European Journal of Sport Science

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/tejs20

Do Athlete and Coach Performance Perfectionism Predict Athlete Burnout?

Luke F. Olsson, Daniel J. Madigan, Andrew P. Hill & Michael C. Grugan

To cite this article: Luke F. Olsson, Daniel J. Madigan, Andrew P. Hill & Michael C. Grugan (2021): Do Athlete and Coach Performance Perfectionism Predict Athlete Burnout?, European Journal of Sport Science, DOI: 10.1080/17461391.2021.1916080

To link to this article: https://doi.org/10.1080/17461391.2021.1916080

Published online: 23 Apr 2021.

EUROPEAN JOURNAL OF SPORT SCIENCE
https://doi.org/10.1080/17461391.2021.1916080

Do Athlete and Coach Performance Perfectionism Predict Athlete Burnout?

Luke F. Olsson, Daniel J. Madigan, Andrew P. Hill and Michael C. Grugan

School of Science, Technology, and Health, York St John University, York, UK

ABSTRACT

Research has illustrated that athlete perfectionism predicts athlete burnout. The present study sought to build on existing research in two ways. First, we provide the first test of the relationship between performance perfectionism and athlete burnout. That is, whether the degree to which athlete's expect their own or others' sport performances to be perfect, predicts burnout. Second, we broaden the examination of the perfectionism-burnout relationship to include coaches by testing the incremental predictive ability of perceptions of coach other-oriented performance perfectionism (the degree to which coaches were perceived to expect perfect performances from others). A sample of 190 competitive adult athletes (*M* age = 20.54) completed measures of their own performance perfectionism (self-oriented, socially prescribed, and other-oriented performance perfectionism), perceived coach other-oriented performance perfectionism, and burnout symptoms. Regression analyses indicated that both athlete self-oriented and socially prescribed performance perfectionism positively predicted athlete burnout. In addition, after controlling for all dimensions of athlete performance perfectionism, perceived coach other-oriented performance perfectionism positively predicted athlete burnout. The findings suggest that, in addition to their own perfectionism, when athletes perceive their coaches to be more perfectionistic towards others, they are more likely to experience burnout.

KEYWORDS

Exhaustion; reduced accomplishment; devaluation; sport; social

Introduction

Athlete burnout has been studied over the past three decades and has been found to have a negative impact on athlete motivation, performance, and mental health (Smith, Pacewicz, & Raedeke, 2019). To help prevent burnout, researchers have sought to identify factors that make athletes more susceptible to its development. The degree to which an athlete is perfectionistic has emerged as one such factor (Hill & Curran, 2016). The present study extends our understanding of the role of perfectionism in the development of athlete burnout in two ways. First, we provide the first test of the relationship between performance perfectionism and athlete burnout. Second, we broaden the examination of the relationship between perfectionism and athlete burnout to include coaches by testing the incremental predictive ability of perceptions of coach performance perfectionism.

Athlete burnout

Athlete burnout is a psychological syndrome that comprises three symptoms: emotional and physical exhaustion, reduced sense of accomplishment, and sport devaluation (Raedeke, 1997; Raedeke & Smith, 2001). Emotional and physical exhaustion is the perceived depletion of emotional and physical resources for sport participation. Reduced sense of accomplishment is the negative evaluation of one's sporting abilities and achievements. Finally, sport devaluation is the development of a cynical attitude towards sports participation. These symptoms are related to negative outcomes for athletes such as diminished psychological wellbeing, reduced motivation, poorer performance, and the potential for dropout (Gustafsson, Madigan, & Lundkvist, 2017).

Several models have been proposed to explain the development of athlete burnout (see Eklund & DeFreese, 2020). In the present study, we adopt Smith's (1986) stress-based model as a theoretical lens. This is because it has received substantial empirical support in sport (e.g. DeFreese & Smith, 2014) and it also gives a prominent role for personality factors which is the focus of the present study. In Smith's model, personality factors influence burnout by framing the appraisal processes that determine the experience of threat, coping, and stress. These factors do so by capturing an athlete's beliefs, values, and goals that when threatened first trigger a stress response. Thereafter, personality

CONTACT Luke F. Olsson l.olsson@yorksj.ac.uk School of Science, Technology, and Health, York St John University, Lord Mayors Walk, York, UK, YO31 7EX

influences the assessment of demands and resources, and what is inferred from failing to meet the demands. In this model, burnout is the result of chronic stress from the constant appraisal of personal resources being outweighed by personal demands and rise in a gradual sense of unmet goals, fatigue, and low self- and activity value.

Multidimensional perfectionism

One personality factor that has been linked to athlete burnout is perfectionism. Perfectionism is a personality trait characterised by excessively high personal standards and overly critical evaluations (Frost et al., 1990). One model widely used to examine perfectionism posits three dimensions of perfectionism (Hewitt & Flett, 1991). The first dimension, self-oriented perfectionism, reflects an individual's belief that striving for perfection and being perfect are integral to oneself. The second dimension, socially prescribed perfectionism, reflects an individual's perception that others impose perfectionistic standards onto them and hold perfectionistic expectations that they must meet. The final dimension, other-oriented perfectionism, reflects the tendency to impose one's own perfectionistic standards onto others. Collectively, these dimensions capture both the intrapersonal and interpersonal aspects of perfectionism.

Researchers have sought to understand how different dimensions of perfectionism affect the experiences of athletes. Subsequently, self-oriented perfectionism has been linked with both adaptive (e.g. intrinsic motivation; Appleton & Hill, 2012) and maladaptive outcomes (e.g. depressive symptoms; Carter & Weissbrod, 2011). In contrast, socially prescribed perfectionism is widely considered to be maladaptive for athletes, with empirical evidence linking it with outcomes such as obsessive passion (Curran, Hill, Jowett, & Mallinson-Howard, 2014), negative self-perceptions when one loses (Carter & Weissbrod, 2011), and depressive symptoms (Smith, Hill, & Hall, 2018). Although fewer studies have examined other-oriented perfectionism, there is evidence that it is related to a mix of interpersonal outcomes such as better team performance (Hill, Stoeber, Brown, & Appleton, 2014) and antisocial behaviour towards others (Grugan, Jowett, Mallinson-Howard, & Hall, 2020).

