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Perfectionism and Attitudes Towards Doping in Junior Athletes

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Abstract

Recent theory and research suggest that perfectionism is a personal factor contributing to athletes' vulnerability to doping (using banned substances/drugs to enhance sporting performance). So far, however, no study has examined what aspects of perfectionism suggest a vulnerability in junior athletes. Employing a cross-sectional design, this study examined perfectionism and attitudes towards doping in 129 male junior athletes (mean age 17.3 years) differentiating four aspects of perfectionism: perfectionistic strivings, perfectionistic concerns, parental pressure to be perfect, and coach pressure to be perfect. In the bivariate correlations, only parental pressure showed a positive relationship with positive doping attitudes. In a multiple regression analysis controlling for the overlap between the four aspects, perfectionistic strivings additionally showed a negative relationship. Moreover, a structural equation model examining the relationships between all variables suggested that coach pressure had a negative indirect effect on attitudes towards doping via perfectionistic strivings. The findings indicate that perceived parental pressure to be perfect may be a factor contributing to junior athletes' vulnerability to doping, whereas perfectionistic strivings may be a protective factor.

Keywords: perfectionism; attitudes towards doping; sport; junior athletes; performance enhancing substances; performance enhancing drugs

Perfectionism and Attitudes Towards Doping in Junior Athletes

Introduction

In sports, the term "doping" refers to the use of substances and drugs enhancing an athlete's performance that are banned by the World Anti-Doping Agency (WADA). Despite rising awareness of doping, more frequent controls, and serious disciplinary consequences for athletes who are caught, doping is still regarded a widespread and pervasive problem in competitive sports (Morente-Sánchez & Zabala, 2013). Consequently, there has been an increasing interest in sport psychology and the sports sciences to understand the factors making athletes vulnerable to doping (Allen, Taylor, Dimeo, Dixon, & Robinson, 2015; Petróczi & Strauss, 2015). According to the life-cycle model of performance enhancement (Petróczi & Aidman, 2008), there are not only systemic factors (e.g., doping culture) contributing to the problems. Personal factors also play an important role. One such factor that was recently suggested to increase athletes' vulnerability to doping is perfectionism (Bahrami, Yousefi, Kaviani, & Ariapooran, 2014; Flett & Hewitt, 2014; Zucchetti, Candela, & Villosio, 2015).

Perfectionism in sport is a multidimensional characteristic comprising four aspects: perfectionistic strivings, perfectionistic concerns, parental pressure to be perfect, and coach pressure to be perfect (Anshel & Eom, 2003; Dunn, Causgrove Dunn, et al., 2006; Stoeber, Otto, & Stoll, 2006). Perfectionistic strivings capture athletes' self-oriented striving for perfection and their setting of exceedingly high personal standards of performance. In contrast, perfectionistic concerns capture athletes' concerns over making mistakes, feelings of discrepancy between one's expectations and performance, and negative reactions to imperfection. Parental pressure to be perfect captures athletes' perceptions that their parents expect them to be perfect and would criticise them if they failed to deliver. Coach pressure to be perfect is the same as parental pressure, except that it is the coach who is perceived as expecting perfection and being critical.

Why is perfectionism seen as a vulnerability factor increasing athletes' risk of doping? According to a recent review on the perils of perfectionism in sports (Flett & Hewitt, 2014), all aspects of perfectionism may facilitate the tendency for perfectionists under pressure to use substances in order to gain a competitive advantage. This, however, may not be the only reason why perfectionism may be associated with doping. According to Petróczi (2013), it is important to distinguish between internal and external rewards in the doping mindset because doping may be used for different goals: to maximise athletic potential (be as good as possible) or maximise the chance to win (outperform others). (In addition, there may be aesthetic reasons, for example, in bodybuilders [Pederson, 2010]). Perfectionism in sport has been shown to be related to both of these goals (Stoeber, Stoll, Pescheck, & Otto, 2008). Consequently, perfectionism may play an important role in understanding individual differences contributing to doping.

