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Athletic identity, compulsive exercise and eating psychopathology in long-distance runners

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ABSTRACT

Having a high athletic identity is thought to increase vulnerability for compulsive exercise and Eating Disorder (ED) psychopathology. This study examined whether there is an association between athletic identity and levels of compulsive exercise and ED psychopathology in long-distance runners. A sample of 501 long-distance runners completed the Athletic Identity Measurement Scale (AIMS), Compulsive Exercise Test (CET) and Eating Disorders Examination Questionnaire (EDEQ). There was a significant positive association between participants' AIMS and total CET scores (moderate effect size; $r = 0.34$ for males and 0.33 for females). BMI did not influence the relationship between AIMS and CET scores in males. However, for females, AIMS scores were positively associated with levels of Weight Control Exercise when covarying for BMI (small to moderate effect size, $r = 0.22$). No significant associations with EDEQ scores were found (negligible to small effect sizes; $r = 0.06$ for males and $r = 0.14$ for females). Following replication, coaches might need to be vigilant to the welfare of endurance runners that have a strong athletic identity, since this could be linked to them exercising compulsively. Future work should examine whether having a strong athletic identity predicts ED psychopathology when this identity is challenged (e.g., due to injury).

1. Introduction

Various factors have been implicated in the high prevalence rates of eating disorders among athletes. One is sporting type; with greater ED prevalence rates in sports that emphasise leanness relative to sports where leanness is not a performance requirement (e.g., long-distance running versus American football) (Kong & Harris, 2015; Petrie, 1996). Another is level of competition (e.g., sport participation at a national versus recreational level) (Picard, 1999). However, research into both of these factors is inconsistent (e.g., Chapman & Woodman, 2016; Gomes, Martins, & Silva, 2011; Hausenblaus & McNally, 2004). Therefore, rather than focusing on sporting type, or level of competition, it might be more appropriate for research to focus on psycho-social factors that could contribute towards an increased risk of ED psychopathology. One possible factor that should be considered is the athlete's level of *athletic identity*. Specifically, having a high athletic identity could increase the likelihood of an athlete exercising in a compulsive manner (e.g., Gapin & Petruzzello, 2011). This, in turn, is a direct risk factor for EDs (Davis, Kennedy, Ravelski, & Dionne, 1994).

Brewer, Van Raalte, and Linder (1993) define athletic identity as the, "degree to which an individual identifies with the athlete role" (p. 237). This definition has been the most widely used and accepted among the literature (e.g., Lamont-Mills & Christensen, 2006; Webb, Nasco, Riley, & Headrick, 1998). Brewer et al. (1993) hypothesised that having a high athletic identity might limit an individual from possessing a multidimensional self-concept and increase vulnerability towards negative health-related outcomes (Hughes & Leavey, 2012).

In keeping with this theory, athletic identity may be a risk factor for ED psychopathology. For example, Jones, Glintmeyer, and McKenzie (2005) reported the case of a female swimmer who described sport as being central to her life (e.g., her goals, achievements, and self-esteem). This high athletic identity was accompanied with a positive body image. However, during a meeting with her coach a critical comment was made regarding her weight and shape. This comment was experienced as a direct challenge towards her self-worth and was a trigger for the development of ED psychopathology (i.e., dieting, binging and purging). Hence, having a high athletic identity may increase an individual's vulnerability to ED triggers (e.g., low self-esteem, weight/ shape concerns and critical comments from others) and the development of psychopathology. However, there is a paucity of research that has directly examined the relationship between athletic identity and ED psychopathology in athletes. In the few studies to date, it has been found

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that level of athletic identity is positively correlated with levels of ED psychopathology among runners (Gapin & Petruzzello, 2011) and figure skaters (Voelker, Gould, & Reel, 2014).

When trying to establish the role of athletic identity in relation to ED psychopathology, it is important to consider the role of compulsive exercise. This multi-dimensional construct involves, "an association with weight and shape concerns, and persistent continuation in order to: (a) mitigate the experience of extreme guilt and/or negative affect when unable to exercise; and (b) avoid the perceived negative consequences of stopping" (Meyer, Taranis, Goodwin, & Haycraft, 2011, p. 184). Specific to sport, many athletes may exercise with a high degree of commitment, but not feel the same level of negative affect when unable to exercise in comparison to those with high levels of compulsive exercise. Thus, it is unclear why some athletes develop compulsive exercise, whilst others do not.

Research has highlighted that compulsive exercise symptoms may develop in an individual whose identity is already tied into their exercise and/or sporting environment (Groves, Biscomb, Nevill, & Matheson, 2008). Furthermore, athletes with high athletic identities have been found to disregard practitioners advice when injured and risk a premature return to sport (Podlog et al., 2013), suffer from depression following an injury (Brewer, 1993) and have difficulties coping with retirement from sport (e.g., Grove, Lavallee, & Gordon, 1997; Lavallee, Gordon, & Grove, 1997; Park, Tod, & Lavallee, 2012; Webb et al., 1998). These findings suggest that there is a compulsive element to the way in which people with high athletic identities exercise. Therefore, a plausible model would implicate having a high athletic identity as a predictor of compulsive exercise.

