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Burnout in elite rugby: Relationships with basic psychological needs fulfilment

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Abstract

In this study, we examined the utility of self-determination theory (Ryan & Deci, 2002) as a framework for understanding the antecedents of athlete burnout in elite New Zealand rugby union players ($n = 133$). Perceptions of competence, autonomy, and relatedness (i.e. basic psychological needs) were hypothesized to be negatively related to burnout scores, while players classified as “high-burnouts” were predicted to report lower needs fulfilment than players with low burnout. Canonical correlation analysis indicated that relatedness was a low to moderate predictor of burnout, but players’ competence and autonomy accounted for substantial portions of variance in two athlete burnout symptoms: reduced accomplishment and sport devaluation. The proportion of variance accounted for in the exhaustion dimension of athlete burnout was not substantive. Multivariate analysis of variance supported these results, as “high-burnout” players had lower competence and autonomy scores than athletes reporting low burnout symptoms. The two groups did not report significantly different relatedness scores. Implications of these results for researchers and practitioners are discussed.

Keywords: *Basic psychological needs, autonomy, competence, relatedness, athlete burnout, exhaustion, devaluation, reduced sense of accomplishment, rugby union*

Introduction

I didn’t really want to play – no desire to play whatsoever, I didn’t want to turn up. [I would be] sitting there going “What am I doing here? It’s a beautiful sunny day, I could be out”. I started thinking about other things I could be doing, thinking about [travelling] overseas ... I found I was getting quite tired in games. I was rooted, physically knackered [i.e. exhausted]. I’d turn up to play and be rooted in the warm-up ... Your mental attitude ... it can cause a lot of lethargy and tiredness. (Quote from an “elite professional rugby player”; personal communication, 7 July 2004)

The above quote illustrates that for some elite athletes sport is a less than fulfilling experience as they struggle to find the desire and energy to continue to participate. Burnout in rugby has been the focus of considerable media attention in recent years, with players (e.g. BBC, 2002a; Dallaglio, 2005; McCaw, 2006), coaches (e.g. *Otago Daily*

Times, 2005a; Paul, 2004), and administrators (e.g. BBC, 2002b, 2002c; Donaldson, 2006; Majendie, 2005; *Otago Daily Times*, 2005b) expressing concern about the issue. Sport scientists have also viewed burnout as a potentially serious problem (e.g. Cresswell & Eklund, 2005a), and although there is limited empirical evidence on the topic, burnout in rugby has been hypothesized to result in concentration problems, mood swings, poor performance, and potential dropout from the sport (Cresswell & Eklund, 2006a).

Burnout may be especially relevant for elite players who must invest extraordinary amounts of time and effort to be successful (Baker, Cote, & Abernethy, 2003). However, despite research into athlete burnout in adolescent (e.g. Gould, Udry, Tuffey, & Loehr, 1996; Gustafsson, Kentta, Hassmen, & Lundqvist, 2007) and university athletes (e.g. Vealey, Armstrong, & Comar, 1998), until recently little research had examined burnout in adult *elite* athletes (Cresswell & Eklund, 2005a, 2005b, 2005c, 2007; Lemyre, Treasure, & Roberts, 2006).

Definition

Researchers in organizational psychology have defined burnout as a psychological syndrome characterized by “overwhelming exhaustion, feelings of cynicism and detachment from the job, and a sense of ineffectiveness and lack of accomplishment” (Maslach, Schaufeli & Leiter, 2000, p. 399). Raedeke (1997) adapted Maslach’s symptom-based definition and suggested that athlete burnout should be viewed as a syndrome characterized by (a) emotional and physical exhaustion, (b) sport devaluation, and (c) a reduced sense of accomplishment. Raedeke’s symptom-based definition allows for cases in which athletes are suffering from burnout symptoms, but have *not* discontinued their sport participation; plus burnout is not assumed to be caused solely by chronic stress (cf. Smith, 1986). Recent researchers in sport psychology (Cresswell & Eklund, 2005a, 2005b, 2005c; Price & Weiss, 2000; Raedeke & Smith, 2004) have adopted Raedeke’s (1997) conceptualization of athlete burnout and this definition was utilized in the current study.

