to sports activity. Previous research has established that transformational leadership produces better results in team performance than other forms of leadership, like transactional (e.g. Arthur et al, 2011). However, there is less evidence regarding how athletes' perceptions of leadership differ according to their perception of goal achievement at the individual and team levels and according to their sports performance. Data was collected for 180 male junior soccer players aged between 16-18 years, competing in 1st/2nd national divisions, at the beginning (T1) and end (T2) of the sports season. Three leadership areas (transformational, transactional, and decision making), goal achievement in sport, and team performance were evaluated, using the adapted Portuguese versions of the TTIQ, MSLS, and PGI scales (Beauchamp et al, 2010; Gomes & Resende, 2014; Mata & Gomes, 2013). A Group (High vs Low) x Time (T1 vs T2) mixed ANOVA was conducted using SPSS. Results showed that athletes with (a) a higher perception of individual goal achievement evaluated their coaches more positively; (b) a higher perception of team goal achievement started the season with a less positive evaluation of their coaches but ended the season with a more positive evaluation; and (c) higher sport performance evaluated their coaches less positively in two domains of transformational leadership but ended the season by attributing less negative feedback and passive management to their coaches. In sum, this study suggests that coaches are



evaluated differently by athletes who have higher and lower goal achievement at the individual and team levels and by athletes who have better and worse sport's performance. These differences in the evaluation of coaches occurred at the three levels of leadership, suggesting that coaches can augment their efficacy by adopting positive behaviors in these domains.

*Keywords: leadership, goal achievement, team performance*

### The impact of mental routines on performance enhancement of young tennis athletes

**Catarina Morais (University of Kent, School of Psychology. United Kingdom), A. Rui Gomes (University of Minho, School of Psychology. Portugal)**

Pre-service mental preparation routine is a common performance enhancement and coping strategy used by tennis players (cf. Gould, 2001). Mental routines include, for example, relaxation, imagery, and self-talk strategies. The present study aimed to test the efficacy of mental routines on performance of young tennis athletes. A cognitive-behavioral intervention was implemented aiming to help athletes' to develop a systematic behavioral and cognitive preparation prior to serve. The cognitive component of the routine was introduced at the education phase, in which athletes were instructed and taught to analyze the game, decide the type of serve they wanted to perform and commit with that decision, and to have a positive self-talk before the point. The behavioral component consisted on teaching athletes how to assess good posture, positive body language, and physical regulation (through breathing exercises). During training sessions, and when necessary, corrections on athletes' posture, body language, and physical regulation were made in order to allow them to consistently perform the pre-serve routine. Their service games' efficacy (percentage of service games won) and mental toughness (an evaluation of mental routine, error management and positive self-talk) were measured before and after the intervention. Their efficacy on service games when they perform (vs. when they do not) the mental routines was also compared. Data was collected before and after the intervention, during one year. 84 service games from 10 different athletes (aged between 10 and 15-years old) were analysed using mixed ANOVA, regression and mediation analyses (Process Hayes, 2008). The results revealed: (1) a positive impact of the intervention programme on performance efficacy; (2) athletes win more service games when they perform the mental routines; and (3) this relationship is mediated by mental toughness. In conclusion, the implementation of mental routines improved athletes' efficacy in their service games.

*Keywords: mental routine, mental toughness, psychological intervention, performance enhancement*

### Anger management and perfectionism in youth tennis players of a high performance sport center

**Carlos Arnoldo Ceballos Aguayo, Diana Lorena Flores Escalante, Paulina Campos Romero (Universidad Autónoma de Yucatán), Juan González Hernández (Universidad de Murcia)**

The present document is a preliminary study that examines the control and expression of anger and the perfectionism in young Mexican tennis players from the high performance sport center "Real Credit Tennis Center". Competition sports are considered a field where variables such as perfectionism are present, either because of the high demand of the sport or because of the goals and personality of each individual (Dunn, Babiak, Causgrove Dunn y Syrotuik, 2002). Within sports, perfectionism can be associated with the anger expression (Hewitt et. al., 1991). Participants were six tennis players with ages between 14 and 16 years ( $M=14.44$  years and a  $SD=1.04$ ), the employed instruments were the State-Trait Anger Expression Inventory (STAXI-NA, Del Barrio, Spielberger & Aluja, 2005) and the Multidimensional Perfectionism Scale (MPS-F, Franco, Mancilla-Díaz, Álvarez, Vázquez & López, 2010). It was observed that the participants obtained punctuations outside the expected ranges for their age in the subscales of external expression, external control, internal control and total control, obtaining results below the 25th percentile and above the 75th



percentile, which may indicate poor management of control and expression of anger in accordance with the authors Del Barrio, Spielberger & Aluja (2005). Likewise, referring the perfectionism variable (Franco, Mancilla-Díaz, Álvarez, Vázquez & López, 2010) it was found that the tennis players overvalue order and organization and their personal standards are elevated, both maladaptive behaviors that can make them judge their achievements in an inadequate way and experience uncertainty about their performance (Frost, Marten, Lahart y Rosenblate, 1990; Purdon, Antony & Swinson, 1999). Therefore, it is considered necessary to strengthen young athletes in anger management and in the decrease of maladaptive behavior of perfectionism, in order to help them to achieve an optimal emotional state and improve their sports performance.

*Keywords: anger expression, anger control, athletic performance, perfectionism*

### Portuguese badminton on the way to the olympic games Rio 2016, a holistic approach

**Carla Martins (ISMAT), Pedro Martins, José Guilherme (ISMAT), Rui Rego (Universidade do Algarve), António Paula Brito (FMH-UTL)**

We aimed to qualify a badminton player for the Rio2016 Olympics. From a case study, we have applied a holistic approach that crosses sport psychology, neuro-linguistic programming, and sport coaching, consisting of 4 stages. The player is 24 years old; has 18 years of a sports career. 2012, participates in the London Olympics. May 2013 he is injured. By October 2014, he dropped 1598 positions to 1650 of the World Ranking (WR). Started university at age 22. From a SWOT analysis at the 1st stage we defined the present state. Strengths: experience and competitive level; athletes' motivation; family support and friends network; municipality support. Weaknesses: unmotivated coach; absence of opponents, multidisciplinary team and medical support; he was absolutely alone in international competitions, dealing with logistics and competition issues; high qualification costs. Opportunities: mental coach presence; Olympic solidarity bursary; support from colleagues and University; financial awards obtained. Threats: qualifying; injuries; difficulties in the clubs organization; overlapping his studies with the qualification; 27 international matches carried out in 15 months; great emotional challenge; food differences in countries; Jet lag; Zika virus; impossibility for the mental coach to develop a more systematic work. Stage 2, defined the desired state, qualification for the Olympics2016. Stage 3, defined a plan of action: formulated objectives; focused on resources under the athlete's control; private doctor; he planned his training; articulated with his coach and club; how to communicate; raised sponsorships; anticipated logistical contingencies in competitions; managed university and qualification for the Olympics demands. Stage 4, evaluation, present in all stages. In 17 months he climbs 1585 positions in the WR, obtaining 15 medals. May 2016, he qualified in position 34 for the Olympics. where he played 2 games and lost, although at certain times he was in advantage.

*Keywords: case study, holistic approach, neuro-linguistic programming, sport coaching, resilience*

### The resumption of a Portuguese Olympic dream

**Carla Martins (ISMAT), Pedro Martins, José Guilherme (ISMAT), Rui Rego (Universidade do Algarve), António Paula Brito (FMH-UTL-)**

From October 2014, a case study was developed with a 24 year-old injured badminton player from Algarve who participated in London 2012 Olympic Games. He was 45 times national champion and 19 times international medallist and was in position 1650 of the World Ranking. With a career of 19 years and after 17 months out of the international circuit, we aimed to prepare him to resume and qualify for the 2016 Olympic Games. Based on sports psychology, neuro-linguistic programming (NLP) and sports coaching a holistic approach was developed. After an initial SWOT analysis, it was decided to participate in the Moroccan International Tournament. The athlete was prepared in one month. Performed a total of 8 sessions. 2 linked to



the training and educational phase of the Psychological Training Skills (PTS), in which we establish two goals, learning NLP tools and achieve the 1st place. 1 session, so that the mental coach (MC) could see the athlete and club during training. 3 sessions, to operationalize the practice and achievement phases of PTS. 1 more session to accompany the athlete during his trip, this communication was mediated by Viber<sup>1</sup>. During the last session we did the PTS evaluation phase. Focusing on enhancing the resources, discipline and autonomy, that were under his control, was decisive - "having to go and give my best, without having to think about things that wouldn't depend on me and also not having the pressure of victory, made me feel lighter". During face-to-face sessions, the MC calibrated the athlete and systematically evaluated the congruence between verbal, para-verbal and non-verbal communication. The learning process of NLP tools were measured by the observation and calibration of micro behaviours of the athlete and by the content analysis of his self-assessment and internal dialogues. The athlete came first and the Olympic dream was catapulted into another dimension!

<sup>1</sup>Viber: mobile phone application used for communications.

**Keywords:** case study, neuro-linguistic programming, sport coaching

### Is there variation in burnout levels in soccer athletes during a season?

**Camila Cristina Fonseca Bicalho (Universidade do Estado de Minas Gerais), Cristiane Bhering Moretzsohn da Silva (Colégio Padre Eustáquio), Varley Tealdo da Costa (Universidade Federal de Minas Gerais)**

Burnout is a syndrome capable of affecting young soccer players' during different moments of a season (Adie, Duda, & Ntoumanis, 2012). Little is known about the variability of burnout levels in young soccer players those are close to reaching professionalism. The aim of this study was to verify the variability of burnout levels in U-20 Brazilian soccer athletes during three distinct periods of the season. A total of fifty-three U-20 soccer athletes were evaluated (M age=19.20 years, SD=0.96). The Athlete Burnout Questionnaire (ABQ), Brazilian version, was used to evaluate symptoms of sport devaluation (SPD), emotional/physical exhaustion (EPE), reduced sense of accomplishment (RSA) and burnout total score (BT). ABQ has been applied once in each period of season: return from vacation, training and competition. The statistic procedures adopted were: Mean (M) and standard deviation (SD) the Kolmogorov-Smirnov. As the normality test was not confirmed we used the Friedman test ( $p < 0.05$ ). The burnout values for each period of season were found: Vacation SPD (M=1.34, SD=0.31), EPE (M=1.79, SD=0.60), RSA (M=1.97, SD=0.63), BT (M=1.70, SD=0.39); Training SPD (M=1.47, SD=0.39), EPE (M=1.86, SD=0.51), RSA (M=1.87, SD=0.55), BT (M=1.75, SD=0.33); Competition SPD (M=1.43, SD=0.39), EPE (M=1.92, SD=0.66), RSA (M=1.97, SD=0.61), BT (M=1.77, SD=0.41). The variability of BT indicators during the three periods of a season were not observed. Only the SPD dimension was presented significant differences during the periods of training-vacation ( $p < .01$ ) and competition-vacation ( $p < .01$ ), however there were no difference between training and competition ( $p = .58$ ). It is concluded that for this sample, burnout did not present variability along the season, demonstrating a certain behavioural stability in the perception of athletes. However, the levels of the SPD dimension varied in the period of vacation /training and vacation /competition.

**Keywords:** burnout, soccer, athletes, longitudinal study

### Youth academy athletes' parents' participation on sports practice

**Camila Castro Barros Valicente, Marisa Lucia de Mello Santiago, Maria Regina Capanema Bahia, Murillo José Lemos Nogueira (Minas Tênis Clube)**

Sport is a phenomenon in the actual social model, which includes institutions like family, school and the sportive club. This connection is close and is associated to the development of the athlete's value, and the parents influence is a determining factor, validating the study of Bloom, 1985, Stambulova, 1994, Coté, 1999. The chance of success is bigger when the right support is given since the childhood and during the first years of



practice. The goal of the study was identify what role have the parents of a competitive Brazilian club regarding to the types of influence during the development of their careers. A qualitative research was made, in wich the athletes answered surveys, classifying the kinds of help they received from their parents. The sample had 560 children and teenagers, which 324 were between 11 and 14 years old, and 242 aging between 15 and 19 years. The sports were: swimming, futsal, judo, tennis, basketball, volleyball, and gymnastics. Parents were classified by their athlete children as supporters, demanding, presents and absent, as well as how much they give technical tips for their kids. Results show 51.12% are supporter parents, 39.32% are present, 10.60% are demanding and 3.35% are absent. Regarding the technical tips frequency, there were changes between the 11 to 14 years old athletes and the 15 to 19 years old group: in the younger group the technical tip frequency was classified as sometimes (45.37%), always (22.84%), often (20.99%) and never (10.80%), while in the older athlete group there was a significant increase in never (28.51%), complementing with sometimes (40.91%), often (14.46%) and always (16.12%). This survey data showed parents are present and supportive. However, 11 to 14 years old athletes' parents give more technical tips than the 15 to 19 years old. These results evidence the older the athlete is the less their parents give technical tips, although they continue present and supportive.

*Keywords: athletes, parents, participation*

### Impact of passion on the hope perception among Brazilian athletes

**Caio Rosas Moreira, Nayara Malheiros Caruzzo, Selso Ananias, Patrícia Carolina Borsato Passos (State University of Maringá)**

Sports passion is a feeling that can affect athletes' behavior, as well as the internalization process of sport in their lives. This study derived from the Dualistic Model of Passion (Vallerand, 2015) and the Hope Theory (Snyder, 2000). Hope Theory addresses the dedication intensity to activity dimensions, implying on athletes and their capacity to formulate pathways to reach goals. This study investigated the impact of sports passion on hope perception among Brazilian athletes. The subjects were 590 male (51.2%) and female (48.8%) high performance athletes ( $22.87 \pm 5.45$  years), from team ( $n=467$ ) and individual sports ( $n=123$ ). Data collection was conducted through Passion Scale and Dispositional Hope Scale and was analyzed using Mann-Whitney test, Spearman's coefficient and multiple regressions. Results showed that team sports athletes had greater harmonious and obsessive passion, when compared with individual sports ( $p < 0.01$ ); harmonious passion and passion criterion were correlated with all hope dimensions (agency, pathways and global hope) ( $p < 0.05$ ), graded as moderated among individual sports athletes and low to moderated for team sports athletes ( $p < 0.05$ ). Regressions demonstrated that in both groups only the harmonious passion had positive and significant impact on hope, explaining 14% of agency and pathways variability, and 18% of global hope in team sports. For individual sports athletes the harmonious passion impacted 25% of the agency and 22% of the global hope ( $p < 0.05$ ). It was concluded that passion and hope are correlated constructs, demonstrating that athletes who autonomously internalize sport practice in their identity have greater possibility of increasing their levels of hope.

*Keywords: passion, hope, sport*

### Perfectionism and satisfaction of basic psychological needs: a study in the Brazilian futsal context

**Caio Rosas Moreira (State University of Maringá), José Roberto Andrade do Nascimento Junior (Federal University of Vale do São Francisco)**

Perfectionism is a personality trait that presents both adaptive and maladaptive functions for sports performance, being able to be highlighted as a facilitator psychological element for better results and as a

feature of Olympic champions. In this sense, the basic psychological needs (BPN) satisfaction emerges as a potential factor to be studied, once this psychological attribute is related to dedication, trust and commitment of the athletes in the sport. Thereby, understanding how perfectionistic traits directly affect BPN is of utmost importance for the pursuit of maximum sports performance. This study investigated perfectionism traits and BPN satisfaction in the Brazilian futsal context. The subjects were 301 athletes ( $25.48 \pm 4.90$  years old), starters ( $n=156$ ) and reserves ( $n=145$ ), participants of the Brazilian League 2013. The instruments were the Sport Multidimensional Perfectionism Scale-2 and the Basic Needs Satisfaction in Sport Scale. Data analyses were conducted through Spearman's Correlation and Multiple Regression. Results showed that "Personal patterns/organization" was positively associated with BPN in both groups, while "Perceived parental pressure" and "Doubts in action" were negatively associated with BPN ( $p < 0.05$ ). In the regression, "Personal standards/organization" had a positive effect on BPN in all groups. It should be noted that among titular athletes the impact was on the "Relatedness" ( $\beta=0.17$ ), while for reserves on "Competence" ( $\beta=0.17$ ) ( $p < 0.05$ ). "Doubts in action" had a negative impact in both groups, being that for the starters it impacted athletes' "Autonomy" ( $\beta=-0.22$ ), while for the reserves the effect was on "Autonomy" ( $\beta=-0.21$ ) and "Competence" ( $\beta=-0.16$ ) ( $p < 0.05$ ). It was concluded that while the perfectionistic strivings favour athletes' BPN satisfaction, perfectionistic concerns weaken these needs satisfaction, regardless of players' position.

*Keywords: perfectionism, basic needs, sport, futsal*

### **Talent development and athletes' fulfillment in nigerian secondary school sports competition**

***Blessing Oluwatunbi (Sport Psychology Association of Nigeria), Grace Otinwa (Nigeria Association for Sport Science and Medicine), Olanrewaju Ipinmoroti (Sport Psychology Association of Nigeria), Adeolu Adesokan***

The purpose of this study was to examine the influence of school sports competition on talent development and athletes' fulfillment (satisfaction) in Nigerian secondary schools. Three hypotheses were formulated: regular school sport activities, school inter-house sports competition and participation in school sports will have no significant influence on talent development (TD) and athletes' fulfillment (AF) in Nigerian secondary schools. Descriptive survey research method was employed. 200 athletes and 20 sport masters / mistresses, selected randomly from 4 secondary schools in Ikeja Local Government Education Area of Lagos State, Nigeria were used in the study. The instrument used for data collection were self-structured, validated, 2 point scale questionnaires with a reliability coefficient of 0.83 named, "School Sports Influence on Talent Development and Athletes' Fulfillment Questionnaire-I & II" (SSITDAFQ-I for athletes & II for sports masters/mistresses). Athletes' performance improvement and performance satisfaction were used to measure TD and AF variables respectively. SSITDAFQ-I&II were developed by the researchers and administered on selected respondents. The data collected was used to develop a frequency distribution table for analysis. The descriptive statistics of frequency counts and percentages were used in presenting the data collected, while inferential statistics of t-test was used to test all hypotheses at a 0.05 level of significance. The hypotheses were tested and all rejected. The findings from the study indicated that regular school sport activities, school inter-house sports competition and participation in school sports all had significant influence on TD and AF. In addition, reward, win or loss and coaching strategies had further impact on AF. It was recommended that in sports competition, athletes should be rewarded right from participation level whether they won or lost.

