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Research article

Eating attitudes, perfectionism and body-esteem of elite male judoists and cyclists

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Abstract
This study tested the hypothesis that male athletes who feel pressured to maintain a specific body weight present an elevated risk of subclinical eating disorders. Twelve judoists (19.5 ± 0.5 yr), fifteen cyclists (21.2 ± 2.8 yr) and seventeen non-competitive students matched for BMI and used as controls (21.8 ± 1.8 yr) were studied using the Eating Attitudes Test (EAT-26). The Multidimensional Perfectionism Scale, the Body Esteem Scale and the Profile of Mood States were also used to evaluate the relationships between eating disorders and psychological characteristics. Athletes completed the tests during their competitive period and controls completed the same scales at the same time. Scores obtained on EAT-26 differed significantly from the control group on EAT ($p < 0.01$), Dieting ($p < 0.01$), and Bulimia scores ($p < 0.05$). Sixty percent of the athletes used weight loss methods. Self-induced vomiting, use of laxatives and diet pills were reported by 4%, 10%, and 8.5% of them, respectively. Increasing exercise was the primary method used by controls to lose body weight. Athletes reported greater negative feelings about their physical appearance and their Body Weight Satisfaction than controls ($p < 0.01$, $p < 0.05$, respectively). Our results also showed that depression mood accounted for 73% of the variance in Bulimia scores and for 64% of the variance in Global EAT scores in athletes. Body-esteem Appearance and depression accounted for a significant proportion of the variance in Dieting scores. There was no difference in perfectionism and mood between athletes and controls. This study highlights that these athletes may tread a fine line between optimal competitive attitudes and detrimental health behaviors.

Key words: Eating behavior, male athletes, perfectionism, body esteem, mood.

Introduction

Prevalence of eating disorders (EDs) has become a growing concern among athletic populations (Sundgot-Borgen, 1993). Sports participants are at greater risk of developing EDs than the general population, especially in endurance, aesthetic and weight class sports where leanness or a specific weight are thought to favor sports performance (Fogelholm and Hiilloskorpi, 1999; Smolak et al., 2000; Sundgot-Borgen and Torstveit, 2004). Smolak et al. (2000) have estimated EDs among athletes to range from 1% to 62% depending on the type of population studied (gender being the main determinant) and methods used to assess EDs (interview or self-report). Consequently, the prevalence of EDs in athletic populations remains a matter of debate (Sundgot-Borgen, 1996; Johnson et al., 2004).

Numerous studies have examined the prevalence of EDs in female athletes, but very little information is available concerning their male counterparts (Fogelholm and Hiilloskorpi, 1999; Hall and Lane, 2001; Hopkinson and Lock, 2004; Lane, 2003). This lack of information on EDs in male athletes may be attributable to the fact that this syndrome is less widespread in male than female populations (Baum, 2006).

The aetiology of EDs is multifactorial and includes psychological factors such as self esteem, perfectionism, and mood (DiNicola et al., 1989; Hewitt et al., 1995; Sassaroli et al., 2005). The link between eating disorders and mood disturbance is well established in the clinical literature (Vandereycken, 1987). However, the link between mood and abnormal eating attitudes has rarely been investigated in sport populations (Terry et al., 1999). Among samples of rowers, Terry et al. (1999) found that depressed mood scores predicted 9% of the variance in EAT scores, whereby high scores on the EAT were associated with depressed mood.

Both perfectionism and self-esteem have been linked to EDs (Hewitt et al., 1995; Hopkinson and Lock, 2004; Mendelson et al., 2002). It has been shown that individuals classified as perfectionists are preoccupied and dissatisfied with their body shape and weight (Ruggiero et al., 2003). They tend to engage in excessive cognitive strategies in their pursuit of perfection.