If perfectionism is a personal factor increasing athletes' vulnerability to doping, one should expect athletes high in perfectionism to have more positive attitudes towards doping compared to athletes low in perfectionism. Positive attitudes towards doping comprise beliefs that the use of banned substances for performance enhancement is necessary (e.g., "Doping is necessary to be competitive") or socially acceptable (e.g., "Doping is not cheating since everyone does it"; Petróczi & Aidman, 2009). Positive attitudes towards doping are key in psychological research on doping because they have been shown to influence whether or not an athlete will use banned substances or not (Gradidge, Coopoo, & Constantinou, 2010; Morente-Sánchez & Zabala, 2013; Petróczi & Aidman, 2009). Consequently, in the absence of objective information on doping, positive attitudes towards doping are sometimes regarded a proxy for doping behaviour because they predict intention to dope (Morente-Sánchez & Zabala, 2013; Ntoumanis, Ng, Barkoukis, & Backhouse, 2014).

Previous Research

So far, only two studies have investigated the relationships between perfectionism in sport and attitudes towards doping. The first study (Bahrami et al., 2014) examined bodybuilders. To measure attitudes towards doping, it used the Performance Enhancement Attitude Scale (Petróczi & Aidman, 2009) which is a unidimensional measure capturing positive attitudes towards doping. To measure perfectionism, it used the Sport Multidimensional Perfectionism Scale (Dunn, Causgrove Dunn, et al., 2006) which is a multidimensional measure of perfectionism in sport differentiating perfectionistic strivings, perfectionistic concerns, parental pressure to be perfect, and coach pressure to be perfect. When bivariate correlations were examined, results showed that perfectionistic strivings and perfectionistic concerns showed positive correlations with positive attitudes towards doping whereas parental and coach pressure showed nonsignificant correlations.

The second study (Zucchetti et al., 2015) examined athletes attending a sports medicine centre. To measure attitudes towards doping, it also used the Performance Enhancement Attitude Scale. To measure perfectionism in sport, it used the Perfectionism in Sport Scale (Anshel & Eom, 2003). Like the Sport Multidimensional Perfectionism Scale, the Perfectionism in Sport Scale differentiates perfectionistic strivings, perfectionistic concerns, parental pressure to be perfect, and coach pressure to be perfect, but Zucchetti et al. (2015) only examined overall perfectionism combining the four aspects. When overall perfectionism was entered in a multiple regression analysis (together with various social factors and other personal factors including self-confidence, motivation, and life satisfaction) to predict positive attitudes towards doping, overall perfectionism emerged as a positive predictor.

The two studies make an important contribution to research on personal factors in doping as they provide the first empirical evidence that perfectionism in sports represents a vulnerability factor for doping. The studies, however, left some open questions. Regarding Zucchetti et al.'s (2015) study, it is unclear what aspects of perfectionism were driving the positive effect that

overall perfectionism had in the multiple regression predicting positive attitudes towards doping. Moreover, Zucchetti et al. (2015) did not report bivariate correlations so it is unclear if the effect of overall perfectionism was influenced by the other predictor variables that were simultaneously entered in the regression analysis (Cohen, Cohen, West, & Aiken, 2003). Regarding Bahrami et al.'s (2014) study, it is unclear how representative their findings are of perfectionism in sport. The reason is that bodybuilding is a sport in which doping seems to be widely practiced and may form an acceptable part of the sport's culture (Pedersen, 2010; Santos, da Rocha, & da Silva, 2011). One indication of that is that the bodybuilders in the study by Bahrami et al. (2014) had an average Performance Enhancement Attitude Scale score of 50.09 (SD = 4.58) which was considerably higher and showed less variance than the average Performance Enhancement Attitude Scale scores that Petróczi and Aidman (2009) found in the various athletes samples used in the Performance Enhancement Attitude Scale's validation studies ($30.86 \leq M\text{s} \leq 44.68$; $7.39 \leq SD\text{s} \leq 13.02$). Finally, both studies investigated adult athletes. Bahrami et al.'s (2014) bodybuilders were on average 27.1 years old, and Zucchetti et al.'s (2015) athletes 31.5 years. This is relevant because the life-cycle model of performance enhancement (Petróczi & Altman, 2008) suggests that factors which predict engagement in doping practices may be different at different career stages. Moreover, no study has yet investigated the relationships of perfectionism and positive attitudes towards doping in junior athletes. This, however, would be important because anti-doping programmes may have the greatest impact on athletes that are in an early stage of their sporting careers (Morente-Sánchez & Zabala, 2013; Ntoumanis et al., 2014). Furthermore, perfectionism has previously been associated with negative behaviour in junior athletes, for example, need thwarting and athlete burnout (Jowett, Hill, Hall, & Curran, 2013; Mallinson & Hill, 2011).

