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Implicit and explicit attitudes towards sport among young elite athletes with high versus low burnout symptoms

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Acknowledgements

Abstract

The development of cynical attitudes towards elite sport is a core symptom of athlete burnout and has been associated with dropout from elite sport. To date, this phenomenon has mainly been studied by investigating explicit attitudes towards sport, whereas athletes' automatic evaluations (i.e. implicit attitudes) that have been shown to influence behavior as well were not considered. This study aimed to compare explicit and implicit attitudes towards sport of young elite athletes with high (N=24) versus low (N=26) burnout symptoms. Using self-reported measures, general and athlete burnout symptoms were assessed. Additionally, a single-target implicit association test was administered to examine participants' automatic evaluation of sport. Statistical analysis revealed greater emotional/physical exhaustion and sport devaluation in athletes reporting high compared to low burnout symptoms. Implicit attitudes towards sport did not significantly differ between the groups. Furthermore, no significant correlations were observed between different athlete burnout symptoms and implicit attitudes. Athletes with high burnout symptoms show a tendency to explicitly detach themselves from sport, thus fostering sport devaluation as a core symptom of athlete burnout. However, this process does not seem to be reflected in their implicit attitudes towards sport.

Keywords: adolescents; automatic evaluations; dual mode model; reflective processes; sport

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Introduction

Young elite athletes may be at risk of chronic stress exposure as, aside from being successful in their sport, young athletes have to deal with a range of stressors such as coping with developmental tasks (e.g. increasing responsibility and social pressures), performing well at school (e.g. high work load at school), and managing sport-related pressures (e.g. increasing training loads; (Gustafsson, Kenttä, & Hassmén, 2011; Mellalieu, Neil, Hanton, & Fletcher, 2009). Furthermore, becoming a successful elite athlete is virtually impossible without performing close to one's performance limit during training and competition over extended periods of time (Kellmann, Kölling, & Pelka, 2017; Lemyre, Roberts, & Stray-Gundersen, 2007; Meeusen et al., 2013). While many young athletes are willing to do so (Lemyre, et al., 2007), prolonged exposure to high training loads and other sources of stress may have negative consequences (Meeusen, et al., 2013), and ultimately lead to overtraining syndrome (Kenttä & Hassmen, 2002), overuse injuries (Oyen, Klungland Torstveit, & Sundgot-Borgen, 2009), and/or burnout symptoms (Cresswell & Eklund, 2006). Researchers have therefore posited that chronic stress and athlete burnout may be critical factors in explaining why aspiring athletes prematurely drop out from elite sport (Isoard-Gautheur, Guillet-Descas, & Gustafsson, 2016).

In their integrated model of athlete burnout, Gustafsson et al. (2011) highlighted that several vulnerability or protective factors may increase or decrease the likelihood that an athlete develops burnout symptoms. Vulnerability factors include perfectionistic concerns, trait anxiety, ineffective coping skills, unidimensional athlete identity, high investments, social constraints or low attractiveness of alternatives. By contrast, social support, perceived autonomy, a positive motivational climate or being mentally tough are considered protective factors (Gerber et al., 2018; Madigan & Nicholls, 2017). In Gustafsson et al.'s (2011) integrated model, burnout is defined as a syndrome comprised of three symptoms. First, physical and emotional exhaustion, which can be defined as the perceived depletion of emotional and physical resources beyond that associated with training and competition.

Second, a reduced sense of accomplishment, which is reflective of athletes' tendency to evaluate themselves negatively in terms of sport abilities and achievement. Third, sport devaluation, which points towards athletes' development of cynical attitudes towards involvement in elite sport. This symptom also contains an affective/emotional component, as this dimension involves a loss of interest in sport practice, which refers to a loss of motivation, but also negative feelings towards sport practice. These symptoms can all be assessed with the Athlete Burnout Questionnaire (ABQ) (Raedeke & Smith, 2008), which is the most common instrument employed in athlete burnout research. However, while the ABQ dimensions can be used to describe processes involved in the development of athlete burnout, Gustafsson, Madigan, and Lundkvist (2017) recently posited that if burnout is considered a health problem in athletes, other instruments with clinically validated cut-offs such as the Shirom-Melamed Burnout Measures seem more suitable to assess burnout symptoms.

