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<https://orcid.org/0000-0001-6370-8901> and Appleton, Paul R. (2011) The predictive ability of the frequency of perfectionistic cognitions, self-oriented perfectionism, and socially prescribed perfectionism in relation to symptoms of burnout in youth rugby players. *Journal of Sports Sciences*, 29 (7). 695 - 703.

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1 Hill, A. P. & Appleton, P. R. (2011). The predictive ability of the frequency of
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Sports Sciences*, 29, 695-703.

4
5 The predictive ability of the frequency of perfectionistic cognitions, self-oriented
6 perfectionism, and socially prescribed perfectionism in relation to symptoms of
7 burnout in youth rugby players

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13 Running head: Perfectionism and Athlete Burnout

14 Keywords: motivation, achievement, athletics.

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1 Abstract

2 Perfectionism has been identified as an antecedent of athlete burnout.
3 However, to date, researchers examining the relationship between perfectionism
4 and athlete burnout have measured perfectionism at a trait level. The work of Flett
5 and colleagues (Flett, Hewitt, Blankstein, & Gray, 1998) suggests that
6 perfectionism can also be assessed in terms of individual differences in the
7 frequency with which they experience perfectionistic cognitions. The purpose of
8 this investigation was to: (i) examine the relationship between the frequency of
9 perfectionistic cognitions and symptoms of athlete burnout; and (ii) examine
10 whether the frequency of perfectionistic cognitions account for additional unique
11 variance in symptoms of athlete burnout above the variance accounted for by self-
12 oriented and socially prescribed dimensions of perfectionism. Two-hundred and
13 two male rugby players (age $M = 18.81$, $SD 2.87$, range 16-24) were recruited
14 from youth teams of professional and semi-professional rugby union clubs in the
15 UK. Participants completed measures of trait perfectionism, frequency of
16 perfectionistic cognitions and symptoms of athlete burnout. The frequency of
17 perfectionistic cognitions was positively related to all symptoms of athlete
18 burnout and explained 3-4% unique variance in symptoms of athlete burnout after
19 controlling for self-oriented and socially prescribed dimensions of perfectionism.
20 Findings suggest that the frequency with which perfectionistic cognitions are
21 experienced may also be an antecedent of athlete burnout. Perfectionistic
22 cognitions should, therefore, be considered in both future models of the
23 relationship between perfectionism and athlete burnout, as well as interventions
24 aimed at reducing perfectionism fuelled burnout.

1 Introduction

2 Striving and competing in elite sport requires extraordinary levels of
3 dedication and physically demanding training. However, researchers have
4 suggested that while high levels of investment are necessary, it may also render
5 some athletes susceptible to the development of burnout (Gustafsson, Hassmen,
6 Kentta, & Johansson, 2007). Burnout is a syndrome comprising three core
7 symptoms. The first symptom is an enduring depletion of emotional and physical
8 resources beyond that associated with routine practice and competition. The
9 second symptom is a sense of reduced accomplishment in terms of sport abilities
10 and achievement that develops regardless of objective success. The third symptom
11 is the eventual devaluation of ones participation in sport (Raedeke & Smith,
12 2001). Research suggests that these symptoms are associated with a number of
13 aversive consequences for athletes that include performance decrements,
14 emotional difficulties and potential dropout (Cresswell & Eklund, 2006a;
15 Goodger, Gorely, Lavalley, & Harwood, 2007). Consequently, the costs of
16 burnout may be substantial in terms of both the psychological welfare of athletes
17 and unfulfilled athletic potential (Feigley, 1984).

18 There are currently a number of theoretical explanations for the
19 development of athlete burnout (see Cresswell & Eklund, 2006b). To date,
20 Smith's (1986) cognitive-affective model has received the greatest attention and
21 empirical support. According to this model, burnout is the product of chronic
22 stress that arises as a consequence of an appraisal process in which demands are
23 continually considered to outweigh personal resources. For athletes, the
24 experience of burnout is an intensely emotional time as they must cope with the

1 realisation that, despite heavy investment, they may fall short of the personal
2 goals that energise their involvement (Cresswell & Eklund, 2006a; Gould, 1996;
3 Gustafsson et al., 2007). Personality factors are considered to be important in
4 Smith's stress-based model because they influence the appraisal process by giving
5 meaning to personal failure (Smith, 1986; Lazarus & Folkman, 1984).