Personality characteristics such as perfectionism are observed frequently by the sport community. In fact, most elite athletes strive towards perfection (Koivula et al., 2002) and perfectionism is a significant determinant both of elite performance and of specific psychopathologies. Both clinical reports (Slade, 1982) and research (Shafran et al., 2002) have supported the claim that anorexic and possibly bulimic individuals display higher perfectionism than non-disordered control individuals. In the present study, we have employed a multidimensional conceptualisation of this variable introduced by Hewitt et al. (1991). Their model includes Self-oriented perfectionism (setting very high standards for myself), Socially Prescribed Perfectionism (feeling that others place unreasonable standards on one's own behavior), Other-oriented Perfectionism (setting exacting standards for others and subjecting them to stringent evaluation). Bastiani et al. (1995) highlighted the relevance of one or more of these dimensions in eating disorders. In the domain of sport, Haase et al. (2001) pointed out that a high Self-oriented Perfectionism score was often linked to eating disorders. Additionally, Vohs et al. (2001) showed an interaction between perfectionistic attitudes and body dissatisfaction in female athletes with low self-esteem. Self-esteem appears to be an important risk factor for body dissatisfaction and eating disturbance. (Fairburn et al., 2003; Keel et

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al., 2001; Sheffield et al., 2005). Mendelson et al. (2001) established a multidimensional measure of body-esteem, differentiating general feelings about physical appearance from weight satisfaction and from appraisals made by others about one's body or appearance. This distinction between the different aspects of body-esteem may help to better understand the relationship between dimensions of body esteem and symptoms of disordered eating. In female, Ferrand et al. (2004) has shown that body mass index and body esteem for appearance accounted for a significant amount of variance in dieting scores in elite synchronized swimming athletes.

To date, few studies have examined the prevalence of eating disturbances in male athletes. The primary aim of this investigation was to examine the extent to which abnormal eating attitudes are found in judo and cycling. Judoists and cyclists were enrolled in this study because of the importance of body weight control for performance and the associated greater risk for eating disorders in endurance and weight-class sports (Andersen et al., 1995; McCoy, 1996). A secondary purpose of this study was to examine relationships among eating attitudes, perfectionism, body esteem, and mood states. Given the link between eating disorders and mood disorders (Vandereycken, 1987, DiNicola et al., 1989), it was hypothesized that significant relationships would be found between abnormal eating attitudes and negative mood characteristics (tension, depression, anger, fatigue, confusion).

Methods

Athletes were recruited through national training teams. In addition, mathematic students of a French University took part voluntarily in this study. Questionnaires were obtained from 80 participants for a general response rate of 75.6%. Of these, 8 questionnaires were unusable because the respondents answered less than 20% of the questions. The adjusted response rate was 65%, resulting in a final sample of 52 participants.

The final sample included twelve judoists, fifteen cyclists (road cycling) and seventeen controls. All participants signed consent forms and received a full verbal and written explanation of the purpose of the study, its anonymous nature, and of their ability to withdraw from the experiment at any time. Permission to conduct the study was granted by the University of Human Research Ethics Committee.

All the judoists were national-level athletes, with a training history of 9.6 ± 2.4 years. They belonged to two teams, and only competed nationally. Their weekly training volume had been constant over the past two years, with an average of 15 $h \cdot wk^{-1}$. All the cyclists also were national athletes, with a training history of 8.5 ± 1.4 years, and all of them belonged to the same team. The weekly distance covered (in which races and training were included) ranged between 600 and 750 km. The athletes took part in races each weekend, with distance ranging from 100 to 150 km. The control group consisted of moderately active mathematics students performing on average 2 hours of physical activity per week. None of them were engaged in any competitive sports nor did they train for one type of sport in particular.

The participants were asked to respond honestly to all of the items of the questionnaires. The instructions outlined the general nature of the investigation but made no mention of eating disorders. The questionnaires were sent to athletes via their club with a stamped, addressed envelope. All replies were anonymous. Approximately 2 months after the questionnaires were mailed to the clubs, the questionnaires were resent to encourage athletes who had not replied to the first mailing. All athletes completed questionnaires during their competitive period. The controls received the same questionnaire as the athletes.

Anthropometry

Heights and weights of all the participants were measured at the beginning of the study by one of the researchers and Body Mass Index (BMI) was calculated ($kg \cdot m^{-2}$). Body Mass Index serves as an indication for low body weight in eating disorders (Augestad and Flanders, 2002).

Assessment of psychological parameters and lifestyle

A self-administered questionnaire was used to collect information from the following areas: the nature and extent of athletic involvement, training regimen, injury occurrence, nutritional habits (e.g., "How many meals do you usually eat per day"; typical daily intake; food frequency; nutritional supplements), alcohol consumption, weight history, weight loss methods used, and eating-related behaviors such as dieting, binge eating, and purging, and eating patterns (e.g., "Do you ever feel out of control when eating or feel that you cannot stop eating", "Have you ever eaten a large amount of food rapidly and felt that this eating incident was excessive and out of control"; restriction/limitation of amounts or types of foods). Participants were asked to rate their weight satisfaction and to state whether they wished to lose or gain weight. This questionnaire was adpted from surveys by Cobb et al., (2003), and Beals (2004).