Isoard-Gautheur, et al. (2016) have suggested that sport devaluation may play a critical role in the dropout of young elite athletes. In a study involving 459 elite junior handball players (aged 14 to 18 years), the authors found that athletes with high levels of exhaustion had a higher risk of dropping out from elite sport at the 6-year follow-up, but only if they simultaneously reported high levels of sport devaluation. However, in the situation where athletes had high exhaustion scores but low sport devaluation scores, then the risks of dropout were lower, and comparable to athletes with low scores on all three burnout dimensions. While these findings need further replication, the study of Isoard-Gautheur et al. (2016) suggests that the devaluation of sport may be a key aspect of the development of athlete burnout. This notion is also in line with Smith's (1986) cognitive-affective model of athletic burnout, in which withdrawal from sport is regarded as a critical feature. Moreover, mental and physical withdrawal have been described as an important coping mechanism in occupational burnout. For instance, referring to the work of Maslach (1979), Kristensen, Borritz, Villadsen, & Christensen (2005) indicated that many professionals tend to cope with stress by distancing themselves from their work, a process which can have negative consequences for themselves, but also for their coworkers and clients. Although professionals may have to distance themselves from stimuli that largely differ from the stimuli encountered

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by young elite athletes, this finding indicates that devaluation or withdrawal are important strategies to handle stress across different settings. The critical role of sport devaluation in dropout from elite sport can be further explained from an expectancy-value model perspective (Eccles & Wigfield, 2002). Specifically, the expectancy-value model suggests that individuals' motivation to engage in a particular behavior is determined by their expectancy beliefs (an individual's thoughts about his/her chances to succeed in an upcoming task) and the value attributed to a task (an individual's perception of the worthiness of a task in relation to his/her personal goals). As shown in the domain of physical education (Dickhäuser & Schrahe, 2006), students' expectancy beliefs are more closely related to their self-esteem if they assign high importance to that particular subject. Accordingly, if they feel they are no longer able to attain the required performance standards, one possible coping strategy is to devaluate the importance of the subject to protect their self-esteem. As previously highlighted by Harter (1986), such a discounting can be considered an effective short-term coping strategy, but in the long run may result in reduced motivation to engage in a particular behavior. This has previously been demonstrated in multiple sport domains (Guillet, Sarrazin, Fontayne, & Brustad, 2006; Zhu & Chen, 2013).

In prior research, sport devaluation has commonly been assessed using self-report measures. Such measures allow deliberation and can therefore be used to assess explicit attitudes. While social-cognitive (behavioral) theory suggests that such explicit attitudes are an important predictor of intentions and behavior (Biddle & Mutrie, 2006), attitudes are formed through both cognitive and affective pathways (Cunningham & Zelazo, 2007). Thus, an exclusive focus on the reflective processes (e.g., explicit attitudes) may neglect that automatic behavioural preferences can also have a strong impact on our thinking and behaviour (Hyde, Doerksen, Ribeiro, & Conroy, 2010). Moreover, social psychologists have argued that self-reported explicit attitudes may be biased due to issues associated with self-presentation, self-deception, and self-ignorance (Gregg, Banaji, & Seibt, 2006). For instance, for young athletes involved in high performance sport, revealing in writing (during the questionnaire sessions) that they are experiencing a decrease in motivation, have the impression of not succeeding, and feel exhausted (i.e., thereby admitting their weaknesses)