6 Perfectionism is a personality factor broadly defined as a combination of a
7 commitment to exceedingly high standards and evaluative concerns (Frost,
8 Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). Unlike more adaptive
9 achievement related personality factors (e.g., conscientiousness), the achievement
10 striving energised by perfectionism is purported to include both approach and
11 avoidance motives, as well as self-critical tendencies (Blatt, 1995). This complex
12 mix is believed to reflect a conditional sense of acceptance and the desire to
13 validate a sense of self-worth (Burns, 1980; Greenspon, 2000; Hollander, 1965).
14 As described here, perfectionism is a potent energising force but ultimately
15 provides the basis for substantial psychological difficulties if achievement striving
16 is unsuccessful. It is for these reasons that a number of sport psychologists
17 suggested some time ago that perfectionism may be an especially important
18 personality factor when identifying athletes who are at risk to burnout (e.g., Dale
19 & Weinberg, 1990; Feigley, 1984; Gould, Tuffey, Udry, & Loehr, 1996a).
20 However, it is only recently that the perfectionism-athlete burnout relationship has
21 received systematic attention.

22 There are currently a number of approaches to the conceptualisation and
23 measurement of perfectionism (e.g., Frost, et al., 1990; Hewitt & Flett, 1991;
24 Slade & Owens, 1998). However, researchers have suggested that these models

1 typically include dimensions of perfectionism that measure either a commitment
2 to exceptionally high standards or evaluative concerns (e.g., Frost, Heimberg,
3 Holt, Mattia, & Neubauer, 1993). Researchers examining the consequences of
4 perfectionism for athletes have generally found that, when considered in isolation,
5 dimensions assessing a commitment to exceptionally high standards (e.g., high
6 personal standards and perfectionistic striving) are associated with positive
7 consequences, whereas dimensions assessing evaluative concerns (e.g., concern
8 over mistakes, perceived parental and coach pressure) are associated with negative
9 consequences (see Stoeber & Otto, 2006). Some of these consequences are
10 indicative of an adverse influence of trait dimensions of perfectionism on the
11 appraisal process and the potential for perfectionism to contribute to the
12 development of burnout in the manner described by Smith (1986). This includes
13 the experience of higher levels of anxiety at various points in the performance
14 process (e.g., Frost & Henderson, 1991; Hall, Kerr, & Matthews, 1998; Mor, Day,
15 Flett, & Hewitt, 1995), as well as poorer coping tendencies (Gaudreau, & Antl,
16 2008).

17 Researchers also suggest that a distinction can be made between
18 dimensions of perfectionism that assess commitment to exceptionally high
19 standards and those that assess evaluative concerns in terms of their relationship
20 with symptoms of athlete burnout (Chen, Kee, Chen, & Tsai, 2008; Chen, Kee, &
21 Tsai, 2009; Gould et al., 1996a). Adopting an approach developed by Hewitt and
22 Flett (1991), research by Hill and colleagues (Hill, Hall, & Appleton, 2010; Hill,
23 Hall, Appleton, & Kozub, 2008; Hill, Hall, Appleton, & Murray, 2010) has, for
24 example, found that socially prescribed perfectionism, the desire for validation

1 through the attainment of lofty external standards, and a component of evaluative
2 concerns, is positively related to symptoms of burnout. In contrast, self-oriented
3 perfectionism, the tendency to set high personal goals and engage in self-
4 criticism, and a component of a commitment to exceptionally high standards, is
5 inversely related to symptoms of burnout. The findings of this research suggest
6 that self-oriented and socially prescribed perfectionism may be useful when
7 examining the relationship between multidimensional perfectionism and athlete
8 burnout. There is also further justification for adopting this approach. Specifically,
9 researchers suggest that these dimensions are influential variables in stress related
10 processes (see Hewitt & Flett, 2002) and therefore have clear theoretical links to
11 burnout (see Hill et al., 2008). In addition, these dimensions appear to encapsulate
12 the perceived (socially prescribed perfectionism) and self-imposed pressure (self-
13 oriented perfectionism) reported by athletes who have experienced burnout
14 (Gould, Tuffey, Udry, & Loehr, 1996b; Gustafsson et al., 2007).