*Keywords: school sports competition, fulfillment, athletes, talent development*



## Assessment of the predisposing factors to self-efficacy among university athletes in South-West, Nigeria

**Celina Adewunmi (Sport Psychology Association of Nigeria), Blessing Oluwatunbi (Sport Psychology Association of Nigeria), Olanrewaju Ipinmoroti (Sport Psychology Association of Nigeria), Abiodun Moronfolu (Nigeria Association for Physical, Health Education, Recreation, Sports and Dance)**

The purpose of this study was to assess the predisposing factors to self-efficacy among university athletes in south-west Nigeria. Descriptive survey research method was employed. A total of 500 athletes, selected randomly from 5 universities in South-West geopolitical zone of Nigeria were used in the study. The instrument used to collect data for the study was a self-structured questionnaire named "Self-Efficacy Factors Assessment Questionnaire (SEFAQ)". This was developed by the researcher and validated by three experts in sports psychology. The test-retest method was used in establishing the reliability of the instrument ( $r=0.73$ ). A total of 500 copies of the validated instrument were administered on selected respondents using the spot method. The data collected was used to develop a frequency distribution table for analysis. The descriptive statistics of frequency counts and percentages was used in presenting the data collected, while inferential statistics of t-test was used to test all hypotheses at a 0.05 level of significance. Three (3) research hypotheses were formulated and tested. The findings from the study indicated that level of preparation, coaching strategies and quality of opposition all had significant influence on self-efficacy among university athletes in South-West Nigeria. It was however recommended from the study that athletes in universities all over the country should be better prepared before any competition in order to make them exhibit high level of self-efficacy.

*Keywords: assessment, self efficacy, predisposing factors, athletes*

## The influence of college students' physical exercise on core self-evaluation: The mediating role of physical self-esteem

**Bin Xie, Jia Lin Guo (xi'an Physical Education University)**

The purpose of this study is to determine whether physical self-esteem is an intermediary variable when physical exercise affects the core self-evaluation, by analyzing the relationship of these variables, then to provide theoretical foundation for the practice of improving psychological health of undergraduate through physical exercise intervention. Randomly selected 360 college students from the three universities to fill in questionnaire on Physical Exercise Grade Questionnaire, Core self-evaluation Scale and Physical Self-esteem Scale, 307 valid questionnaires were collected. Correlation Analysis, Independent Simple T test and Regression Analysis were used to process data, the results indicates : that the score of physical self – worth, subjective physical attraction and physical self-esteem for college students with high intensity exercise are significantly higher than the score for the college students with low exercise intensity ; the score of subjective physical attraction and physical self-esteem for college students with weekly exercise frequency greater than or equal to three times are significantly higher than the score for non-exercise group and participation group ; Physical exercise intensity does not affect core self-evaluation scores, While the frequency of exercise affects the core self-evaluation, The higher frequency of exercise is, the higher core on core self-evaluation is. In the test of intermediary effect on physical self-esteem, the total effect of physical exercise on core self-evaluation is 0.157 ( $P < 0.01$ ), which indicated that physical self-esteem only played part mediating role in exercise influencing core self-evaluation, and intermediary role is mainly reflected in sense of physical self-value, subjective physical attraction and physical self-esteem total score.

*Keywords: physical exercise, physical self-esteem, core self-evaluation, mediating role*



## Coach-athlete relationship and athletes' performance satisfaction: The mediating effects of hope and athlete engagement

**Bin Wang**

In competitive sports, coaches and athletes were indispensable participants, whose relationship was also the most pivotal relationship. Coach-athlete relationship (CAR) was defined as a situation in which coaches' and athletes' emotions, thoughts, and behaviors were mutually and causally interconnected. Although previous study had investigated the relationship between CAR and athletes' performance satisfaction, we didn't know the mechanism between them. Based on 3+1Cs model of CAR, this study aimed to investigate how CAR influenced performance satisfaction among athletes, and the mediating role of hope and athlete engagement in the relationship between CAR and athletes' performance satisfaction. Data for the present study were collected from 483 Chinese athletes, who completed the Coach-Athlete Relationship Questionnaire, the Trait Hope Scale, the Athlete Engagement Questionnaire, the Athlete Satisfaction Questionnaire. The results showed that CAR was positively correlated with hope( $r=0.33$ ,  $p < 0.01$ ), athlete engagement( $r=0.41$ ,  $p < 0.01$ ), and performance satisfaction( $r=0.36$ ,  $p < 0.01$ ). Furthermore, CAR could positively predict performance satisfaction through (a) direct effect ( $\beta=0.18$ ,  $p < 0.01$ ), (b) the mediation effect of hope ( $\beta=0.17$ ,  $p < 0.01$ ), (c) the mediation effect of athlete engagement ( $\beta=0.04$ ,  $p < 0.01$ ), and (d) the serial multiple mediation effects of hope and athlete engagement( $\beta=0.05$ ,  $p < 0.01$ ). The results suggested that through improving the quality of CAR, the level of hope and engagement among athletes could be increased, and then their performance satisfaction could be enhanced.

*Keywords: coach-athlete relationship, athletes' performance satisfaction, hope, athlete engagement*

## Effects of two different protocols of weight training in patients with Alzheimer's disease

**Bianca Andrade de Sousa, Salma Soleman Hernandez, Rudney da Silva (Santa Catarina State University)**

According to a report by Alzheimer's Disease International (2015), dementia affects approximately 50 million people worldwide and almost 10 million new cases are identified per year, and studies are being carried out aiming to find more effective strategies for prevention and treatment of Alzheimer's disease (AD). In this context, physical exercise has been pointed out as an important non-pharmacological intervention tool, especially weight training (WT). However, despite the benefits of WT for health, there are still many gaps. Thus, this study aimed to compare the effects of two different WT protocols in individuals with AD. Therefore, 16 patients with mild and moderate levels of AD participated in the study. Socio-demographic, clinical and stage of AD data was collected (Clinical Dementia Rating Scale - CDR) as well as cognitive data (Montréal Cognitive Assessment - MoCA; Verbal Fluency Test - VF). Experimental interventions lasted 14 weeks, and in this context the experimental group with mild intensity (G20RM;  $n=10$ ) trained three times a week and the moderate intensity group (G12RM;  $n=6$ ) trained twice a week. The data was analysed through descriptive and inferential statistical using the Mann Whitney U-Test for comparison between groups before and after the experiment and the Wilcoxon test for intra-group comparison, with a significance level of 5% for all analysis. The results don't show significant differences between the groups for the socio-demographic characteristics (age, schooling and time of illness), neither between the groups before (MoCA:  $12.8 \pm 4.2$  and  $11.0 \pm 2.8$ pts, VF:  $6.0 \pm 3.6$  and  $7.2 \pm 3.6$ pts) and after (MoCA:  $11.6 \pm 5.0$  and  $11.3 \pm 2.0$ pts, VF:  $5.7 \pm 4.0$  and  $6.5 \pm 3.3$ pts) the experimental protocol nor the intragroup comparisons. However, the means obtained before and after the protocol indicated maintenance of the cognitive functions in both groups, concluding that the practice of WT can be assumed for cognitive stimulation of patients with AD.

*Keywords: alzheimer disease, elderly, weight training*



## Coaches of masters athletes: Beliefs and perceptions of their influence on athletes

**Bettina Callary (Cape Breton University), Bradley W. Young (University of Ottawa)**

Adults represent a fast growing sport cohort, but little is known about tailoring sport programming to their needs. Masters Athletes (MAs; typically 35+ years who regularly train) who have coaches have described diverse benefits to being coached, including sport specific (e.g., skill improvement, self-efficacy, heightened sport interest, self-determination) and non-sport benefits (e.g., improvements in health and personal development; Callary et al., 2015; Medic et al., 2012). Since coach perceptions may influence the ways they coach MAs, the purpose of the study was to explore how coaches perceive their MAs' motives and accommodate their interests, and how coaches perceive their influence on MAs. Data were collected via in-depth interviews with 11 coaches (four female, seven male; ages 36-66) of Masters swimmers, who ranged in coaching experience from three to 20 years. Following thematic analyses (Braun & Clark, 2006), results indicated that coaches perceived MAs had specific motives for being coached (e.g., technical improvement, structure, and management through researched and planned practices; sense of belonging through coaches creating social support; and safety, health, and fitness related motives). Their reasons for coaching corresponded with athletes' motives (e.g., sharing sport expertise; social affiliation and feeling one's contribution is valued; and self-improvement related to health and fitness). Further, coaches felt they possessed personal characteristics that their MAs liked. While the coaches believed they influenced MAs' sport performance, skill improvement, and motivation, they generally noted they did not influence development beyond sport. The results are discussed in relation to MAs' preferences and needs from coaches and the heterogeneity of adult groups, while considering how ageism in sport might influence coaches' perceptions. Implications for coach education: The importance of coaches understanding how to effectively work with adults.

*Keywords: coaching, masters athletes, influence, ageism, perception, adults*

## Evaluation of an exercise programme to improve quality of life recovery as a rehabilitation strategy in cancer process

**Bernat-Carles Serdà (Universitat de Girona (UdG)), Montserrat Grau (Universitat Autònoma de Barcelona (UAB)), Míriam Barra (Escola Universitària de la Salut i l'Esport (EUSES)), Arantza del Valle (Universitat de Girona (UdG))**

QoL is multidimensional, dynamic and modular in its paradigm. The challenge in the interpretation of QoL data in clinical research is that QoL is influenced by psychological phenomena such as adaptation to illness. The effect of the changeable nature of QoL is the resulting shift in the patient's assessment. QoL shift for a number of reasons: measurement intervals no longer have the same psychological anchors (recalibration), the importance attributed to different domains changes over time (reprioritization), and the definition of QoL differs throughout the disease continuum (reconceptualization). This research aims to obtain a valid and sensitive assessment of QoL change over the disease, and to evaluate a rehabilitation programme to invert the observed decreasing of QoL when patients return to daily living activities. The method was a sequential triangulation between quantitative and qualitative methods. 66 men were included in the sample. QoL was assessed in 4 periods: P1 at diagnosis moment, P2 a post-test on discharge moment, P3 a then-test measurement two weeks after discharge (retrospective evaluation). After returning home patients were randomized in experimental and control group. Experimental group assisted to a rehabilitation program during 24 weeks. P4 includes QoL assessment after this period for both Control (P4c) and Experimental Group (P4e). Results show that from baseline to post-test, QoL significantly decreased. The recalibration then-test confirmed a low QoL in all periods evaluated. Experimental and control group proves the positive effect of the Rehabilitation Program on QoL. Understanding the dynamic of QoL over time will help to adapt rehabilitation programs improving its sensitivity and efficacy, and would give professionals an accurate perception of

treatment and side-effects impact in patients' QoL. Results underline the importance of a health professional change towards a watchful waiting on QoL until its recovery in the daily living

*Keywords: quality of life, prostate cancer, response shift, rehabilitation*

## **A nutritional program for physical education instructors to improve their competences as agents of change**

**Beatriz Galilea Ballarini (Consell Català de l'Esport. Generalitat de Catalunya), Catarina Sousa, Marta Carrasco (Instituto de Educación Física. INEFC), Antonia Zamora (Consell Català de l'Esport. Generalitat de Catalunya)**

The present work aims to design, implement and evaluate a nutritional training program for physical education instructors. Studies show the need to include sports agents in nutritional training and not just the athletes. Twenty physical education instructors between 18 and 25 years old participated in this program. At the beginning and at the end of the study, participants completed a 24-hour dietary record for 3 days (Mataix, 2002) and also their basic knowledge of a balanced diet (Zawilla, 2003), their attitudes and resources in relation to deficient nutrition cases were assessed through case studies. The training program consisted of a total of 4 workshops lasting approximately 2 hours each. The workshops were included in the ongoing training program of the physical education instructors. A mean comparison before and after the program for the knowledge questionnaire and qualitative comparison of the 24-h dietary registered were applied for data analysis. Results show that participants improve their knowledge at the end of the study, that they identify and manage adequately cases of unhealthy nutrition and also improve their daily dietary habits. We can conclude that the specific training program improves the knowledge and skills of the instructors as agents of change. The program helps to prevent and solve risk behavior of eating disorders in the field of physical activity. Future investigations should see the benefits of a similar training program for coaches especially in sport with weight requirements.

*Keywords: physical education instructors, healthy behaviors; nutritional training, coach*

## **The moral disengagement in doping scale (MDDS): Validity and reliability of the Turkish version**

**Bahri Gürpınar, Mert Nalbant (Akdeniz University, Faculty of Sport Sciences), Maria Kavussanu (University of Birmingham, School of Sport, Exercise and Rehabilitation Sciences)**

The purpose of this study was to test the factorial validity and reliability of the Turkish Version of the Moral Disengagement in Doping Scale (MDDS) developed by Kavussanu et al. (2016). The Turkish version was translated from English with the back-translation method. The scale consists of one factor and 6 items that measure the six mechanisms of moral disengagement proposed by Bandura (1991). The questionnaire was administered to 264 (110 female 154 male) athletes from 32 different types of sports. The athletes were aged between 17-31 years old. The mean age was  $19.25 \pm 1.96$ . The mean sport experience was  $4.85 \pm 3.15$ . Data were collected from the athletes who entered the school of physical education and sport entrance exams and 47 of them were national athletes from different sport branches. The scale showed good internal consistency with Cronbach's Alpha Coefficient of .78. For linguistic equivalence, both versions were completed by 26 people who spoke both English and Turkish ( $r_s = .86$ ). The Kaiser-Meier-Olkin (KMO) test used in order to assess the appropriateness of the sample size for the factor analysis. The Bartlett test was used to determine whether the data were normally distributed. The KMO value have been found 0.83 and Bartlett test was significant (Chi-square: 366.506, df: 15, p: 0.000). The factorial validity of The MDDS was examined using confirmatory factor analysis. With analysis made with LISREL, fit indices shows good or excellent fit ( $\chi^2/df=2.41$ ; RMSEA=0.073; GFI=0.97; AGFI=0.094; SRMR=0.038; CFI=0.98; NNFI=0.097). After the modification were made between the items 1 and 2, fit indices showed excellent fit ( $\chi^2/df=1.44$ ; RMSEA=0.041; GFI=0.99; AGFI=0.096; SRMR=0.027;



CFI=1.00; NNFI=0.099). The overall results indicate that the MDDS is a reliable and valid instrument that can be used to assess the Turkish student athletes' moral disengagement mechanisms in relation to doping.

*Keywords: moral disengagement in doping, validity, reliability*

### Value systems of Turkish youth athletes

**Bahri Gürpınar, Serkan Toprak (Akdeniz University, Institute of Social Sciences), Merve Ayvalli (Akdeniz University), Jean Whitehead (University of Brighton)**

The aims of this study were to test the validity and reliability of a Turkish version of the Youth Sport Values Questionnaire (YSVQ: Lee, Whitehead and Balchin, 2000) and to reveal the value system of young Turkish athletes. The questionnaire consists of 18 items. These have high ecological validity because they were obtained directly from young competitors. Each item is a proxy for a different value and they are considered to represent a comprehensive set. The response format is a rating scale of the importance of the values to participants. Group scores for each value can be ranked in order of importance, and this hierarchy represents the value system of the group. The Turkish version was developed using the back-translation method. The appropriateness of the items in Turkey and the content validity of the questionnaire was provided by expert opinions. The questionnaire was administered to 304 athletes (105 girls 199 boys) from 6 different sports who were members of sports clubs in the province of Denizli. The students were aged between 11-18 (mean  $14.06 \pm 1.92$ ). The mean sport experience was  $4.27 \pm 2.36$  years. Results showed high test-retest reliability over 15 days ( $r_s = .91$ ) and high linguistic equivalence in participants who answered both English and Turkish versions ( $r_s = .87$ ). In the hierarchy of Turkish values the top 3 were contract maintenance ( $4.28 \pm 1.03$ ), personal achievement ( $4.27 \pm 1.08$ ) and being fair ( $4.20 \pm 1.18$ ). The bottom 3 were enjoyment ( $3.35 \pm 1.74$ ), tolerance ( $2.88 \pm 1.74$ ) and winning ( $2.23 \pm 1.99$ ). Correlation between the Turkish and UK mean value scores was calculated. Overall the Turkish value system had a medium correlation with the UK system ( $r_s = .48$ ). Enjoyment ranked much lower than in other nations and this reflects the impact of the Turkish military and political situation. The overall results indicate that the YSVQ is a reliable and valid instrument that can be used to assess the Turkish student athletes' value systems.

*Keywords: values, value systems, validity, reliability, Turkey*

### Auto-efficacy, situational and external factors in amateur, beginner and competitive Mexican runners

**Diana Vázquez, Erika Alejandra Lorenzo Contreras (UNAM)**

Within the world of sports multiple factors are involved, hence the complexity to achieve maximum sports performance. Athletes with high levels of self-efficacy are proactive to regulate their cognitions, motivations and emotions, which grants them an advantage to meet the challenges presented to them (Gutiérrez & Ureña, 2013); however, they must be prepared for any situation or demand. The purpose of this research was to determine if there are statistically significant differences among runners in self-efficacy, situational (uncertainty management and importance given to competition) and external factors. Three groups were assessed: amateur runners (N=40), beginner runners (N=40) and competitive runners (N=40), ages 15 to 33 ( $X = 20.43$ ,  $S.D. = 3.62$ ), using the Situational and External Factors for Athletes Scale (EFSED, Vázquez & Silva, 2015) and the Perceived General Self-Efficacy Scale (Acosta, Padilla, Sánchez & Guevara, 2003). A one-way ANOVA was performed, revealing statistically non-significant differences in self-efficacy and external factors among the three groups of runners. To assess situational factors (uncertainty management and importance given to competition), a Student's t-test was carried out to compare beginner and competitive runners. Results showed statistically significant differences between the two groups: competitive (and more experienced) runners are more capable of managing uncertainty during a competition than beginners. These findings highlight the importance of

helping athletes to focus their attention on situations they can control as well as being prepared for any situation presented to them, therefore providing valuable information for the design of better intervention strategies for athletes.

*Keywords: sports, athletes, auto-efficacy, uncertainty, runners*

### Eye quietness and quiet eye in expert and novice golf performance: an electrooculographic analysis

**Germano Gallicchio (School of Sport, Exercise & Rehabilitation Sciences, University of Birmingham), Andrew Cooke (School of Sport, Health & Exercise Sciences, Bangor University), Christopher Ring (School of Sport, Exercise & Rehabilitation Sciences, University of Birmingham)**

Quiet eye (QE) is the final ocular fixation on the target of an action (e.g., the ball in golf putting). Camera-based eye-tracking studies have consistently found longer QE durations in experts than novices; however, mechanisms underlying QE are not known. To offer a new perspective we examined the feasibility of measuring the QE using electrooculography (EOG) and developed an index to assess ocular activity across time: eye quietness (EQ). Ten expert and ten novice golfers putted 60 balls to a 2.4 m distant hole. Horizontal EOG (2 ms resolution) was recorded from two electrodes placed on the outer sides of the eyes. QE duration was measured using a EOG voltage threshold and comprised the sum of the pre-movement and post-movement initiation components. EQ was computed as the standard deviation of the EOG in 0.5 s bins from -4 to +2 s, relative to backswing initiation: lower values indicate less movement of the eyes, hence greater quietness. Finally, we measured club-ball address and swing durations. T-tests showed that total QE did not differ between groups ( $p = .31$ ); however, experts had marginally shorter pre-movement QE ( $p = .08$ ) and longer post-movement QE ( $p < .001$ ) than novices. A group  $\times$  time ANOVA revealed that experts had less EQ before backswing initiation and greater EQ after backswing initiation ( $p = .002$ ). QE durations were inversely correlated with EQ from -1.5 to 1 s ( $r_s = -.48$  -  $-.90$ ,  $p_s = .03$  -  $.001$ ). Experts had longer swing durations than novices ( $p = .01$ ) and, importantly, swing durations correlated positively with post-movement QE ( $r = .52$ ,  $p = .02$ ) and negatively with EQ from 0.5 to 1 s ( $r = -.63$ ,  $p = .003$ ). This study demonstrates the feasibility of measuring ocular activity using EOG and validates EQ as an index of ocular activity. Its findings challenge the dominant perspective on QE and provide new evidence that expert-novice differences in ocular activity may reflect differences in the kinematics of how experts and novices execute skills.