can be difficult, as they may be afraid of what other people would think (even when athletes are explicitly informed during the consent procedures that their responses will not be communicated to their parents, coach or school staff, and that their names do not appear in the raw data set). Therefore, there are risks that (young elite) athletes may "hide" their true feelings by responding in a way that conceals weakness (i.e., social desirability bias). This might be even more important in burnout as it is – to a certain degree – stigmatized in sport (Gustafsson, Kenttä, Hassmén, Lundkvist, & Durand-Bush, 2007). Hence, to address some of these issues, researchers have developed methods such as Implicit Association tests (IATs) to assess implicit attitudes. Such tests have been successfully used to predict a number of different behaviours (Greenwald, Poehlman, Uhlmann, & Banaji, 2009). Focusing simultaneously on implicit and explicit attitudes corresponds well with dual mode models (Fazio, 1990), which postulate that human behaviour is guided by two different modes. While reflective processes (e.g. explicit attitudes) influence people's behaviour through deliberate and conscious reflections about the costs and benefits of a specific behaviour, implicit attitudes operate in a more spontaneous and unconscious/affective way, without an active balancing of costs and benefits (Evans, 2008). In other words, implicit attitudes target people's non-declarative responses to attitude objects, and can be understood as an indicator of their automatic associations with those objects (Gregg, Banaji, et al., 2006). In accordance with this perspective, researchers' interest in implicit cognitive processes has increased in recent years to explain physical activity and exercise behaviour (Rebar et al., 2016). However, so far, little is known about whether automatic processes (e.g., implicit attitudes) are involved in athlete burnout in general, and sport devaluation in particular. We thus aim to address an important void in the literature by simultaneously assessing implicit and explicit attitudes towards sport among young elite athletes.

The aim of the present study was to compare students with high versus low general burnout symptoms with regard to their explicit and implicit attitudes towards sport. We expected participants with high general burnout scores to report less favourable explicit attitudes towards sport, as expressed by higher ABQ sport devaluation scores. Moreover, we expected participants with high general burnout scores to exhibit less favourable implicit

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attitudes towards sport, as measured with a Single-Target Implicit Association Test (ST-IAT). Finally, we expected that all ABQ dimensions would be negatively correlated with participants' implicit attitudes towards sport, but that the strongest (negative) correlation would occur for sport devaluation.

Materials and Methods

Participants and Procedures

Participants were selected from a sample of 257 students (163 males and 94 females; age: M=16.8 years, SD=1.4) attending Swiss Olympic Sport Classes in the North-Western, German-speaking part of Switzerland. These classes are designed to facilitate the combination of school and elite sport (e.g., lower number of lessons per week, extended school duration). All students were assured confidentiality and informed that participation was voluntary. Importantly, students were informed that their responses would not be communicated to parents, teachers, school principals or members of the coaching staff, and that their names would not appear in the raw data set. Informed written consent was collected before the beginning of data collection. Data was collected in November-December 2016. All students completed a written questionnaire, consisting of a battery of internationally accepted psychological instruments (see below for more details). Ethical approval was obtained from the local ethical committee to ensure that all procedures were in line with current Swiss legal requirements. Moreover, all procedures met the ethical requirements defined in the declaration of Helsinki and its later amendments.

In the above sample, 32 students (13 females, 19 males) had clinically relevant burnout symptoms (see below for cut-offs). Of these, 24 students (10 females, 14 males) were willing to take part in additional assessment focussing on implicit attitudes towards sport. Finally, valid data on the ST-IAT was obtained from 21 students (7 females, 14 males; age: M=17.5 years, SD=1.5). To ensure that students with high versus low burnout symptoms do not differ with regard to background variables, 32 students with relatively low burnout symptoms (scores on the SMBM <3.0) were purposely selected (matched for gender, age, educational level and place of residence). Of these, 26 students (10 females, 16 males)

volunteered for the additional tests, and 24 had valid data on the ST-IAT (9 females, 15 males, age: M=17.0 years, SD=1.7). On average, athletes had participated in competitive sports since M = 7.8 years (SD = 2.8; range: 2-14 years) and invested 22.5 hours per week in training and competition (SD = 8.0; range: 8-41 hours). The athletes engaged in the following sports: Soccer (n = 11), handball (n = 4), judo (n = 4), volleyball (n = 4), swimming (n = 3), tennis (n = 3), track and field (n = 3), and others (< 2 athletes; n = 13).