The Present Study

Against this background, the aim of the present study was to examine the relationships between multidimensional perfectionism in sport and positive attitudes towards doping in male junior athletes. In doing so we differentiated between perfectionistic strivings, perfectionistic concerns, parental pressure to be perfect, and coach pressure to be perfect following the previous studies (Bahrami et al., 2014; Zucchetti et al., 2015). Differently from the previous studies, we also looked at the relationships between perceived pressure to be perfect and perfectionistic strivings and concerns. Following previous studies that conceptualised parental pressure to be perfect in school and college students as antecedents of perfectionistic strivings and concerns (Damian, Stoeber, Negru, & Băban, 2013; Rice, Lopez, & Vergara, 2005), we regarded parental and coach pressure as antecedents of perfectionistic strivings and concerns in predicting positive attitudes towards doping in junior athletes (Figure 1). The study focused on male athletes because they tend to have more positive attitudes towards doping than female athletes (Bloodworth, Petróczi, Bailey, Pearce, & McNamee, 2012).

Method

Participants

A sample of 130 male junior athletes was recruited at two sports academies (85 from Academy 1, 45 from Academy 2) to participate in the present study. In this, all male athletes from the two academies were invited to take part in the study, and all sports were considered. Overall, 143 athletes were approached (91% response rate). Sports academies are part of the UK's further education system. Their main purpose is to recruit and develop promising junior athletes by providing them with a professional coaching environment while they study alongside their sporting commitments. Academy athletes are selected based on their ability (competitive performance in trials to enter the academy) and regularly compete at a regional, national, or international level. Participants' mean age was 17.3 years (*SD* = 0.8; range = 16-19 years).

Participants were involved in different sports (58 in soccer, 37 in rugby, 18 in basketball, 5 in athletics, and 12 in other sports [e.g., tennis, squash]) and trained on average 9.7 hours per week (*SD* = 5.7). The study was approved by the ethics committee of our university. Informed consent was obtained from all participants. In addition, parental consent was obtained from participants below the age of 18.

Measures

Perfectionism. To measure perfectionism, we used four subscales from two multidimensional measures of perfectionism in sport: the Sport Multidimensional Perfectionism Scale (Dunn, Causgrove Dunn, et al., 2006) and the Multidimensional Inventory of Perfectionism in Sport (Stoeber et al., 2006). To measure perfectionistic strivings, we used two indicators—the Multidimensional Inventory of Perfectionism in Sport subscale capturing striving for perfection (5 items; e.g. "I strive to be as perfect as possible") and the Sport Multidimensional Perfectionism Scale subscale capturing personal standards (7 items; e.g. "I have extremely high goals for myself in my sport")—and then standardised the scale scores before combining them to a measure of perfectionistic strivings (Dunkley, Zuroff, & Blankstein, 2003). To measure perfectionistic concerns, we also used two indicators—the Sport Multidimensional Perfectionism Scale subscale capturing concerns over mistakes (8 items; e.g., "People will probably think less of me if I make mistakes in competition") and the Multidimensional Inventory of Perfectionism in Sport subscale capturing negative reactions to imperfection (5 items; e.g., "I feel extremely stressed if everything does not go perfectly")—and again standardised the scale scores before combining them to one measure of perfectionistic concerns. To measure perceived pressure to be perfect differentiating parental pressure and coach pressure, we used the Multidimensional Inventory of Perfectionism in Sport subscales capturing parental pressure to be perfect (8 items; e.g., "My parents expect my performance to be perfect") and coach pressure to be perfect (8 items; e.g.,