Athlete perfectionism and burnout

Perfectionism has been forwarded as an antecedent of burnout by a number of researchers (e.g. Flett & Hewitt, 2005). In support of this idea, there is substantial empirical evidence for the relationship between perfectionism and burnout (see Hill & Curran, 2016). In this regard, the relationship between self-oriented perfectionism and burnout has been found to be complex. While cross sectional evidence indicates the self-oriented perfectionism is negatively related to burnout (e.g. Hill, Hall, Appleton, & Kozub, 2008), longitudinal evidence indicates that it may be unrelated to burnout over time (e.g. Smith et al., 2018). In contrast, researchers have consistently found that socially prescribed perfectionism is positively related to athlete burnout (e.g. Appleton & Hill, 2012). Other-oriented perfectionism has typically been excluded from these studies as it has been viewed as less important to the development of burnout (cf. Smith et al., 2018). This omission originates from the assertion that other-oriented perfectionism is an interpersonal dimension that has less relevance to self-referenced or personal outcomes (Hewitt & Flett, 1991).

We build on previous research in the present study by re-examining the perfectionism-burnout relationship using a novel way to conceptualise and measure perfectionism in athletes. To date, research that has adopted Hewitt and Flett's (1991) model in athletes has adapted instruments so to measure perfectionism by directing athletes to think about sport (e.g. " … in relation to my sport participation … ") or amending items (e.g. "I want to be perfect in my life" vs. "I want to be perfect in my sport"). Notably, when using either approach, it is not clear which specific aspect of sport athletes may be thinking of when answering questions or whether their perfectionism is being applied to all aspects of sport. Ways of measuring perfectionism grounded in specific aspects of sport may therefore be useful in reducing this ambiguity and offer additional insight when understanding its relationship with athlete outcomes (Hill, Appleton, & Mallinson, 2016). With this in mind, Hewitt and Flett's (1991) model has recently been adapted to measure performance perfectionism (i.e. the extent to which athletes demand perfect performance from themselves and others; Hill et al., 2016).

The importance of the distinction between requiring to be perfect generally, requiring to be perfect in sport, or requiring to perform perfectly in sport is evident in research. For instance, there is evidence that levels of perfectionism differ depending on the domain of life someone is referring to, with athletes reporting they are more perfectionistic towards their sport than their studies (Dunn, Gotwals, & Dunn, 2005; Stoeber & Stoeber, 2009). In addition, research has found that athletes' perfectionism can be measured as it applies to both practice and competition in sport and that effects differ depending on the specific focus (Stoeber, Otto, &

Stoll, 2006). Here we focus on a specific aspect of sport, namely athletic performance. Athletic performance is one of the most important, if not the most important, aspect of athlete life and is an acute focus of perfectionistic athletes (Hill, Witcher, Gotwals, & Leyland, 2015). Coupled with the notion that performance difficulties can be a major source of stress and burnout for athletes (e.g. Cresswell & Eklund, 2006; Gould, Tuffey, Udry, & Loehr, 1996; Gustafsson, Hassmén, Kenttä, & Johansson, 2008), performance perfectionism appears to be especially relevant to athlete burnout. In keeping with the above reasoning, the current study extends research by providing the first examination of how self-oriented performance perfectionism, socially prescribed performance perfectionism, and other-oriented performance perfectionism relate to athlete burnout.

Coach perfectionism and burnout

So far, research has focused exclusively on how an athlete's perfectionism influences their own burnout. One further way we extend existing research on the perfectionism-burnout relationship here is by including perceptions of the coach. Examining perceptions of the coach is important because early burnout work suggested that others, particularly authority figures, can affect burnout perceptions (e.g. Leiter & Maslach, 1988). This idea is also incorporated in the theoretical model by Smith (1986) in an athlete's appraisal of external demands and resources. On the one hand, coaches may help temper the risk of burnout by providing support and maintaining perceptions that demands are reasonable and can be met by available resources. On the other hand, coaches may increase the risk of burnout by contributing to perceptions that external demands are unrealistic, excessive, and unobtainable. In this way, Smith considered the personal qualities of the coach (e.g. leadership style and degree of social support) to be important in determining the likelihood of athlete burnout.

Research supports the importance of considering the perceived qualities of the coach for athlete burnout. For example, perceptions of social support from coaches are negatively related to athlete burnout (e.g. Lu et al., 2016). Similarly, perceptions that coaches are more democratic (encourage and consider input from their athletes) are negatively related to athlete burnout (e.g. Price & Weiss, 2000), whereas perceptions that coaches are more autocratic (exert authority and enforce decisions) are positively related to athlete burnout (e.g. Granz, Schnell, Mayer, & Thiel, 2019). Work examining athlete burnout from a coach-athlete relationship perspective, too, has found that factors such as liking one's coach and being committed to them are negatively related to athlete burnout (Isoard-Gautheur, Trouilloud, Gustafsson, & Guillet-Descas, 2016). Finally, in qualitative studies, athletes have reported that coach expectations and coach conflict contribute to their levels of burnout (e.g. Gustafsson et al., 2008). In keeping with this growing body of research, in the present study we argue that to fully understand the experience of athlete burnout, it is important to take into account an athlete's view of the perfectionistic qualities of their coach.

One way to capture this information is by adapting the performance perfectionism dimensions grounded in Hewitt and Flett's (1991) model. In this regard, perceived coach self-oriented performance perfectionism corresponds to an athlete's perception that the coach sets excessively high personal standards and is fixated on flaws in their own performance. Perceived coach socially prescribed performance perfectionism corresponds to an athlete's perception that their coach thinks others impose unrealistic performance standards on them. Finally, perceived coach other-oriented performance perfectionism corresponds to an athlete's perception of how demanding the coach is of others, including the athlete. While self-oriented and socially prescribed perfectionism are most relevant to burnout from an individual perspective, these dimensions will have less relevance to athlete burnout when examining the perceptions of others. In contrast, while other-oriented perfectionism has been regarded as the least important dimension when examining athlete burnout in previous research, in context of perceptions of others, it is likely the most important. This is because perceived coach other-oriented perfectionism is the only dimension that is relevant to the appraisal of the demands and resources personally available to the athlete.

There is direct evidence that perceptions of the perfectionistic demands from coaches are important for athlete burnout. This has been captured in research examining perceived coach pressure. Specifically, in this research athlete perceptions that coaches have unrealistic expectations and are critical of others has been found to be positively related to all three burnout symptoms in athletes (e.g. Gotwals, 2011). We would expect similar findings when coaches' excessive demands and unrealistic expectations are captured via perceived coach other-oriented perfectionism with the notable difference that, here, athletes are reflecting on and considering the personality or personal qualities of the coach. Drawing on existing research, we expect that elevated levels of perceived coach other-oriented perfectionism would correspond with elevated levels

of athlete burnout above and beyond athlete performance perfectionism.