*Keywords: electrooculography, eye quietness, golf putting, kinematics, psychophysiology, quiet eye*

### Strategies used during mental rotation of hand images depend on imagery difficulty

**Aya Takayama (Hiroshima University)**

In a common mental rotation task, pictures of the right or left hand are presented at different angles of rotation. Subjects are required to judge the laterality (right or left) of hands as quickly and accurately as possible. To make the correct judgment, subjects implicitly imagine moving their own hand from its orientation into the orientation of the stimulus. In the present study, we investigated whether the brain detects a match in shape between an imagined hand and a visually presented hand or detects a mismatch in shape between the two during the task. To address the question, we used a divided visual-field paradigm. In the paradigm, when a visual stimulus was presented in the right and left visual field, the stimulus was therefore initially projected to the left and right cerebral hemisphere, respectively. Subjects were asked to judge as quickly and accurately as possible the laterality of pictures of the hands with different angles of rotation that were presented in the right or left visual field. We measured the response time required for judgments. When the hands were presented with high imagery difficulty (the fingers of the hand were pointing downward), projecting mismatched hand stimuli to each hemisphere decreased response times. In contrast, when the hands appeared with low imagery

difficulty (fingers of the hand were pointing upward), projecting matched hand stimuli to each hemisphere reduced response times. We conclude that the brain uses different strategies for judging the laterality of the hand depending on the degree of difficulty of implicit imagery.

*Keywords: mental rotation, motor imagery, visual field*

## Careers and employability of graduates of the European Master in Sport & Exercise Psychology from 2009 to 2016

**Athanasios Papaioannou (University of Thessaly), Elbe Anne-Marie (University of Copenhagen), Lintunen Taru (University of Jyväskylä), Apitzsch Erwin (Lund University), Alfermann Dorothee (University of Leipzig), Boen Filip (University of Leuven), Gernigon Cristophe (University of Montpellier), Hutter Vana (VU University Amsterdam), Johnson Urban (Halmstad University), Torregrosa Miquel (Autonomous University of Barcelona), Serpa Sidonio (University of Lisbon)**

This is an update of the careers and employability survey of students of the European Master's in Sport and Exercise Psychology (Lintunen, Elbe, Apitzsch et al., 2009). From 2009 until 2016 two European consortia of universities provided Master's level studies in sport and exercise psychology within a truly European and multicultural environment. (1) The Erasmus Mundus European Master in Sport and Exercise Psychology (EMSEP), a consortium of 4 European universities comprising Jyväskylä (coordinator), Leipzig, Lund and Thessaly. This was a 2-year program entirely focused on Sport and Exercise Psychology, with a yearly intake of 20-25 international students who registered across three host universities (JYV., LUND, THES.). In Semester 2 all students were moving to Leipzig where more than 10 invited international lecturers provided courses every year. The program included sport and exercise psychology courses and seminars in semesters 1, 2 and 3, practicum in semester 3 and research thesis in semester 4. (2) The Intensive Course (IC) of the European Masters in Sport and Exercise Psychology is a yearly Course of a consortium of 13 European universities that provide lecturers and students who move to a host university that organizes an IC with a duration between 6 to 20 days. Since 2009, more than 236 postgraduate students from all continents took part in the 8 IC workshops that were organized in Montpellier, Lueven, Copenhagen, Amsterdam, Lund, Rome and Thessaly (2016 & 2017) respectively. In this paper we provide the findings of a survey delivered to more than 300 graduates from these two programs.

*Keywords: training, professional development, international, sport psychology, careers*

## Mental toughness and emotional intelligence of professional basketball players in terms of different variables

**Atakan Yazici, Mehmet Güçlü (Gazi University, Sport Science Faculty)**

The purpose of this study was to investigate the relation between mental toughness and emotional intelligence of professional basketball players playing in Turkish leagues and to examine mental toughness (MT) and emotional intelligence (EI) in terms of different demographic variables. Target population of the study consists of the professional athletes playing in leagues related to Turkish Basketball Federation (TBF). The research sample comprises 63 women, 135 men, totally 198 pro-basketball players from 17 teams. In addition, 156 participants are Turkish citizen and 42 participants are citizen of the USA. "Sports MT Questionnaire (SMTQ)" developed by Sheard et al (2009), and as well as "EI Scale for use in Sport (EISS)" developed by Lane et al (2009) collecting data used during the research. The One-Way ANOVA test was utilized in order to examine the influence of independent variables (gender, citizenship, marital status, league category, team's ranking) on dependent variables. The relation between EI and MT was analyzed through Pearson Product-Moment Correlation Coefficient technic. The complete analysis applied in IBM SPSS 21 software provided a significance level of the data as  $p < 0.05$ . According to the results, significant differences



between EI and MT were observed in terms of such variables as gender, citizenship, marital status, league category, teams success ranking. In addition, a linear positive correlation was found while examining the relationship between the EI and MT subscales, EI social skills subscales and the MT assessment subscales. As a result of research, in terms of citizenship variables Turkish athletes proved to have a higher level of social skills subscale, while American players have better appraisal of others emotions. In addition, in terms of constancy and control subscales American citizens showed higher mean. The results also showed that the increase in MT constancy subscale score causes the increase in EI social skills subscale.

*Keywords: mental toughness, emotional intelligence, basketball, citizenship*

## Emotional intelligence and sport-oriented attitudes of young athletes and non-athletes

**Atakan Yazici, Ilkay Ulutas (Gazi University, Faculty of Education)**

The purpose of this study was to investigate the relation between emotional intelligence and Sport-Oriented Attitudes of Young Athletes and non-Athletes. Also study examine emotional intelligence and sport-oriented attitude in terms of different demographic variables. The interest of young people in sports has been increasing steadily. Children younger than 12 years of age may train more than 15 hours a week to specialize in sports (Sabato, Walch & Caine, 2016). Although, sport is physically and mentally supportive for adolescents, factors such as intense workout, competition, win-win pressure may be increase the stress levels of adolescents who start the sports at early ages. Some adolescents cannot cope with these pressures, and even choose to quit sports (Sabato, Walch & Caine, 2016; Alvarez, Balaguer, Castillo & Duda, 2012). Target population of the study consists of the 137(39.7%) active athletes from different sports and 208(60.3%) non athletes participated in this study. The research sample comprises 133 women (age=16.04±1.31), 212 men (age=16.47±1.15), totally 245 high school students participated. Participants filled out Trait Emotional Questionnaire (TEIQue-ASF) and "Sport-Oriented Attitude Scale" (S-OAS). Data were analyzed according to some variables such as gender, age, professional experience. The complete analysis applied in IBM SPSS 21 software provided a significance level of the data as  $p < 0.05$ . The results show that when the ages were older interest in sports and desire for exercises of the adolescent were increased. Emotional intelligence averages are not affected by factors such as age, sports experience. However, it has been found that there is a positive relationship between emotional intelligence and desire for exercises and negative relationship with living with sport. The results were discussed in the light of its implications for the supporting emotional intelligence and maintenance of sport involvement among young athletes.

*Keywords: emotional intelligence, sport-oriented attitude, young athletes, sport psychology, sport science*

## "Organizing for Excellence": stress-recovery states in the Danish national orienteering team during a training camp and the 2015 World Championship

**Astrid Becker-Larsen (Institute of Sport Science and Clinical Biomechanics, University of Southern Denmark, Denmark), Natalia Stambulova (School of Health and Welfare, Halmstad University, Sweden), Kristoffer Henriksen (Institute of Sport Science and Clinical Biomechanics, University of Southern Denmark, Denmark)**

Elite level athletes are under considerable pressure to perform, why energy management is a natural part of the life of elite athletes. Energy management is particularly important during periods of high demand on their resources, such as during training camps and competitions, which are often intense and do not allow sufficient time for recovery. Research on recovery has mainly focused on individual physical and physiological strategies. In the 2015 World Championship, the Danish national orienteering team was the best nation, winning four gold medals. In the present study we examined: (a) the stress-recovery states of the Danish orienteers during a three-week preparatory training camp and the following 2015 World Championship, and (b) their perceived sources of stress and recovery during the two events. The study was designed as mixed-method



with the RESTQ-sport questionnaire, semi-structured interviews, and a coach's journal as the data sources used longitudinally during the camp and the championship. Results revealed: (a) well-balanced stress-recovery states among all athletes during the entire period; and (b) perceived sources of stress and recovery classified into organizational, social, personal, and athletic. The athletes themselves stated that their well-balanced stress-recovery states positively affected their learning, well-being, and performance. The organizational strategies played a key role in reducing athletes' unnecessary stress and in facilitating individual recovery. We suggest that "organizing for excellence", keeping in mind athletes' energy management, is a special task for coaches and managers when preparing for camps and competitions.

*Keywords: elite sport, sport psychology, stress, recovery*

## Amount of hard continuous long runs during first ten years of training of elite long distance Kenyan and Spanish runners

**Arturo Casado (Isabel I University), Luis Miguel Ruiz (Politecnica Madrid University)**

Amount of Deliberate Practice has been proposed as performance indicator in different ambits. Kenyan running excellence has been studied from different perspectives: physiology, biomechanics, psychology and others. As part of Deliberate Practice background, this study compares the amount of a training activity (hard long tempo runs) of elite Kenyan and Spanish long distance runners. 20 male long distance Kenyan world level runners and 18 male Spanish long distance international level runners were studied. Personal conversations with athletes and coaches and their training logs were used in order to get data about their training in their ten first years of systematic training. Amount of different types of training was calculated in a training week which was located ten weeks before the main goal of the season (gold label marathon, Olympics, world, European championships...) every two years in the ten-year period. Tempo run is considered a training activity of more than 14 continuous kilometres run at a high pace. ANOVA's and ANCOVA's analysis were used to find out significant differences between groups. Results showed that Kenyan runners ran significantly more kilometres of tempo run than Spanish runners during their ten first years of systematic training ( $p = 0,00$ ). 20 Kenyan runners ran in their first 4 years of systematic training a mean of 10845 kilometres (TD = 3668) and 18 Spanish runners ran a mean of 2071 kilometres (TD = 1854). In their 10 first years of systematic training, 5 Kenyan runners ran a mean of 23771 kilometres (TD = 6396) and 16 Spanish runners ran a mean of 7081 kilometres (TD = 5302). Therefore, hard tempo run might be seriously considered to be implemented as a key training type for long distance runners. This data suggests that long continuous hard (tempo) runs is a main characteristic of Kenyan long distance runners which might benefit their superior performance.

*Keywords: kenyan runners, long distance, training, tempo run, spanish runners, elite, deliberate practice*

## Changing my messy brain: An autoethnographic tale of neurofeedback for sport and health

**Arne Edvardsson (Halmstad University)**

Advances in neuroscience technology have opened up new ways of understanding the brain. This development has made it possible to work with new methodological approaches in sport psychology research. In the present study, I (first author) share an autoethnographic neurofeedback tale of my own sport psychology career struggles; from being an athlete with injuries and concentration problems to becoming a sport psychology practitioner using a neurosciences conceptual framework with a developing self-compassionate understanding of myself. Pursuing a sport psychology career has been as much a social mission as it has been a self-therapeutic journey trying to change my own messy brain for the better. Over a 4-year period I took systematic notes of my own neurofeedback training and responses to different neurofeedback protocols (e.g., SMR training over sensorimotor strip, alpha theta training at Pz and different bipolar placements). These systematic notes, which started with a cognitive-function focus, have continued to develop into explorations of



emotional self-regulation and quality of life perspectives. I discuss the important lessons I learned (e.g., how to integrate different sport psychology skills to optimize neurofeedback learning, how to talk about one's own neurofeedback experiences with clients). I hope future researchers will continue investigate this first-person, experiential neuroscience perspective that potentially can contribute to a better understanding of our brains and the potential of neurofeedback training for ourselves and the athletes and coaches we serve.

*Keywords: sport psychology career, brain activity, storytelling, concentration, psychological aspects of sport injuries, new methodological approaches*

### **The mediational role of autonomous and controlled motivation in the relationships between basic psychological needs satisfaction and athletes' self-talk**

**Aristea Karamitrou, Nikos Comoutos\*** *Note: \*Former Zourbano, Antonis Hatzigeorgiadis, Yiannis Theodorakis (Department of Physical Education and Sport Science, University of Thessaly)*

Using Self-Determination Theory (Deci & Ryan, 1985) as the theoretical framework, we examined potential antecedents of athletes' self-talk in a sample of 381 athletes (154 females, 227 males; mean age 16.55 years). Employing a cross-sectional design, our primary aims were to investigate the relationships between basic needs satisfaction, behavioral regulations, and athletes' self-talk, and b) to examine whether autonomous and controlled motivation would mediate the relationships between basic needs satisfaction and athletes' self-talk. Our self-determination theory derived hypotheses were partially supported. Bootstrap multiple mediation analyses revealed that: (a) competence directly predicted athletes' negative self-talk (negatively); (b) autonomous motivation partially mediated the positive relationships that competence and "volition" aspect of autonomy had with athletes' positive self-talk and fully mediated the positive relationships between relatedness and "internal perceived locus of causality (IPLOC)" aspect of autonomy and athletes' positive self-talk; (c) relatedness and IPLOC neither directly nor indirectly (via the associations with autonomous and controlled motivation) significantly predicted athletes' negative self-talk; (d) and finally controlled motivation partially mediated the positive relationship that "volition" aspect of autonomy had with athletes' negative self-talk. Overall, these preliminary findings stress the importance of both basic needs satisfaction and motivation as factors linked to athletes' self talk and suggest that athletes' basic psychological needs satisfaction, appear to foster more autonomous motivation toward sport and maximize athlete' positive self-talk, while simultaneously reducing negative self-talk.

*Keywords: thoughts, self-determination, behavioral regulations, PROCESS, youth sport*

### **Pre-competition anxiety levels in the spanish athletics national team for the most significant competitions: European, World Championships and Olympic Games**

**Antonio Sánchez Muñoz, Alberto Rodríguez Cayetano, Raimundo Castaño Calle, José María Fuentes Blanco, José María de Mena Ramos, Avilés Vicente Roberto, Salvador Pérez Muñoz (Universidad Pontificia de Salamanca)**

The control of this precompetition anxiety is one of the most important aims in the preparation for a high performance athlete. The current work is considered from the perspective of checking the anxiety levels in the Spanish women in national team who participate at the highest level, European Championships, World Championships and Olympic Games as well. For the data obtaining, the questionnaire Competitive State Anxiety Inventory-2 (Martens et al., 1990) was applied in its Spanish version (Jaenes et al., 1999). The sample for this study is formed by the 100% of the Spanish athletes called up by the Royal Spanish Athletics Federation for the international competitions in different categories. 92 female with ages contained between 16 and 38 years old ( $M = 23.49; \pm 5.504$ ). There are significant differences ( $p < .000$ ) between cognitive anxiety and self-confidence and self-confidence with somatic anxiety ( $p < .005$ ). In the "U 18" category (16-17 years), there are



significant differences ( $p < .009$ ) between cognitive anxiety and self-confidence. There is a significant correlation ( $p < .022$ ), between cognitive anxiety and self-confidence in the U 20 category (18-19 years), as well as between self-confidence and somatic anxiety ( $P < 0.011$ ). The two dimensions of anxiety: cognitive and somatic, have a significant correlation ( $p < .001$ ) between them. There are also significant differences ( $p < .033$ ), between cognitive anxiety and self-confidence in the "U 23" category (20-22 years), as well as in the senior category ( $p < .004$ ).

The obtained results show significant differences between the cognitive anxiety dimension and the self-confidence, that is, the negative expectations do not influence in the results due to the high level of self-confidence that women have.

*Keywords: cognitive anxiety, auto confidence, somatic anxiety, spanish athletics*

### Effects of perceived exertion of different training loads on the volleyball male players' performance

**Antonio Montalvo Espinosa (Universidad Pablo de Olvide), Elena Hernandez Hernandez (Universidad Pablo de Olvide)**

High level volleyball players are facing very intense and perceptual situations of training very often. Under such conditions, those players are subject to a negative and stressfull reaction, which is harmful for its performance. The purpose of this study was 1) analyze the subjective perception of the effort of a Superliga Spanish volleyball team in two different training situations; (2) check the influence on their performance and in the capacity of them players to face the competition. The sample was composed of 11 players male adults ( $n = 11$ , age =  $24 \pm 3$ ), apparently healthy. By the time of the study found half of the season, where the variables of performance in terms of training loads were stable. A group was training through concentrated loads, which made a weights and track training at the same time. Another group was training through charges at two different times (moorning and evening). RPE test was used to determine the subjective perception of the participants, which was evaluated post-training in both groups. Moreover, POMS test was used to determinated the mood of athletes after the training and match week. RPE was evaluated dayly after each training while POMS was used once for week, the day after the competition, right on the weekly rest day, in a quiet and relaxed atmosphere. The results showed that this test helps to adapt the planning loads of training, because it helps to control the perceived intensity to better cope with the competition. There were not significant differences in terms of objective performance variables. No significant differences were observed between the intra and intra group training loads ( $p < .005$ ). In addition, it was observed that the athletes' moods in the middle and end of the season were at competitive optimum levels, with no inter or intragroup differences observed ( $p < .005$ ).

*Keywords: RPE, POMS, psychologist training, volleyball, performance*

### Segmentation of clients in fitness centers according to quality and fidelity

**Jerónimo García-Fernández (Universidad de Sevilla), Antonio Jesús Sánchez-Oliver (Universidad Pablo Olavide), Moisés Grimaldi-Puyana, Jesús Fernández-Gavira (Universidad de Sevilla), Pablo Gálvez-Ruiz (Universidad de la Rioja)**

Quality has been a variable studied extensively in fitness centers (FC) as a predictor of customer loyalty (Theodorakis, Howat, Ko and Avourdiadou, 2014). Few are those who have studied in the academic literature of the profiles of consumers according to these variables. Objective: to examine the segmenting the customers of FC according to quality and fidelity The sample was 4303 women and 4159 men from 33 FC. Brady and Cronin (2001) scale for perceived quality (facility, employees, programs) and Zeithaml, Berry and Parasuraman (1996) scale for loyalty was used (10-point Likert-type), adapted to the Spanish context by García-Fernández, Gálvez-

Ruiz, Vélez and Bernal (2017). Data were analyzed using SPSS(descriptive and reliability analysis, two-stage cluster analysis and ANOVA) and AMOS(confirmatory factor analysis) The internal consistency were satisfactory. The results indicated that there were significant differences with the quality and loyalty scales with three sociodemographic variables. Age and permanence obtained a predictive index of 1.0 and gender of 0.01. First cluster (28.6%) women (51.6%) aged 21-30 years (53.0%) stood out for a period of 1-2 years (55.1%). Second group (22.7%) were men (50.2%) aged 41-50 years (57.0%) with permanence of 1-2 years (40%). Third group (27.6%) were men (52.1%) aged 31-40 years (58.9%) with permanence of 3-6 months (54.6%). Fourth cluster (21.1%) were women (54.7%) aged 21-30 years (100%) with permanence of 3-6 months (53.3%). The analysis of the variance between the four groups and the quality and loyalty scales, there were in all cases significant differences ( $p < .000$ ). The measurement model showed an acceptable fit to the data [ $\chi^2(36)=381.61$ ;  $\chi^2/df=10.60$ ; RMSEA=.054; RMR=.066; CFI=.99; GFI=.98; TLI=.99] The findings show different customer profiles and perceptions of quality and loyalty. This fact helps the managers of the FC to propose actions to identify clients with low quality perceptions and, consequently, to improve their fidelity.