"My coach expects my performance to be perfect"; see Appendix). All subscales have demonstrated reliability and validity in previous studies (Dunn, Causgrove Dunn, et al., 2006; Stoeber, Otto, Pescheck, Becker, & Stoll, 2007). Participants were asked to indicate to what degree each statement characterised their attitudes in their sport responding on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

Positive attitudes towards doping. To measure positive attitudes towards doping, we used the Performance Enhancement Attitude Scale (Petróczi & Aidman, 2009) which is comprised of 17 items capturing attitudes towards doping (e.g., "Doping is necessary to be competitive," "Doping is not cheating since everyone does it"). The Performance Enhancement Attitude Scale has demonstrated validity and reliability in previous studies (Petróczi & Aidman, 2009; Zucchetti et al., 2015). Each item was preceded by the phrase "My opinion regarding sport in general is that …," and participants responded on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). This scale was used (instead of the original 6-point scale) to allow our findings to be directly comparable to those of Zucchetti et al. (2015) who used the same 5-point scale. In addition, it had the advantage of not confusing junior athletes with different response formats.

Data Screening

First, we inspected the data for missing values. Because very few item responses were missing ($i = 16$), missing responses were replaced with the mean of the item responses of the corresponding scale (ipsatised item replacement; Graham, Cumsille, & Elek-Fisk, 2003). Next, we examined the scales scores' reliability by computing Cronbach's alphas. All scores showed satisfactory reliability (Table 1). Finally, we screened the data for multivariate outliers. One participant showed a Mahalanobis distance larger than the critical value of $\chi^2(5) = 20.52$, $p < .001$ and was removed from the further analyses, resulting in a final sample of $N = 129$.

Results

Analytic Strategy

To examine the relationships between perfectionism and positive attitudes towards doping, we followed the model in Figure 1. In doing so, we first examined the bivariate correlations between all variables. Next, we computed a series of multiple regressions to investigate how the four aspects of perfectionism predicted positive attitudes towards doping when examined simultaneously (Model 1), how parental and coach pressure predicted perfectionistic strivings (Model 2), and how parental and coach pressure predicted perfectionistic concerns (Model 3). Finally, based on the findings from Models 1-3, we used structural equation modelling (SEM) to combine and test the relationships suggested by Models 1-3 in one structural model.

Main Analyses

Bivariate Correlations. When the bivariate correlations were examined (Table 1), all aspects of perfectionism showed positive intercorrelations indicating significant overlap. Moreover, parental pressure to be perfect showed a positive correlation with positive attitudes towards doping.

Multiple Regressions. When multiple regressions were conducted predicting positive attitudes towards doping simultaneously taking the four aspects of perfectionism into account (Table 2, Model 1), parental pressure to be perfect emerged as a positive predictor as was expected from the bivariate correlations. In addition, perfectionistic strivings emerged as a negative predictor. Once the overlap with the other aspects of perfectionism was controlled for, perfectionistic strivings showed an inverse relationship with positive attitudes towards doping.

Next we examined how parental and coach pressure predicted perfectionistic strivings and perfectionistic concerns (Table 2, Models 2-3). In both models, only coach pressure emerged as a positive predictor. Once the overlap between the two aspects of pressure to be perfect was controlled for, only coach pressure showed positive relationships with perfectionistic strivings

and perfectionistic concerns.