Eating pattern was assessed with the Eating Attitudes Test (EAT-26,(Garner et al., 1983).

Dimensions of perfectionism were assessed by the Multidimensional Perfectionism Scale (MPS) (Hewitt et al., 1991). Self-esteem was measured with the Body Esteem Scale (Mendelson et al., 2001). Finally, mood state was evaluated using the Profile of Mood States (McNair et al., 1971).

The French Version of Eating Attitudes Test (EAT-26, Leichner et al., 1994)

The EAT-26 is a 26-item questionnaire validated by Leichner et al. (1994) designed to identify eating habits and concerns about weight derived from a 40-item original inventory (Garner and Garfinkel, 1979). To complete the EAT-26, participants rate their agreement with statements about weight and food. The factor dieting describes avoiding high calorie food and pre-occupation with being thinner. Examples include "I enjoy trying new rich foods" and "I am terrified about being overweight". The factor bulimia and food pre-occupation includes items that reflect thoughts about food. Examples include "I find myself preoccupied by food" and "I feel that food controls my life". The bulimia aspect of the factor includes items

Table 1. Age and anthropometric characteristics of the participants. Data are means (±SD).

	Age (year)	Weight (kg)	Height (m)	BMI (kg·m-²)
Controls (n = 17)	21.8 (1.8)	70.6 (9.3)	1.78 (.05)	22.1 (1.8)
Judoists (n = 20)	19.5 (.5)	67.4 (13.4)	174 (.09)	21.9 (2.21)
Cyclists (n = 15)	21.2 (2.8)	68.0 (6.5)	180 (.06)	20.8 (1.4)

such as "I have the impulse to vomit after meals" and "I have gone on eating binges where I feel that I may not be able to stop". Items on the third factor, oral control, are related to the control of eating and the perceived pressure from others to gain weight. Examples include "I avoid eating when I am hungry" and "I cut my food into small pieces".

Participants rate the intensity of attitudes from six possible options Never, Rarely, Sometimes (0), Often (1), Very Often (2), and Always (3). The first three responses are scored zero, with the other three responses being scored 1, 2, and 3 accordingly. A score greater than 20 is considered to be an indicator of a possible eating disorder problem, and individuals who score 20 or more should seek clinical support.

Multidimensional Perfectionism Scale (MPS, Hewitt et al., 1991)

This scale is a 45-item measure, translated and validated in French by Labrecque et al., (1998). It assesses individual differences in Self-oriented Perfectionism (e.g., "I demand nothing less than perfection from myself"), Other-oriented Perfectionism (e.g., "Everything that others do must be of top-notch quality"), and Socially Prescribed Perfectionism (e.g., "My coach experts excellence from me at all times"). Each item is evaluated on a scale anchored by 1 = disagree and 7 = agree. Higher scores reflect greater perfectionism trait. The MPS's reliability and validity have been confirmed in both clinical and nonclinical cohorts (Hewitt et al., 1991; Parker and Adkins, 1995).

The Canadian-French version of the Body Esteem Scale (BES,Mendelson et al., 2001)

The BES includes 23 items to which participants respond using a 5-point Likert scale anchored from never to always. This scale assesses the following three dimensions of body esteem: Appearance (general feelings about appearance, e.g., "I like what I see when I look in the mirror), Weight (weight satisfaction, e.g., "weighing myself depresses me") and Attribution (evaluations attributed to others about one's body appearance, e.g., "my looks help me to get dates"). The scale has been constructed so that higher scores represent higher body-esteem.

The French version of the Profile of Mood States (POMS, McNair et al., 1971)

Mood states were evaluated by the Profile of Mood States (POMS) questionnaire (McNair et al., 1971). The POMS is a self-reported questionnaire which includes 65 adjectives designed to assess six mood constructs: tension, depression, anger, fatigue, vigor, and confusion. To Complete the POMS, participants rate "how are you feeling right now?" on a 5-point scale anchored by 0 ("not at all") to 4 ("extremely"). Scores on the states of tension, depression, anger, vigor, fatigue, and confusion of the participant are then calculated.