Present study

The present study had two aims. First, we provide the first test of the relationship between performance perfectionism and athlete burnout. Second, we also broaden the examination of the perfectionism-burnout relationship to include coaches by testing the incremental predictive ability of perceptions of coach performance perfectionism on athlete burnout. We hypothesised that athlete socially prescribed performance perfectionism would positively predict athlete burnout, whereas athlete self-oriented and other-oriented performance perfectionism would be unrelated to athlete burnout. In addition, after controlling for athlete perfectionism, we hypothesised that perceived coach other-oriented performance perfectionism would positively predict athlete burnout. In contrast, we hypothesised perceived coach self-oriented and socially prescribed performance perfectionism would be unrelated to athlete burnout.

Methods

Participants

Participants were 190 adult athletes (80 female; *M* age = 20.54 years, *SD* = 2.72) from the United Kingdom. Athletes were competing across 19 different individual sports (e.g. athletics, tennis, and golf) at university (*n* = 29), club (*n* = 13), regional (*n* = 22), national (*n* = 90) and international (*n* = 32) levels. Athletes had been working with their coach for an average of 3.37 (*SD* = 2.66) years and spent on average 10.31 h (*SD* = 7.38) per week training.

Procedure

The study was approved by an institutional ethics committee. Athletes were provided with information outlining the purpose and procedures of the research. After providing written informed consent, athletes were asked to complete participant characteristics and measures of their own perfectionism, perceived coach perfectionism, and athlete burnout.

Measures

Athlete performance perfectionism

Athlete perfectionism was measured using the Performance Perfectionism Scale–Sport (PPS-S: Hill et al., 2016), a 12-item instrument based on Hewitt and Flett's (1991) model of perfectionism. The measure contains three subscales of 4 items that capture an athlete's self-oriented performance perfectionism (SOPP: "I put pressure on myself to perform perfectly"), socially prescribed performance perfectionism (SPPP: "People always expect my performances to be perfect"), and other-oriented performance perfectionism (OOPP: "I am never satisfied with the performances of others"). Participants rated on a seven-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree)*. Hill et al. (2016) provided evidence to support the psychometric properties of the measure. In the present sample, each dimension demonstrated good internal consistency (SOPP α = .75, SPPP α = .78, and OOPP α = .76).

Perceived coach performance perfectionism

To measure perceived coach performance perfectionism, we used a modified version of the PPS-S. Specifically, we modified the items to reflect the athlete's perceptions of their coach for self-oriented performance perfectionism (CSOPP: "My coach puts pressure on themselves to perform perfectly"), socially prescribed performance perfectionism (CSPPP: "My coach believes people always expect their performances to be perfect"), and other-oriented performance perfectionism (COOPP: "My coach is never satisfied with the performance of others"). This is a common approach used in research examining perceptions of others' perfectionism (e.g. Appleton, Hall, & Hill, 2010). In the present sample, two of the dimensions yielded good internal consistency (CSOPP α = .76, COOPP α = .83), with the third deemed as adequate (CSPPP α = .67).

Athlete burnout

Athlete Burnout was measured using the Athlete Burnout Questionnaire (ABQ: Raedeke & Smith, 2001). The ABQ is a 15-item measure with three subscales of 5 items. The ABQ captures an athlete's emotional and physical exhaustion (EPE: e.g. "I am exhausted by the mental and physical demands of sport"), reduced sense of accomplishment (RSA: e.g. "I am not performing up to my ability in sport"), and sport devaluation (SD: e.g. "I have a negative feeling towards my sport"). A score for each of the symptoms can be created by averaging the five corresponding items. In addition, the three subscales can be averaged to provide an overall burnout score (total burnout). Participants rated on a 5-point scale ranging from 1 (*almost never*) to 5 (*almost always*). Raedeke and Smith (2001) provided evidence to support the psychometric properties of the measure. The present sample displayed good internal

consistency (EPE α = .93, RSA α = .71, SD α = .86, and total burnout α = .87).

Analytic strategy

In accordance with Tabachnick and Fidell (2014), we first inspected the data for missing values, with participants being excluded if they exceeded more than 5% missing data. Of the remaining participants, missing cases were replaced with the mean of the item responses from each corresponding subscale (Graham, Cumsille, & Elek-Fisk, 2003). Next, we examined the reliability of each subscale by computing Cronbach's alphas and screening for univariate (i.e. standardised score that was greater than $z = 3.29$) and multivariate outliers (i.e. Mahalanobis distance larger than the critical value of $\chi^2[10] = 29.59$, $p < .001$).

Because we adapted the PPS-S to measure perceived coach performance perfectionism, we then assessed the factor structure of the instrument using confirmatory factor analysis (CFA). We follow the recommendations of Rhemtulla, Brosseau-Liard, and Savalei (2012) and use the robust maximum likelihood estimator (MLR) in Mplus 7.0 (Muthén & Muthén, 2005, 1998–2012). Model fit was evaluated using the following fit indices: the chi-square statistic (χ2), comparative fit index (CFI), Tucker–Lewis index (TLI), standardised root mean square residual (SRMR), and the root mean square error of approximation (RMSEA) (see Marsh, Hau, & Wen, 2004). We used the following cut-off values as benchmarks for acceptable fit (χ2 /df < 3, CFI > .90, TLI > .90, SRMR < .10, RMSEA < .10; Marsh et al., 2004). We also used exploratory structural equation modelling (ESEM) in order to further explore fit using MLR with oblique rotation and the same indices above to assess fit. Because the CFA is nested in the ESEM, we also compared the fit of the models using Satorra-Bentler chi-square difference test (Satorra & Bentler, 2001). In the case of both CFA and ESEM, in accordance with Kidder and Judd (1986), item loadings were deemed problematic if they did not load meaningfully on their intended factor (< .30) and/or loaded more meaningfully on a different factor (> .30).

With respect to the main analyses, we computed descriptive statistics and bivariate correlations between variables. Next, we computed a series of multiple regressions to examine if athlete performance perfectionism and perceived coach performance perfectionism predicted athlete burnout. In the first step, dimensions of athlete performance perfectionism were entered as predictors. In the second step, dimensions of perceived coach performance perfectionism were entered as predictors. In using this hierarchical regression, we were first able to address aim one by examining the predictive ability of athlete performance perfectionism separately from perceived coach perfectionism and then address aim two by examining the incremental predictive ability of perceived coach performance perfectionism. Separate regressions were performed for the three burnout symptoms and total burnout. These regressions included bias-corrected accelerated (BCa) bootstrapped (1,000 samples) estimates of confidence intervals.