Structural Equation Modelling (SEM). Finally, we tested a structural model combining the significant relationships from Models 1-3 into one structural model employing SEM with manifest variables (Figure 1). To estimate the model, we used Mplus 7.0 (Muthén & Muthén, 1998-2012) and robust maximum likelihood estimation. To evaluate model fit, it is recommended to examine a range of incremental and absolute fit indices in addition to the χ^2 statistic (Hu & Bentler, 1999; MacCallum & Austin, 2000). Consequently, we also examined the comparative fit index (CFI), Tucker-Lewis Index (TLI [also known as non-normed fit index, NNFI]), root mean square error of approximation (RMSEA), and standardised root mean square residual (SRMR). Whereas there is no established "golden rule" for model fit regarding these indices (Marsh, Hau, & Wen, 2004), we used the following cut-off values (in parentheses) as benchmarks for acceptable model fit (CFI > .90, TLI > .90, RMSEA < .08, SRMR < .10) and good model fit (CFI > .95, TLI > .95, RMSEA < .06, SRMR < .08; Marsh et al., 2004).

The structural model provided a good fit to the data. The Satorra-Bentler $\chi^2 = 0.39$ ($df = 2$) was nonsignificant indicating a good model fit as did all the other fit indices (CFI = 1.00, TFI = 1.00, RMSEA = .00 [90% CI = .00-.10], SRMR = .01). The TLI is a non-normed index and can exceed 1.00 (in the present model TLI was 1.06) in which case it is conventionally reported as 1.00 (McDonald & Ho, 2002). As Figure 2 shows, parental pressure had a direct positive effect on positive attitudes towards doping. Moreover, coach pressure positively predicted perfectionistic strivings, and perfectionistic strivings negatively predicted positive attitudes towards doping. Thus, coach pressure had an indirect negative effect on positive attitudes towards doping, meaning that coach pressure positively predicted perfectionistic strivings which in turn negatively predicted positive attitudes towards doping.

Additional Analyses

Because previous research suggests that type of sport may affect positive attitudes towards doping, we repeated all analyses controlling for type of sport (differentiating speed and power sports vs. motor-skills demanding sports; Alaranta et al., 2006). The results remained the same indicating that type of sport did not affect the relationships between perfectionism and doping attitudes in the present sample.

Discussion

The aim of the present study was to examine the relationships between multidimensional perfectionism in sport and positive attitudes towards doping in junior athletes. Differentiating four aspects of perfectionism in sport—perfectionistic strivings, perfectionistic concerns, parental pressure to be perfect, and coach pressure to be perfect—the study found a positive correlation between parental pressure to be perfect and positive attitudes towards doping. Junior athletes who thought that their parents expected them to be perfect had more positive attitudes towards doping than junior athletes who did not think their parents had such expectations. Moreover, when multiple regressions were computed controlling for the overlap between the four aspects of perfectionism, perfectionistic strivings showed a negative relationship with positive attitudes towards doping. Furthermore, the multiple regressions found that coach pressure positively predicted perfectionistic strivings and concerns in junior athletes. Parental pressure had no effect once the overlap with coach pressure was controlled for. Finally, when the significant effects from the multiple regressions were examined in a structural equation model, parental pressure had a direct positive effect on positive attitudes towards doping whereas coach pressure—via perfectionistic strivings—had an indirect negative effect.

Corroborating the findings of the previous studies on perfectionism and positive attitudes towards doping (Bahrami et al., 2014; Zucchetti et al., 2015), the present findings confirm that perfectionism in sport is a personal factor explaining individual differences in doping attitudes.

Moreover, the findings suggest that perfectionism is a factor not only in bodybuilders and older athletes, but also in junior athletes. What aspects of perfectionism play a role, however, seems to differ for junior athletes. Examining bodybuilders, Bahrami et al. (2014) found perfectionistic strivings and perfectionistic concerns to show positive correlations with positive attitudes towards doping (whereas parental and coach pressure showed nonsignificant correlations). Examining junior athletes, we found parental pressure to show a positive correlation (whereas all other aspects showed nonsignificant correlations). What is more, perfectionistic strivings showed a *negative* relationship with positive attitudes towards doping when the overlap with the other aspects was controlled for.