*Keywords: quality, fidelity, fitness centers, clients*

### Organizational culture and job satisfaction in fitness centers

**Pablo Gálvez-Ruiz (Universidad de la Rioja), Moisés Grimaldi-Puyana (Universidad de Sevilla), Antonio Jesús Sánchez-Oliver (Universidad Pablo Olavide), Jesús Fernández-Gavira, Jerónimo García-Fernández (Universidad de Sevilla)**

Numerous studies indicate the significant relationship between organizational culture and job satisfaction (Lamentan, Yuem and Mohad 2016). Its importance is that organizations with adequate organizational cultures, obtain competitive advantages (Theriou and Chatzoglou, 2008). For this reason, Bernabé, Campos-Izquierdo and González (2016) point out that this is a vital variable, especially in the search for job satisfaction of the internal customer in sports centers. The aim of this study was to work with a test a model between organizational culture and job satisfaction in fitness centers. The sample was composed of 180 employees (79 women and 101 men) from fitness centers. A questionnaire was used to measure organizational culture (MacIntosh and Doherty, 2010) and job satisfaction (Warr, Cook and Wall, 1979) with a 10-point Likert scale. The back-translation followed the procedure described by Hambleton and Kanjee (1995) The Kaiser-Meyer-Olkin coefficient (.92) and the Bartlett test of sphericity ( $\chi^2=3966.96$ ;  $df=378$ ;  $p < .001$ ) were adequate. After exclusion of 2 items with cross-loading in job satisfaction scale and 1 item in organizational culture scale with loading  $< .04$ , a principal components analysis using oblimin rotation yielded 3 factors in organizational culture and 2 factors in job satisfaction, explaining 71.69% of common variance across items. The Cronbach's alpha coefficient ( $\alpha$ ) obtained was .93 for organizational culture and .94 for job satisfaction. The CFA for the 5-factor model showed an acceptable adjustment [ $\chi^2(266)=592.36$  ( $p < .001$ );  $\chi^2/df=2.23$ ; RMSEA=.08; TLI=.90; IFI=.91; CFI=.91]. The composite reliability (ranged from .88 and .94) and average variance extracted (ranged from .55 and .83) were adequate. Additionally, all constructs were considered to exhibit discriminant validity given all AVE values exceeded the appropriate squared correlations. The findings indicate that the model between organizational culture and job satisfaction is accurate.

*Keywords: job satisfaction, fitness centers, organizational culture, employee satisfaction*

### Determinants of moral decision-making in sport: Comparison between Olympic and Non-Olympic athletes

**António Fernando Rosado, Joana Viães (Universidade de Lisboa)**

Recently, the assessment of attitudes to moral decision-making, namely, attitudes towards fairplay among athletes has been the subject of research (see, for example, Vallerand, 1994; Vallerand, Brière,

Blanchard, & Provencher, 1997; Vallerand, Deshaies, Cuerrier, Brière, & Pelletier, 1996; Vallerand & Losier, 1994), and by Boixadós and Cruz (1995) and Boixadós, Cruz, Torregrosa, and Valiente (2004). The main purpose of this study was to evaluate the associations between attitudes to moral decision-making, namely, acceptance of cheating, keeping winning in proportion and acceptance of gamesmanship and several demographic and psychological variables, as Olympic and non-Olympic status, gender, academic qualifications, the type of sports practiced and core self-evaluations. A secondary aim was the translation and validation, for the portuguese population, of two measurement instruments: (1) the Attitudes to Moral Decision-making in youth Sports Questionnaire (AMDYSQ), developed by Lee et al. (2007) and (2) the Core Self-Evaluation Scale, developed by Judge et al. (2003). The participants were 200 individuals (107 males and 93 females), among which 22 are Olympic athletes and 178 are non-Olympic athletes. Confirmatory Factorial Analysis (CFA) was used for the validation of the two instruments. A set of statistically significant differences were found between attitudes to moral decision-making and all exogenous variables, except for academic qualifications. The correlation between core self-evaluations and keeping winning in proportion, among Olympic athletes, indicates that they have a higher perception of keeping winning in proportion, considering their self-evaluation. The study provided some preliminary data on the antecedents of ethical attitudes among athletes and clarify the importance of core self-evaluations on sport ethical behavior, providing sport psychologists valuable information to have a complete picture of determinants of moral behavior in sport.

*Keywords: sportpersonship, cheating, gamesmanship, core self-evaluations*

## Approach and avoidance motivations in achievement contexts: A comparative test of two models

**Anne Teboul (University of Montpellier), Hervé Le Bars (Western Catholic University of Angers), Christophe Gernigon (University of Montpellier)**

Contemporary achievement goal models (Elliot & McGregor, 2001; Elliot, Murayama, & Pekrun, 2011) have been criticized for their lack of parsimony, discriminant validity, and predictive value (Gernigon, Vallacher, Nowak, & Conroy, 2015; Roberts, 2012). As a parsimonious alternative to these models, Gernigon et al. (2015) proposed a dynamical model of approach and avoidance, according to which approach and avoidance patterns result from the interactions among a few key social-cognitive variables: competence expectancies (C), benefit for the self (Bs), and threat for the self (Ts). In this formal model, the control parameter, K, of approach (when K tends toward +1) and avoidance (when K tends toward -1) motivations results from the following equation:  $K = (C \times Bs) - [Ts \times (1 - C)]$ . The present study aims to test whether this model predicts intrinsic motivation in achievement contexts better than Elliot et al.'s (2011) six-goal model does. High school students ( $n = 130$ ) familiarized themselves with a basketball training circuit. Then, one week later, right before carrying out the basketball circuit again, they answered the AASQ (Gernigon, Klosek, Montigny, & Teboul, 2017), which measures C, Bs, and Ts, thus enabling the calculation of K; the AGIQ-6 (Le Bars, Teboul, Pineau, & Gernigon, 2017), which measures involvement in the goals (task-approach, self-approach, other-approach, task-avoidance, self-avoidance, and other-avoidance) of Elliot et al.'s (2011) six-goal framework; and an intrinsic motivation scale (Elliot & Harackiewicz, 1996). A stepwise regression analysis revealed that the parameter K was the first predictor of intrinsic motivation ( $b = .40$ ;  $p < .001$ ;  $R^2 = .27$ ), only followed by self-approach goals ( $b = .36$ ;  $p < .001$ ; added  $R^2 = .11$ ). This finding brings support to the relevance of Gernigon et al.'s (2015) dynamical model of approach and avoidance, as compared to Elliot et al.'s (2011) six-goal model.

*Keywords: achievement goals, dynamical systems, goal involvement*

## Development and validation of the Approach-Avoidance System Questionnaire (AASQ)

**Christophe Gernigon, Cyril Klosek, Camille Montigny, Anne Teboul (University of Montpellier)**

Gernigon, Vallacher, Nowak, and Conroy (2015) recently proposed a dynamical model of approach and avoidance, according to which approach and avoidance patterns result from the interactions among a few key social-cognitive variables: competence expectancies (C), benefit for the self (Bs), and threat for the self (Ts). In this formal model, the control parameter, K, of approach (K tends toward +1) and avoidance (K tends toward -1) results from the equation:  $K = (C \times Bs) - [Ts \times (1 - C)]$ . This research aimed to develop a French questionnaire measuring the variables C, Bs, and Ts, which enable the calculation of K: the Approach-Avoidance System Questionnaire (AASQ), and to test its structural and theoretical validities. A pool of 18 items was selected and adapted from various instruments. Items of competence expectancies stemmed from Gillet, Rosnet, and Vallerand's (2008) Satisfaction of Basic Needs Scale. Items of perceived benefit for the self stemmed from Ninot, Delignières, and Fortes' (2000) Physical Self-Perception Profile and from Vallières and Vallerand's (1990) Self-esteem Scale. Items of perceived threat for the self stemmed from Conroy's (2001) Performance Failure Appraisal Inventory. A sample of 666 students in sport sciences answered these items. Exploratory factorial analyses revealed a three-factor structure accounting for 69% of the variance and led to retain 12 items (four per factor). Internal consistencies were good ( $.73 \leq \text{Coeff. } \alpha \leq .90$ ). A second study was then conducted on 400 sport sciences students in their first academic semester. Only K significantly predicted exams performance for that semester ( $b = .14$ ;  $p < .001$ ), whereas none of the goals (mastery-approach, performance-approach, mastery-avoidance, performance-avoidance) of Elliot and McGregor's (2011) four-goal framework did so. These findings support both structural and theoretical validities of the AASQ, which should be confirmed with future empirical research using this instrument.

*Keywords: achievement motivation, attractors, dynamical systems*

### **Specific questionnaire for motor riders. Evaluation of situations and difficulties management, self-confidence and team dimensions**

**Anna Viñolas, Joaquín Dosil (Universidad de Vigo)**

During the last fifteen years Sports Psychology has carried out an increasing specialization to each sport modality (Dosil, 2002, 2005), including motor sports (Dosil & Garcés de Los Fayos, 2005). The use of a vehicle to compete influences in many aspects such as the physical training of the rider, the capacity of adaptation to the vehicle or do an appropriate risks taking to obtain the higher performance of the tandem rider-vehicle, while preserving safety. These are the main reasons for creating and specific questionnaire for riders as a part of the author's PhD. Motor sports had a large number of characteristics that made it peculiar at the mental level. The speed in which the riders make the decisions, the consequences that those decisions have, including injuries or dead risks; as well as the competition format, are intended to be collected in this specific questionnaire. The poster reflects the process followed for the preparation of the questionnaire and the results obtained. A priori CNPD dimensions (motivation, self-confidence, awareness level and attention-concentration) were targeted (Dosil, 2005). To prepare the Likert scale items the phases established by Anguera (2002) were followed. The final questionnaire had 29 items, with a KMO of .804 and a Bartlett's sphericity test significant ( $p < .05$ ). After an EFA analysis four factors were formed: rider confidence, situations managing, team and management of difficulties; which are slightly different from what was expected. The final version of the questionnaire explains the 44.5% of the variance, with an overall alpha of .87. The results show significant differences between genders: men score higher on self-confidence while women score higher on management of difficulties. Riders score significantly higher than drivers in team dimension. Finally, the pilots who have never left competition get higher scores in the total punctuation.

*Keywords: motor sports, riders, drivers, questionnaire*



## The effectiveness of respiratory and mobility exercises on anxiety and depression of hospitalized surgical patients

**Anna Christakou (National & Kapodistrian University of Athens, Greece), Nektarios Stavrou (National & Kapodistrian University of Athens, Greece, National Sport Research Institute, Olympic Athletic Center of Athens, Greece)**

Long hospital stay duration causes a significant impairment on patients' psychological state. The purpose of the study was to examine the effects of respiratory and mobility exercises on anxiety and depression of hospitalized surgical patients. The sample consisted of 60 surgical, not mentally disabled, patients from the same hospital (36 men, 24 women, aged  $63.80 \pm 13.74$  years, duration of hospital's stay  $38.06 \pm 27.06$  days, duration of exercise program  $22.87 \pm 14.91$  days). The participants of the experimental group ( $n = 30$  subjects) participated in the same exercise program which consisted of breathing, cough, balance, standing and walking exercises. Another sample of thirty surgical hospitalized patients consisted the non-exercise (control) group. All the participants completed the Hospital Anxiety and Depression Scale which has two factors, i.e. Anxiety and Depression factors of seven items each (HADS; Zigmond & Snaith, 1983; Michopoulos et al., 2007). The Greek version of HADS has good psychometric properties (Cronbach's  $\alpha$  for total HADS = 0.884, 0.829 for Anxiety and 0.840 for Depression and test-retest ICC for total HADS = 0.944) and has been used as a good tool for clinicians to assess anxiety and depression of hospitalized patients. All the participants completed the same questionnaire in the first post-surgical day and in the last day leaving from the clinic. The experimental group completed just before the beginning of the exercise program and the control group was asked to complete the same questionnaire at the same time (morning hour). Wilcoxon W showed differences between pre-post measurements in the experimental group in both factors of the questionnaire (total HADS  $W = -3.40$ ,  $p < .001$ , Anxiety factor  $W = -4.29$ ,  $p < .000$ , Depression factor  $W = -.572$ ,  $p < .000$ , Depression factor  $W = -.572$ ,  $p < .000$ ). No significant differences were revealed in the control group.

*Keywords: exercise, anxiety, depression, surgery, patients*

## The use of observational learning by youth athletes: Observing opponents in competition

**Angelita Cruz, Hyun-Duck Kim (Keimyung University)**

Recent studies have shown that athletes use the skill function of observational learning (OL) the most, followed by the strategy function and performance function respectively, and may vary based on factors such as gender and competition level. While gender and competition level differences were found in adult athletes, evidence in young players is lacking. Hence, the purpose of the study was to determine young athletes' use of OL and to compare any differences based on these factors. 167 athletes completed the Functions of Observational Learning Questionnaire to assess their use of the skill, strategy, and performance functions of OL at a national competition. Youth athletes ranked the strategy function the highest, followed by the skill and performance functions. To determine differences in usage, repeated measures ANOVA with Tukey's post hoc tests showed athletes used the performance function of OL significantly less compared to the strategy and skill functions respectively whereas no difference was observed in the use of OL between the strategy and skill functions. In addition,  $2 \times 2$  MANOVA test showed a significant main effect for competition level. Univariate effects showed high school athletes used the strategy function of OL more than elementary athletes. While previous results showed that the pattern of observational learning use in athletes employed the skill function the highest, the current study revealed that young athletes relatively favored the use of the strategy function first followed by the skill function and performance function. Further, competition level influenced athletes' use of observational learning but not gender. It appears that functions of OL in a sporting context may vary depending on the objectives of the specific situation and the target individual to be observed. The results provide further insights on how coaches can recommend the use of observational learning in a competitive environment to their athletes.

*Keywords: FOLQ, young players, badminton, modeling*

### **Social support and negative affective responses influence on rehabilitation adherence among injured athletes: A longitudinal mediation approach**

**Andreas Ivarsson (Halmstad University), Andreas Stenling (Umeå University), Urban Johnson, Emelie Elfsberg, Julia Zetterström (Halmstad University), Ulrika Tranaeus (The Swedish School of Sport and Health Sciences; Karolinska Institutet)**

A successful return to sport after a sport injury is positively influenced by the injured athlete's adherence to the rehabilitation programs (Ivarsson et al., 2017). Two factors suggested to predict rehabilitation adherence are social support and negative affective responses (Wiese-Bjornstal, 2010). Social support is suggested to decrease the level of negative affective responses that, in turn, is proposed to improve adherence to injury rehabilitation programs. In most published studies, however, the relationships between these variables have been studied using a cross-sectional design; a design that most often produces biased estimates (Stenling et al., 2017). The aim of the study was, using a longitudinal mediation design, to investigate if there was an indirect effect of social support on rehabilitation adherence via negative affective responses. A total of 73 injured athletes (Mage=25.43, SD= 9.52) participated in the study, all engaged in rehabilitation of a major sport injury (i.e., absent from regular sport activities for more than 30 days). The athletes completed questionnaires related to perceived social support, negative affective responses, and rehabilitation adherence on three occasions with 10 days in between. A Bayesian path analysis showed a credible indirect effect ( $ab = .04$ ) of social support (measured at time 1) on rehabilitation adherence (measured at time 3) via negative affective responses (measured at time 2). Negative credible associations were found between social support and negative affective responses ( $\beta = -.27$ ) and between negative affective responses and rehabilitation adherence ( $\beta = -.40$ ). Coaches, teammates, and significant others are recommended to establish high quality relationships, based on empathy, with the injured athlete. Such relationships will decrease the likelihood for maladaptive responses and improve adherence to the rehabilitation program.

*Keywords: adherence, negative affective responses, rehabilitation, social support, sport injury*

### **Patients' experiences of physical activity on prescription with access to counsellors in routine care – a qualitative study in Sweden**

**Andersen Pia (The Region of Kronoberg)**

Introduction Multi-professional physical activity on prescription (PAP) concepts are suggested to facilitate routine care delivery of PAP. There is a paucity of qualitative research on PAP concepts from the patients' perspective to provide insights into how such concepts influence recipients' physical activity. This study explores influences on PAP recipients' engagement in physical activity. PAP recipients in the study received prescription in routine care in a concept with access to physical activity counsellors implemented in a Swedish county. Method Interviews with a purposive sample of 13 adult invited to talk about their experiences of PAP and what influenced their engagement in physical activity over time. The interviews were recorded, transcribed verbatim and analysed using deductive content analysis. The framework COM-B (Capability-Opportunity-Motivation-Behaviour) was used to map emerged sub-categories. Results Capability to engage in physical activity concerned 1) tailoring the PAP to the individual's physical capacity and 2) accounting for the individual's experiences of physical activity. Opportunities given to engage in physical activity concerned 1) receiving a prescription 2) receiving professional counselling and follow-up from a physical activity counsellor 3) having access to appropriate activities 4) the time of the year 5) having a balanced life situation 6) having support and someone who can "push" for continued physical activity. Motivation was influenced by 1) the individual's own desire to improve one's health condition 2) the individual finding stimulating activities that encourage



continuation. Conclusion There was a great deal of interdependency between the sub-categories and the COM-B determinants. Many sub-categories were mapped onto Opportunities. A person-centred approach to PAP along with counselling and follow-up by a physical activity counsellor were important for the PAP recipients to engage in physical activity.

*Keywords: qualitative, physical activity, prescription, health care, promotion, behaviour change*

### Performance enhancing substances in exercise settings: a systematic review

**Ana Tavares (Lisbon University / Polytechnic Institute of Lisbon), Sidónio Serpa, Luís Horta, António Rosado (Lisbon University)**

Performance enhancing substances (PES) are used by gym/fitness users. This situations implies a public health problem, since it have been shown that drugs such as Steroids, Stimulants, Erythropoietin and Human Growth Hormone have significant performance enhancing effects, which can lead to dangerous side effects or even fatal with long-term use. This systematic review aimed to analyze studies that describe attitudes, beliefs and knowledge, as conceptualized in Theory of Planned Behavior (TPB) influenced by the use of PES by gym/fitness center users and provide a framework on the state of the art in this theme, and thus allow the design and foundation of future research lines. Twenty-six articles were identified from a systematic approach following the PRISMA Statement via electronic databases and hand-searching bibliographies of reference lists. Only peer-reviewed primary research published in English, Portuguese and Spanish (1997-2016), focusing on gym/fitness center users regardless of age and gender and provide some information on psychosocial factors towards using PES were included in this review. Emergent themes conceptualized with the TBP concluded that the main reasons pointed for young male bodybuilders using steroids as prevalent drug, regards aesthetic issues, improve muscle size, strength and performance. Important influences come from groups and instructors. Drugs are obtained by a variety of sources. Predisposition related to steroid use increase with years of physical training. Although some steroid users indicated a general lack of knowledge of the potential harmful effects of drugs, others had high knowledge about drug's side effects. The TPB illustrated a relationship between psychosocial factors influencing gym users to use PES. TPB could be used in future research to provide a template when developing prevention programs to reduce the use of PES and promote new lines of investigation on this study groups, as well as different PES than steroids.