Results

Data screening

In accordance with Tabachnick and Fidell (2014), one participant exceeded more than 5% missing data and was therefore excluded. Next, when examining the reliability of each subscale, all scores showed good reliability, except for perceived coach socially prescribed perfectionism which was deemed adequate (see Table 3). When considering univariate outliers, one participant had a standardised score that was greater than $z = 3.29$ and was deleted from further analysis. No participant showed a Mahalanobis distance larger than the critical value of $\chi^2(10) = 29.59$, $p < .001$. The final sample size was $N = 188$ (78 female; M age = 20.55 years, $SD = 2.73$).

Confirmatory factor analysis and exploratory structural equation modelling

Model fit and factor loadings can be found in Tables 1 and 2. In accordance with Marsh et al. (2004), the CFA for the three-factor model of perceived coach performance perfectionism did not provide good fit: χ^2 (51) = 125.19, χ^2/df = 2.45, CFI = .88, TLI = .85, SRMR = .07, RMSEA = .09, 90% CI .07, .11. ESEM demonstrated better model fit: χ^2 (33) = 54.56, χ^2/df = 1.65, CFI = .97, TLI = .93, SRMR = .04, RMSEA = .06, 90% CI .03, .09. In addition, when compared to the CFA, the ESEM provided significant better fit based on the Satorra-Bentler chi-square difference test: TRd (18) = 66.18, $p < .001$. However, factor loadings indicated that participants may not have been able to distinguish between two of the dimensions of perceived coach performance perfectionism: perceived coach self-oriented and socially prescribed performance perfectionism. This was evident with items not loading on their intended factor meaningfully and a number of meaningful cross-loadings. Accordingly, the problematic dimensions were omitted from further analyses. Notably, we retained perceived coach other-oriented performance perfectionism because this dimension is

Table 1. Perceived Coach Performance Perfectionism Goodness of Fit Statistics for CFA and ESEM.

									Model Comparison		
	χ2	*df*	χ2 / *df*	CFI	TLI	RMSEA	RMSEA 90% CI	SRMR	Comparison	Δχ2	Δdf
CFA	125.19***	51	2.45	.88	.85	.09	[.069, .108]	.07			
ESEM	54.56**	33	1.65	.97	.93	.06	[.029, .086]	.04	ESEM vs. CFA	66.18***	18

Note: CFA = Confirmatory factor analysis; ESEM = Exploratory structural equation modelling; *df* = Degrees of freedom; CFI = comparative fit index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = Standardised Root Mean Square Residual. Δχ2 difference test is Satorra-Bentler χ2 difference test.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2. Perceived Coach Performance Perfectionism Standardised Factor Loadings for CFA and ESEM solutions.

		CFA	ESEM		
Dimension	Item	Factor Loading	Factor Loading 1	Factor Loading 2	Factor Loading 3
Perceived Coach SOPP	1	**.57*** **	**1.13** **	−.33**	−.11*
	4	**.69*** **	**.62** **	.19	.03
	10	**.60*** **	.22	.52***	.08
	11	**.79*** **	**.37**	.69***	.06
Perceived Coach SPPP	2	**.60*** **	.28*	.07	.36***
	7	**.47*** **	.04	.11	.44***
	9	**.48*** **	.29**	.25	.08
	12	**.73*** **	.41	**.38**	.15*
Perceived Coach OOPP	3	**.83*** **	.02	.01	**.80*** **
	5	**.84*** **	−.01	−.09	**.88*** **
	6	**.59*** **	−.19*	.06	**.66*** **
	8	**.74*** **	.07	.03	**.69*** **

Note: Bold typeface denotes loadings above .30 on target factors. Underlined typeface denotes meaningful cross-loadings (>.30). CFA = confirmatory factor analysis; ESEM = exploratory structural equation modelling; SOPP = self-oriented performance perfectionism; SPPP = socially prescribed performance perfectionism; OOPP = other-oriented performance perfectionism; factor loading 1 target dimension = perceived coach SOPP; factor loading 2 target dimension = perceived coach SPPP; factor loading 3 target dimension = perceived coach OOPP.
*$p < .05$. **$p < .01$. ***$p < .001$; two-tailed.

the main focus of the study and can be distinguished from the other two dimensions.

Bivariate correlations

When the bivariate correlations were examined, almost all variables displayed positive bivariate correlations (see Table 3). As expected, athlete socially prescribed performance perfectionism displayed small to moderate significant correlations with athlete burnout and emotional and physical exhaustion. However, a non-significant relationship was found between athlete socially prescribed performance perfectionism and the other two symptoms. Similarly, except for sport devaluation (non-significant relationship), athlete self-oriented performance perfectionism also displayed a small yet significant correlation with athlete burnout and each burnout symptom. Finally, athlete other-oriented performance perfectionism displayed a non-significant relationship with total burnout and the three burnout symptoms. With respect to perceived coach other-oriented performance perfectionism, the dimension displayed small to moderate significant positive correlations with athlete performance perfectionism dimensions,[1] total burnout, and each burnout symptom.

Multiple regression analyses

Results of the multiple regression analyses can be found in Table 4. At Step 1, athlete performance perfectionism explained 5% of the variance in total burnout: F (3, 184) = 3.28, $p = .02$. Athlete socially prescribed performance perfectionism was a significant positive predictor: $\beta = .18$, $p = .03$. A similar finding was also evident for emotional and physical exhaustion whereby athlete performance perfectionism predicted 10% of the variance: F (3, 184) = 6.93, $p < .001$. Again, socially prescribed performance perfectionism was a

Table 3. Descriptive Statistics, Cronbach's Alphas, and Bivariate Correlations.

Variable	1	2	3	4	5	6	7	8
1. Athlete self-oriented performance perfectionism								
2. Athlete socially prescribed performance perfectionism	.39***							
3. Athlete other-oriented performance perfectionism	.18*	.38***						
4. Perceived coach other-oriented performance perfectionism	.20**	.46***	.39***					
5. Athlete total burnout	.16*	.20**	.05	.35***				
6. Athlete emotional and physical exhaustion	.20**	.30***	.08	.34***	.78***			
7. Athlete reduced sense of accomplishment	.21**	.11	.03	.15*	.62***	.22**		
8. Athlete sport devaluation	−.01	.04	.01	.26***	.83***	.43***	.38***	
M	5.07	3.25	2.12	2.94	2.44	2.53	2.61	2.19
SD	1.09	1.19	0.96	1.37	0.69	1.03	0.66	1.02
α	.75	.78	.76	.83	.87	.93	.71	.86

Note: $N = 188$.
*$p < .05$. **$p < .01$. ***$p < .001$; two-tailed.

Table 4. Summary of Multiple Regression Analyses.