How can we explain the different pattern of relationships? First, note that Bahrami et al.'s bodybuilders reported highly positive attitudes towards doping. With an average score of 50.09 (*SD* = 4.58) on the Performance Enhancement Attitude Scale, they showed a much higher score than those found in various athlete samples (Petróczi & Aidman, 2009). If doping is a widely accepted practice in bodybuilding ("doping culture"), then athletes who are part of this culture and strive for perfection may have more positive attitudes towards doping than athletes who do not strive for perfection. Additionally, Zucchetti et al. (2015), using the same 5-point scale, reported similar average Performance Enhancement Attitude Scale scores as the present study (*M* = 32.3, *SD* = 9.8). Second, Bahrami et al.'s bodybuilders were on average 27.1 years old and thus significantly older than our junior athletes (mean age 17.3 years). This is relevant because parental pressure to be perfect is more salient in younger athletes (Dunn, Gotwals, Causgrove Dunn, & Syrotuik, 2006) and thus may have an effect on doping attitudes in junior athletes, but not adult athletes. Moreover, according to Petróczi (2013), athletes at different stages of their sporting career have different mindsets. Whereas older athletes' mindsets are geared towards achievement goals that are more performance-oriented making them more vulnerable to doping,

younger athletes' mindsets are geared towards achievement goals that are more mastery-oriented making them less vulnerable. Because performance goals and mastery goals are both associated with perfectionistic strivings in athletes (Stoeber et al., 2008), the perfectionistic strivings of Bahrami et al.'s bodybuilders may have been predominantly performance-oriented and thus be positively related to positive doping attitudes. Conversely, the perfectionistic strivings of our junior athletes may have been predominantly mastery-oriented and thus negatively related to positive doping attitudes (Allen et al., 2015).

However the negative relationship between perfectionistic strivings and positive attitudes towards doping only emerged when the overlap of perfectionistic strivings with the other aspects of perfectionism was controlled for. Consequently, the finding of perfectionistic strivings predicting less favourable attitudes towards doping needs to be interpreted with caution and may only apply to "pure perfectionistic strivings," that is, perfectionistic strivings with other, negative aspects of perfectionism partialled out (Hill, 2014). Still, the finding is in line with previous findings indicating that perfectionistic strivings in sport are mostly adaptive when the overlap with perfectionistic concerns is controlled for (Gotwals, Stoeber, Dunn, & Stoll, 2012; Stoeber, 2011). Moreover, perfectionistic strivings are closely related to the personality trait of conscientiousness (Rice, Ashby, & Slaney, 2007). Consequently, the finding is also in line with previous findings indicating that conscientiousness is a protective factor against doping (Petróczi & Aidman, 2008).

Limitations and Future Studies

The present study had a number of limitations. First, as this is the first empirical study investigating the relationships of perfectionism and attitudes towards doping in male junior athletes, future research needs to replicate the findings before firm conclusions can be drawn. Furthermore, the study examined only male athletes. Consequently, future studies need to

investigate if the present findings generalise to female athletes. Second, the study employed a cross-sectional design. Future studies will therefore need to examine if the pathways suggested in our structural equation model (Figure 2) replicate when multi-wave longitudinal designs are employed (Cole & Maxwell, 2003). Third, there may be an influence of performance level. Qualitative research suggests that elite athletes may have more positive attitudes towards doping because they are under significantly more pressure to perform (Smith et al., 2010). Therefore, future research should investigate if the current findings replicate in an elite athlete sample. Furthermore, the present sample was mainly from team sports so future research needs to investigate if differences between team and individual sports may affect the present findings. Future research should also control for socially desirable responding (Gucciardi, Jalleh, & Donovan, 2010) and consider examining achievement goals alongside perfectionism (Stoeber et al., 2008) to examine the role that achievement goals play in the perfectionism–doping attitudes relationship. Finally, the present study investigated *perceived* pressure to be perfect, that is, junior athletes' perceptions that parents and coaches expected them to be perfect. Future studies may profit from including parents and coaches and measure their actual expectations. Anti-doping programmes need to know if it sufficient to target athletes' perceptions or whether parents' and coaches' expectations should also be targeted.