*Keywords: gym users, performance enhancing substances, theory of planned behavior*

### How ongoing match status shapes variability and regularity of volleyball game actions

**Ana Ramos, Pedro Silva (University of Porto, Portugal), Keith Davids (Centre for Sports Engineering Research, Sheffield Hallam University, Sheffield, UK), Isabel Mesquita (University of Porto, Portugal)**

Performance behaviours teams do not remain stable throughout competitive games, changing with momentary variations in score lines. In this study, we analysed and compared performance variability of volleyball teams of different standing in complex I (game phase that comprises the actions of reception, setting and attacking), according ongoing changes in match status. Eight matches from the 2012 Olympics women's volleyball competition (elite level) and eight matches from the Portuguese national women's league (national level) in the 2014-2015 season were analysed. A total of 1496 rallies were observed and the following variables were analysed: setting conditions, attack zone, attack tempo, block opposition and match-status (i.e., advantage and disadvantage situations). Data reliability was measured through intra- and inter-observer testing procedures ( $K > 0.75$ ). Variability of tactical performance indicators was assessed using Shannon entropy measures. Magnitude-based inferences were used to analyse and compare values of selected variables. Overall, results showed that, independent of match-status (i.e., in advantage and disadvantage situations), elite level teams displayed a higher level of regularity in setting conditions, attack tempo and block opposition, and



greater variability in the attack zone, compared to national level teams. These findings suggest that elite teams were more consistent, and their performance was less dependent on match-status when they were leading or trailing in games, therefore seems relevant that coaches manipulate the match status during the practice. Results reported here may highlighted coaches for the importance of stabilizing specific game patterns (setting conditions) and displaying greater variability in other game actions (attack), regardless of competitive level of performance.

*Keywords: performance analysis, entropy, volleyball, match-status*

### **Team ranking and exploitation of variability and regularity in game actions: Use of entropy to assess collective tactical behaviours**

**Ana Ramos, Patrícia Coutinho, Pedro Silva (University of Porto, Portugal), Keith Davids (Centre for Sports Engineering Research, Sheffield Hallam University, Sheffield, UK), Isabel Mesquita (University of Porto, Porto, Portugal)**

Measures of variability can provide useful insights into how expertise shapes performance in team sports. In this study, we analysed and compared variability of tactical performance indicators in complex I in volleyball teams of different rankings, taking into account their final competitive standings. Two competitive levels were considered: elite, which included the eight ranked teams in the 2012 Olympic Games, and national, defined by the top eight ranked teams in the Portuguese national league (2014-2015). At each competitive level, variability in tactical behaviours of the top four (teams finishing 1st to 4th) and bottom four teams (5th to 8th) were compared. Eight matches from each performance level were investigated, involving a total of 1496 game rally sequences. The following variables were analysed: setting conditions, attack zone, attack tempo and block opposition. Variability of tactical performance indicators was assessed using the Shannon entropy measure. Magnitude-based inferences were used to analyse the practical significance of compared values of selected variables. Results of elite level competition showed that the top four teams displayed higher regularity in setting conditions and attack tempo, and higher variability in attack zone and block opposition, compared to the bottom four teams. At the national level, the top four teams displayed higher variability in all game actions, compared to the bottom four teams. Results suggested that uncertainty in attacking actions was a key factor in the success of the top four elite teams, which was predicated on greater performance stability in other game actions. Data emphasized the importance of the setter in the top four national teams. Results also highlighted the importance for coaches of developing the setters' capacity for playing at faster tempos in diversified attack zones.

*Keywords: performance analysis, team sports, entropy, volleyball*

### **Discriminant analysis of need satisfaction, motivational regulations, wellbeing and performance between soccer players with high and low perception of coach-autonomy support**

**Ana María del Mar Concha Viera, Rossana de Fátima Cuevas Ferrera (Universidad Autónoma de Yucatán), Isabel Balaguer (Universitat de València), Javier Sanchez-Lopez (University of Verona), Jeanette Magnolia López Walle (Universidad Autónoma de Nuevo León)**

It is important to know the social and personal factors that affect the athletes' development in competitive sports in order to strengthen the strategies to achieve the optimal performance (Balaguer y Castillo, Duda and García-Merita, 2011). From the perspective of the Self-Determination Theory (SDT; Ryan and Deci, 2000), the aim of this study was to evaluate the effect of the perception of coach-autonomy support in youth soccer players on basic psychological needs satisfaction, motivational regulations and wellbeing as investigated in most of previous studies, additionally athletic performance was included as novelty variable.



Participants were 38 male soccer players (Mage=14.55, SD=1.26), with a sports experience around 7.4 years (SD = 3.5), who completed a questionnaire package tapping the variables of interest. Based on the perception of coach-autonomy support questionnaire applied to the soccer players, a hierarchical cluster analysis (Ward method with a measure of squared Euclidean distance) was performed to obtain two groups: athletes with high perception of coach-autonomy support (H-AS), n=28; and athletes with low perception of coach-autonomy support (L-AS), n=10. No differences in age and sport practice experience were found between groups. A discriminant statistical analysis was performed to assess whether basic needs satisfaction, motivational regulations, subjective vitality and athletic performance distinct the groups. Results revealed that autonomy need satisfaction ( $\eta^2=0.71$ ,  $\eta^2=11.8$ ,  $p=0.001$ ), integrated regulation ( $\eta^2=0.87$ ,  $\eta^2=4.7$ ,  $p=0.02$ ), subjective vitality ( $\eta^2=0.78$ ,  $\eta^2=8.6$ ,  $p=0.003$ ) and general performance ( $\eta^2=0.88$ ,  $\eta^2=4.32$ ,  $p=0.03$ ) significantly distinct these groups, where H-AS group showed higher scores. No differences were observed in other variables. Our results highlight the importance of the perception of coach-autonomy support on autonomy development, motivation, wellbeing and most important on athletic performance in youth soccer players.

*Keywords: perceived coach-autonomy support, self-determination theory, athletic performance*

## Development and initial validation of the Italian Mood Scale (ITAMS) for use in sport and exercise contexts

**Alessandro Quartiroli (University of Wisconsin - La Crosse, United States), Peter Terry, Gerard Fogarty (University of Southern Queensland, Australia)**

Mood profiling is used in a variety of situational and cultural contexts for a range of purposes, such as monitoring psychological responses to training load, injury rehabilitation or travel across time zones, as a general wellbeing indicator, and to catalyze discussion between a sport psychologist and an athlete. This presentation chronicles the development and initial validation of the 24-item Italian Mood Scale (ITAMS) for use in exercise and sport domains. The ITAMS was developed from the Brunel Mood Scale (BRUMS; Terry et al., 2003) using the translation-back translation method prior to completion, via an online platform, by 950 Italian-speaking athletes (284 males), ranging in age from 16 to 63 years ( $M = 25.03$ ,  $SD = 7.62$ ). To enhance the generalizability of the findings, participants were recruited from a wide range of sports. In the first stage of the validation process, statistical procedures in MPlus were used to evaluate the measurement model. Multigroup exploratory structural equation modelling supported the hypothesised 4-item x 6-factor (tension, depression, anger, vigor, fatigue, confusion) measurement model for males and females separately and for the combined sample. Analysis of the scale scores using SPSS provided further support for the construct validity of the measure, with observed relationships between ITAMS scores and concurrent Italian-language measures of related constructs, including the 20-item Positive and Negative Affect Schedule (PANAS; Terracciano et al., 2003), and the 7-item depression scale of the Depression, Anxiety and Stress Scale-21 (DASS-21; Bottesi et al., 2015), shown to be consistent with theoretical predictions. Alpha coefficients for all ITAMS subscales exceeded the threshold of acceptability. The psychometric characteristics of the ITAMS suggest that the scale provides a valid and reliable measure of mood responses for use in Italian-language contexts.

*Keywords: scale development and validation, mood, ITAMS*

## Above board: Reframing the moral decision-making of NCAA student-athletes

**Amy Banas, Elliot Turiel (UC Berkeley)**

Researchers studying the psychological processes of athletes have maintained that, in sport activities, athletes engage in and approve of moral transgressions more than their non-athlete peers, seeing that as evidence that athletics promote social and moral deficiencies. Those propositions are based on several assumptions about moral development, as well as the nature of social reasoning with respect to sport

participation. However, a body of research (Smetana, 2006; Turiel, 1983, 2002) on the development of distinct domains of moral, social, and personal judgments suggests that such approaches leave out important social contextual considerations in evaluations of sport activities and that these considerations are necessary for understanding moral reasoning and development within the sport context. To examine the above, our study assessed the evaluations and reasons used by 48 male and female Division I NCAA student-athletes and 48 collegiate non-athletes in response to situations involving acts of physical harm in sport and non-sport contexts, administered in a semi-structured, clinical interview. We hypothesize that athletes will be more accepting of peer violence than their non-athlete counterparts, but that this finding only will hold for incidents taking place in the sport context. Additionally, we hypothesize that the justifications athletes use to explain their acceptance of the harmful act will provide evidence that while some participants condone potentially harmful acts and others do not, this difference is not due to moral deficiency, but to processes of balancing competing considerations about maintaining relationships and upholding the expectations of a sport or community. Preliminary findings support such hypotheses and further indicate that informational assumptions about intentions, the purpose of sports, limits of consent and personal choice, the wisdom of authority, and the utility of physical acts factor into reasoning about peer violence.

*Keywords: decision-making, morality, cognition, social reasoning, NCAA, physical harm*

## **The utility of sports psychology in health and social intervention programs. Gender-based violence**

**Amador Cernuda (King Juan Carlos University)**

An important area of application of the sport psychology is in the contributions in health and social welfare. This study presents the results of an experience of using Karate in a social intervention program to support victims of gender-based violence. A very necessary aspect that we must promote and develop is their self-esteem and Karate is a sport discipline that enhances the personality. 38 women aged 25 to 51 years, with posttraumatic stress victims of gender-based violence. Instruments: 16PF (Cattell); Self-esteem AF5 (Musitu & García) and STAI (Spielberger). Procedure: A program was applied for 8 months, two sessions a week of 90 minutes each. The first 30 minutes were dedicated to the learning of cognitive techniques and group dynamics used in sports psychology, and the remaining 60 minutes for the practice and learning of Karate. After analyzing the data with the statistical package SPSS version 19 for Windows, we could observe that the majority of participants in the study improved their self-esteem (40%) and reduced their anxiety (30%). Conclusions: In social policies, the use of sport should be promoted for social intervention programs.

*Keywords: sport, karate, gender-based violence, posttraumatic stress, social policies*

## **Perceptual-cognitive skills in team and combat sports**

**Alyona Grushko, Ekaterina Korobeynikova, Dmitrii Kabanov, Vladimir Kasatkin (Moscow Center of Advanced Sport Technologies)**

Outcome in sport competitions depends on a combination of various factors including perceptual-cognitive skills (PCS). Well-developed PCS are crucial for combat and team sports in order to outsmart opponent by anticipating his or her actions (Faubert, Siddebottom, 2012; Mangine et al., 2014, Romeas et al., 2016). The purpose of the study was to identify relationships between PCS. 122 elite and intermediate level male athletes (soccer, judo & boxing; mean age  $\pm$ SD: 19.1 $\pm$ 3.9) participated in the study in the competitive period. The following PCS were tested: 1) choice reaction time (RT) was assessed during a 3-min session (ThoughtTechnology); 2) complex RT - by the completion of a 1-min session on Dynavision-D2; 3) visual attention: a) multiple object tracking (MOT) - by completion of a Core-session on Neurotracker; b) attention allocation (AA-task), was assessed via "Red-Black Tables" (Praktika-MSU). Athletes also completed Russian

versions of SMS and STAI in order to reveal additional factors which may influence the results. Results. There is a positive correlation between the complex RT and choice RT for the left and right foot ( $r=.358$  /  $r=.375$ ,  $p<.01$ ); the complex RT and number of mistakes in AA task ( $r=.200$ ,  $p<.05$ ) and tempo characteristics of AA ( $r=.247$ ,  $p<.05$ ). There is a negative correlation between MOT and tempo characteristics of AA ( $r=-.247$ ,  $p<.05$ ). One-Way-data analysis indicates a significant difference in a number of mistakes in the AA task in athletes with different levels of state anxiety ( $F=3.41$ ,  $p<.05$ ). The results also revealed a negative correlation between the number of mistakes in the AA task and intrinsic motivation (“to accomplish things” ( $r=.240$ ,  $p<.05$ ); “to experience stimulation” ( $r=.206$ ,  $p<.05$ )) and “introjected” motivation ( $r=.243$ ,  $p<.01$ )). The results demonstrated the relationships between different PCS. In order to enhance performance in team and combat sports we suggest organizing complex assessment and training of PCS.

*Keywords: perceptual-cognitive skills, sensory-motor reaction, attention, visual attention, soccer, judo, boxing*

## The implementation of the eye tracking in psychological diagnosis in rock-climbing and golf

**Alyona Grushko (Moscow Center of Advanced Sport Technologies)**

Nowadays eye tracking have become an inherent part of psychological diagnosis and training in different sports. The current research presents the results of eye tracking implementation (ETG SMI) in rock-climbing and golf. The purpose of the first study was to determine visual strategies that athletes use to preview the rock-climbing routes. Twenty-eight rock-climbers participated in the study which was carried out in an indoor climbing gym. Athletes were supposed to preview climbing routes in eye-tracking glasses and after that complete the routes in on-sight in leading stile. Via quantitative & qualitative frame-by-frame analysis of eye tracking data (number & duration of saccades, fixations, gaze tracking) we determine different types of visual strategies in routes inspection: «ascending», «fragmentary », «zigzagging» and «sequence of blocks». We consider that the most effective visual strategy is «sequence of blocks»: an athlete inspects the route by blocks of 2-4 handholds or footholds from the beginning up to the end, paying attention to cue elements. We consider that this strategy should be incorporated in imagery sessions as preparation for a climbing route because it is connected with tactical component of training and anticipation phenomenon in sport. The second study (case study) addressed the implementation of the eye tracking in golf. Three golf-players participated in the study conducted in natural settings – during regular training sessions on a golf field. The qualitative frame-by-frame analysis of gaze tracking was used before and after the self-talk implementation. We found out that combining instructional self-talk technique and modifying gaze strategy according to the cue elements of golf-putting (the ball, hole etc.) allowed to enhance performance: first, by improving shooting accuracy, second, by managing automatic thoughts and negative emotions which may occur during golf putting.

*Keywords: eye tracking, mental training, imagery, self-talk, rock-climbing, golf*

## Consequences of prosocial and antisocial behavior for the recipient: An experimental study

**Ali Al-Yaaribi (University of Birmingham)**

Prosocial behaviors are acts intended to help or benefit another individual (e.g., encouraging a teammate), while antisocial behaviors are acts intended to harm or disadvantage another individual (e.g., verbally abusing a teammate). The consequences of these behaviors for the recipient have received little research attention. The aim of this study was to experimentally examine the effect of prosocial and antisocial teammate behavior on the recipient's anger, anxiety, happiness, attention, and performance. One hundred and two participants (51 males;  $M = 20.31$ ,  $SD = 2.30$  years old) from a British university were randomly assigned to 3 groups: prosocial behavior; antisocial behavior; and control group. They were tested individually and performed a competitive basketball free-throw task in two sessions: a baseline (Time 1) and an experimental



session (Time 2). During Time 2, a confederate – acting as the “teammate” - verbalized prosocial, antisocial, or neutral statements. Anger, anxiety, happiness, and attention were measured after the baseline and experimental sessions; performance (successful baskets and shooting accuracy) was also recorded. Repeated measures ANCOVAs on the Time 2 variables controlling for Time 1 variables and LSD post hoc comparisons showed significant differences among groups. At time 2, the antisocial group reported higher anger and anxiety and lower attention than the prosocial and control groups. It also reported lower happiness than the control group. The prosocial group reported higher happiness than the other two groups. Finally, the prosocial and antisocial groups performed better than the control group. These findings suggest that prosocial and antisocial behaviors are significant determinants of the recipient’s emotions, attention, and performance and that teammates are significant social agents in sport. The present study provides the first experimental evidence of the potential consequences of moral behavior in sport.

*Keywords: teammate, happiness, anger, anxiety, performance*

### Stressors and coping in voluntary sports coaches

**Alexandra Potts, Faye Didymus, Mariana Kaiseler (Carnegie Research Institute, Leeds Beckett University, United Kingdom)**

Sports coaching has been identified as a naturally stressful occupation. Coaches must be able to competently and effectively manage stress that is inherent in competitive sport and perform under pressure. Yet, limited research exists that has explored coaches’ experiences of psychological stress. The research that does exist has mainly focused on full-time, elite coaches who represent just 3% of the coaching workforce in the United Kingdom (U.K.). Despite the voluntary coaching workforce contributing to 72% of the total U.K. coaching personnel, little is known about the stressors that volunteer coaches experience or the ways they cope with these stressors. To explore the stressors that voluntary coaches experience and the coping strategies that they use. Methods: Following institutional ethical approval, four (Mage = 38.5±11.68 years) voluntary coaches were interviewed using a semi-structured interview guide. Each interview was conducted face-to-face and lasted between 56.44 and 84.25 minutes (Mduration= 66.95±12.19 minutes). Thematic analysis was used to organise and analyse the rich, in-depth data. Self-reflexivity was used by the primary researcher throughout to ensure rigor. The coaches reported 28 different stressors, which were categorised into four higher-order themes: personal, athlete-related, organisational, and external/uncontrollable. Thirty nine different coping strategies were discussed, which were categorised into two higher-order themes: problem-focused and emotion-focused coping. Overall, the stressors and coping strategies reported by the voluntary coaches in this study were similar to those reported in previous literature by paid coaches. This research represents some of the first to explore voluntary coaches’ experiences of stressors and coping strategies. Further research is warranted to explore voluntary coaches’ motivation to continue their engagement despite the stressors they experience.

*Keywords: elite sport, NVivo, qualitative, recreational sport*

### Athlete burnout: A multidimensional approach on predicting burnout under a conceptual integrated perspective

**Alexandra Markati, Maria Psychountaki, Kostantinos Karteroliotis, Nikolaos Apostolidis (Kapodistrian University of Athens Greece)**

Burnout among athletes is a syndrome characterized by various affective, cognitive, physical, and motivational dysfunctions. Although a number of theories and models have explained the burnout process adequately, results are contradicting. Gustafsson and colleagues (2011) suggested an integrated model of athlete burnout which includes antecedents, signs and other factors, derived from recent empirical research.