Statistical analysis

Following Nevill and Lane (2007), non-parametric analyses (Kruskall Wallis followed by the Mann-Withney U test) were used in the statistical computations for eating pattern, dimensions of perfectionism, self-esteem and mood state responses. Chi-square analyses were used to determine differences between the groups, regarding frequency of weight reduction method used, and bone injuries. The Spearman Rank Order coefficient was used for testing correlations among the Global Eat score (and the three sunscales of EAT score), perfectionism, body esteem components, and mood states for each group.

Multiple regression analyses were conducted to examine how body-esteem components, dimensions of perfectionism, and mood contributed to variance in global EAT score, Dieting, Bulimia and food preoccupation, and Oral control. Although this was a limitation, we used multiple regression analyses, which are parametric tests, because there is no non-parametric equivalent. All statistical analyses were performed with SPSS 12.1 statistical software.

Results

Physical characteristics

Physical characteristics of the participants are presented in Table 1. There were no significant differences between the group in terms of age, weight and BMI.

Eating behavior

Questionnaire responses on health, weight, and diet history indicated that 65% of the athletes (judoists and cyclists) lost more than 3 kg during a season and that they consciously limited food choices (e.g., eliminating red meats, severely restricting dietary fat, and reducing carbohydrate intake). In fact, judoists lost 3.4 ± 0.2 kg and cyclists lost 3.1 ± 0.3 kg. Controls lost 0.5 ± 0.2 kg. However, fifty five percent of controls wanted to lose body weight.

The athletes reported using seven different weight loss methods. Figure 1 shows the percentage of participants using each of these seven methods in each of the groups. Judoists and cyclists used the more drastic methods to lose weight including fasting (14% among judoists, 41% among cyclists) and laxatives. Increasing exercise was the preferential method used by the controls to lose body weight (46%).

Twenty-five percent of the judoists, 46% of the cyclists, and 38% of controls felt pressured to lose weight. The main causes of the perceived pressure for both groups of athletes were their coaches (8.3%), fellow or former athletes (25%) and themselves (25%). For the controls,

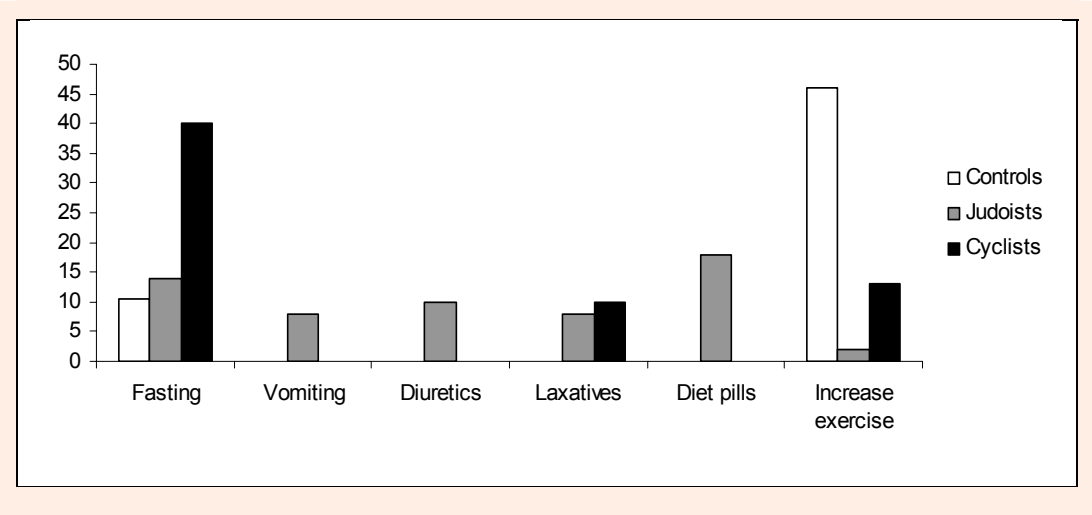

Figure 1. Percentages of the different weight loss methods used by each group.

the perceived pressure to lose weight was attributed to social pressure (45%) and themselves (15%).

Participant scores of the EAT-26 are presented in Figure 2. The results show that the athletes differed significantly from the control group on EAT ($p < 0.01$), Dieting ($p < 0.01$), and Bulimia scores ($p < 0.01$). The mean Oral Control scores were the only ones in which there was no significant difference between the athletes and the controls. Cyclists did not differ from judoists on any score.