Numerous empirical studies have examined the *antecedents* of burnout, such as perfectionism (Gould et al., 1996), parental pressure (Harlick & McKenzie, 2000), perceived stress (Raedeke & Smith, 2004; Smith, 1986), commitment (Raedeke, 1997), and motivation (Cresswell & Eklund, 2005a, 2005b, 2005c; Lemyre et al., 2006). The overarching aim of these studies has been to identify means by which athlete burnout can be prevented or at least minimized. However, some of this research has suffered from conceptual and theoretical limitations. For example, some research has lacked a strong theoretical framework from which to investigate possible antecedents of athlete burnout (e.g. Harlick & McKenzie, 2000). Consequently, there remains a need to test (e.g. Raedeke, 1997; Raedeke & Smith, 2004) theoretical frameworks that are an appropriate basis for research on the *antecedents* of athlete burnout.

Purpose

The general purpose of this study was to investigate a conceptual explanation of athlete burnout antecedents in elite rugby. Self-determination theory (Ryan & Deci, 2002) was employed to examine the motivational basis for athlete burnout in a sample of junior elite rugby players. It has been hypothesized that the “frustration” of basic psychological needs (autonomy, competence, relatedness) may represent the motivational basis for athlete burnout (Cresswell & Eklund, 2006a, 2007). However, recent athlete burnout research employing a self-determination theory framework (e.g. Cresswell & Eklund, 2005a,

2005b, 2005c; Lemyre et al., 2006) has focused solely on the relationship between behavioural regulations (motives) and burnout. Consequently, the psychological *needs*–athlete burnout relationship has yet to be examined empirically.

Self-determination theory and athlete burnout

Recent non-sport research has demonstrated the utility of self-determination theory (Ryan & Deci, 2000) in the explanation of states of well-being and ill-being. Self-determination theory (Ryan & Deci, 2002) proposes that humans have basic psychological needs for competence, autonomy, and relatedness that must be fulfilled in order to enjoy optimal well-being. In a sporting context, competence refers to a feeling that one has the ability and the opportunity to be effective in one’s sport. Feelings of autonomy indicate a perception of choice and self-directedness, while relatedness is defined as a sense of mutual caring and connectedness with others (e.g. teammates and coaches). According to Ryan and Deci (2000, 2002; Deci & Ryan, 2000a, 2000b), the extent to which these needs are fulfilled will determine the degree to which *positive* psychological consequences are experienced, while the extent to which these needs are frustrated (or thwarted) will determine the degree to which *negative* consequences are experienced (e.g. burnout). With respect to states of ill-being, Ryan and Deci (2000) concluded that “psychological-need deprivation appears to be a principal source of human distress” (p. 74).

Research in a variety of life domains and cultures has supported the predictions of self-determination theory regarding the importance of needs fulfilment. For example, needs fulfilment has been associated with higher self-esteem, higher task engagement, and lower anxiety in the workplace (Deci et al., 2001). Needs fulfilment has also been associated with higher emotional well-being (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000), as well as with more self-determined behavioural regulations in students (Vallerand, Fortier, & Guay, 1997) and employees (Richer, Blanchard, & Vallerand, 2002). Similarly, in sport basic needs fulfilment has been shown to predict positive outcomes such as subjective vitality (Reinboth & Duda, 2006; Reinboth, Duda, & Ntoumanis, 2004; Standage, Duda, & Pensgaard, 2005) and self-determined motivation (Hollembeak & Amorose, 2005; Sarrazin, Vallerand, Guillet, Pelletier, & Curry, 2002). Given the theoretical and empirical links between needs fulfilment and positive consequences, it was expected that athlete burnout would exhibit negative relationships with the fulfilment of autonomy, competence, and relatedness needs. It was also expected that players classified as “high-burnouts” would report lower

needs fulfilment than players with low athlete burnout.