The purpose of the present study is to quantitatively examine the predictive significance of the dimensions of athletic burnout (exhaustion, reduced accomplishment, devaluation) by a number of proposed core signs (mood states, performance satisfaction and amotivation) and the additive prediction of a variety of psychosocial/situational determinants and trait characteristics. 231 athletes completed a form of demographic/sport characteristics and 7 questionnaires: Athlete Burnout Questionnaire, Profile of Mood States Questionnaire, Sports Motivation Scale, single-item scale for performance satisfaction, Social Support Questionnaire, Self-Esteem Scale and State-Trait Anxiety Questionnaire. Three separate hierarchical regression analyses showed that (a) exhaustion was mostly predicted by negative mood and lack of motives (32%  $R^2$ ), whereas, training load contributed 1% explained variance, (b) reduced accomplishment was mostly predicted by performance satisfaction (42%  $R^2$ ), while, self-esteem contributed 6% explained variance, and (c) sport devaluation was mostly predicted by age, performance satisfaction, and amotivation (33%  $R^2$ ), while, intrinsic motivation and trait anxiety contributed 7% & 4%, respectively. The present research is the first one so far to examine quantitatively some major antecedents, signs, and psychosocial/situational factors as proposed by Gustafsson's theoretical integrated model. Results highlight the value of integrating a variety of determinants to explain athlete burnout dimensions and considering burnout both as a state and as a process.

*Keywords: athlete burnout, satisfaction, integrated model, amotivation*

### **Evaluating the associations between coaches' autonomy supportive behaviors, the quality of athlete-coach relationship and athlete burnout under a Self-Determination perspective**

**Alexandra Markati (Kapodistrian University of Athens Greece), Kieran Kingston (Cardiff School of Sport, Cardiff Metropolitan University)**

Athlete burnout is a syndrome defined as a result of three concepts: Emotional - physical exhaustion, reduced accomplishment, and sport devaluation (Raedeke, 1997). Previous research has shown that associations exist between different dimensions of the coaching environment (e.g. coaching behaviors and coach-athlete relationship quality) and athletes' well-being (Felton & Jowett, 2013). However, it is unclear how these dimensions- when aggregated - affect burnout symptoms. Recent research proposes that Deci & Ryan's (1990) Self-Determination perspective might be suitable to explain how social factors affect athlete burnout occurrence (Gauthier, Guillet, & Lemyre, 2012). Thus, the current study aimed to examine; (a) whether the quality of the coach-athlete relationship mediates the relationship between autonomy-supportive coaching behavior and athlete burnout, and (b) how basic psychological needs might explain the predictive relationships between coaching behaviors, coach-athlete relationship and athlete responses. One hundred thirty one British athletes (Mage=22, SD=5.2) completed four established questionnaires in a single-shot design, measuring (a) coach autonomy support, (b) quality of coach-athlete relationship, (c) athletes' basic needs satisfaction, and (d) athlete burnout. Four Hierarchical regressions examined the proposed mediating relationships. Results revealed that, (a) quality of coach-athlete relationship partially mediated the relationship between autonomy supportive behavior and devaluation, (b) the need of relatedness partially mediated the relationship between autonomy supportive behavior and coach-athlete relationship, and (c) the needs of competence and autonomy fully mediated the relationship between the quality of coach-athlete relationship and burnout dimensions. The current study reinforces the potential impact of social environmental factors on athlete cognitions and experiences and the role of SDT in explaining the aforementioned relations.

*Keywords: athlete burnout, autonomy supportive, relationship, basic needs*

### **Assessment of self-regulation ability in psychological training for athletes of Russian national team**

**Alexandra Gorovaya, Igor Mitin (FMBA)**

The leading components in the structure of psychological readiness that mostly defining the effectiveness of competitive performances of a world class athlete are self-regulation skills. The main goal of our study is validation of scientific basis for biofeedback technology for psychological readiness measurement among Russian national team athletes. 45 athletes of Russian national table tennis team participated in this study. Mental readiness was studied by complex tests which were included in apparatus-program diagnostic complex "Multipsychometr". Assessment of athletes' self-regulation ability comprised game-based biofeedback by means of portable device named "Pulse Detector" that records, intensifies and feedbacks player's physiological reactions due to control the game's plot. Participants were given two biofeedback games: «Vira» and «Rally». Subgroups were selected on the basis of the hierarchical cluster analysis on integral indicators EffRR of "Vira", EffRR and EffRT of "Rally", than comparison of psychophysiological results was conducted. Stepwise discriminant analysis revealed the most informative indicators, separating the mental state of "successful" and "unsuccessful" athletes: Group 1 has more developed cognitive functions such as memory; the ability to concentrate; the distribution of attention; the reaction rate etc. Athletes from Group 2 have more advanced features to efficiently perform tasks related to the implementation of stereotypical features; they are also characterized by high lability of nervous processes. Results also showed a significant difference in the vegetative reactions of people with different levels of stress. Thus, the relation between the effectiveness of the performance during game biofeedback and stress resistance was found. The strategy of game biofeedback technology usage as modern assessment procedures of athletes' mental readiness in the framework of psychological support of national teams was successfully elaborated.

*Keywords: Russian national team, mental readiness, individual ability of self-regulation usage, game biofeedback, stress resistance*

### **Similar gaze metrics underlie visual-tracking behavior during motor execution and motor imagery for manual interception**

**Alessio D'Aquino, Cornelia Frank, Thomas Schack (University of Bielefeld)**

When designing motor imagery interventions aimed at enhancing sport performance, practitioners should consider eye movements as a promising tool to monitor the imagery process during practice. However, while specific eye movements indicate the allocation of attentional resources towards task-relevant cues during movement, it is less clear whether a similar gaze behavior is replicated during motor imagery (i.e. the mental rehearsal of an action) (Heremans et al., 2008; McCormick et al., 2013). In this study, we compared gaze metrics between motor imagery and motor execution using eye-tracking technology during computer-based manual interception. We recruited 24 varsity students (11 females) with a mean age of  $26.9 \pm 2.8$  years and with no prior experience on the task. Overall, participants were requested to visually track and manually intercept a horizontally transient target as quickly and as accurately as possible by clicking with the mouse cursor. During the task, both the target speed (i.e. fast and slow) and the performance conditions (i.e. motor execution, motor imagery, and control) were manipulated. Each participant completed 6 blocks of 20 trials with each block representing a combination of the experimental manipulations for target speed and performance conditions. We found that the number of saccades and smooth pursuit duration were similarly affected by the target's speed manipulation ( $p.05$ ). These results suggest that motor imagery employs visuomotor strategies akin to motor execution and that the eye-hand coupling tends to remain intact for interceptive actions across states of action. In the applied setting, we advise practitioners to consider eye movements as reliable markers of visual perceptual activity to assess and design imagery-based interventions.

*Keywords: motor imagery, eye movements, interception, motor execution, visual perception*



## Is physical activity important in adolescent peer relationships?

**Geumran Seo, SeYun Park**

It is generally accepted that physical activities play critical role in peer relationships. Nonetheless, there is very little research on how a physical activity relates to peer relationships (Smith, 2003). This study identifies the influence of physical activity in high school students' peer relationships. We analyzed the relationships among several factors affecting peer relationships (self-esteem, life satisfaction, and peer stress), physical self-description, physical fitness, and academic achievement. A total of 262 high school adolescents (154 male, 108 female, age mean=15.9 yrs, SD=0.25) responded to the questions about: self-esteem, life satisfaction, peer stress, and physical self-description. Participants identified three of their closest friends. Additionally, we collected data on aerobic capacity (20m PACER), muscle strength (hand grip), BMI, academic achievement of mathematics and Korean. Peer relationships were measured through degree centrality using UCINET6. The data were analyzed Pearson correlation and multiple regressions by using SPSS 20. The result found that degree centrality had a significant correlation with aerobic capacity ( $r=.256$ ,  $p<.01$ ), muscle strength ( $r=.129$ ,  $p<.05$ ), physical self-description ( $r=.151$ ,  $p<.05$ ), and life satisfaction ( $r=.150$ ,  $p<.05$ ). Through multiple regressions analysis, aerobic capacity had a statically significant effect on degree centrality ( $R\text{ square}=.66$ ,  $F=12.013$ ,  $p<.001$ ). Academic achievement did not have a significant effect on degree centrality. Overall, the results provided insightful information about physical fitness and physical self-concept, and that these factors would be more crucial than academic achievement, self-esteem, and peer stress. This is associated with research (Jeon, 2016) that indicated physical attractiveness was regarded as an important factor when measuring the happiness of Korean adolescents.

*Keywords: social network analysis, peer relationships, physical activity, academic achievement*

## Identification tools of the talented soccer player: A review focused on the psychological-decisional aspect

**Alejandro Prieto-Ayuso, Juan Carlos Pastor-Vicedo, Sixto González-Villora, Onofre Contreras-Jordán (Universidad de Castilla-La Mancha)**

The identification of talent is a key issue for soccer clubs (Fernández-Río & Méndez-Giménez, 2014), regardless of their sports objectives (Hatum, 2012) or economic ones (Carazo, 2009) with their soccer players. However, in spite of the apparent importance attached to detection process, tests to measure talent performance do not seem to be clear (Nicolairé, Catuzzo, & De Mello Monteiro, 2009) based mainly on the intuition of the coach (Christensen, 2009). This work has aimed to show the main tools (performance indicators or tests) of psychological and decisional measurement of the football player with talent, due to the great importance given to this aspect to become an elite player (Reina Gómez & Hernández Mendo, 2012). The methodology used has consisted of a review of the literature in academic and football databases (InStat, WhoScored, Opta and FourFourTwo). The results found point to the existence of multiple performance indicators related to the psychological-decisional aspect, both in previous studies and in databases to evaluate performance, as well as tools for evaluating tactical behavior in competition (GPET or FUT-SAT). Some of the tools founded have been the Test of Color and Word of Stroop (mental concentration test), decision making in football (perception and anticipation test), or simulation of video + movement (psychomotor test). It concludes on the one hand the need to take into account the psychological-decisional aspect when evaluating the talented soccer player. On the other hand, the existence of tests and performance indicators that help measure this aspect. As future lines of research, we propose the creation of psychological assessment instruments that are more ecological and not decontextualized from the real context of competition.

*Keywords: talent, psychology, detection, football, tool, performance*



## Psychophysiological variables in competition chess, a journey to the center of the board

**Alejandro Parejo Martínez, José Carlos Jaenes (Universidad Pablo de Olavide)**

Chess as a competitive sport has been scarcely studied from a psychophysiological perspective. The purpose of this study was to verify the relationship between muscular strength, heart rate variability and precompetitive anxiety in professional chess players before, during and after an official game of chess. Twelve Andalusian high-level chess players participated in the research. Heart rate variability (HRV) was tracked the night prior to an official competition, and from 30 minutes before the beginning of the game until the end. HRV was measured using the Complexity Index (CI), obtained through a multiscale entropy analysis (MSE). The grip strength of the dominant hand was measured before (Fpre) and immediately after (Fpost) the game using a hand grip dynamometer. Besides, the Competitive State Anxiety Inventory (CSAI-2) test was applied to assess cognitive anxiety (AC), somatic anxiety (AS) and self-confidence (AUT), based on Multi-dimensional Anxiety Theory (Martens et al., 1990). The results showed a non-significant trend towards decrease of the CI of the HRV during competition compared to the resting value, and a non-significant trend towards decrease of the grip strength of the pre/post chess game. Some trends were found between AC, AS and AUT values. There was a significant negative trend between AUT and AS ( $r=-6.30$ ;  $p=0.028$ ). AS and CI showed a non-significant negative trend. This work provides an approach to a practically unexplored scientific reality. Trends were found between the different variables that may be corroborated in further studies. Would be needed to enlarge the sample size in order to increase the reliability. The study variables can be useful while preparing for competition as stress indicators for evaluation in competition chess.

*Keywords: chess, stress, pre-competitive anxiety, hand grip strength, heart rate variability (HRV), multiscale entropy (MSE)*

## The etiology of morbid obesity from a qualitative perspective

**Ángel Megías Boró, Alejandro Jiménez Loaisa, Vicente Javier Beltrán Carrillo, David González-Cutre, Eduardo Cervello (Miguel Hernandez University of Elche)**

Society frequently supports an obesity discourse which associates the responsibility for obesity with the individual behaviour. Nevertheless, obesity may, in part, be symptom of other environmental, cultural and psychosocial challenges. The aim of this study was to gain an in-depth understanding of the factors influencing the etiology of morbid obesity from the subjective perception of post-bariatric patients. For that purpose, a total of ten post-bariatric patients (nine women and one man) participated in a first semi-structured interview seven months after surgical intervention. One year later, in order to solve some knowledge gaps identified after a process of data analysis, a second batch of interviews was carried out. Findings showed that there were multiple factors which conditioned the participants' sedentary lifestyle and bad eating habits, and led them to morbid obesity. In this sense, some elements that contributed to their sedentary lifestyles were embarrassment of showing their body in public, pain and poor physical condition, and their bad experiences in non-inclusive physical activity contexts. Other factors such as bad family food education, loss of a loved person, family problems, arguments or disputes, and past traumatic events like childhood sexual abuse influenced their development and maintenance of unhealthy eating behaviours. Moreover, findings illustrate the continuous struggle that participants lived with obesity along their lives, with failed attempts of losing weight by multiple diets and physical activity, and the corresponding sense of failure. These results may be helpful to understand the etiology of morbid obesity and to design prevention/treatment strategies from a more holistic, sensitive and respectful perspective. Health and physical activity professionals should work as a team, taking into account that the etiology of morbid obesity transcends a simple equation between expended and consumed calories.

*Keywords: sedentary lifestyle, eating habits, bariatric surgery*

### Pre-competition anxiety in young paddle tennis players in Castilla y León

**Alberto Rodríguez Cayetano, Antonio Sánchez Muñoz, José Manuel De Mena Ramos, José María Fuentes Blanco, Raimundo Castaño Calle, Salvador Pérez Muñoz (Universidad Pontificia de Salamanca)**

Anxiety is one of the most frequently observed states of mind in competitive sport understanding it as “an inadequate adaptation of an individual to a specific situation which increases the activation level and modifies the emotional functioning” (Urrea, 2014, p. 67). For the execution of this investigation, the Revised Competitive State Anxiety Inventory-2 (CSAI-2R) (Cox, Martens & Russell, 2003) has been chosen in its Spanish version from Andrade, Lois and Arce (2007). The sample for the present study is formed by 221 paddle players in ‘Castilla y León’: 93 U12, 73 U14 and 55 U16 players. The average in the obtained answers are 1.51 (.622) for the features ‘somatic anxiety’, 1.96 (.716) for the ‘cognitive anxiety’ and 3.24 (.642) for the features ‘self-confidence’. By categories, the elements ‘cognitive anxiety’ and ‘somatic anxiety’ are higher in the U16 category ( $M = 2.20$  y  $M = 1.62$ , respectively), while the element self-confidence is higher in the U12 category ( $M = 3.44$ ). The obtained results show that there is a significant positive correlation between the elements cognitive anxiety and somatic anxiety. Regarding to the self-confidence elements, there is a significant negative correlation between this feature and the somatic anxiety and the cognitive anxiety.

*Keywords: Cognitive anxiety, somatic anxiety, self-confidence, paddle tennis*

### The impact of the Health Behavior with Quality Sports Thematic Network (REDDECA) and its degree of development and ability to convene, according to the IV International Colloquium on Sports Psychology

**Alan Limon, Karen Briseidy Villarreal, Zeus Omar Ontiveros, Juan Carlos Arturo González**

The creation of the Thematic Network Healthy Conduct with Quality Sport (REDDECA) was created in January of 2015 as an initiative for the development of psychology and sports sciences in Mexico. The aim of the present research is to evaluate the expansion and divulgation of the advances of scientific knowledge at the national level with researchers of international prestige on the trends topics on the sport psychology and to identify the professionals with knowledge to the thematic network. This in order to avoid pseudoprofessionals who profit or damage the sport psychology and sports sciences, through an incorrect use of information or inefficient methodological application in their research. The event of "IV International Colloquium of Sports Psychology", held on November 14 and 15, 2016, in the city of Tepic, in Nayarit, Mexico was attended by 21 experts in Sports Psychology, 8 (38%) were national and 13 (62%) were international. The International Society of Sports Psychology (ISSP) endorsed the academic, scientific and international character of the event. A total of 545 attendees were distributed as follows: Autonomous University of Nayarit 370, University of Guadalajara 53, Autonomous University of Nuevo León 40, State University of Sonora 23, Autonomous University of Colima 17, Universidad Juárez del Estado de Durango 10, Autonomous University of Yucatan 10, Autonomous University of the State of Morelos 6, National Autonomous University of Mexico 4, Autonomous University of San Luis Potosí 2, Autonomous University of Sinaloa 2, Autonomous University of Baja California 2, University of Guanajuato 2, YSCSPORT 2, Universidad Autónoma de Ciudad Juárez 1, Autonomous University of Querétaro 1. The results are intended to serve as a reference point for future parameters of the announcement.

*Keywords: ability to convene, sport, science, Mexico*

### Emotional management in athletes neurosis with physical exercise

**Akira Esqueda (UNAM)**

This research is based on Cullen's investigation (1969) approved by some studies done by Salazar, Murillo and Sierra (2007) which refers on neurosis as a movement and sense disease that affects the nervous system. Similarly, the definition founded in Salama's research (2007) neurosis is defined as emotional blockages. That lead us to develop this research, which focus on determine a correct management of energy through physical activity. Exercise help in a more efficient way working with neurosis compared to a Gestalt psychotherapy treatment. We decided to work as Antoni and Zenter (2015) with only four emotions: fear, anger, sadness and happiness. It was evaluated by perceptual scale of Borg without taking care of the different issues that can appear (Scherr, Wolfarth 2013). The psychotherapeutic model consist in generate an emotional change of the participants through physical movement and physical activity that generates energy so they can modify their emotional states evolving their neurosis. We did a comparative and perceptive study of the emotional movement through two psychotherapeutic models, looking that the client perceptually indicates how they feel with ten sessions. It has to be emphasized that through the frequency study, we concluded that each emotion reacts with a specific strength: fear and maximum effort, anger an explosive effort, sadness and aerobic effort and happiness with a quick effort. It was concluded that in neurosis management, exercise is more effective than Gestalt psychotherapy.

*Keywords: emotional management, exercise, neurosis, psychotherapeutic model*

### **Social attitude and value in sport -comparative study between German and Japanese youth athletes-**

**Akihiko Kondo (Keio University), Reinhild Kemper (Friedrich-Schiller Universität Jena)**

The reason behind sports being broadly accepted in society is the expectation of people that "sports have educational effects on personality development." Lee, M.J et al. (2008) in the UK have focused on this issue and conducted their studies on the theme "Whether sports have effects of improving the social attitude of young people" using measurements called YSVQ-2, SAQ, MSOS and POSQ. This study aims to conduct comparative studies on "what educational effects sports have" between Germany and Japan, which have different social and educational environments. In this study, we translated the questionnaire, which was comprised 27 items developed by Lee in Japanese and German. The first step of data analysis was to attempt factor analysis of each of the three domains (i.e. Values of sport, attitude in sports and achievement orientations) in Germany and Japan. The second step of data analysis was to examine the relationship among subscale of all of the domains. The third step was to compare the factor point between Germany and Japan. Participants of this study were 280 German and Japanese youth athletes aged 15–24. Results on Factor structure of each domain of Germany and Japan were the same result of Lee's English data. Value of sport was composed of morality, competence, and status. Attitude at s sport was composed of pro-social attitude, such as commitment and convention, and anti-social attitude, such as cheating and gamesmanship. Achievement orientation was composed of task orientation and ego orientation. About Direct influence of each factor of values of sport, attitude in sports and achievement orientations, it was found that task orientation factor significantly correlate with convention factor. In the factors of morality, status, convention, cheating and ego and task orientation, there were some differences between Germany and Japan.