Model	R^2	β	*B*	BCa 95% CI
Model 1: *DV = Athlete Total Burnout*				
Step1: *F* (3, 184) = 3.28*	.05			
Athlete self-oriented performance perfectionism		.10	.06	[−.02, .15]
Athlete socially prescribed performance perfectionism		.18*	.10	[.01, .20]
Athlete other-oriented performance perfectionism		−.03	−.02	[−.14, .09]
Step 2: F (4, 183) = 7.52***; ΔF (1,183) = 19.26***	.14			
Athlete self-oriented performance perfectionism		.10	.06	[−.03, .14]
Athlete socially prescribed performance perfectionism		.05	.03	[−.06, .13]
Athlete other-oriented performance perfectionism		−.12	−.09	[−.20, .03]
Perceived coach other-oriented performance perfectionism		.35***	.18	[.10, .26]
Model 2: *DV = Athlete emotional and physical exhaustion*				
Step1: *F* (3, 184) = 6.93***	.10			
Athlete self-oriented performance perfectionism		.10	.10	[−.04, .23]
Athlete socially prescribed performance perfectionism		.28***	.24	[.09, .39]
Athlete other-oriented performance perfectionism		−.05	−.05	[−.24, .12]
Step 2: F (4, 183) = 8.78***; ΔF (1,181) = 13.00***	.16			
Athlete self-oriented performance perfectionism		.10	.09	[−.05, .22]
Athlete socially prescribed performance perfectionism		.18*	.15	[.01, .31]
Athlete other-oriented performance perfectionism		−.12	−.13	[−.32, .04]
Perceived coach other-oriented performance perfectionism		.29***	.22	[.10, .34]
Model 3: *DV = Athlete reduced sense of accomplishment*				
Step1: *F* (3, 184) = 2.99*	.05			
Athlete self-oriented performance perfectionism		.20*	.12	[.04, .21]
Athlete socially prescribed performance perfectionism		.04	.02	[−.07, .12]
Athlete other-oriented performance perfectionism		−.02	−.01	[−.12, .09]
Step 2: F (4, 181) = 2.97*; ΔF (1,181) = 2.80	.06			
Athlete self-oriented performance perfectionism		.20*	.12	[.04, .21]
Athlete socially prescribed performance perfectionism		−.02	−.01	[−.10, .09]
Athlete other-oriented performance perfectionism		−.05	−.04	[−.15, .08]
Perceived coach other-oriented performance perfectionism		.14	.07	[−.01, .16]
Model 4: *DV = Athlete sport devaluation*				
Step1: *F* (3, 184) = 0.15	.00			
Athlete self-oriented performance perfectionism		−.03	−.03	[−.18, .12]
Athlete socially prescribed performance perfectionism		.05	.05	[−.11, .20]
Athlete other-oriented performance perfectionism		.00	.00	[−.17, .16]
Step 2: F (4, 181) = 4.13**; ΔF (1,181) = 16.04***	.08			
Athlete self-oriented performance perfectionism		−.04	−.03	[−.17, .10]
Athlete socially prescribed performance perfectionism		−.07	−.06	[−.23, .11]
Athlete other-oriented performance perfectionism		−.09	−.09	[−.27, .07]
Perceived coach other-oriented performance perfectionism		.33***	.25	[.12, .37]

Note: *N* = 188. DV = dependent variable. β = standardised regression weight. *B* = unstandardized regression weight. BCa 95% CI = bias corrected accelerated 95% confidence intervals.
*$p < .05$. **$p < .01$. ***$p < .001$; two-tailed.

significant positive predictor: β = .28, $p < .001$. Athlete performance perfectionism was also a significant predictor for reduced sense of accomplishment and predicted 5% of the variance: F (3, 184) = 2.99, $p = .03$. In this case, athlete self-oriented performance perfectionism was a significant positive predictor: β = .20, $p = .01$. Finally, athlete performance perfectionism was not a significant predictor of sport devaluation: F (3, 184) = 0.15, $p = .93$.

After controlling for athlete performance perfectionism when predicting total burnout, perceived coach other-oriented performance perfectionism emerged as a significant predictor at Step 2 and explained an additional 9% of the variance: ΔF (1, 183) = 19.26, $p < .001$, β = .35, $p < .001$. A similar finding was found when predicting emotional and physical exhaustion with an additional 6% of the variance explained: ΔF (1, 183) = 13.00, $p < .001$, β = .29, $p < .001$. With respect to sport devaluation, perceived coach performance other-oriented perfectionism was a significant predictor and explained an additional 8% of the variance: ΔF (1, 183) = 16.04, $p < .001$, β = .33, $p < .001$. Perceived coach other oriented performance perfectionism was a non-significant predictor of athlete reduced sense of accomplishment: ΔF (1, 183) = 2.80, $p = .10$, β = .14, $p = .10$.

Discussion

The present study had two aims. First, we aimed to provide the first test of the relationship between athlete performance perfectionism and athlete burnout. Second, we aimed to broaden the examination of the perfectionism-burnout relationship to include

perceived coach performance perfectionism. For aim one, in partial support of our hypotheses, athlete socially prescribed performance perfectionism (perception that others expect perfect performance) positively predicted total burnout and emotional and physical exhaustion. Furthermore, as expected, athlete other-oriented performance perfectionism (demanding perfect performance from others) did not predict total burnout or any of the individual burnout symptoms. However, contrary to our hypotheses, athlete self-oriented performance perfectionism (demanding perfect performance for oneself) positively predicted athlete reduced sense of accomplishment. For aim two, we found partial support for our hypotheses that perceived coach other-oriented performance perfectionism (perception that the coach demands perfect performance from others) predicted athlete burnout. Specifically, after controlling for athlete performance perfectionism, perceived coach other-oriented performance perfectionism predicted total burnout, emotional and physical exhaustion, and sport devaluation, but not a reduced sense of accomplishment.

Athlete performance perfectionism and burnout

When adopting Hewitt and Flett's (1991) model, studies examining athletes have typically found that socially prescribed perfectionism is the most important predictor of athlete burnout. This has been found in youth and adult athletes, team and individual sports, and both cross-sectional and longitudinal work (e.g. Appleton & Hill, 2012; Hill, Hall, & Appleton, 2010; Smith et al., 2018). Important to the aims of the current study, our findings suggest this is the case when perfectionism is focused on athletic performance as well as sport more generally. In revisiting Smith's (1986) model we can understand why this is the case. Perceiving that others expect your performances to be perfect, and may judge you harshly when these demands are not met, is likely to contribute to greater threat ("people will think less of me"), more negative assessments of coping ability as demands are high and externally controlled, and, in turn, more stress. The lack of control over the expectations seems especially important in understanding how the stress may become chronic as athletes have little opportunity to directly address them (Hill et al., 2008). In addition, focussing on performance may also give rise to stress as it is more important but less controllable than other aspects of sport participation (e.g. training). As such, when socially prescribed, perfectionistic standards for performance may become a constant source of stress from which there is little respite. As a result, this stress can become chronic and ultimately lead to burnout.