Ryan and Deci (2000) stated that “specifying psychological needs as essential ... implies that individuals cannot thrive without satisfying all of them, anymore than people can thrive with water, but not food” (p. 75). For example, a social environment that satisfies competence but neglects relatedness is expected to result in lower well-being or higher ill-being. Worse still, Ryan and Deci (2000) stated that social contexts that engender conflicts between basic needs set up conditions for alienation and potential mental health problems – for example, when a child is required by parents to give up autonomy to feel loved. From a sporting perspective, a similar problem can arise when a player is required by the coach to give up autonomy to feel part of the team (relatedness); or when the coach attempts to enhance competence by encouraging strong rivalries (i.e. conflict) between players for selection in the starting team (i.e. thus negatively influencing the satisfaction of relatedness).

Nevertheless, Ryan and Deci (2002) have suggested that while still necessary for growth and development, the psychological need for *relatedness* may play a more distal role than competence and autonomy. Preliminary evidence for this issue in sport is limited, but initial studies suggest that while autonomy, competence, and relatedness scores predicted subjective vitality (Reinboth & Duda, 2006; Reinboth *et al.*, 2004; Standage *et al.*, 2005) and self-determined motivation in sport (Hollebeak & Amorose, 2005; Sarrazin *et al.*, 2002), the relative importance of each need and the amount of variance accounted for by needs fulfilment has varied across studies. Consequently, the relative importance of satisfying each of these three basic needs is not clear with respect to their influence on athlete burnout.

Research questions

The following research questions were addressed:

1. Do rugby players' perceptions of needs satisfaction predict their level of athlete burnout?
2. Do players reporting high burnout report lower need satisfaction than players with low burnout?
3. What is the relative importance of each of the three needs for predicting athlete burnout?

In summary, the overall objective of this study was to investigate the utility of self-determination theory as a framework for understanding athlete burnout in junior elite New Zealand rugby players. The fulfilment of basic needs for competence, autonomy, and relatedness was expected to be associated with lower

athlete burnout (Hypothesis 1), while players classified as “high-burnouts” were predicted to report lower needs fulfilment than players with low athlete burnout (Hypothesis 2).

Methods

Participants and procedure

Male rugby players ($n = 133$) were recruited from 11 New Zealand Rugby Union player development academies. At the time of this study, 13 provincial academies existed in New Zealand (representing approximately 260 players). We contacted all 13 academies and received responses from 11. These junior elite players completed the questionnaire at a regular mid-season meeting under the supervision of an academy coach or manager. All participants completed informed consent forms and confidentiality was ensured as players placed their completed questionnaires in a sealed envelope, which was returned to the researchers. Ethical approval for the study was granted by the first author's university ethics committee.

The mean age of the players was 19.7 years (range 16–26 years), 59.5% of whom had represented New Zealand at the age-group national level and/or their province at the senior level. The remaining players had represented their province at the junior level. Players identified themselves as having New Zealand European ($n = 75$), New Zealand Maori ($n = 32$), Samoan ($n = 11$), Cook Island ($n = 2$), Fijian ($n = 2$), and Tokelauan ($n = 1$) ethnicity. Participants were able to indicate belonging to more than one ethnic group. Twenty-three players did not report their ethnic heritage.

Measures

Athlete burnout. Athlete burnout was measured using the 15-item Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001). The questionnaire includes three subscales: (a) Emotional/Physical Exhaustion, (b) Devaluation, and (c) Reduced Sense of Accomplishment. Participants responded to all ABQ items using a 5-point Likert rating scale ranging from 1 = “almost never” to 5 = “almost always”. Raedeke and Smith (2001) provided strong initial validity evidence and subsequent studies have supported the internal consistency (e.g. Cresswell & Eklund, 2005a; Price & Weiss, 2000), as well as the convergent and divergent validity of the subscale scores (Cresswell & Eklund, 2006b).

Basic needs. Athletes' perceptions of autonomy, competence, and relatedness were assessed using eight items adapted from those utilized by Deci and

his colleagues (2001) to measure needs fulfilment in the work setting. In addition to these eight items, we included two items adapted from McAuley and co-workers' (McAuley, Duncan, & Tammen, 1989) competence scale. Sample items included "I feel free to express my ideas in my sport" (Autonomy), "I think I am good at my sport" (Competence), and "I am close to people in my sport" (Relatedness). Using 7-point Likert scales (1 = "not true at all", 4 = "somewhat true", 7 = "very true"), each participant was asked to assess how well the statements reflected his sport experience.