Measures

General burnout symptoms

The 14-item SMBM (Lerman et al., 1999) was used to measure burnout symptoms. The original formulation of the SMBM is composed of three subscales labelled physical fatigue (six items: e.g., "I feel physically drained."), cognitive weariness (five items: e.g., "I feel I am not thinking clearly."), and emotional exhaustion (three items: e.g., "I feel I am unable to be sensitive to the needs of co-workers and customers."). All items refer to the past four weeks. For the emotional exhaustion subscale, the wording of the items was adapted to increase suitability for adolescents. Thus, a more open formulation was used to refer to people in general instead of co-workers and customers ("I feel I am unable to be sensitive to the needs of other people."). Answers were given on a 7-point Likert scale ranging from 1 (never or almost never) to 7 (always or almost always). The mean score over all 14 items was calculated to obtain an overall index, with higher scores reflecting higher burnout symptoms. A score of ≥ 4.40 was considered as a clinically relevant burnout level. This cut-off was chosen because Lundgren-Nilsson, Jonsdottir, Pallant, and Ahlborg (2012) found in a study with 319 clinical patients and 319 working employees that a score of 4.40 on the Shirom-Melamed Burnout Questionnaire (an earlier version of the SMBM) would place 83.4% of the clinical population above the cut, and 86.5% of the working population below the cut. In the present sample, internal consistency of the overall index was satisfactory, with a Cronbach's alpha of .92.

Athlete burnout symptoms

Athlete burnout was assessed with a German version (Ziemainz, Abu-Omar, Raedeke, & Krause, 2004) of the Athlete Burnout Questionnaire (ABQ) (Raedeke & Smith, 2008). The ABQ is a self-report inventory that consists of 15 items. Items are answered on a 5-point Likert scale, with the following stem ("How often do you feel this way?") and the following anchors: (1) almost never, (2) rarely, (3) sometimes, (4) frequently, and (5) almost always. Compared to the version from Ziemainz et al. (2004), we slightly changed the wording of some items to achieve a better fit with the English version, and to facilitate comprehension among young elite athletes. Three scores were obtained by calculating separate means over the items of the three subscales related to emotional/physical exhaustion (e.g. "I feel overly tired from my sport participation."), sport devaluation (e.g. "I don't care as much about my sport performance as I used to do."), and reduced sense of accomplishment (e.g. "I am not performing up to my ability in sport."). In the present sample, the Cronbach's alpha of the three subscales ranged between .83 and .85.

Implicit attitudes towards sport

Implicit attitudes toward sport were measured using a ST-IAT. In standard Implicit Association Tests (IATs), associations are assessed between a target concept (e.g., 'physical activity') versus a comparison concept (e.g., 'physical inactivity') and the evaluative concepts 'good' and 'bad'. In ST-IATs, no counter-category is applied. The ST-IAT has been found to be reliable and to exhibit discriminant validity (Bluemke & Fries, 2008). In the present study, a computer-based ST-IAT with the target concept "sport" and the evaluative categories "good" and "bad" was administered with E-Prime 2.0 (Psychology Software Tools, USA). Participants were seated in a comfortable position and completed the task while the surrounding noise was kept to minimum. Visual stimuli that represented the target concept were photographs showing young adults at different sport scenarios (e.g. swimming, running). The target images that were presented to the participants showed no specific affective content. Instead of attribute words, which have been used frequently in previous ST-IAT experiments, we employed emoticons (8 smileys and 8 frownies) that had to be attributed to the evaluative categories. The advantage of this approach is that response time is not confounded by verbal

abilities and the stimuli can be matched in visual size. The visual stimuli for the target concept and the attributes were been obtained from the ST-IAT script employed in a previous study (Brand & Antoniewicz, 2016). The first phase of the computerized task included 16 practice trials and participants were instructed to evaluate emoticons by pressing a key corresponding to "good" or "bad". The evaluative categories were displayed in the upper left and right corner and depending on the location of the attribute, participants had to press a button with the left or right index finger. Following a fixation period of 250 ms, visual stimuli were presented in the center of the screen until a response was collected. Participants were instructed to respond as quickly and accurately as possible. In the next 2 blocks, participants were required to assign emoticons and target images to one of the two response categories, which categorized "sport" as either "good" or "bad". The assignment of sport to the evaluative categories was always changed after the first block and the order was counterbalanced across all participants. Each block included 32 trials and was preceded by 16 practice trials to reduce learning effects. Trials in which the visual stimuli were not correctly assigned to the categories were repeated until a correct response was collected. As dependent variable, D-score was calculated by dividing the ST-IAT raw scores (difference in mean reaction time between the two blocks) by the within--individual standard deviation of response latencies calculated across the compatible and incompatible trials (Greenwald, Nosek, & Banaji, 2003). D-scores can take up values from -2 to +2; and |0.15|, |0.35| and |0.64| have been interpreted as slight, moderate and strong preference (or aversion), respectively (Blanton, Jaccard, & Burrows, 2014).