Bone injuries

Bone injuries were reported by 33.3% of the judoists (2% were identified as stress fractures) and 27.2% of the cyclists. 8% of the controls reported bone injuries.

Psychological parameters

Psychological characteristic scores are presented in Table 2. The three groups did not differ on measures of Perfectionism nor on measures of mood states. Analyses of variances revealed significantly higher Body-esteem Appearance and higher Body-esteem Weight Satisfaction for the controls as compared to the athletes ($p < 0.01$, $p < 0.05$, respectively). Body-esteem Attribution did not differ between groups.

Among athletes, significant correlations were reported between Dieting scores and depression ($r = 0.6$, $p < 0.001$), Global EAT scores and depression ($r = 0.8$, $p < 0.001$), and Bulimia scores and depression ($r = 0.7$, $p < 0.001$). An interaction effect between the group of athletes and Body-esteem Appearance and between the group of athletes and Body-esteem Satisfaction were also noted.

Regression analyses for Dieting scores, Boulimia scores and Global EAT scores revealed that perfectionism did not contribute to the prediction of eating disorder symptoms in any group. Table 3 summarizes the results of the regression analyses.

In athletes, depression was the largest significant predictor of Global EAT scores in athletes (R^2 adj = 0.64, $F = 7.7$, $\beta>0$, $p < 0.001$). Depression was also the largest significant predictor of Bulimia scores in athletes (R^2 adj = 0.73, $F = 24.9$, $\beta>0$, $p < 0.001$).

Body-esteem Appearance and depression accounted for a significant proportion of the variance in Dieting scores (R^2 adj = 0.45, $F = 6.4$, $p < 0.001$).

Body-esteem Satisfaction was the largest predictor of Bulimia scores in nonathletes (R^2 adj = 0.45, $F = 4.3$, $\beta<0$, $p < 0.001$).

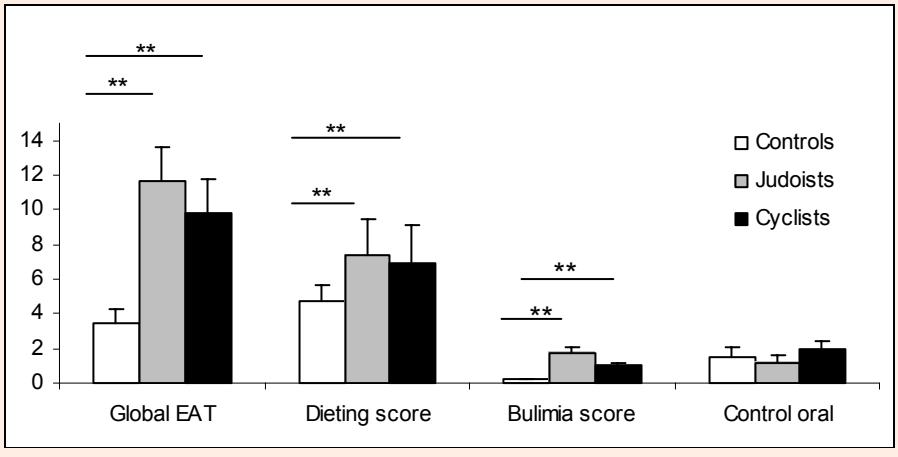

Figure 2. Disordered eating attitudes of the participants. Data are presented as mean ± SD.
** p <0.01 Judoists or Cyclists vs Controls.

Table 2. Psychological characteristics of the participants. Data are means (±SD).

	Controls	Judoists	Cyclists
BE-Weight Satisfaction	24.5 (1.5)	21.2 (.2) *	19.2 (2.5) *
BE-Appearance	32.6 (2.7)	25.4 (4.4) **	23.8 (6.0) **
BE-Attribution	10.6 (2.4)	9.5 (2.7)	9.1 (3.1)
Self-oriented Perfectionism	64.2 (7.8)	67.8 (12.8)	68.4 (11.3)
Other-oriented Perfectionism	58.5 (6.0)	57.5 (7.8)	58.8 (3.3)
Socially prescribed Perfectionism	51.6 (9.5)	50.3 (7.8)	49.9 (10.7)

Abbreviation: BE = body esteem.
* $p < 0.05$, ** $p < 0.01$ Judoists or Cyclists vs Controls.