In line with previous claims that athletes' other-oriented perfectionism may not be relevant to athlete burnout because standards are focused on others (Hewitt & Flett, 1991), this dimension of athlete performance perfectionism did not predict athlete burnout. It appears that, as others have suggested, as a quality of the athlete this dimension may be less important for burnout and more important for other social outcomes (e.g. antisocial behaviour towards others; Grugan et al., 2020). Given that interactions with others are an important source of burnout, this could be considered somewhat surprising. However, in this regard, it may be that other-oriented performance perfectionism is more detrimental for others, rather than the individual themselves. As an in indirect relationship with athlete burnout is still conceivable, we recommend that future studies include other-oriented perfectionism when examining athlete burnout to provide a fuller test of Hewitt and Flett's (1991) model and to identify circumstances when it may be important.

Our most unexpected finding was that athlete self-oriented performance perfectionism was found to predict higher reduced sense of accomplishment. It is intuitive that demanding perfect performances from one's self may increase negative evaluations of personal sporting abilities and achievements. Moreover, this relationship has previously been hypothesised by others based on the notion that self-oriented perfectionism is a vulnerability factor for psychological difficulties (Flett & Hewitt, 2005; Hill et al., 2008). However, this is the first-time research has found this dimension of perfectionism to positively predict any burnout symptom in athletes, with most research highlighting a negative or non-significant relationship (e.g. Appleton & Hill, 2012). It therefore suggests that focusing on specific aspects of sport, like performance, may be important in revealing this relationship. This may be because performance carries especial importance, and when success is defined as flawlessness and perfection, athletes will experience considerably more psychological difficulty than if perfectionism is directed to less important or more inconsequential aspects of sport.

Coach performance perfectionism

The present study provides the first evidence that perceived coach performance perfectionism is important for athlete burnout. The study substantiates previous research that has found that other people such as coaches are important to athlete burnout (e.g. Gould et al., 1996; Pacewicz, Mellano, & Smith, 2019; Udry,

Gould, Bridges, & Tuffey, 1997), as well as research that has found perceived perfectionistic pressure from coaches is positively related to athlete burnout (Gotwals, 2011). In Smith's (1986) model, coaches are an importance source of external demands and available resources, contributing to the sense that one is able or unable to cope with the stressors they encounter. Our findings suggest that the perceived perfectionistic qualities of the coach may be part of this process and can provide further insight into the likelihood of athlete burnout. By extension, we provide initial but important evidence that the perfectionism-burnout relationship should not only include dimensions attributed to the athlete themselves but also the perceived perfectionistic qualities of their coach.

Perceived coach other-oriented performance perfectionism explained additional variance and predicted total burnout, emotional and physical exhaustion, and sport devaluation. While previous athlete burnout research has typically ignored the role of other-oriented perfectionism, we found it to be important when examined as a perceived quality of the coach. While many coaches will have high expectations for their athletes, perceptions of other-oriented performance perfectionism in a coach corresponds to unrealistic expectations and excessive criticism. Moreover, research outside of sport suggests that such coaches may be perceived to be unsupportive, unemphatic, and generally uninterested in the athlete (Stoeber, 2014). One can expect these perceptions to be an important factor in the experience of burnout, as well as for the overall experience that athletes have in sport.

When reflecting on the findings, it is interesting to consider the degree to which perceived coach other-oriented performance perfectionism is separate from athlete socially prescribed perfectionism. There is clearly overlap between perceiving a coach demands perfection from others ("My coach is never satisfied with the performance of others") and perceiving that others expect you to be perfect ("People always expect my performances to be perfect"). This was evident for total burnout where, once added to the regression, perceived coach other-oriented performance perfectionism explained variance previously accounted for by athlete socially prescribed performance perfectionism. However, the two are not synonymous which can be demonstrated by psychometric (see footnote 1), conceptual, and predictive evidence. Perfectionistic demands experienced by athletes can include an array of specific others and not just the coach (e.g. parents and teammates). This can be seen in the regression for exhaustion where athlete socially prescribed performance perfectionism remained a predictor even after controlling for perceived coach other-oriented perfectionism or for sports devaluation where perceived coach other-oriented perfectionism was the only predictor. Taken together, it appears that the perceptions of what a coach expects of others and what athletes report others expect of them can be distinguished and both are useful in predicting burnout.

Applied implications

The findings have a number of applied implications. Importantly, the findings highlight that practitioners will need to differentiate between the different irrational beliefs athletes may hold; self-imposed perfectionistic performance standards ("I am tough on myself when I do not perform perfectly"), socially prescribed perfectionistic performance standards ("People always expect my performances to be perfect"), and other-oriented performance standards ("I am never satisfied with the performances of others")–with the former two a key focus of preventing athlete burnout. Mirroring research outside of sport, initial evidence indicates that activities based on cognitive behavioural therapy (CBT) can be effective in challenging such perfectionistic beliefs, particularly socially prescribed perfectionism (Donachie & Hill, 2020). Other interventions with evidence for reducing perfectionism in athletes include mindfulness and self-compassion (De Petrillo, Kaufman, Glass, & Arnkoff, 2009; Mosewich, Crocker, Kowalski, & DeLongis, 2013). With this evidence in mind, these interventions may be useful in reducing perfectionism fuelled burnout in athletes.

Addressing perceptions of the perfectionistic qualities of the coach is more difficult. As discussed above, perceptions could reflect irrational personal beliefs indicative of athlete socially prescribed perfectionism. In which case, by targeting irrational socially prescribed beliefs, perceptions of the coach could also be addressed. However, perceptions may also reflect an accurate assessment of the coach's personality or behaviours, in which case these interventions would be ineffective. Instead, interventions would need to focus on working with coaches to address their perfectionism, particularly other-oriented perfectionism. Other interventions might also focus on working with both coaches and athletes to help foster a more positive relationship. A positive coach-athlete relationship, for example, has recently been found to be negatively related to athlete burnout (e.g. McGee & DeFreese, 2019), with other work showing that factors such as enhancing communication, conflict management, and other-efficacy are key to promoting and maintaining a quality relationship (e.g. Davis, Jowett, & Tafvelin, 2019;

Jackson, Grove, & Beauchamp, 2010; Rhind & Jowett, 2012). We therefore suggest that improving the coach-athlete relationship may be a further way of reducing the negative effects of perfectionism in coaches.