*Keywords: social attitude, value in sport*

### **Relationship between basic needs satisfaction in sport and burnout/engagement among Japanese soccer players**

**Akari Kamimura, Yujiro Kawata (Juntendo University)**

Clarifying the basic psychological needs in sport related to athlete engagement and athlete burnout would be useful for mental support of athletes. Therefore this study examined the relationship between basic



psychological needs satisfaction in sport and athlete burnout and athlete engagement among Japanese soccer players. We collected data from 1765 Japanese soccer players from 33 different teams (1584 males, 181 females; Mage = 17.71 years, SD = 2.03; mean continuous competitive sports participation = 10.58 years, SD = 3.10). Players completed the Basic Needs Satisfaction in Sport Scale (BNSSS; Johan et al., 2011), Athlete Burnout Questionnaire (ABQ; Raedeke and Smith, 2001), and Athlete Engagement Questionnaire (AEQ; Lonsdale et al., 2007). We analyzed data using Pearson's correlations. We examined correlations between basic needs satisfaction in sport (BNSSS) and the extent of Burnout (ABQ) or Engagement (AEQ). There were significant, moderate-to-strong positive correlations between subscale scores of the BNSSS and subscale scores of the AEQ ( $r = .37-.72$ ,  $p < .001$ ). In contrast, there were significant, weak-to-moderate negative correlations between subscale scores of the BNSSS and subscale scores of the ABQ ( $r = -.16-.60$ ,  $p < .001$ ). In particular, ABQ sports devaluation scores were significantly moderately negatively correlated with BNSSS subscale scores. We conclude that the basic needs satisfaction in sport and athlete burnout or athlete engagement are closely associated among Japanese soccer players, consistent with earlier studies outside Japan. Satisfying of basic psychological needs in sport might be an effective way of suppressing athlete burnout (sports devaluation), and an effective method of improving athlete engagement.

*Keywords: athlete burnout, athlete engagement, basic needs satisfaction*

## The relationship between attitudes toward sport and the characteristics of autobiographical memories in high school students

**Aiko Okuda (Biwakogakuin University), Shiro Nakagomi (Kokushian University)**

Current behaviors might be understood and even defined by analyzing autobiographical memories. This study aimed to reveal the relationship between attitudes toward sport and the characteristics of autobiographical memories. For 200 high school students, the scale for attitude toward physical exercise and self-administered semi-structured questionnaires on autobiographical memories were distributed. Based on a questionnaire of the attitude toward physical exercise, the 25 students most favorable towards sport ("group A") and the 25 least favorable towards sport ("group B") were selected, and their autobiographical memories compared. The content of the memories differed. Nearly 40% of the respondents in the group A recalled a "specific activity," while over 50% of the respondents in the group B recalled "a landscape." Respondents in the group A recalled formative images in which the subject was actively involved, whereas those in the group B recalled scenes in which the subject was passively involved. And also, early experiences of play and sport were evaluated from the perspective of "area of experience" and "dynamism." Under the "area of experience" category, over half the respondents in the group A answered "sport," while most respondents in the group B gave answers falling into the "other" category, such as making things, drawing, playing cat's cradle, and other indoor activities. A further difference was apparent in levels of "dynamism." 52% of the group A had a score of "very high" compared with 20% of the group B, and 20% of the group B scored "very low" compared with 0% of the group A. This suggests that the respondents in the students most favorable towards sport participated from a young age in highly dynamic physical activities and that this activity overlaps with features of their formative images. These results appear to indicate that autobiographical memories such as recollections of formative images and proto-experiences in sport influence current attitudes toward sport.

*Keywords: autobiographical memories, attitudes toward sport*

## Greek traditional dance learning: Impact on student motivation

**Aikaterini Koupani, Stella Rokka, Bebetos Evagelos, Filippos Filippou**

The aim of this study was to investigate the effect of a learning program of Greek traditional dance with music and movement motives from dance aerobic, hip-hop and break dance on the 4th, 5th, and 6th grade

elementary school student motivation for participation. 300 students, none interesting for traditional dance, participated in the research of which 192 constituted the experimental team and 108 were the control group. The experimental group followed the three months program while the control group followed the typical physical education program. To evaluate students' motivation the Greek version (Moustaka, Vlachopoulos, Vazou, Kaperoni, & Markland, 2010) of "Behavioural Regulation in Exercise Questionnaire – II" (Markland & Tobin, 2004) was used. Descriptive statistics, reliability analysis, and ANOVA repeated Measures were used for data analysis. At the beginning independent sample tests were held to find out if there were statistically significant differences between the experimental and the control groups in the initial measurement. Results showed that there were not statistically significant differences in any of the five factors. Results showed that a. Cronbach's alpha for all factors was satisfactory. b. the experimental group decreased significantly the levels of "external regulation" and "amotivation", and enhanced significantly their "introjected regulation", "identified regulation" and "intrinsic motivation". c. Both male and female students of the experimental group were influenced similarly by the program. d. Grades (or age) are not differentiation factors of motivation in traditional dance program. In conclusion, we can say that a program of teaching traditional Greek dance, with music and movement motives from dance aerobic, hip-hop and break dance, reduces the rates "external regulation" and "amotivation" while it simultaneously increases student "introjected regulation", "identified regulation" and "intrinsic motivation".

*Keywords: teaching methods; dance aerobic; intrinsic motivation; identified regulation*

## Effects of acute aerobic exercise on executive control network: Rs- fMRI study of preadolescent children

**Aiguo Chen, Lina Zhu, Xuan Xiong, Yue Li (Yangzhou University)**

Executive function (EF) lies at the core of cognitive function and plays a crucial role in children's learning, reasoning, problem solving, and intellectual activity. Behavioral findings have suggested that acute aerobic exercise improves children's EF; however, there is still very little knowledge about whether a single session of aerobic exercise can alter functional connectivity (FC) in executive control network (ECN), which are assumed to reflect intrinsic brain activity during resting-state, as assessed by resting-state functional Magnetic Resonance Imaging (Resting-state functional MRI, Rs-fMRI). Therefore, we investigated the effect of acute moderate-intensity aerobic exercise on executive function and executive control network in preadolescent children, and further explored the neural basis of acute aerobic exercise on EF in these children. We used a within-subjects design with a counterbalanced order. Nine healthy, right-handed children were scanned with a Siemens MAGNETOM Trio 3.0 Tesla magnetic resonance imaging scanner and performed an executive function task (Flanker task) following a baseline session and an exercise session, which consisted of 30 minutes of aerobic exercise on a bicycle ergometer (MONARK 834, Sweden) at 60% of their estimated maximum heart rate (HRmax; 220-age). Compared with the baseline session, acute moderate-intensity aerobic exercise benefitted performance in the Flanker task, decreased the FC between left dorsolateral prefrontal and right cerebellum, further, the decreased FC was positively correlated with the EF's behavioral improvement. These data extend the current knowledge by indicating that acute aerobic exercise enhances children's EF, and the neural basis may be related to functional connectivity changes in the ECN elicited by acute aerobic exercise.

*Keywords: acute aerobic exercise, preadolescent children, executive function, executive control network, functional connectivity*



## 10 years of the Hungarian sport psychologist education

**Ágota Lénárt (University of Physical Education), Miklós Fischer Fischer, Gáborné Haraszi (Hospital for Sport), Tom Ormay, Judit Boda-Ujlaky, László Tóth, Noémi Gyömbér, Krisztina Kovacs, Lilla Török (University of Physical Education)**

The sport psychologist postgraduate education started at the University of Physical Education (Budapest, Hungary) in 2007. Prerequisite of the admission is a degree in Psychology (MA). The program takes 4 terms and students should gain 120 credits. To be able to get the accredited certification, students write a thesis and complete a final exam. The degree meets the requirements of all of the areas of sport psychology, from giving lectures (even at university level) to working in elite applied sport psychology. Our poster shows the structure and the content of the courses. In each term there are sport-related (like sport sociology, sport physiology), psychology-related (like sport psychological interventions), and auxiliary courses (like sport psychiatry and visiting trainings, and sport events under supervision). There is an emphasized part of the course: the method-specific interventions aiming personal growth of the students. This part consists of 50-50 lessons per each term and provides an introduction to different intervention methods (autogenic training, mental training, group interventions, imaginative interventions, neurolinguistic programming, non-verbal therapies), considering the previous knowledge of the students. Another significant part is the presentation and discussion of case studies. From the beginning students can provide services at sports clubs, under supervision. The program unites well the psychoeducative interventions and the European psychotherapeutic methods, which makes possible the individualized psychological preparation of the athletes. In the program, that starts in every second year, 70 students have had a degree, and this year 20 more are foreseen. We present the carrier of our students, who work in many different fields, from leisure sport activities to elite Olympic athletes. The program broadens with child and youth sport psychology special program from 2017.

*Keywords: sport psychologist education*

## Optimal emotions and self efficacy of polish gymnasts

**Agnieszka Zajac (The University of Physical Education in Cracow), Aleksandra Tokarz (Jagiellonian University)**

Artistic gymnastics is characterized by a wealth of emotional experience, associated with time-consuming and labor-intensive training, the necessity of full mobilization at a specific time, so as to best show own skills during the competition. That might be a reason why elite gymnasts were found to exhibit very high anxiety levels in comparison to similarly skilled athletes in other sports (5). Determination of the optimal emotions guarantees the full involvement in the tasks performed and the best use of available resources, enabling high-quality start and achieve the highest possible result (3). Four major IZOF-based predictions of emotion-performance relationships (used in this research) focus on interindividual variability of optimal emotion intensity and content, the in-out of the zone notion, interactive effects of emotions enhancing and weaken performance, and bi-directionality of emotion-performance relationships (9,8). According to Lee (6) the performance of female artistic gymnasts has been shown to vary according to self-efficacy expectations and how about male gymnasts? Our study of the temporal pattern shed light on the mechanisms by which emotions influence performance and identifies the most favorable for the gymnasts psychological conditions. Thirty five best polish male gymnasts participated in the study. They filled out: General Self-Efficacy Scale (10), a Competitive Sport Anxiety Inventory – 2 (7,1), Popular Questionnaire of Emotional Intelligence (4) and polish adaptation of Positive and Negative Affect Schedule (2). The collected data were analyzed using STATISTICA and a Direct Discriminant Function Analysis was used in analyzing results. The findings suggest that emotional intelligence correlates positively with a range of emotions and experiencing more positive and optimal emotions is associated with higher level of self-efficacy. The research suggests which emotions during the gymnastics competition might be optimal.

*Keywords: emotions, emotional intelligence, self efficacy, anxiety, gymnastics, peak performance*

## Yoga poses increase psychological empowerment and state self-esteem in comparison to 'power poses'

**Agnieszka Golec (Goldsmiths, University of London)**

"The effects of yoga poses on psychological empowerment and self - esteem. " Agnieszka Golec de Zavala Goldsmiths, University of London  
**Keywords:** yoga , psychological empowerment , self - esteem  
 Research on beneficial consequences of yoga focuses on the effects of yogic breathing and meditation. Less is known about the psychological effects of performing yoga postures. The present study investigated the effects of yoga poses on psychological empowerment (How empowered, powerful, in control, energetic, alert do you feel in the present moment?) and self - esteem (Measured by the State Self - Esteem Scale) . The effects of yoga postures were compared to the effects of expansive body postures: 'power poses', which arguably increase psychological sense of power and self - confidence due to their association with interpersonal dominance (Carney et al., 2010). The study tested the novel prediction that yoga poses, which are not associated with interpersonal dominance but increase energy, would increase the sense of psychological empowerment and self - esteem compared to 'power poses' (high and low). A two factorial, between participants design was employed. Participants performed either two standing yoga poses with lifted chest and open front of the body (n = 19), two standing yoga poses with covered front of the body (n = 22), two expansive, high power poses (n = 21), or two constrictive, low power poses (n = 20) for 1 - minute each. The results showed that yoga poses in comparison to 'power poses' increased self - esteem. This effect was mediated by an increased sense of psychological empowerment and was observed when baseline trait self - esteem was controlled for.

*Keywords: yoga, empowerment, self-esteem*

## 2016 Olympic Games: Perceptions about the development of sport psychology in Brazil

**Adriana Lacerda (Veiga de Almeida University), Leonardo José Mataruna-dos-Santos (Coventry University-CTPSR / TUM)**

Sport Psychology in Brazil is a relatively recent field, compared to other areas of Sport Sciences, such as medicine, biomechanics and kinetics analysis. According to Rubio (2000), the first work of a sport psychologist was developed by João Carvalhaes in the 1958 Football World Cup. However, since that date until the end of the last century the field presented a gap of professional interventions. Regarding Olympic Games, only in Athens 2004, Brazilian Olympic Committee (COB) invited a psychologist, Dietmar Samulski, to accompany the delegation of 247 athletes. In 2008, in Beijing there was no psychologist in the teams. In London 2012 the COB supported sport federations that already had psychologists in their staff. For Rio, COB created the "Mental Preparation Department" to systematize the work, with more than 30 psychologists. The Research Question: Is possible to have immediately feedback of this strategical psychological intervention promoted by COB through small words of athletes after the medal ceremony? The data was observed in the last six months before the Games and after the Olympic Medal Ceremony (speeches) in the competition field. This paper is multi-method research that used the 'After Reaction Review' (Darling, 2005) based on the 'experience report' of the people involved in the action; and the 'situational analysis' to report the 'professional ethnography description' (Mataruna, 2007). The results show that the most part of the athletes recognized in the media the importance of mental work. As preliminary results, the area finally is consolidated in the COB as a part of the overall preparation of the athletes regarding the positive report by themselves. The conclusion points that the preparation had an important participation in the best result of Brazil in Olympic Games ever. It is perceived that this was a great advance for greater acceptance and recognition of Sport Psychology.

*Keywords: olympic games, sport psychology, sport science*



## Sports and exercise psychology in 21st century present in sports psychology in Mexico: AMPDAF

**Ada Sarai Albarran, Luz Antonia Vazquez Romo, Claudia Alicia Rivas Garza, Juan Carlos Perez, Jonatan Gadiel Yañez Lopez (ISSP/SOLCPAD/AMPDAF), Alexandre Garcia-Mas (ISSP)**

Right now, the sport presents high levels of technical-tactical, physical and psychological exigency in all its levels: as much as in the physical activity, as in initiation sports, of specialization and of high performance; It is for this reason that the Mexiquense Association of Sports Psychology and Physical Activity since its creation in 2008 has helped to enhance the performance of sports players in Mexico, and has been a platform to promote research in the field of Sports, Contributing in this way to the development of the Sciences Applied to Sport. The brief history of the AMPD is presented, with the events held: congresses, diplomas and courses, including the organization of the meeting of ISSP Manager Council on 2014. The present poster shows the statistical results of the work in different contexts of the variables self-efficacy and sports commitment from the scale of commitment of Scatlan adapted to the sport and self-efficacy. It has been used the Perceived Collective Efficacy Questionnaire, CEC, to measure in the context of football, following the proposals made by Heuzé, Raimbault et al. (2006) for sports like basketball and handball; (Effectiveness and Behavior Questionnaire for Teamwork (CETE) in order to evaluate the relationship between collective efficacy and capacity for teamwork (balance individualism-collectivism). The results obtained will be presented in the different inferior teams of the soccer club of Santos and in the equipment of 2nd and 3rd division of Colts of the UAEMex, from 2015 to the date.

*Keywords: history, research, commitment, self-efficacy, soccer, Mexico*

## Psychological intervention protocol in sport from the motivational coaching perspective

**Enrique Cantón (University of Valencia. General Council of Psychology of Spain), David Peris Delcampo (Spanish Federation of Sport Psychology, Valencia, Spain)**

Psychological intervention in modern sport demands effective and rapid results; for this reason, it is necessary to have efficient and well-founded applied tools that offer appropriate intervention solutions. From this perspective and using the "coaching approach" (in which the professional creates the necessary environment for the client or coachee to achieve their goals, through a non-directive intervention and taking advantage of the coachee's own resources), in motivational facets an intervention tool, elaborated by Enrique Cantón, that uses the figure of a "giraffe" as a metaphorical image has been applied to describe the motivational processes (see Cantón, 2013, 2014, 2017) Structured in four main components that collect existing motivational variables (achievement, expectations, attributions, self-confidence,...), facilitates the understanding process, achieving goals and improving self-confidence. This working model, named "The Giraffe of Cantón", is applied through a protocol structured in three phases, with a total of 7 sessions of approximately one hour: Identification (assessment of each motivational processes component, beginning with the goal - "head" -); Change/development (facilitating the coachee's identification and change of the motivational components in order to clarify their goal and increase the confidence); and Monitoring (the effect of the process on the coachee is evaluated after a while). This paper explains this protocol, showing an effective tool from the coaching approach that can facilitate work in sport psychology.

*Keywords: coaching, psychological intervention, Canton's Giraffe, the giraffe of Cantón*

## What is the relation between fitness condition and psychological parameters in shooting sports?

**Daniel Mon (Universidad Politécnica de Madrid, Spain)**

Due to the high precision requirements, both physical and psychological factors, can determine the shooting performance. Among these two parameters, the ability to stabilize the weapon seems to play a very important role. This ability is determined by the shooters' physical condition[1]. Mental preparation plays also a very important role, being the anxiety an important parameter that affects performance in Olympic shooting. However, what is the exact relation between the fitness condition and the anxiety? The objective is to find out the relation between fitness condition and psychological parameters in competition. 23 female shooters, from whom 5 were elite, competed at a national Spanish Olympic shooting championship for this study. The shooters completed a demographic and a CSAI-2 questionnaire 10 minutes before each competition stage. Performance was measured by the use of electronic targets during competition. The competition consisted of: A qualification round and an Olympic rapid fire final round. The normal distribution of the variables was tested via implementation of the Shapiro-Wilk test. The data analysis of the 8 finalists revealed a negative correlation between somatic anxiety and physical condition ( $r^2=0.71$ ;  $p<0.01$ ). On the other hand, self-confidence was found to be positively correlated with physical condition ( $r^2=0.64$ ;  $p<0.05$ ). Regarding the importance of the athletes' physical condition, the results of the present study are in accordance with other studies. The perceived physical condition has been found to be positively correlated with performance as well as self-confidence, reducing the precompetitive anxiety. For this reason, physical condition programs should be recommended in the Olympic shooting sport [1].