Discussion

The purpose of this study was to examine the extent to which abnormal eating attitudes are found in judo and cycling and to evaluate several psychological variables (in particular perfectionism, body esteem, and mood), which are generally associated with eating disorders.

Garner et al. (1983) reported that a Global EAT score of 20 identified individuals at risk of an eating disorder. None of the participants of the present study corresponded to that category; hence they were not considered as being at risks of EDs. This percentage (0%) is lower than the estimate of Yates et al. (2003), who found, using self-reported psychiatric symptoms, that one in 12 cyclists are directly affected by eating disorders. A German study of lightweight wrestlers and rowers, all competing in low-weight divisions, demonstrated a higher prevalence of bingeing (52%) and subclinical eating disorders (11%) compared with non-athlete controls (Thiel et al., 1993) assessed by the EAT-26. Dale and Landers (1999) suggested that male college wrestlers develop only transient eating problems. However, comparing results from the literature is confounded by the different methodologies used to assess eating behaviors. Differences in how the questions are expressed, and the frequency and duration of the behaviors involved vary so widely from study to study that an effective comparison is almost impossible. The level of the athletes also seems to be a parameter, which must be taken into account (Ferrand and Brunet, 2004). Further, conducting clinical interviews is considered more accurate in the diagnosis of eating behaviors than self-administered questionnaires. For practical reasons, interviews were not used in this study. However, the EAT-26, which we used, is the most widely used standardized measure of symptoms and concerns characteristic of eating disorders (Hopkinson and Lock, 2004; Mazzeo, 1999). Sixty percent of athletes used weight loss methods, putting these athletes at risk of developing EDs. Thus, even if the athletes did not have a score above 20 in the Global EAT score, they did engage in pathogenic weight loss methods several times in the year and especially during the period of competition. In fact, purging behaviors such as self-induced vomiting, use of laxatives and diet pills were reported by 4%, 10%, and 8.5% respectively of the athletes (Figure 1). Kurtzman et al., (1989) indicated that 9% of the athletes in their study reported using laxatives and/or having vomited at least once in the past year for weight control. Skemp-Arlt (2006) showed that bulimic symptoms were characterized by binge-eating followed by compensatory restricting in order to prevent weight gain.

Although previous research has tended to sum EAT scores into a single scale, findings from Lane et al., (2004) lend support to using each subscale independently. In fact, these authors reported that scores on dieting behaviors could influence the composite score on EAT. Moreover, they noted that only dieting and bulimia scores were associated with depressed mood. In our study, the athletes had significantly higher Dieting ($p < 0.01$), and Bulimia scores ($p < 0.05$) than the controls. Dieting is related to an increased risk for restrictive eating and overeating problems, as well as binging and purging behaviors. For relationships between mood and EAT scores, our findings show that depression mood accounted for a significant proportion of the variance of Global EAT Scores as well as of Dieting and Bulimia scores, in a positive linear manner (Table 3). These results, which show a significant relationship between depressed mood and negative eating attitudes support previous research (Grubb et al., 1993). The link between depression and risk of eating disorders shown in clinical environments (Herpertz-Dahlmann et al., 1995) has yet been reported in the athletic environment (Terry et al., 1999). Thus, all these results suggest that mood profiling may serve as a strategy for identifying athletes at risk of developing eating disorders.

Table 3. Relative contribution of Body esteem and depression which predict EAT scores.

		R^2 adj	Beta	t
Global EAT				
Depression	Athletes	.64	.8	4.4 ***
Bulimia				
Depression	Athletes	.73	1	6.7 ***
BE-Satisfaction	Nonathletes	.45	-.79	-3.7 ***
Dieting				
BE- Appearence	Athletes	.45	-.5	-2.4 *
Depression			6.4	2.8 ***

Abbreviation: EAT = Eating Attitudes Test, BE = body esteem.
* $p < 0.05$, *** $p < 0.001$.

Table 4. Mood states subscales of the participants. Data are means (± SD).