Altogether, psycho-social factors might contribute towards an increased risk of ED psychopathology in athletes. Having a high athletic identity might be one factor that increases vulnerability towards ED psychopathology in athletes and the tendency to exercise in a compulsive manner. However, there is a scarcity of research that has empirically examined these possible associations. The aim of this study is to examine whether athletic identity is linked to levels of compulsive exercise, and ED psychopathology in long-distance runners. It is hypothesised that there will be significant associations between athletic identity and levels of compulsive exercise and ED psychopathology.

2. Methods

2.1. Participants

Long-distance runners were recruited from University-based and community running clubs from across England. Running clubs were contacted by email and were invited to partake in the study. Participants were eligible to take part if they were between 18 and 65 years of age and competed in or trained for events that require the athlete to run 1500 m or further. They were informed that the study was looking to learn more about the exercise and eating attitudes of runners. The study received ethical approval from Loughborough University Ethics Committee.

2.2. Measures

2.2.1. Athletic Identity Measurement Scale (AIMS; Brewer & Cornelius, 2001)

The AIMS is a 7-item questionnaire measuring participants' levels of athletic identity. It employs a 7-point Likert scale (anchored with 1 = strongly disagree and 7 = strongly agree), with scores summed to form a total AIMS score. Higher scores are indicative of a higher degree of identification with the athletic role. The AIMS has been found to be a reliable and valid measure (Visek, Hurst, Maxwell, & Watson, 2008). Within this sample the Cronbach's alpha was 0.84.

2.2.2. Compulsive Exercise Test (CET; Taranis, Touyz, & Meyer, 2011)

The CET measures participants' levels of compulsive exercise. The CET utilises a 6-point scale (anchored by 0 = never true and 5 = always true) with higher levels of compulsive exercise indicated by higher scores on the CET. Plateau et al. (2014) reported that there is a three-factor structure for the CET in athletes. The three subscales are: Avoidance of Negative Affect, Weight Control Exercise and Mood Improvement. A total score for the CET is calculated by adding together the mean scores for the subscales. Taranis et al. (2011) have found support for the convergent and concurrent validity of the CET among female exercisers. In this study the CET generated satisfactory internal consistency (Cronbach's alpha for Avoidance of Negative Affect = 0.86; Weight Control Exercise = 0.82; Mood Improvement = 0.72; total CET = 0.86).

2.2.3. Eating Disorders Examination Questionnaire (EDEQ; Fairburn & Beglin, 1994)

The EDEQ measures participants' eating psychopathology based upon their eating attitudes and behaviours over the previous four weeks. The questionnaire utilises a 7-point rating scale, with higher scores representing greater eating psychopathology. The EDEQ has been found to be an internally consistent measure (Penelo, Villarroel, Portell, & Raich, 2012). Within this sample the Cronbach's alpha was 0.94.

2.3. Procedure

Participants could complete an online version of the questionnaires ($n = 471$) or a visit was arranged by a researcher to the running club to hand out a paper version of the questionnaires at a training session ($n = 30$). For both the online and paper questionnaire formats, participants were asked to read an information sheet that informed them of the nature of the research. Consent was given at the start of the study. Participants then completed a demographics questionnaire, which asked participants to report their age, height, weight, the main event that they train for and their current level of competition. Following this the AIMS, CET and EDEQ were completed. Data were analysed using IBM SPSS Statistics 22.

2.4. Data analysis

Participants' demographics were analysed to examine if there were differences between males and females scores on the AIMS, CET and EDEQ. Correlations were used to analyse the association between participants' total AIMS score and their scores on the CET and EDEQ. Partial correlations were then used with BMI included as a covariate to examine if this influenced the relationship between the AIMS, CET and EDEQ. As multiple comparisons were completed the Bonferroni correction was used. Results were interpreted as being statistically significant when $p < 0.01$. Effect sizes were interpreted based on the guidelines of Cohen (1988) as small (≥ 0.1), moderate (≥ 0.3) and large (≥ 0.5).

3. Results

3.1. Participant characteristics

Five hundred and one distance runners (male $n = 279$, female $n = 222$) participated in the study. The mean age of participants was 38.77 years ($SD = 12.14$; range = 18–65 years) and the mean body mass index was 23.07 ($SD = 3.09$, range = 17.67–54.67) for males and 21.94 ($SD = 3.87$, range = 15.09–55.18) for females.

Participants competed in the following events: 1500 m ($n = 27$), 3000 m ($n = 12$), 5000 m ($n = 37$), 10,000 m ($n = 110$), half-marathon ($n = 130$), marathon ($n = 130$), cross-country ($n = 11$), ultramarathon ($n = 16$), fell running ($n = 12$) and other ($n = 16$). Participants' current levels of competition were: national level or above ($n = 33$), county level ($n = 51$), club level ($n = 292$) or recreational ($n =$