Practical Implications and Conclusion

Despite these limitations, the present study makes a contribution to our understanding of perfectionism in sports and doping because it is the first to examine junior athletes and find perceived parental pressure to be perfect a possible vulnerability factor for doping. In their life-cycle model of performance enhancement, Petróczi and Aidman (2008) argue that deterrence strategies against doping are more successful if they identify factors which pose a particular risk of doping in certain target groups of athletes and their respective career stage. The present

findings suggest that, in junior athletes at the early stage of their sporting career, perceived parental pressure to be perfect may pose a risk that anti-doping programmes may want to target. In contrast, the study found no evidence that perfectionistic strivings, perfectionistic concerns, and perceived coach pressure represented vulnerability factors to doping. On the contrary, pure perfectionistic strivings showed a negative relationship with positive doping attitudes suggesting that, in junior athletes, perfectionistic strivings may have a protective element and should not be a prime target for anti-doping programmes.

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Appendix

Parental pressure to be perfect

My parents expect my performance to be perfect.

My parents criticize everything I do not do perfectly.

My parents are dissatisfied with me if my performance is not top class.

My parents expect me to be perfect.

My parents demand nothing less than perfection of me.

My parents make extremely high demands of me.

My parents set extremely high standards for me.

My parents are disappointed in me if my performance is not perfect.

Coach pressure to be perfect

My coach expects my performance to be perfect.

My coach criticizes everything I do not do perfectly.

My coach is dissatisfied with me if my performance is not top class.

My coach expects me to be perfect.

My coach demands nothing less than perfection of me.

My coach makes extremely high demands of me.

My coach sets extremely high standards for me.

My coach is disappointed in me if my performance is not perfect.

Table 1

Descriptive Statistics, Cronbach's Alphas, and Bivariate Correlations

Variable	1	2	3	4	5
Perfectionism					
1. Perfectionistic strivings					
2. Perfectionistic concerns	.60***				
3. Parental pressure to be perfect	.30**	.31***			
4. Coach pressure to be perfect	.53***	.49***	.50***		
5. Positive attitudes towards doping	–.08	.10	.36***	.10	
M	0.00	0.00	18.25	20.66	34.02
SD	0.91	0.93	8.11	6.40	10.99
Cronbach's alpha	.79	.84	.95	.88	.89

Note. $N = 129$. All variables are sum scores except perfectionistic strivings and perfectionistic concerns which are combined standardised scores (see text for details).

**$p < .01$. ***$p < .001$.

Table 2

Summary of Multiple Regression Analyses

	R^2	β
Model 1: DV = positive attitudes towards doping	.181***	
Perfectionistic strivings		–.27*
Perfectionistic concerns		.15
Parental pressure to be perfect		.41***
Coach pressure to be perfect		–.03
Model 2: DV = perfectionistic strivings	.280***	
Parental pressure to be perfect		.05
Coach pressure to be perfect		.50***
Model 3: DV = perfectionistic concerns	.249***	
Parental pressure to be perfect		.09
Coach pressure to be perfect		.45***

Note. $N = 129$. DV = dependent variable. β = standardised regression weight.

*$p < .05$. **$p < .01$. ***$p < .001$.

Figure Captions

Figure 1. Conceptual model of the relationships between parental and coach pressure to be perfect, perfectionistic strivings and concerns, and positive attitudes towards doping.

Figure 2. Structural equation model of parental and coach pressure to be perfect and perfectionistic strivings predicting positive attitudes towards doping. Paths coefficients are standardised. $N = 129$. *$p < .05$. ***$p < .001$.