Potential confounders

The following potential confounders were considered: Gender (male vs female), age, body mass index (BMI; self-reported body weight in kg divided through self-reported height in m^2), educational level (high school vs. vocational educational and training), nationality (Swiss vs. foreign), training load, time spent in competitions, years participating in competitive sport, current injury (yes vs. no), and use of medication (yes vs. no).

Statistical Analyses

Descriptive statistics (*M, SD*) were calculated to describe the main study variables. Analyses of variance (ANOVAs) and χ^2-tests were used to examine differences in potential confounders between students with high versus low burnout scores. Moreover, four separate ANCOVAs were calculated to examine how the two groups differ with regard to explicit and implicit attitudes about sport. The sequence of the ST-IAT task (positive first versus negative first) and relevant confounders were used as covariates. Finally, partial correlations were used to examine the bivariate associations between athletes' implicit and explicit attitudes towards sport (controlling for ST-IAT sequence and relevant confounders). An alpha level of *p*<.05 was determined across all analyses. All analyses were carried out with SPSS® (version 24, IBM Corporation, Armonk, NY, USA) for Apple Mac®.

Results

Descriptive Statistics

Descriptive statistics are presented in Table 1, showing that the most frequently reported symptom of athlete burnout was exhaustion, followed by reduced sense of accomplishment and sport devaluation. With regard to implicit attitudes towards sport, 4 participants reported a strong aversion, 4 a slight aversion, 7 a slight preference, 7 a moderate preference, and 6 a strong preference towards sport, whereas the implicit attitudes of 15 participants were in the neutral range (-0.14 to 0.14).

Association with potential confounders

Athletes with high versus low burnout symptoms did not differ in any of the assessed confounders (all *p*s > 0.05). However, a statistical trend indicated that athletes with high burnout scores tended to invest slightly more time in training and competition (24.7±8.6 hours/week versus 20.6±7.1 hours/week) compared to peers with low burnout levels, $F(1,43)=2.96$, p=.092, η^2=.064. Moreover, athletes with high burnout levels tended to be slightly more likely to take medication (29% vs. 8%) compared to peers with low scores, χ^2(1,

N=45)=0.32, *p*=.076, ϕ=.264. We therefore decided to control for these two factors in all subsequent analyses.

Differences between students with high versus low burnout

Table 2 shows that participants with high general burnout levels scored significantly higher in emotional/physical exhaustion and sport devaluation. The inspection of the effect sizes shows that the differences are of substantial magnitude (19-48% of explained variance). By contrast, no significant differences occurred with regard to reduced sense of accomplishment and implicit attitudes towards sport (assessed via ST-IAT).

Partial correlations

As shown in Table 1, none of the partial correlations between athlete burnout symptoms and the ST-IAT scores were statistically significant, with correlation coefficients ranging between -.07 and .19.

Discussion

The key finding of the present study was that young elite athletes with high general burnout symptoms report less favourable explicit attitudes towards sport, as expressed by elevated sport devaluation scores. However, this was not reflected in their implicit attitudes towards sport.

The fact that students with high general burnout scores have less favourable explicit attitudes towards sport was expected. As highlighted in the expectancy-value model of motivation (Eccles & Wigfield, 2002), sport devaluation can help athletes to maintain their self-esteem under circumstances when they feel that they are no longer able to cope with the demands stemming from elite sport. Moreover, such cognitive detachment may help them disengage from elite sport, which might be an effective coping method in order to avoid further negative consequences (Cresswell & Eklund, 2006; Kenttä & Hassmen, 2002; Oyen, et al., 2009). By contrast, the finding that athletes with high versus low burnout scores do not differ with regard to their implicit attitudes towards sport was not anticipated. It can be