Limitations and future research

The present study has several limitations. First, the present study is not able to provide evidence for temporal precedence or causality. Future research should adopt longitudinal designs to enable researchers to better identify the causal directions of relationships examined (e.g. Madigan, Stoeber, & Passfield, 2015). Second, the regression analysis explained smaller amounts of the variance in some aspects of burnout and alludes to other more important predictive factors. We note that beyond the coach, the perfectionism of other important social agents was not considered. Future research would benefit from examining the perfectionism of others such as teammates and parents alongside coaches which may improve predictive ability of the models. Third, the present study measured athletes' perceptions of coach perfectionism rather than coach-reported perfectionism. Therefore, we do not know the degree to which these perceptions are realised within the coaches themselves. Future research should examine actual (self-reported) perfectionism from the coaches themselves to examine how veridical athlete's perceptions are and the contributions of actual and perceived coach perfectionism to athlete burnout. Finally, in assessing the psychometric properties of our amended scale designed to assess perceptions of coach perfectionism, we found that perceived coach self-oriented performance perfectionism and socially prescribed performance perfectionism could not reliably be discerned by athletes. As a consequence, we could not assess the incremental predictive ability of these two dimensions of perfectionism. Additional research is required to create a valid measure to successfully capture these perceptions and determine their effects or ascertain if athletes are simply unable to distinguish between the two.

Conclusion

The present findings suggest that both athlete and perceived coach performance perfectionism positively predict athlete burnout. In doing so, we provide evidence for the importance of taking the perceived qualities of the coach into account when examining the perfectionism-burnout relationship. Athletes may experience burnout not only because of their own perfectionism but also because they believe their coach expects and demands them to perform perfectly.

Note

1. Noting the similarities between perceived coach other-oriented perfectionism and athlete socially prescribed perfectionism, we explored their overlap statistically. An ESEM on the two dimensions (χ^2 [13] = 19.60, p = .11, χ^2 /df = 1.83, CFI = .98, TLI = .97, SRMR = .03, RMSEA = .05, 90% CI .000, .097) provided evidence that the two are distinct with all items loading meaningfully on the intended factor with no meaningful cross-loadings (> .30 was considered meaningful; Kidder & Judd, 1986).

Disclosure statement

No potential conflict of interest was reported by the author(s).

References

Appleton, P. R., Hall, H. K., & Hill, A. P. (2010). Family patterns of perfectionism: An examination of elite junior athletes and their parents. *Psychology of Sport and Exercise*, *11*(5), 363–371.

Appleton, P. R., & Hill, A. P. (2012). Perfectionism and athlete burnout in junior elite athletes: The mediating role of motivation regulations. *Journal of Clinical Sport Psychology*, *6*(2), 129–145.

Carter, M. M., & Weissbrod, C. S. (2011). Gender differences in the relationship between competitiveness and adjustment among athletically identified college students. *Psychology*, *2*(2), 85–90.

Cresswell, S. L., & Eklund, R. C. (2006). The nature of player burnout in rugby: Key characteristics and attributions. *Journal of Applied Sport Psychology*, *18*(3), 219–239.

Curran, T., Hill, A. P., Jowett, G. E., & Mallinson-Howard, S. H. (2014). The relationship between multidimensional perfectionism and passion in junior athletes. *International Journal of Sport Psychology*, *45*(4), 369–384.

Davis, L., Jowett, S., & Tafvelin, S. (2019). Communication strategies: The fuel for quality coach-athlete relationships and athlete satisfaction. *Frontiers in Psychology*, *10*, 2156.

DeFreese, J. D., & Smith, A. L. (2014). Athlete social support, negative social interactions, and psychological health across a competitive sport season. *Journal of Sport and Exercise Psychology*, *36*(6), 619–630.

De Petrillo, L. A., Kaufman, K. A., Glass, C. R., & Arnkoff, D. B. (2009). Mindfulness for long-distance runners: An open trial using mindful sport performance enhancement (MSPE). *Journal of Clinical Sport Psychology*, *3*(4), 357–376.

Donachie, T. C., & Hill, A. P. (2020). Helping soccer players help themselves: Effectiveness of a psychoeducational book in reducing perfectionism. *Journal of Applied Sport Psychology*. doi:10.1080/10413200.2020.1819472

Dunn, J. G., Gotwals, J. K., & Dunn, J. C. (2005). An examination of the domain specificity of perfectionism among intercollegiate student-athletes. *Personality and Individual Differences*, *38*(6), 1439–1448.

Eklund, R. C., & DeFreese, J. D. (2020). Athlete burnout. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (pp. 1220–1240). New York, NY: John Wiley & Sons.

Flett, G. L., & Hewitt, P. L. (2005). The perils of perfectionism in sports and exercise. *Current Directions in Psychological Science*, *14*, 14–18.

Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research*, *14*(5), 449–468.

Gotwals, J. K. (2011). Perfectionism and burnout within intercollegiate sport: A person-oriented approach. *The Sport Psychologist*, *25*(4), 489–510.

Gould, D., Tuffey, S., Udry, E., & Loehr, J. (1996). Burnout in competitive junior tennis players: II. Qualitative analysis. *The Sport Psychologist*, *10*(4), 341–366.

Graham, J. W., Cumsille, P. E., & Elek-Fisk, E. (2003). Methods for handling missing data. In J. A. Schinka & W. F. Velicer (Eds.), *Handbook of psychology: Research methods in psychology* (Vol. 2, pp. 87–114). New York, NY: Wiley.

Granz, H. L., Schnell, A., Mayer, J., & Thiel, A. (2019). Risk profiles for athlete burnout in adolescent elite athletes: A classification analysis. *Psychology of Sport and Exercise*, *41*, 130–141.

Grugan, M. C., Jowett, G. E., Mallinson-Howard, S. H., & Hall, H. K. (2020). The relationships between perfectionism, angry reactions, and antisocial behavior in team sport. *Sport, Exercise, and Performance Psychology*, *9*(4), 543–557.

Gustafsson, H., Hassmén, P., Kenttä, G., & Johansson, M. (2008). A qualitative analysis of burnout in elite Swedish athletes. *Psychology of Sport and Exercise*, *9*(6), 800–816.

Gustafsson, H., Madigan, D. J., & Lundkvist, E. (2017). Burnout in athletes. In R. Fuchs & M. Gerber (Eds.), *Handbuch stressregulation und sport* (pp. 489–504). Berlin: Springer.

Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: Conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology*, *60*(3), 456–470.