Previous research with elite New Zealand athletes ($n = 382$; mean age = 25.9 years) supported the internal consistency of the basic needs subscale scores ($\alpha = 0.74$ to 0.89 ; Lonsdale, 2005). Confirmatory factor analysis of the basic needs subscale scores indicated a difference between the observed and implied covariance matrices: scaled χ^2 (32 , $N = 382$) = 63.85 , $P < 0.01$, $\chi^2/\text{d.f.} = 2.00$. However, the approximate fit indices were all acceptable (comparative fit index = 0.99 , Tucker-Lewis index = 0.98 , root mean square error of approximation (RMSEA) = 0.05 , RMSEA 90% confidence interval = 0.03 – 0.07). This result supported the factorial validity of the basic needs scores.

Data analysis

Relationship between basic needs and burnout. Canonical correlation was performed between the basic needs scores and the athlete burnout scores. The basic needs subscale scores served as the predictor variables and the Athlete Burnout Questionnaire subscales scores served as the criterion variables.

Basic needs differences between players with low and high burnout. To examine motivational differences in players with high and low burnout, two groups of players were created. No firm cut-off criteria have been established for what constitutes a high level of burnout from scores on the Athlete Burnout Questionnaire; thus researchers should proceed cautiously with classifying individuals as having high or low athlete burnout. A cluster analysis conducted by Raedeke (1997) found that a group of swimmers who were suggested to have experienced high burnout had mean scores near or slightly above the scale midpoint (3 = "sometimes") on the three ABQ subscales (Exhaustion: 3.35 , $s = 0.83$; Devaluation: 3.4 , $s = 0.81$; Reduced Sense of Accomplishment: 2.97 , $s = 0.64$). Based on Raedeke's data and Maslach Burnout Inventory-General Survey (MBI-GS) cut-off values for high employee burnout (Maslach, Jackson, & Leiter, 1996), Eklund and Cresswell (2007) tentatively suggested that athletes with ABQ subscale scores of 3 ("sometimes") or

above could be classified as experiencing high burnout. Their criteria for Exhaustion and Devaluation are approximately 0.5 of a standard deviation below the mean scores in Raedeke's study and appear appropriate. However, a substantial number of athletes in Raedeke's study who were classified as having high burnout exhibited Reduced Sense of Accomplishment scores lower than 3 (2.97 , $s = 0.64$). As a result, a lower Reduced Sense of Accomplishment criterion may be more appropriate. This proposal is also supported by the fact that the cut-off score (2.00 after reverse scoring) for the conceptually related MBI-GS scale (Professional Efficacy) is lower than the suggested high burnout cut-off criteria for the other two MBI-GS subscales (Exhaustion = 3.00 , Cynicism = 2.20 ; all MBI-GS scales have endpoints of 0 = "never" and 6 = "every day"; Maslach et al., 1996). As a result, we decided to adopt 2.70 as the cut-off for Reduced Sense of Accomplishment. This value was approximately 0.5 of a standard deviation below the mean score in Raedeke's high burnout group.

Raedeke also identified a group of athletes with low burnout scores (Exhaustion: 1.97 , $s = 0.64$; Devaluation: 1.45 , $s = 0.47$; Reduced Sense of Accomplishment: 1.95 , $s = 0.67$). Based on these means and standard deviations, we set the cut-off criteria for low burnout at 2.30 for the Exhaustion and Reduced Sense of Accomplishment subscales and 1.6 for the Devaluation subscale. All these values were approximately 0.5 of a standard deviation above the mean scores observed in Raedeke's low burnout group. Players with scores at or below these values on all three subscales were assigned to the low burnout group. Multivariate analysis of variance (MANOVA) was then used to test for group differences on the basic needs scores.