15 To date, researchers examining the relationship between these and other
16 dimensions of perfectionism with athlete burnout has measured perfectionism at a
17 trait level. The work of Flett and colleagues (Flett et al., 1998) suggests, however,
18 that perfectionism can also be assessed in terms of individual differences in the
19 frequency with which they experience perfectionistic cognitions which have a
20 larger state component. Perfectionistic cognitions are automatic thoughts and
21 images involving the need to be perfect (Flett et al., 1998). They are indicative of
22 a preoccupation with the attainment of perfection and the regularity with which
23 individuals engage in self-evaluation against an ideal, perfect self (Flett et al.,
24 1998; Hewitt & Genest, 1990). According to self-regulatory models (e.g., Carver

1 & Scheier, 1990; Martin & Tesser, 1996; Pyszczynski & Greenberg, 1987), under
2 normal circumstances such self-focused attention serves an adaptive regulatory
3 function that aids achievement striving. However, because perfectionism entails a
4 focus on unobtainable goals that are tied to a sense of self-worth, perfectionistic
5 cognitions are characterised by emotional turmoil and intrusive negative
6 cognitions focused on personal inadequacies (Flett et al., 1998).

7 The research area of perfectionistic cognitions has received some attention
8 outside of sport. Along with a strong association with trait dimensions of
9 perfectionism, this research has found that the frequency of perfectionistic
10 cognitions are associated with higher levels of anxiety, anger, self-criticism,
11 negative forms of cognitive-emotion coping and deficits in positive forms of
12 cognitive-emotion coping (Ferrari, 1995; Flett, Madorsky, Hewitt, & Heisel,
13 2002; Flett et al., 1998; Flett, Greene, & Hewitt, 2004; Rudolph, Flett, & Hewitt,
14 2007). Critically, researchers suggest that the frequency of perfectionistic
15 cognitions warrant consideration in the perfectionism-distress relationship
16 alongside trait dimensions of perfectionism. Specifically, Flett and colleagues
17 (Flett et al., 1998; Flett, Hewitt, Whelan, & Martin, 2007) found that the
18 frequency of perfectionistic cognitions explain additional variance in anxiety and
19 depression after controlling for trait dimensions of perfectionism.

20 There have been comparatively few attempts to directly examine the
21 experience of perfectionistic cognitions in athletes. Early research in this area
22 suggests, however, that higher levels of trait perfectionism in athletes may
23 encourage an aversive cognitive preoccupation with the attainment of perfection
24 in terms of their performance. Frost and Henderson (1991), for example, found

1 that higher levels of trait perfectionism (concern over mistakes and personal
2 standards) were positively associated with dreams of perfection, difficulty
3 forgetting mistakes, and the frequency of recurring images of mistakes once they
4 occurred during competition. It is possible that the frequency of perfectionistic
5 cognitions may contribute to burnout symptoms by maintaining and intensifying
6 such negative experiences. Although perfectionistic cognitions are a more state-
7 like manifestation of perfectionism, they are also considered to be a relatively
8 stable feature of the cognitive experience associated with perfectionism (Flett et
9 al., 1998). Consequently, the frequency of perfectionistic cognitions may be a
10 source of chronic stress, which according to Smith (1986) is the primary cause of
11 athlete burnout.

12 In addition to being a predictor of higher levels of burnout, the frequency
13 of perfectionistic cognitions may also predict variance in symptoms of athlete
14 burnout above that explained by trait dimensions of perfectionism. The
15 incremental predictive ability, or incremental validity (Hunsley & Meyer, 2002),
16 of the frequency of perfectionistic cognitions is important in terms of justifying its
17 inclusion in models of the perfectionism-burnout relationship. It may also be
18 important in terms of the development of interventions aimed at managing the
19 perfectionism in athletes. If the frequency of perfectionistic cognitions predicts
20 additional unique variance in symptoms of burnout, it would suggest that targeting
21 the experience of perfectionistic cognitions is a necessary additional strategy,
22 alongside a focus on trait perfectionism, when attempting to prevent perfectionism
23 fuelled burnout (Flett et al., 2007). Alternatively, the frequency of perfectionistic

1 cognitions may be a cognitive manifestation of perfectionism subsumed by trait
2 perfectionism and redundant in terms of the prediction of burnout symptoms.

3 In this investigation, we aim to: (i) examine the relationship between the
4 frequency of perfectionistic cognitions and symptoms of athlete burnout; and (ii)
5 examine whether the frequency of perfectionistic cognitions account for additional
6 unique variance in symptoms of athlete burnout above the variance accounted for
7 by self-oriented and socially prescribed dimensions of perfectionism. In doing so,
8 we aim to identify whether the frequency of perfectionistic cognitions is a useful
9 addition to the perfectionism-burnout relationship. Based on the preceding
10 argument, it was hypothesised that the frequency of perfectionistic cognitions
11 would be a positive predictor of all symptoms of athlete burnout and would also
12 predict additional variance in athlete burnout above that explained by self-oriented
13 and socially prescribed dimensions of perfectionism.