Hill, A. P., Appleton, P. R., & Mallinson, S. H. (2016). Development and initial validation of the Performance Perfectionism Scale for Sport (PPS-S). *Journal of Psychoeducational Assessment*, *34*(7), 653–669.

Hill, A. P., & Curran, T. (2016). Multidimensional perfectionism and burnout: A meta-analysis. *Personality and Social Psychology Review*, *20*(3), 269–288.

Hill, A. P., Hall, H. K., & Appleton, P. R. (2010). Perfectionism and athlete burnout in junior elite athletes: The mediating role of coping tendencies. *Anxiety, Stress, & Coping*, *23*(4), 415–430.

Hill, A. P., Hall, H. K., Appleton, P. R., & Kozub, S. A. (2008). Perfectionism and burnout in junior elite soccer players: The mediating influence of unconditional self-acceptance. *Psychology of Sport and Exercise*, *9*(5), 630–644.

Hill, A. P., Stoeber, J., Brown, A., & Appleton, P. R. (2014). Team perfectionism and team performance: A prospective study. *Journal of Sport and Exercise Psychology*, *36*(3), 303–315.

Hill, A. P., Witcher, C. S., Gotwals, J. K., & Leyland, A. F. (2015). A qualitative study of perfectionism among self-identified perfectionists in sport and the performing arts. *Sport, Exercise, and Performance Psychology*, *4*(4), 237–253.

Isoard-Gautheur, S., Trouilloud, D., Gustafsson, H., & Guillet-Descas, E. (2016). Associations between the perceived quality of the coach–athlete relationship and athlete burnout: An examination of the mediating role of achievement goals. *Psychology of Sport and Exercise*, *22*, 210–217.

Jackson, B., Grove, J. R., & Beauchamp, M. R. (2010). Relational efficacy beliefs and relationship quality within coach-athlete dyads. *Journal of Social and Personal Relationships*, *27*(8), 1035–1050.

Kidder, L., & Judd, C. (1986). *Research methods in social science*. New York, NY: CBS College Publishing.

Leiter, M. P., & Maslach, C. (1988). The impact of interpersonal environment on burnout and organizational commitment. *Journal of Organizational Behavior*, *9*(4), 297–308.

Lu, F. J., Lee, W. P., Chang, Y. K., Chou, C. C., Hsu, Y. W., Lin, J. H., & Gill, D. L. (2016). Interaction of athletes' resilience and coaches' social support on the stress-burnout relationship: A conjunctive moderation perspective. *Psychology of Sport and Exercise*, *22*, 202–209.

Madigan, D. J., Stoeber, J., & Passfield, L. (2015). Perfectionism and burnout in junior athletes: A three-month longitudinal study. *Journal of Sport and Exercise Psychology*, *37*, 305–315.

Marsh, H. W., Hau, K. T., & Wen, Z. L. (2004). In search of golden rules: Comment on approaches to setting cutoff values for fit indexes and dangers in overgeneralising Hu & Bentler (1999) findings. *Structural Equation Modeling: A Multidisciplinary Journal*, *11*, 320–341.

McGee, V., & DeFreese, J. D. (2019). The coach-athlete relationship and athlete psychological outcomes. *Journal of Clinical Sport Psychology*, *13*(1), 152–174.

Mosewich, A. D., Crocker, P. R., Kowalski, K. C., & DeLongis, A. (2013). Applying self-compassion in sport: An intervention with women athletes. *Journal of Sport and Exercise Psychology*, *35*(5), 514–524.

Muthén, L. K., & Muthén, B. O. (2005). *Mplus: Statistical analysis with latent variables: User's guide (pp. 1998–2012)*. Los Angeles: Muthén & Muthén.

Pacewicz, C. E., Mellano, K. T., & Smith, A. L. (2019). A meta-analytic review of the relationship between social constructs and athlete burnout. *Psychology of Sport and Exercise*, *43*, 155–164.

Price, M. S., & Weiss, M. R. (2000). Relationships among coach burnout, coach behaviors, and athletes' psychological responses. *The Sport Psychologist*, *14*(4), 391–409.

Raedeke, T. D. (1997). Is athlete burnout more than just stress? A sport commitment perspective. *Journal of Sport and Exercise Psychology*, *19*(4), 396–417.

Raedeke, T. D., & Smith, A. L. (2001). Development and preliminary validation of an athlete burnout measure. *Journal of Sport and Exercise Psychology*, *23*(4), 281–306.

Rhemtulla, M., Brosseau-Liard, PÉ, & Savalei, V. (2012). When can categorical variables be treated as continuous? A comparison of robust continuous and categorical SEM estimation methods under suboptimal conditions. *Psychological Methods*, *17*(3), 354–373.

Rhind, D. J., & Jowett, S. (2012). Development of the coach-athlete relationship maintenance questionnaire (CARM-Q). *International Journal of Sports Science & Coaching*, *7*(1), 121–137.

Satorra, A., & Bentler, P. M. (2001). A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika*, *66*(4), 507–514.

Smith, A. L., Pacewicz, C. E., & Raedeke, T. D. (2019). Athlete burnout in competitive sport. In T. S. Horn & A. L. Smith (Eds.), *Advances in sport and exercise psychology* (4th ed., pp. 409–424). Champaign, IL: Human Kinetics.

Smith, E. P., Hill, A. P., & Hall, H. K. (2018). Perfectionism, burnout and depressive symptoms in youth soccer players: A longitudinal study. *Journal of Clinical Sport Psychology*, *12*, 179–200.

Smith, R. E. (1986). Toward a cognitive-affective model of athletic burnout. *Journal of Sport Psychology*, *8*(1), 36–50.

Stoeber, J. (2014). How other-oriented perfectionism differs from self-oriented and socially prescribed perfectionism. *Journal of Psychopathology and Behavioral Assessment*, *36* (2), 329–338.

Stoeber, J., Otto, K., & Stoll, O. (2006). Multidimensional Inventory of Perfectionism (MIPS): English version. Unpublished manuscript, School of Psychology, University of Kent, UK. https:// kar.kent.ac.uk/41560/

Stoeber, J., & Stoeber, F. S. (2009). Domains of perfectionism: Prevalence and relationships with perfectionism, gender, age, and satisfaction with life. *Personality and Individual Differences*, *46*(4), 530–535.

Tabachnick, B. G., & Fidell, L. S. (2014). *Using multivariate statistics* (6th ed). Essex, UK: Pearson Education Limited.

Udry, E., Gould, D., Bridges, D., & Tuffey, S. (1997). People helping people? Examining the social ties of athletes coping with burnout and injury stress. *Journal of Sport and Exercise Psychology*, *19*(4), 368–395.