Results

Preliminary analyses and descriptive statistics

Preliminary analyses indicated that the internal consistency of the Autonomy ($\alpha = 0.69$) and Competence ($\alpha = 0.46$) scores was less than desirable. Removal of two negatively worded items improved the alpha scores (Autonomy = 0.73 ; Competence = 0.79) and these modified subscale scores were used in all subsequent analyses. The internal consistency of the Reduced Sense of Accomplishment scores was also somewhat low ($\alpha = 0.68$), but examination of the item-total correlations did not indicate that any items could be deleted to improve the alpha coefficient. The Reduced Sense of Accomplishment scores were retained for further analyses, but some caution may be warranted when interpreting the results related to these scores. The remaining

subscales, including Relatedness ($\alpha = 0.73$), Exhaustion ($\alpha = 0.79$), and Devaluation ($\alpha = 0.72$), produced scores with acceptable internal consistency. Data were normally distributed (skewness < 2 , kurtosis < 7) and examination of the Mahalanobis distances indicated that there were no multivariate outliers (Tabachnick & Fidell, 2001).

Descriptive results

Overall, our junior elite sample reported moderate to high Autonomy (5.02, $s = 1.15$), Competence (5.23, $s = 1.11$), and Relatedness (5.93, $s = 1.04$). Participants typically reported low to moderate Exhaustion (2.76, $s = 0.63$), Devaluation (2.00, $s = 0.70$), and Reduced Sense of Accomplishment (2.35, $s = 0.57$). Further details regarding players' ABQ responses are given in Table I.

Relationship between basic needs and burnout

Canonical correlation was performed between the basic needs scores and the athlete burnout scores. Missing data were deleted listwise and as a result data from 109 players were included in this analysis. The basic needs subscale scores served as the predictor variables and the ABQ subscales served as the criterion variables. An omnibus multivariate test of significance indicated that a relationship existed between the two sets of variables (Wilks' $\lambda = 0.57$, $F_{9, 241.09} = 6.90$, $P < 0.001$). Only the first canonical correlation (0.64) was statistically significant and indicated that there was 40.50% overlapping variance between the two sets of variables (canonical loadings for the first function are shown in Table II). Canonical loadings above 0.30 are usually considered meaningful (Tabachnick & Fidell, 2001).

Results indicated that all three basic needs predictors were negatively correlated with the

canonical variate, with Autonomy (-0.84) and Competence (-0.76) most strongly related. Relatedness scores showed a weaker correlation with burnout scores (-0.39). Of the ABQ subscales, Devaluation (0.40) and Reduced Sense of Accomplishment (0.99) were significantly correlated with the canonical variate and accounted for 38.54% of the variance in the burnout scores. Taken together these results suggest that a lack of basic needs fulfilment is associated with greater devaluation of one's sport participation and a reduced sense of accomplishment.

Basic needs differences between players with low and high burnout

Using the criteria outlined, six players were identified as having three subscale scores at or above the cut-off values for high burnout (see Table III). These players formed the high burnout group and had a mean global burnout score (i.e. mean of all three subscales) of 3.47 ($s = 0.28$). Twelve players had three subscale scores below the criteria for low burnout and were assigned to the low burnout group. The mean global burnout score for this group was 1.63 ($s = 0.15$).

Testing group differences with such a small sample size is not ideal. However, the number of participants in each group (six and twelve) exceeded the number of dependent variables (three), which according to Tabachnick and Fidell (2001) is the minimum required sample size. As a result, MANOVA with a Method 1 adjustment for unequal sample sizes was employed and revealed a significant difference between the groups on basic needs variables (Wilks' $\lambda = 0.48$, $F_{3, 11} = 3.98$, $P = 0.04$). Follow-up univariate analyses (Table III) indicated that players in the high burnout group reported significantly lower Autonomy and Competence scores than the low

Table I. Frequency distribution of athletes' ABQ subscale scores.