14 Method

15 Participants

16 Participants were 202 male rugby union players (age $M = 18.81$, $SD 2.87$,
17 range 16-24) recruited from youth teams of professional and semi-professional
18 rugby union clubs in the UK. The mean number of years participating in rugby
19 was 8.80 years ($SD = 3.76$) and had been at their club for 3.54 years ($SD = 3.49$).
20 Participants also reported that in comparison to other activities they engaged in,
21 their participation in rugby was very important ($M = 8.18$, $SD = 1.00$) on a nine-
22 point Likert scale (1 = *not at all important* to 9 = *extremely important*).

23 Participants complete a multi-sectional questionnaire that contained measures of
24 symptoms of athlete burnout, self-oriented and socially prescribed perfectionism,

1 and perfectionistic cognitions prior to a training session. Informed consent was
2 gained from each participant prior to completion of the questionnaire.

3 Instruments

4 *Athlete Burnout.* Symptoms of athlete burnout were measured using
5 Raedeke and Smith's (2001) Athlete Burnout Questionnaire. This instrument
6 measures athlete burnout across three subscales; a reduced sense of athletic
7 accomplishment (e.g. "I am not performing up to my ability in my sport."),
8 perceived emotional and physical exhaustion (e.g. "I am exhausted by the mental
9 and physical demands of my sport."), and sport devaluation (e.g. "I don't care as
10 much about my sport performance as I used to."). Each subscale contains 5-items
11 and is scored on a five-point Likert scale (1 = *almost never* to 5 = *almost always*).
12 During validation of this scale Raedeke and Smith (2001) provided evidence to
13 support the validity and reliability of measurement associated with the scale. This
14 included sufficient internal consistency ($\alpha = \text{RA } .84$, $\alpha = \text{E } .89$ and $\alpha = \text{D } .89$) and
15 test-retest reliability ($r = \text{RA } .86$, $r = \text{E } .92$ and $r = \text{D } .92$). The internal
16 reliabilities for these scales, and others used in the current study, are presented in
17 Table 1.

18 *Multidimensional Perfectionism:* Self-oriented (SOP) and socially
19 prescribed perfectionism (SPP) were measured using Hewitt and Flett's (1991)
20 Multidimensional Perfectionism Scale (HMPS). Responses on the self-oriented
21 perfectionism subscale reflect excessive striving for high personal standards and
22 self-critical tendencies (e.g., "I must always be successful in activities that are
23 important to me."). In contrast, responses to the socially prescribed perfectionism
24 subscale reflect the belief that significant others have exceedingly high standards

1 and that acceptance is based on the attainment of those standards (e.g., “The
2 people around me expect me to succeed at everything I do.”). The two subscales
3 of the MPS each contain 15-items measured on a seven-point Likert scale (1 =
4 *strongly disagree* to 7 = *strongly agree*). The stem of the instrument was adapted
5 to focus the athletes on their participation in sport (“Listed below are a number of
6 statements concerning how you view your participation in rugby...”). Evidence to
7 support the validity and reliability of the scale has been provided by Hewitt and
8 Flett (1991, 2004). For example, sufficient internal consistency ($\alpha = \text{SOP } .89$ and
9 $\alpha = \text{SPP } .86$) and test-retest reliability ($r = \text{SOP } .88$ and $r = \text{SPP } .75$) has
10 previously been reported in student and general samples. Recently, researchers
11 have suggested that this scale also has adequate psychometric properties when
12 used to measure these dimensions of perfectionism in athletes (e.g., Appleton,
13 Hall, & Hill, 2009; Hill et al., 2008).

14 *Perfectionistic cognitions:* The frequency of perfectionistic cognitions was
15 measured using Flett et al.’s (1998) Perfectionism Cognitions Inventory (PCI).
16 Responses reflect the frequency of the experience of ruminative cognitions
17 involving perfectionistic themes and the need to be perfect (e.g., “I should be
18 perfect.” “My performance should be flawless.”). The stem of the instrument was
19 adapted to focus the athletes on their participation in sport (“Please read each
20 thought and indicate with respect to your most recent performances in training and
21 matches how frequently, if at all, the thought occurred to you over the last week
22 or so.”). The scale contains 25-items and is scored on a five-point Likert scale (1
23 = *not at all* to 5 = *all the time*). Evidence to support the validity and reliability of
24 measurement associated with the scale has been provided by Flett et al. (1998).