	Tension	Depression	Vigor	Fatigue	Anger	Confusion
Controls	41.4 (5.8)	39.9 (4.8)	54.7 (6.4)	46.3 (5.6)	45.1 (4.7)	42.7 (7.8)
Judoists	39.4 (6.5)	38.5 (3.8)	55.0 (5.9)	45.1 (4.9)	44.1 (4.8)	40.9 (5.3)
Cyclists	38.4 (8.7)	37.8 (8.8)	59.0 (5.6)	43.6 (5.7)	42.7 (5.2)	38.8 (8.7)
Athletes †	38.7 (7.1)	39.1 (4.2)	57.8 (2.4)	44.2 (5.0)	43.2 (5.7)	39.1 (6.8)

† Athletes = Judoists + Cyclists

Our results also showed that feelings about appearance accounted for a significant amount of variance in Dieting scores among athletes. BE-Weight Satisfaction is also related to Bulimia scores among non athletes (Table 3). Body-esteem is closely related to global self-esteem and emphasises the person's affective evaluation of the body (i.e. feelings associated with personal body image). Body-esteem has also been established as an important aspect of well-being, and Berry and Howe (2000) indicated that athletes with low self-esteem who are involved in competitive sports might be at risk for the development of eating disorders particularly when this personality trait is strongly linked to environmental pressures. In our study, athletes lost more than 3 kg during the season. Moreover, 67% of the cyclists and 25% of the judoists reported that they were not satisfied with their weight. These athletes had body-image pressures at a number of levels, ranging from the performance-related pressures reinforced by coaches and team-mates. The study by Paxton (1996) underlined the importance of perceived team-mates pressure on participants' body image concern. This point suggests that a team environment may provide a subculture that emphasizes the importance of thinness though peer pressure to diet and be thin. Team coaches and others responsible for the preparation of judoists should be encouraged to educate themselves and their athletes on safe weight loss strategies. Furthermore, it appears that people who diet or restrain their eating are more aware of the social pressures about thinness (Griffiths et al., 2000). As also suggested by Gingras et al. (2004) the athletes in our study may possess beliefs about their appearance that give rise to their weight-loss efforts.

Previous researchers have recognized that perfectionism influences disordered eating patterns (Davis, 1997), and the tendency to hold and pursue high goals gives rise to conditions for restrained eating (Slade, 1982). Moreover, perfectionism, body dissatisfaction, and self-esteem have been identified as factors that significantly affect the development of bulimic symptoms (Vohs et al., 2001). Contrary to our expectations, the findings indicated that Perfectionism dimensions were not relevant in predicting eating disorders symptoms in this sample. Athletes were no different from controls in terms of perfectionism dimensions, this result being in agreement with that of Ferrand and Brunet (2004) in cycling. Thus, even though cyclists and judoists reported experiencing pressure to control their body weight, they did not display higher scores of perfectionism, particularly higher Socially Prescribed Perfectionism, than controls (Table 4).

Limitations

Present limitations need to be addressed. First, as with any study using self-reported measures, findings may be susceptible to selective or erroneous reporting. Self-reported measures always carry risks, especially with athletes who might not be forthcoming in their answers for fear of being eliminated from the team if they appear to be eating-disordered (Brownell et al., 1992). Second, the EAT-26 alone does not yield a specific diagnosis of an eating disorder. However, the use of a self-administered questionnaire, which incorporates Diagnostic and statistical manual of mental disorders (APA, 1994), as we used in our study, increases the advantages of using this questionnaire, which has been used in many epidemiological or screening studies, even if each susbscale should be interpreted independently (Gila et al., 2005; Lane et al., 2004). Finally, although the number of participants was small, there have been very few studies of eating attitudes in male athletes, since this is a relatively under recognised problem.

Conclusion

Even if none of the athletes met the criteria for EDs, they did engage in pathogenic weight loss methods several times in the year and especially during the period of competition, putting these athletes at risk for developing eating disorders. This study highlights that these athletes may tread a fine line between optimal competitive attitudes and detrimental health behaviors. Because sports medicine providers, including athletic trainers, physicians, and physical therapists, see athletes on a frequent basis, they must be aware of disordered-eating attitudes and be informed in identification of this pathology. Further research is needed to more firmly establish the prevalence eating disorders in the male athlete and further, extend the line of inquiry examining relationships among measures of eating disorders, mood, and personality of athletes.

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Key points

- Prevalence of eating disorders has become a growing concern among athletic populations, but very little information is available concerning male athletes.
- This study highlights that these athletes may tread a fine line between optimal competitive attitudes and detrimental health behaviors.

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