Score	Physical and Emotional Exhaustion		Sport Devaluation		Reduced Sense of Accomplishment		
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
"Almost never" to "Rarely"	<2	12	9.23	55	44.35	24	18.75
"Rarely" to "Sometimes"	2–2.8	63	48.46	54	43.55	81	63.28
"Sometimes" to "Frequently"	3–3.8	50	38.46	13	10.48	23	17.97
"Frequently" to "Most of the time"	≥ 4	5	3.85	2	1.61	0	0
Athletes with subscale scores at or above the high burnout criterion		55	42.31	15	12.01	45	35.16

Note: Missing data were deleted, thus the number of participants is not equal across the subscales. The cut-off criteria were 3.00 for Exhaustion and Devaluation and 2.50 for Reduced Sense of Accomplishment. Six players (5.04%) reported scores above the cut-off values for all three symptoms; 20 (16.81%) were above the cut-off values for two symptoms; 45 (37.82%) were above the cut-off values for one symptom; 48 (40.34%) were not above the cut-off values for any symptom.

burnout group ($P < 0.01$). Relatedness scores did not differ across the groups ($P = 0.06$). According to Cohen's (1988) guidelines, effect sizes for the differences in Autonomy and Competence scores were large. The effect size for the non-significant difference in Relatedness was also large, but was substantially smaller than the differences observed in the Autonomy and Competence scores.

Discussion

The purpose of this study was to examine the basic needs–athlete burnout relationship and the relative importance of each of the three needs for predicting burnout. Overall, these junior elite rugby players reported moderate to high basic needs fulfilment (i.e. autonomy, competence, and relatedness) and low to moderate athlete burnout (i.e. exhaustion, sport devaluation, and reduced sense of accomplishment). These descriptive findings are encouraging news for those concerned with the threat of burnout for young elite rugby players – those players “at risk” of burnout were in the minority in this sample. Nevertheless, those players with high burnout would clearly benefit from means to prevent or decrease their current burnout.

The fulfilment of basic needs for competence, autonomy, and relatedness was expected to be associated with lower athlete burnout (Hypothesis 1).

Table II. Canonical loadings of athlete burnout and basic needs predictors.

Variables	Loadings
Criterion variables	
Exhaustion	0.06
Devaluation	0.40
Reduced Sense of Accomplishment	0.99
Predictor variables	
Autonomy	−0.84
Competence	−0.76
Relatedness	−0.39

In addition, players classified as “high-burnouts” were expected to report lower needs fulfilment than players with low athlete burnout (Hypothesis 2). Results generally supported these two hypotheses. Hypothesis 1 was partially supported as players' perceptions of autonomy and competence were strongly related to their reported levels of athlete burnout; however, relatedness was only a low to moderate predictor of burnout. Athletes' needs satisfaction accounted for substantial portions of variance in two of the athlete burnout symptoms: Reduced Sense of Accomplishment (loading = 0.99) and Devaluation (loading = 0.40). The Exhaustion dimension of athlete burnout was not related to basic needs fulfilment (loading = 0.06).

This latter finding regarding the exhaustion dimension of athlete burnout is intriguing. Previous studies with rugby players (Cresswell & Eklund, 2005a) and adolescent swimmers (Raedeke & Smith, 2001) provide support for this finding, as exhaustion was the burnout dimension least related to enjoyment, commitment, and motivation. It is not clear why the exhaustion dimension would be unrelated to basic needs. Perhaps, as Gould and his colleagues (1996) speculated, burnout is caused by both psychological and physiological factors. Following that logic it is possible that the exhaustion dimension may be influenced to a greater extent by physiological factors. For example, there is convincing empirical evidence that overtraining syndrome (a related condition) is caused by both training and non-training stressors (for a review, see Kreider, Fry, & O'Toole, 1998); consequently, it is possible that psychological and physiological factors in combination can lead to maladaptive states in sport (such as the exhaustion dimension of burnout). Clearly, future research needs to examine both physiological and psychological factors to test the hypothesis that different burnout dimensions may be more strongly influenced by different factors.

Hypothesis 2 was also partially supported, with the high burnout group reporting significantly lower Autonomy and Competence scores. Relatedness

Table III. Comparisons of basic needs scores across high and low burnout groups.