1 These authors have reported both sufficient internal consistency ($\alpha = .94$) and test-
2 retest reliability of the scale (3-months $r = .67$).

3 Results

4 *Preliminary analysis*

5 Due to large amounts of missing data from individual respondents ($> 5\%$),
6 eight participants were removed from the sample. Once these values were
7 removed, there were 164 complete cases and 30 cases with incomplete data. For
8 those with incomplete data, the average percentage of missing values due to item
9 non-response was 1.60% ($SD = 0.52$, range = 1.40 to 2.90%). This percentage of
10 missing data is the equivalent of just over 1 item ($M = 1.13$, $SD = 0.35$, range 1 to
11 2). There were six unique patterns of missing data (participants with the same
12 single item not complete) that accounted for the missing data of 15 participants.
13 The other 15 participants had missing data in a pattern not shared with other
14 participants. The ratio of patterns of missing data to the number of participants
15 with missing data was = .70 (ratio includes unique and non-unique patterns of
16 missing data). Consequently, it was assumed that the mechanism that underpins
17 the missing data is likely to be a non-systematic. Given the low number of
18 missing items, each missing item was replaced using the mean of each case's
19 available non-missing items from the relevant subscale. This method of
20 imputation is considered to be an appropriate strategy when the amount of missing
21 data is low and items are highly correlated (Graham, Cumsille, & Elek-Fisk,
22 2003).

23 Next, internal reliability analysis (Cronbach's alpha) was performed on
24 each scale. Internal consistencies are displayed in Table 1. With the exception of

1 the socially prescribed perfectionism, all scales demonstrated sufficient internal
2 consistency (above 10 items $\alpha = >.70$, above 5 items $\alpha = >.60$; Loewenthal, 2001).
3 Based on inter-item correlations, 1 item was removed from the socially prescribed
4 perfectionism scale (“My parents rarely expect me to excel in all aspects of my
5 life.” – the word seldom was replaced with rarely from the original item). As a
6 result, the scale demonstrated adequate internal consistency ($\alpha = .71$).

7 Finally, measured variables (e.g., perfectionistic cognitions) were screened
8 for univariate outliers (see Tabachnick & Fidell, 2007). Standardised z-scores
9 larger than 3.29 ($p <.001$, two-tailed) were used as criteria for univariate outliers.
10 This procedure led to the removal of 2 participants. Apart from the sport
11 devaluation variable (skewness = 1.15, $SE = .18$, $zskew = 6.58$), variables were
12 considered to be approximately univariate normal (absolute skewness $M = 0.16$,
13 $SD = 0.13$, $SE = 0.18$, absolute kurtosis $M = 0.50$, $SD = 0.22$, $SE = 0.35$). The
14 sport devaluation variable was subsequently transformed using the guidelines
15 provided by Tabachnick and Fidell (2007). The transformed variable (-1/sport
16 devaluation) was no longer significantly skewed (skewness = -0.18, $SE = .18$,
17 $zskew = -1.01$) and had a large positive significant linear relationship with the
18 original variable ($r = .94$). This transformed variable was used in subsequent
19 analyses.

20 *Descriptive statistics and zero-order correlations*

21 The descriptive statistics are reported in Table 1. Participants reported
22 moderate-to-high levels of self-oriented perfectionism, moderate levels of socially
23 prescribed perfectionism (seven-point Likert scale), and moderate frequency of
24 perfectionistic cognitions (five-point Likert scale). The sample also reported

1 moderate-to-low levels across all symptoms of burnout (five-point Likert scale).
2 The mean values reported across these variables are of a similar magnitude to
3 those reported elsewhere in comparable athlete samples (e.g., see Lemyre, Hall, &
4 Roberts, 2008).

5 The zero-order correlations between dimensions of perfectionism, the
6 frequency of perfectionistic cognitions and symptoms of athlete burnout are also
7 reported in Table 1. Self-oriented perfectionism was negatively related to
8 emotional and physical exhaustion and sport devaluation, and unrelated to a
9 reduced sense of athletic accomplishment. Socially prescribed perfectionism was
10 positively related to all symptoms of athlete burnout. The frequency of
11 perfectionistic cognitions was positively related a reduced sense of
12 accomplishment and emotional and physical exhaustion but unrelated to sport
13 devaluation.