*Keywords: fitness, psychological parameters, shooting sports*

## Effects of physiotherapeutic and psychological intervention program on emotion regulation in a sample of Spanish soccer players

**Patricia Catala Mesón, Lilian Velasco Furlong (Rey Juan Carlos University, Madrid, Spain)**

This study aimed to assess the results of a psychological intervention program to improve emotion regulation in a sample of male soccer players from the third division of Madrid. The sample consisted of 22 players. The players were assigned to one of the following intervention modalities: a group that received a psychological treatment and a physiotherapy treatment (the combined program), a group that received a physiotherapy treatment and a control group. A pre-post treatment design was carried out. The Spanish version of the Schutte Self Report Inventory (SSRI) was used (García-Coll, Graupera-Sanz, Ruiz-Pérez, & Palomo-Nieto, 2013). The physiotherapy treatment lasted 12-weekly sessions of 30-40 minutes. The players assigned to the combined program received, in addition to the previous 12 physiotherapeutic sessions, 12 sessions of psychological treatment of the same duration on different days of the week. Both treatment modalities lasted 3 months. The results showed that the combined treatment improved all emotion regulation variables assessed: emotional perception ( $p=.02$ ), self-emotional management ( $p=.01$ ), emotional management ( $p=.02$ ) and the use of emotion ( $p=.03$ ). In addition, the control group significantly worsened in self-emotional management ( $p=.02$ ) and the use of emotions ( $p=.04$ ). Implications for injury prevention and well-being of the players are discussed.

*Keywords: emotional intelligence, psychological intervention, soccer*

## Motivation, anxiety and sports injury. Results of a psychological intervention program applied to a sample of soccer players

**Patricia Catala Meson, Cecilia Peñacoba Puente (Rey Juan Carlos University, Madrid, Spain)**

This study aimed to assess the effect of a psychological intervention program based on motivational variables and anxiety reduction, with the ultimate goal of injury prevention in a sample of soccer players. The sample consisted of 22 players (mean age 21.31;  $SD=4.24$ ) of male soccer from a club of the third division of Madrid. The players were assigned to one of the following intervention modalities: a group that included



psychological treatment and physiotherapy treatment (combined program), a group with physiotherapy treatment and a control group. A pre-post treatment design was carried out. The instruments used were the Competitive State Anxiety Inventory 2 (CSAI-2), the Behavioral Regulation Questionnaire in Sport (BRSQ) and the clinical history of injuries. The physiotherapy treatment lasted 12-weekly sessions of 30-40 minutes. The players assigned to the combined program received, in addition to the previous 12 physiotherapeutic sessions, 12 sessions of psychological treatment of the same duration on different days of the week. Both treatment modalities lasted 3 months. The results showed that both interventions decreased the levels of demotivation of the players. The combined program achieved positive effects on the most intrinsic motivations [specifically in knowledge motivation ( $p=.02$ ), stimulation motivation ( $p=.03$ ) and accomplish motivation ( $p=.04$ )]. Both modalities managed to reduce anxiety levels, with greater improvements in the combined program. Given the clearly established effect of physiotherapy on somatic anxiety, it is worth noting the effect of the physiotherapeutic intervention on cognitive anxiety (pre-post  $p=.04$ ). An improvement in self-confidence was revealed after the combined program and a decrease in somatic anxiety seemed to play an important role in the prevention of injury. The results of our work highlight the importance of designing combined programs that include both psychotherapy and physiotherapy.

*Keywords: motivation, anxiety, injury, psychological intervention, physiotherapy, soccer*

### Factors related to psychological competitive ability of Japanese college athletes

**Takashi Takenouchi (Nagoya University, Japan), Mikiko Oohata (Kawabeyasuragi Clinic, Japan)**

Psychological competitive ability (PCA) refers to a trait that enables an athlete to compete to the best of his or her ability (Tokunaga, 2001). This ability is necessary to excel in sports, and therefore, it is important to investigate factors related to this construct. Takenouchi and Oohata (2015) indicated that the achievement of psychosocial developmental tasks was related to PCA of athletes. This study focused on commitment to issues in and outside sports, and examined relationships among commitment, achievement of psychosocial developmental tasks, and PCA of athletes. Japanese college athletes (169 males and 118 females) completed a questionnaire assessing their commitment to five issues in the athletic domain and seven issues in the daily life domain. Identity, which is a psychosocial developmental task in adolescence was assessed using the subscale of the Japanese version (Nakanishi & Sakata, 2001) of the Erikson Psychosocial Stage Inventory (Rosenthal et al., 1981). PCA was assessed using the Diagnostic Inventory of PCA for Athletes (Tokunaga & Hashimoto, 2000), which includes five factors: Volition for competition, Mental stability and concentration, Confidence, Strategic ability, and Cooperation. Correlation analyses indicated that commitment to three issues, i.e. team management/team organization, studying, and future occupation, as well as identity were positively associated with PCA in male athletes. Moreover, commitment to four issues, i.e. athletic performance, future occupation, lifestyles and values, and relationship with the mother, as well as identity were positively associated with PCA in female athletes. Structural equation modeling indicated that identity mediated the relationship between commitment to the issue of future occupation and PCA. These results suggest that facilitating commitment to various issues in and outside sports and the achievement of psychosocial developmental tasks could develop the PCA of athletes.

*Keywords: college athletes, psychological competitive ability, commitment, psychosocial developmental tasks*

### Effects of acute exercise on food-related cognition in obese adolescents

**Jen-Hao Liu, Chih-Han Wu, I-Lun Huang, Tsung Yi Wu, Yu-Kai Chang (National Taiwan Sport University)**

Obesity results from an excessive consumption of high-calorie foods, and can easily lead to high blood pressure, stroke, and diabetes, in relation to physiological disease. Obesity has also been highly associated with cognitive impairment, including impaired executive functions. Many studies have indicated that exercise can



reduce cognitive decline; however, whether its benefits affect food-related cognition functions remains unknown. The purpose of the study was to examine the effects of acute exercise on food-related cognition factors in obese adolescents. Thirty-eight male preadolescents, aged 13-16 years, and with a body mass index > 26, were randomly assigned into control and exercise groups. The exercise group underwent a bout of a jumping rope exercise program, performed at moderate intensity, and the control group engaged in reading for 30 minutes. The measurements, regarding the different types of cognitive functions possibly affected, included a Stroop Test, and a food-related cognition test. The results revealed that the obese preadolescents within the exercise program significantly enhanced both their general and obesity-specific aspects of executive functions, improved their food-related cognition test performances, and reduced their hunger status. These findings suggest that acute exercise may be an effective treatment for enhancing executive functions, improving food-related cognition and reducing hunger status in obese preadolescents.

*Keywords: acute exercise, food-related, obesity, adolescents, cognition*

## The role of athletes' mindfulness on future alexithymia, burnout, and performance

*Rei Amemiya, Yosuke Sakairi (University of Tsukuba)*

There have been nearly no examinations of the mechanism related to the effects of mindfulness programs as a method of approaching both the mental health and performance of sports competitors. This longitudinal study aimed to investigate the relationship between athletes' mindfulness, alexithymia, burnout, and performance efficacy. The participants were 125 university athletes. They completed a questionnaire comprising of the Athletes Mindfulness Questionnaire, Sport Alexithymia Scale, Burnout Scale for University Athletes, and self-reported and objective of Psychological Performance Efficacy Scale at three intervals (Time1; Time2, conducted two months after Time1; and Time3, conducted 4 months after Time1). The results showed acceptable fit indices in the hypothesis model. Athletes' mindfulness at Time 1 was negatively associated with alexithymia at Time2 ( $\beta = -.61$ ,  $p < .001$ ), burnout at Time3 ( $\beta = -.23$ ,  $p < .05$ ), and positively associated with performance self-evaluation at Time3 ( $\beta = .23$ ,  $p < .01$ ). Furthermore, athletes' mindfulness was negatively associated with burnout through alexithymia, and positively associated with performance evaluation by their partner through burnout indirectly ( $p < .05$ ). The results of this study supported the relation between the athletes' mindfulness, their alexithymia, burnout and performance scores using a longitudinal approach. Prior research has suggested that athletes' mindfulness facilitates awareness of positive emotions and it controls their negative emotions that are a source of burnout (Gustafsson et al., 2015). Furthermore, previous studies reported that athletes whose performance was not going well were noted as facing psychological barriers that had a negative impact on their performance and daily lives (Gardner et al., 2006). Therefore, based on the results of this study and the implications of prior research, it has become clear that the strength of mindfulness contributes to regulating athletes' mental health and performance.

*Keywords: mindfulness, alexithymia, burnout, performance, longitudinal study*

## A qualitative exploration of martial artists' mental training: Interpretations of the function of Qi and energy

*Chien-Hsun Lin (Fu-Jen Catholic University, Taiwan), Frank Jing-Horng Lu, Theresa Chyi (Chinese Culture University, Taiwan)*

Early sport psychologists frequently use oriental martial artists' mental training to explain how psychological skills enhancing athletic performance (Nideffer, 1985; Singer, 1990; Suinn, 1986). However, very few studies examined how martial artists practice psychological skills training (PST) and its meaning to contemporary sport psychology. The purpose of this study was to explore the contents of martial artists' mental training and its psychological implications. Focus group interview and individual interviews were

undertaken in this study. We interviewed 8 martial artists (5 males, 3 females) who have practiced martial arts more than 5 years. The interviews were semi-structured through use of recording pen, and transcribed verbatim. The group meeting lasted for 90 min, and the individual interview lasted 30 min per participant. A grounded theory approach (Strauss & Corbin, 1990) was employed throughout the data collection and analysis. Further, Heidegger's (1962) philosophical stand of Hermeneutics was used to examine/interpret findings. We found martial artists used meditation, self-talk and imagery to practice their mental training. Also, they have special philosophy to guide their thoughts and physical training. They believe such mental training bring them into a state of fully concentrated, well-prepared, relaxed, spiritually inspired, happy, and healthy. Their interpretation of mental training is concentrated by the concept of "Qi" and "perceived psychological energy." Compare to general sport athletes, martial artists' mental training was concentrated more in the circulation of Qi in their practice, particularly in meditation, to "gain" more energy. The strategies martial artists used might be helpful for performing better to athletes. We suggested future study should deeply explore the application of mental training on martial artists qualitatively and quantitatively. The implications of Qi and psychological energy also should be further examined.

*Keywords: qi kong, psychological training, mental energy*

## The relationship between mental arousal and performance

**Changzhu Qi**

The object of the paper is to explore the relationship between mental arousal and performance is one of the most important topics concerned by sport psychologists, and many hypotheses and theories focus on the topic. But the meaning of "medium strength" and "optimal arousal intensity", which have been widely used in previous models, is still unclear. Second, there are many inconsistencies in the definition and measurement of the concept of mental arousal. The present model is to clarify the concept of mental arousal and offers a new perspective and a theoretical basis for the research related to mental arousal and sports performance. This paper summarized a series of researches carried out by the authors and the research team, which focused on the concept of mental arousal and the arousal-performance relationship. The intensity-direction model indicates that mental arousal contains both intensity and direction dimensions. Mental Arousal Scale for Athlete (MASA) is developed to measure both the dimensions. Based on the model and systematic integration of previous theories related to the arousal-performance relationship, a new hypothesis is proposed: higher mental arousal is necessary for all physical activity tasks while different tasks call for different directions to enhance performance. The more delicate and complex a task is, the higher need for positive mental arousal will be. To test the model, a study about the relationship between the decision-making and mental arousal was conducted. The study found that direction (positive or negative) influences athletes' intuitive decision-making significantly. For both the expert and novice, intuitive decision-making and sports performance in positive arousal status are significantly better than negative arousal state. This result supported the hypothesis of the present model.

*Keywords: mental arousal, intensity-direction model, MASA, hypothesis*

## Impact of emotional pictures with different valence on attentional bias of tennis plays: behavioral and ERP evidence

**MengYang He**

To contrast the attentional bias characteristics of the experts tennis players and the novices players, the present study uses event-related potentials (ERP) technique which has the high-time-synchronic characteristic. The purpose is to explore tennis players' attentional bias characteristic, and reveal the brain mechanism of tennis players' attentional bias. This experiment uses 2 (group: expert-novice) x 3 (picture priming type:

positive, neutral, negative) mixed design. The emotion valence is within-subject factor, and the group is the between-subject. The dependent variables were response time. Measures were recorded as response time, latency and amplitudes of N1, P1, P2. Three types of picture (positive, neutral, negative) were used in present experiment, the valences are evaluated by 40 students and they have significant differences statistically. First, Compared with novices tennis players, the expert tennis players had faster RT (reaction time). Both the experts and novices tennis players had faster RT (reaction time) toward negative words under negative pictures. Second, the experts showed smaller P1, N1, P2 amplitude and shorter latencies, which means greater ability of attention. Third, Both the experts and novices tennis players displayed smaller P1, P2 amplitude on positive and negative words following negative pictures. The novices tennis players showed a lower P300 amplitude on positive words and a larger amplitude on negative words following positive pictures. Tennis players displayed a lower P300 amplitude toward negative words following positive pictures. N1 is mainly concerned with the processing process, and its amplitude generally represents the allocation of individual attention resources. P1 is an exogenous component, which is related to the processing of visual information, and is affected by attention. Numerous studies show that the P2 was highly related to automatic allocation of attention and attentional blink.

*Keywords: attentional bias, affective priming effect, ERP, tennis player, college students, P1, N1, P2, P300*

### Role of the social state in pre-performance routines: A psychobiosocial state approach

**Thierry R.F. Middleton (Laurentian University), Ismael Pedraza (University of Jyväskylä), Michelle Seanor, Odirin P. Oghene (Laurentian University)**

The concept of individual zones of optimal functioning (IZOF; Hanin, 2000) has received increasing interest (Ruiz, Raglin, & Hanin, 2017); however, few studies have focused on the role and impact of athlete's social states prior to performance. An exploration of the role that athletes' social states play in pre-performance routines was conducted using a thematic analysis (Braun & Clarke, 2006) of semi-structured interview data from elite swimmers ( $n = 8$ ) competing at the university level in Canada. Interviews were conducted as control group interviews of a larger study focused on swimmers' individual zones of optimal functioning (Hanin, 2000) in relation to their psychobiosocial state (PBS-S; Ruiz, Hanin, & Robazza, 2016). Swimmers' were introduced to the concepts of IZOF and PBS-S directly prior to interviews and then asked to describe their routine beginning from 20 minutes prior to a race. Three central themes were identified: (a) determinants of an athlete's social state (e.g., temporal factors, contextual factors), (b) connection of the social state to the psychological state (e.g., impact on cognitive state) and biological state (e.g. impact on motor-behavioural state), and (c) connection of the social state to components of the pre-performance routine (e.g., impact on self-talk prior to competition). This study highlights the important role that athletes' social states play during pre-performance routines and how this state is an integral and interactive component of an athletes' psychobiosocial state. Results highlight the need for future research on the impact of athletes' social states on pre-performance routines and subsequent performance. Practical recommendations are provided using Hanin's (2000) Triple-A framework: need for increased awareness of the role one's social state plays in achieving optimal performance, acceptance of this influence on performance, and action to self-regulate one's social state according to perceived needs and objectives.

*Keywords: social state, pre-performance routines, IZOF, psychobiosocial state*

### Influence of parental education styles in support

**Higinio González-García, Antonio Pelegrín, José Luis Carballo (Universidad Miguel Hernández de Elche)**

Parental educational styles and parents support have been related to higher levels of physical activity. There are no previous studies that examined the relationship between parental educational styles and support

for sport. On the other hand, in the field of health it has been demonstrated that permissive and democratic mothers were associated with greater support for physical activity. Therefore, the aim of this study is to determine if parental education styles influence in parents support of athletes. The total sample consisted of 374 athletes. In order to measure the different variables were used, an ad hoc Sociodemographic questionnaire, the Oviedo Scale of Infrequency Response (INF-OV) and the "Multifactor Self-Assessment Test of Child Adjustment" (TAMAI). The results showed significant differences in: mother protectionism ( $p<.05$ ), democratic mother ( $p<.01$ ), democratic father ( $p<.01$ ) and father protectionism ( $p<.01$ ), in favour of athletes who felt support from parents, who obtained lower levels. On the other hand, authoritarian mother ( $p<.01$ ) and authoritarian father obtained significant differences, in favour of athletes who did not feel support in physical activity and sport. Finally, a binary logistical regression was performed using the introduce method ( $X^2=339.40$ ;  $R^2$  Nagelkerke=.79). The regression analysis showed that mother protectionism ( $p<.05$ ) and democratic father ( $p<.05$ ), are linked with perceived greater support in sport. On the other hand, higher levels of authoritarian mother ( $p<.05$ ) and authoritarian father ( $p<.05$ ) are related to perceiving less support in physical activity and sport. It was concluded that athletes who perceived support for physical activity, obtained higher levels of mother protectionism, democratic mother, democratic father and father protectionism. In addition, mother protectionism and democratic father, are related to support for physical activity.

*Keywords: parents, athletes, collaboration, sport career*

### Starters and non-starters in football: Differences in the perceptions of coach's leadership behaviors

**Yiannis Zarotis, Konstantina Papailia (National & Kapodestrian University of Athens)**

In a football team, coach's behavior determines substantially the members' satisfaction and, in the long term, impacts on each member's personal performance during the training and the game (Mackenzie, 2003). More specifically, if the coach aspires to keep the team in balance, it is necessary to treat equally the starters and non-starters (Chelladurai, 1980). The aim of the present study is to explore the differences in the perceptions of starting lineup players and bench players regarding their coaches' behavior. A sample of 124 football players from 5 different teams and between the age of 15 to 19 participated in the study. Athletes completed the Greek version of Leadership Scale for Sports (Aggellonidis, Zervas, Kakkos, & Psychountaki, 1996), namely the perceived leadership style version, which consisted of five factors. The results demonstrated differences on perceptions of leadership between starters and non-starters players and these differences referred to the following factors: autocratic coach behavior, democratic coach behavior, positive feedback, and training and instructions. The differentiation between starters and non-starters with regard to the perceived coach's behavior, as implied by the study's results, suggests that the coach's behavior "must" adapt to the players' "perceptions" in order to preserve their motivation and team's balance (Smith, Kendall, & Hulin, 1969).

*Keywords: leadership, coach behavior, starters, non-starters*

### Supported or pressured: Differences on perception of parental role among athletes and parents

**Yiannis Zarotis, Konstantina Papailia (National & Kapodestrian University of Athens)**

Parents are substantially involved in their children's sport experiences. They typically make the initial decision to enroll their children in sport and have a significant impact on many of the positive outcomes of their child's sport participation (Wuerth, Leeb, Alfermann, 2004). The primary role of the parent in youth sports is to provide emotional, financial and provisionary support for their children. However, there is a growing concern about the parents' excessive involvement in sports as it seems that certain aspects of parental involvement are detrimental to the development and experiences of young athlete (Nicholas, Holt, Tamminen,

Black, Sehn, & Wall, 2008; Williams & Lester, 2000). The purpose of the present study was to assess the perception of athletes and parents for the parental role in football. The sample was three football teams, 128 participants (athletes and their parents). They complete a Questionnaire for the Parental Role in Sports (Leff & Hoyle, 1995) with 17 items and three factors: parental support, parental pressure and athlete's satisfaction. The results demonstrated statistical significance differences among athletes and parents on factors of pressure and support. Athletes demonstrated less "pressured" and more "supported" than their parents' perception. The results of the study for parent-child agreement presents preliminary evidence in support of the notion that parents and their children do not agree on measures of parental pressure and support in their children's sport (Elliott & Drummond, 2015; Marsh, Zavilla, Acuna, & Poczwadowski, 2015).

*Keywords: parental role, pressure, support, athletes*



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