	High burnout group ($n = 6$)		Low burnout group ($n = 12$)		t	P (one-tailed)	Effect size (Cohen's d)
	Mean	s	Mean	s			
Competence	4.58	0.97	6.00	0.87	3.11	<0.01	1.54
Autonomy	4.25	1.25	6.04	0.75	3.82	<0.01	1.74
Relatedness	5.67	0.76	6.40	0.70	2.06	0.06	1.00

Note: High burnout cut-off criteria were 3.00 for Exhaustion and Devaluation and 2.70 for Reduced Sense of Accomplishment. Six players (5.50%) reported scores at or above the cut-off values for all three symptoms and were classified as “high-burnouts”. Low burnout cut-off criteria were 2.30 for Exhaustion and Reduced Sense of Accomplishment and 1.60 for devaluation. Twelve players (11.09%) did not exceed any of these cut-off criteria and were classified as “low-burnouts”.

scores were not significantly different across the high and low burnout groups. However, despite the lack of a significant difference, the associated effect size was large. Taken together with the results of the correlational analyses (Hypothesis 1), this finding would seem to indicate that a lack of relatedness may be involved in the development of athlete burnout, but that it is likely to play a less important role than the thwarting of autonomy and competence needs. This finding is in line with Ryan and Deci's (2002) suggestion that although relatedness is indeed a fundamental psychological need, it may play a more distal role in the development of well-being and/or ill-being.

Sport-specific research on the needs-well-being relationship is limited and has produced mixed findings regarding the role of relatedness. Reinboth and colleagues' (2004) results indicated that relatedness was not associated with subjective vitality in male adolescent athletes, while Sarrazin *et al.* (2002) reported that relatedness predicted smaller amounts of variance in young female handball players' motivation than did competence and autonomy. On the other hand, Hollebeak and Amorose (2005) found that intrinsic motivation was more strongly predicted by relatedness than competence in a sample of US college athletes. Perhaps the importance of relatedness varies across ages (e.g. adolescents vs. young adults), social environments (e.g. sub-elite, college vs. elite, semi-professional), and across different outcomes variables (e.g. intrinsic motivation *vs.* burnout *vs.* subjective vitality). Further research is needed regarding the relative importance of autonomy, competence, and relatedness in any explanation of adaptive and maladaptive psychological consequences in sport.

Limitations

Our power to detect differences between high and low burnout players (Hypothesis 2) was limited by our small sample size. The most noticeable result of this lack of power in our study was the effect size observed for the relatedness scores ($d = 1.00$). Despite the potentially meaningful magnitude of this difference [Cohen's (1988) guidelines suggest this is a large effect size], the scores were not statistically different ($P = 0.06$). Research with larger samples is clearly needed to further investigate our finding that basic needs fulfilment is associated with less athlete burnout.

We must also note that the ABQ cut-off values we employed when creating high and low burnout groups should not be considered definitive. We based our criteria on evidence from Raedeke's (1997) results and Eklund and Creswell's (2007) suggestions. Clearly, more research is needed to

determine what values of ABQ scores represent high and low burnout. Researchers in organizational psychology have used population norms to create high, medium, and low burnout criteria (one-third splits on each of the three Maslach Burnout Inventory subscales). However, there is little evidence to support the external validity of these criteria and Schaufeli *et al.* (1996) have advised researchers and practitioners to proceed cautiously when seeking to identify highly burned-out employees. We suggest sport researchers should also be cautious and believe that research investigating potential outcomes (e.g. performance decrements, training motivation decrements, training response plateaus, dropout, increased injury/illness susceptibility) associated with differing values of ABQ scores would be most useful.

Another limitation of the current research was its cross-sectional design. The large effect sizes found in our correlational analyses (Hypothesis 1) appear to suggest that autonomy and competence are crucial variables that influence the athlete burnout process; however, longitudinal research is needed to determine if a causal relationship does in fact exist. Finally, the current study focussed solely on the burnout experiences of young adult male, elite rugby players. Further research is needed to understand the relationship between needs fulfilment and athlete burnout in (a) younger and older rugby players, (b) female rugby players, and (c) male and female athletes from other sports.

Conclusions and practical implications

As hypothesized, our results indicate that the relationship between needs satisfaction and burnout is generally strong. This finding is important for practitioners, as it suggests that supporting needs satisfaction may help athletes to avoid burnout. The next logical question is how can needs satisfaction be promoted?