14 *Regression of symptoms of athlete burnout on trait perfectionism and the*
15 *frequency of perfectionistic cognitions*

16 The same analytical strategy utilised by Flett and colleagues (Flett et al.,
17 2007; Flett et al., 1998) when examining the incremental predictive ability of the
18 frequency of perfectionistic cognitions above depression and anxiety was
19 employed in the current study. Specifically, three hierarchical regression analyses
20 were used to assess whether perfectionistic cognitions explain additional variance
21 in symptoms of athlete burnout after controlling for the variance explained by
22 self-oriented and socially prescribed perfectionism. In each regression, a predictor
23 block consisting of self-oriented and socially prescribed perfectionism was
24 entered in step one. This procedure was followed by the frequency of

1 perfectionistic cognitions in step two. The contribution of the frequency of
2 perfectionistic cognitions was determined by examining the statistical significance
3 of the change in the variance accounted for in the criterion variable following its
4 entry in to step two. The results of these analyses are reported in Table 2.

5 The first hierarchical regression included reduced sense of athletic
6 accomplishment as the criterion variable. Self-oriented and socially prescribed
7 perfectionism accounted for 15% of variance in a reduced sense of
8 accomplishment, $F_{(2, 189)} = 16.27, p < .01$. Both dimensions of perfectionism were
9 significant individual predictors ($\beta = \text{SOP} -.17, p < .05$, and $\beta = \text{SPP} .37, p < .01$).
10 Entering the frequency of perfectionistic cognitions resulted in an additional 4%
11 of variance being explained in a reduced sense of accomplishment. This change
12 was statistically significant, $\Delta F_{(1, 188)} = 10.27, p < .01$.

13 The second hierarchical regression included emotional and physical
14 exhaustion as the criterion variable. Self-oriented and socially prescribed
15 perfectionism accounted for 13% of variance in a reduced sense of
16 accomplishment, $F_{(2, 189)} = 13.72, p < .01$. Both dimensions of perfectionism were
17 significant individual predictors ($\beta = \text{SOP} -.19, p < .01$, and $\beta = \text{SPP} .33, p < .01$).
18 Entering the frequency of perfectionistic cognitions resulted in an additional 3%
19 of variance being explained in emotional and physical exhaustion. This change
20 was statistically significant, $\Delta F_{(1, 188)} = 6.12, p < .05$.

21 The third hierarchical regression included sport devaluation as the
22 criterion variable. Self-oriented and socially prescribed perfectionism accounted
23 for 24% of variance in sport devaluation, $F_{(2, 189)} = 29.72, p < .01$. Both
24 dimensions of perfectionism were significant individual predictors ($\beta = \text{SOP} -.47,$

1 $p < .01$, and $\beta = \text{SPP} .19, p < .01$). Entering the frequency of perfectionistic
2 cognitions resulted in an additional 3% of variance being explained in sport
3 devaluation. This change was statistically significant, $\Delta F_{(1, 188)} = 7.71 (1, 188), p$
4 $< .01$. Following the introduction of the frequency of perfectionistic cognitions,
5 socially prescribed perfectionism was no longer a significant predictor of sport
6 devaluation ($\beta = .10, p > .05$).

7 Discussion

8 The aims of this investigation were: (i) to examine the relationship
9 between the frequency of perfectionistic cognitions and symptoms of athlete
10 burnout; and (ii) to examine whether the frequency of perfectionistic cognitions
11 account for additional unique variance in symptoms of athlete burnout above the
12 variance accounted for by self-oriented and socially prescribed dimensions of
13 perfectionism. It was hypothesised that the frequency of perfectionistic cognitions
14 would be positively related to all symptoms of athlete burnout and would predict
15 unique variance in athlete burnout above that explained by self-oriented and
16 socially prescribed perfectionism. The analyses partially supported these
17 hypotheses. The frequency of perfectionistic cognitions displayed a moderate
18 positive correlation with a reduced sense of athletic accomplishment and
19 emotional and physical exhaustion but was not related to sport devaluation. The
20 frequency of perfectionistic cognitions also explained 3-4% of unique variance in
21 symptoms of athlete burnout after controlling for self-oriented and socially
22 prescribed dimensions of perfectionism.