speculated that many young elite athletes have built up a strong (positive) emotional attachment vis-à-vis sport activities. In the present study, athletes were engaged in elite sport for almost eight years, and invested in training and competition more than 20 hours per week. As underlined by Gustafsson et al. (2011) in their integrated model of athlete burnout, several entrapment factors may contribute to the fact that athletes stay highly committed to elite sport despite negative consequences. Following these authors, examples of entrapment factors are high previous investments, low alternative attractiveness, performance-based self-esteem, social constraints, an inflexible organization, and a strong and exclusive identity (Chang, Wu, Kuo, & Chen, 2018; Gustafsson, Martinent, Isoard-Gautheur, Hassmen, & Guillet-Descas, 2018; Martin & Horn, 2013). Based on the present findings, we suggest that positive implicit attitudes towards sport may contribute to athletes' entrapment in sport. This is in line with the notion that (young) elite athletes have particularly strong sport self-schema or athletic identities. In other words, these athletes tend to perceive sport as being highly descriptive of themselves, and might consider these descriptions as highly relevant for their identity and self-image (Anderson, Mâsse, & Hergenroeder, 2007; Brewer, Cornelius, Stephan, & Van Raalte, 2010; Kendzierski, 1988; Lamont-Mills & Christensen, 2006; Whaley & Ebbeck, 2002). Alternatively, it could be argued that the stronger link between athlete burnout and explicit attitudes (sport devaluation) was due to common method bias in self-reports (Podsakoff, MacKenzie, Podsakoff, & Lee, 2003; Wingate, Sng, & Loprinzi, 2018), which might have inflated these associations and diminished those with the reaction time-based measure. It could also be argued that sport devaluation is a reflective process which might not yet have affected learned (memorized) associations, that is, implicit attitudes, in the other (impulsive) system. This is in line with theories positing that implicit attitudes are not easily erased from memory, even when new experiences trigger a change in more explicit attitudes (Petty, Tormala, Briñol, & Jarvis, 2006; Wilson, Lindsey, & Schooler, 2000). In other words, implicit attitudes are likely more stable over time and less susceptible to environmental and conscious/cognitive influences than their explicit counterparts. This notion is consistent with research findings showing that manipulations of attitude change have a stronger impact on explicit than on implicit measures (Gawronski & Strack, 2004; Gregg, Seibt, & Banaji, 2006).

As shown in the partial correlations, implicit and explicit attitudes were not significantly correlated with each other in the present sample. While this finding contradicts our initial hypothesis, it fits well with the dual mode models suggesting that reflective and automatic processes operate fairly independently from each other (Fazio, 1990), as well as with previous research across a variety of domains showing that implicit and explicit attitudes are relatively independent constructs (Hyde, et al., 2010; Jordan, Spencer, & Zanna, 2005). Following Greenwald and Banaji (1995), implicit cognitions have the potential to reveal information that is not accessible through conscious introspection, and thus may contain information about past experiences that people would consciously reject or that they would be unwilling to reveal. As mentioned in our introduction, for young athletes involved in high performance sport, revealing in writing that they have a decrease in motivation can be difficult, as they may be afraid of what their coach or other people could think (even in protocols involving a guarantee of confidentiality). Therefore, surveys always carry the risk that athletes may "hide" their true feelings by responding in a way that conceals weakness (i.e., social desirability bias) or in a way that conforms with their expectations about how elite athletes are generally seen by other people. Nevertheless, this risk seems to be limited as our findings showed that (a) explicit attitudes were more closely related to general burnout symptoms than implicit attitudes, (b) the researchers were not known by the students (e.g., as lecturers or practitioners), and (c) many students in the present sample reported relatively high levels of burnout (Gerber, et al., 2018) or other psychological complaints such as insomnia symptoms (Gerber et al., in press).