In a longitudinal study, Gagné and colleagues (Gagné, Ryan, & Bargmann, 2003) found that needs satisfaction (i.e. autonomy, competence, relatedness) was an important predictor of daily well-being for adolescent female gymnasts, and that autonomy support from parents and coaches was instrumental in ensuring needs satisfaction. Similarly, in a cross-sectional study, Hollebeak and Amorose (2005) reported that democratic coaching behaviour was positively related to needs fulfilment, while autocratic decision making was negatively associated with basic needs perceptions, in a sample of male and female college athletes from a range of sports. Gagné and colleagues concluded that a training climate where coaches support the autonomy of their athletes by "listening to their concerns and affording them some choice, where athletes feel well connected to

teammates, and where they perceive some positive competence feedback, are likely to help athletes experience sustained positive emotions, be more energized, and have higher and more stable self-esteem” (p. 386). They also suggested that when athletes’ needs are supported by parents and coaches, “they might train in a manner that will decrease the risk for injury and burnout” (p. 386).

Mageau and Vallerand (2003) proposed seven practical guidelines for needs-supportive coaches to follow. These practical guidelines identified features of the coach–athlete relationship that should foster autonomy, competence, and relatedness. They drew from educational and psychological research to support the behaviours they proposed to influence autonomy in particular. These behaviours included: (i) providing choice (e.g. including players in the decision making regarding team issues such as tactical options and alternative training drills); (ii) providing a rationale for tasks, limits, and rules (e.g. explaining the logic behind key coaching decisions such as team game plans and team selection); (iii) inquiring about and acknowledging others’ feelings (e.g. get to know players as people first and players second; acknowledging that some training drills may be repetitive or monotonous); (iv) providing opportunities for athletes to take the initiative and do independent work (e.g. empower players to lead a game de-brief session or take a leadership role in creating and delivering new training drills); (v) providing non-controlling performance feedback (e.g. constructive feedback/information/advice that is focused on the “solution” more than the performance “problem” and that is *not* tied to any threats regarding team selection status); (vi) avoiding guilt-inducing or controlling criticisms (e.g. delivering criticism that focuses on the behaviour not the player’s character; conveying criticism regarding performance needs, but also conveying unconditional respect for the player’s overall playing abilities); and (vii) minimizing ego-involvement (e.g. emphasizing self-referenced and self-set training and competition goals for each individual player; avoiding intra-team rivalries and social comparisons).

While the efficacy of implementing these seven guidelines within a competitive rugby environment has yet to be investigated, there is evidence that needs-supportive practices have been successfully employed by coaches working with elite track and field athletes (Mallet, 2005). In addition, there is recent anecdotal evidence that the coaches of an elite rugby team – the New Zealand “All Blacks” team of 2004–2006 (Donaldson, 2005; Long, 2005) – have successfully implemented practices that closely resemble a “needs-supportive” style. For example, the head coach of the All Blacks (Graham Henry) made

the following comment in relation to their team motto of “Better People Make Better All Blacks”:

the players have a lot of input into what we’re doing and we have empowered the players to voice their opinions so we can improve . . . Players are happy when they are stimulated . . . When we talk about them as “better people” we’re talking about people who are self-reliant and have self-leadership, take responsibility for the team, and have collective ownership. (Long, 2005, p. 22)

The above quote indicates that the All Black coaches sought to support their players in a manner that was clearly reminiscent of a “needs-supportive” style (with a primary focus on autonomy and competence). The All Black players appear to have responded positively to this coaching style. As scrum-half, Byron Kelleher, recently remarked:

The best thing about the All Blacks at the moment is that players can contribute so much. Beforehand I think it was dictated to us what our days consisted of. [Being able] to contribute . . . makes your work a lot easier than if you are being treated like a schoolkid being dictated to. (Johnstone, 2007, p. 38)

In terms of performance, this coaching style would also appear to have been a spectacular success – in 2004–2006, the All Blacks won 31 of 37 test matches against top opponents such as South Africa, Australia, England, France, and the British and Irish Lions, which equates to an 84% winning percentage (All Blacks.com, 2006). We therefore suggest that coaches and sport science practitioners working within the elite rugby context may wish to consider Mageau and Vallerand’s guidelines as they seek to promote basic needs fulfillment and help their players realize a variety of positive consequences, including a reduced risk of athlete burnout.

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