23 To date, researchers have focused on understanding the influence of trait
24 dimensions of perfectionism on athlete burnout. The current study provides initial

1 evidence that consideration of more state-like components of perfectionism may
2 further understanding of this relationship. Outside of sport, research has found
3 that the frequency of perfectionistic cognitions is associated with negative
4 affective experiences (e.g., Flett et al., 1998; Flett et al., 2004; Rudolph et al.,
5 2007). Although the frequency of perfectionistic cognitions has not been directly
6 examined in sport, based on their examination of trait dimensions of perfectionism
7 Frost and Henderson (1991) contended that perfectionism may entail a ruminative
8 cognitive style that is likely to undermine the achievement motivation of athletes
9 and foster negative feelings towards sport. The current findings support these
10 suggestions in that the frequency of automatic thoughts that reflect perfectionistic
11 themes was associated with the sports disaffection in the form of higher levels of
12 reduced sense of accomplishment and exhaustion.

13 It is not clear why the frequency of perfectionistic cognitions was
14 unrelated to sport devaluation at a bivariate level. It is possible that the frequency
15 of perfectionistic cognitions is not an antecedent of this symptom of athlete
16 burnout. Alternatively, this finding may be indicative of different temporal
17 processes that underpin symptoms of burnout (see Leiter & Maslach, 1988). The
18 results of the regression, in which the frequency of perfectionistic cognitions were
19 positively related to sport devaluation, highlight a further possibility. It may be
20 that the pattern of relationships between the frequency of perfectionistic
21 cognitions and trait dimensions of perfectionism (positive), and trait dimensions
22 of perfectionism and sport devaluation (both positive and negative), explain this
23 relationship. Specifically, this pattern of relations have the potential to result in a
24 near zero correlation between the frequency of perfectionistic cognitions and this

1 symptom (see MacKinnon, Krull, & Lockwood, 2000). In this case, the
2 relationship between the frequency of perfectionistic cognitions and devaluation
3 would only be revealed in the semi-partial correlations, when the relationship
4 between trait dimensions of perfectionism and the frequency of perfectionistic
5 cognitions are controlled.

6 As has been found in studies examining the incremental predictive ability
7 of the frequency of perfectionistic cognitions in relation to psychological distress
8 (Flett et al., 1998; Flett et al., 2007), the frequency of perfectionistic cognitions
9 explained variance in burnout symptoms after controlling for self-oriented and
10 socially prescribed perfectionism. Based on Cohen's (1992) guidelines, an
11 increase of 1-9% would be considered small-to-moderate. The predictive ability
12 of the frequency of perfectionistic cognitions above trait dimensions was therefore
13 small. However, the magnitude of the incremental variance is comparable to the
14 2-8% additional variance explained in anxiety and depression (Flett et al., 1998;
15 Flett et al., 2007). Moreover, as there is less variance to be explained in burnout
16 symptoms after controlling for trait dimensions, one would not expect large
17 amounts of additional variance to be explained (Hunsley & Meyer, 2003).

18 Overall, then, the findings are consistent with research in this area and support the
19 incremental validity of the frequency of perfectionistic cognitions.

20 Flett et al. (2007) have argued that the unique predictive ability of the
21 frequency of perfectionistic cognitions provide direct support for its inclusion in
22 intervention aimed at reducing the aversive consequences of perfectionism. The
23 current findings support these suggestions and indicate that targeting the
24 frequency of perfectionistic cognitions is also necessary to reduce perfectionism

1 fuelled burnout. It is noteworthy, however, that because of the influence of trait
2 dimensions of perfectionism on both burnout and perfectionistic cognitions,
3 moderating the frequency of perfectionistic cognitions is a strategy that should
4 augment, and not substitute, targeting trait dimensions of perfectionism. Solely
5 targeting the frequency of perfectionistic cognitions is unlikely to have a long-
6 term impact when the core beliefs underlying these thoughts remain intact.
7 Interventions aimed at reducing perfectionism-fuelled burnout must, therefore, be
8 inclusive of the interplay between both trait and more state-like components of
9 perfectionism (Flett et al., 2007).

10

11 The findings must be considered in context of the study's limitations. A
12 measure of other-oriented perfectionism was not included in the current study.
13 This was because this dimension is principally associated with inter-personal
14 difficulties, rather than personal maladjustment. It is for this reason that this
15 dimension has previously been excluded when considering the relationship
16 between trait perfectionism and athlete burnout. However, because of its
17 omission, in the current study we did not assess the incremental predictive ability
18 of perfectionistic cognitions across all trait dimensions of Hewitt and Flett's
19 (1991) model. In future researchers may wish to do so, as well as including other
20 trait measures of perfectionism (e.g., S-MPS-2; Gotwals & Dunn, 2008).