Our study constitutes a useful contribution to the research literature because it distinguished, for the first time, between implicit and explicit attitudes in the investigation of athlete burnout. Moreover, we relied on a clinically validated cut-off (SMBM mean score $\geq$ 4.4) to identify students with high burnout levels and we selected a sample of peers with low burnout scores that was matched for gender, age, educational level and place of residence. Although the cut-off we relied on was derived from adult workers, and – the best suited cut-off for young people remains to be determined in future research, this cut-off is currently the only empirically derived cut-off available, and we preferred such a cut-off to an arbitrarily set

threshold. However, we acknowledge that the (validated) ST-IAT protocol that we used was not specifically designed for elite athletes and contains visual stimuli from different sports. Future studies may use visual stimuli that refer more directly to competitive sport situations and focus on one particular sport. As sport devaluation is linked to a lack of desire to perform well, it is likely that young athletes who tend to devaluate the importance of engaging in elite sport show a more pronounced negative valence towards stimuli presenting a typical scenario during a sports competition. Other limitations were that the sample size was relatively small, which complicated the detection of significant effects. Furthermore, our sample included only students from Swiss Olympic Sport Classes. More research is thus needed to determine if similar results manifest themselves in wider populations of young elite athletes or in older athletes. Finally, it should be noted that different methods exist to assess implicit attitudes (e.g., Antoniewicz & Brand, 2014; Bluemke, Brand, Schweizer, & Kahlert, 2010). In future research, it would be worthwhile to examine if similar results are found across different assessment methods.

Conclusions

Prolonged exposure to excessively high training loads and other sources of distress can have negative consequences such as overtraining syndrome, overuse injuries, and burnout symptoms (Kenttä & Hassmen, 2002; Meeusen, et al., 2013). Previous research has shown that sport devaluation may play an important role in the dropout of young athletes from elite sport (Isoard-Gautheur, et al., 2016). Such cognitive and emotional detachment seems to a certain extent necessary and functional since athletes tend to have strong sport self-schema and athletic identities (Lamont-Mills & Christensen, 2006). Accordingly, several entrapment factors contribute to the fact that young athletes stay committed to sport (Gustafsson, et al., 2018), although such an engagement may have negative consequences for their development and health (Gustafsson, et al., 2011). The present study shows that while athletes with high general burnout symptoms show a tendency to explicitly detach themselves from elite sport, as expressed by their increased sport devaluation scores, this process is not reflected in their implicit attitudes towards sport. As implicit attitudes operate in a more spontaneous and

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unconscious/affective way, without an active balancing of the costs and benefits, our findings suggest that (a) it may be difficult for young athletes to reduce or stop their engagement in elite sport, and (b) young athletes may need support in order to replace elite sport with attractive alternatives.

Conflict of interest

None.

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Table 1. Descriptive statistics and bivariate correlations between burnout symptoms and ST-IAT scores

	M	SD	Range Potential	Actual	Partial correlation with D-Score[a]
Domain-Unspecific Burnout Symptoms					
SMBM Overall index	3.59	1.45	1 to 7	1.79 to 6.79	---
Athlete Burnout Symptoms					
ABQ Exhaustion	2.86	0.85	1 to 5	1 to 5	.11
ABQ Reduced Sense of Accomplishment	2.31	0.73	1 to 5	1.2 to 5	-.07
ABQ Sport Devaluation	1.62	0.76	1 to 5	1 to 5	.19
ST-IAT					
D-Score	0.16	0.37	-2 to +2	-0.56 to 1.12	---

Notes. SMBM = Shirom-Melamed Burnout Measure. ABQ = Athelete Burnout Questionnaire. ST-IAT = Single-Target Implicit Association Test.
Skew = Skewness. Kurt = Kurtosis. [a]Partial correlations controlled for ST-IAT sequence (positive first versus negative first).

Table 2. Differences in athlete burnout symptoms and implicit attitudes towards sport between students with high versus low burnout symptoms

All participants	High burnout symptoms (n=21)		Low burnout symptoms (n=24)				
	M	*SD*	*M*	*SD*	*F*	*p*	η^2
Exhaustion	3.48	0.67	2.32	0.60	36.68	.000	.478
Reduced sense of accomplishment	2.44	0.82	2.19	0.64	2.47	.124	.058
Sport devaluation	1.86	0.99	1.40	0.36	9.17	.004	.187
ST-IAT: D-Score	0.19	0.36	0.14	0.38	0.75	.391	.018

Note: All analyses controlled for ST-IAT sequence (positive first versus negative first), time for training and competition, and use of medication.