21 In order to obtain an acceptable level of internal reliability, an item from
22 the socially prescribed perfectionism subscale was removed. The correlation
23 between the original 15-item scale and the 14-item scale was extremely large ($r =$
24 .99). Consequently, the effect of the removal of this item is unlikely to be

1 substantial. However, it highlights that the psychometric properties of this
2 subscale requires examination in future research. The current findings are also
3 limited by the characteristics of the sample. In future researchers should,
4 therefore, examine the degree to which the observed relationships generalise to
5 other samples and contexts (e.g., gender and sport).

6 Finally, the incremental predictive ability of the frequency of
7 perfectionistic cognitions was small. Researchers should consider re-examining
8 the predictive ability of the frequency of perfectionistic cognitions alongside other
9 potentially important variables (e.g., negative affective experiences, general
10 rumination, etc.). Emerging theoretical models of stress and burnout may prove
11 useful in identifying these variables. For example, cognitive activation theory
12 (Ursin & Eriksen, 2004) and self-determination theory (Cresswell & Eklund,
13 2005) include a range of variables that may have additional predictive ability
14 (e.g., coping, psychological need thwarting). This type of research is required in
15 order to further establish the relative importance of the frequency of
16 perfectionistic cognitions as an adjunct to trait perfectionism when predicting
17 athlete burnout.

18 In conclusion, to date, researchers have focused on examining the
19 relationship between trait dimensions of perfectionism and athlete burnout. Our
20 findings indicate that the frequency of perfectionistic cognitions is an additional
21 feature of perfectionism that is positively related to burnout symptoms and
22 explains unique variance in these symptoms. As suggested by Flett et al. (2007),
23 the frequency of perfectionistic cognitions appears to provide additional unique
24 information about the cognitive characteristics of perfectionists that may be

1 important in terms of the outcomes of perfectionism independent of its trait
2 dimensions. The predictive ability of models of the relationship between trait
3 perfectionism and athlete burnout may therefore be enhanced by including the
4 frequency of perfectionistic cognitions. Finally, targeting the experience of
5 perfectionistic cognitions, in addition to trait perfectionism, may also be useful
6 additional focus of interventions aimed at managing athlete burnout that arises as
7 a consequence of perfectionism.

8

9 *Acknowledgements*

10 The authors would like to thank The Bedford Physical Education Old
11 Students' Association who provided funds for the data collection associated with
12 this project.

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Table 1 *Descriptive statistics, bivariate correlations, and internal reliability coefficients for dimensions of perfectionism, perfectionistic cognitions and symptoms of athlete burnout*

Variable	1	2	3	4	5	<i>M</i>	<i>SD</i>	α
1. Self-oriented perfectionism						5.06	0.77	.84
2. Socially prescribed perfectionism	-.12					3.59	0.61	.71
3. Perfectionistic cognitions	-.42**	-.47**				3.08	0.62	.91
4. Reduced sense of athletic accomplishment	-.12	-.35**	-.27**			2.39	0.62	.69
5. Emotional and physical exhaustion	-.15*	-.30**	-.21**	-.41**		2.15	0.73	.84
6. Sport devaluation	-.45**	-.14	-.03	-.48**	-.53**	1.65	0.71	.85

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

Table 2 *Hierarchical regression analyses with dimensions of perfectionism and perfectionistic cognitions predicting symptoms of athlete burnout*

Criterion Variable	Predictor variables	<i>F</i>	df	<i>R</i> ²	<i>R</i> ² change	β	<i>t</i>
<i>RA</i>							
Step 1	SOP	16.27**	2, 189	.15		-.17	-2.49**
	SPP					-.37	-5.40**
Step 2	SOP	14.81**	2, 188	.19	.04**	-.27	-3.65**
	SPP					-.26	-3.44**
	PCI					-.26	-3.21**
<i>E</i>							
Step 1	SOP	13.72**	2, 189	.13		-.19	-2.79***
	SPP					-.33	-4.74***
Step 2	SOP	11.66**	3, 188	.16	.03**	-.27	-3.66***
	SPP					-.23	-3.08***

	PCI					-0.22	-2.59***
<i>D</i>							
Step 1	SOP	29.72**	2,189	.24		-0.47	-7.41***
	SPP					-0.19	-3.03***
Step 2	SOP	23.09**	3,188	.27	.03**	-0.55	-8.01***
	SPP					-0.10	-1.46***
	PCI					-0.22	-2.78***

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