



Sports-related correlates of disordered eating in aesthetic sports

Eva M. Krentz*, Petra Warschburger

Department of Psychology, University of Potsdam, Karl-Liebknecht-Straße 24-25, 14476 Potsdam, Germany

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ABSTRACT

Objectives: Eating disorders are more prevalent in aesthetic sports such as figure skating or gymnastics. While many descriptive studies on their prevalence already exist, more and more studies are now examining the reasons for the specific risk of these athletes. The purpose of this study was to focus on sport-specific variables in aesthetic sports and to examine their relation to disordered eating.

Design: Cross-sectional.

Method: 96 Elite athletes from aesthetic sports (61 girls, 35 boys) were compared to a control group of 96 sex-matched non-athletes. The mean age of participants was $M = 14.0$ years ($SD = 2.2$). The questionnaire package included disordered eating, general body dissatisfaction, sports-related body dissatisfaction, desire to be leaner to improve sports performance and social pressure to be lean from sports environment.

Results: Athletes from aesthetic sports displayed more eating disorder symptoms but did not differ from the control group with respect to general body dissatisfaction. For athletes in aesthetic sports, the desire to be leaner to improve sports performance was a significant predictor for disordered eating, and mediated the relationship between social pressure from the sports environment and disordered eating. **Conclusions:** The results suggest that sports-related parameters are relevant for understanding eating disorder symptomatology in aesthetic sports. Athletes from aesthetic sports seem to be more at risk if they perceive the possibility to enhance sports performance through weight-regulation, which appears to be triggered by social pressure to be lean from sports environment.

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Eating disorders such as Anorexia Nervosa and Bulimia Nervosa are serious, difficult-to-treat psychiatric disorders (Steinhausen, 2002). For elite athletes, in addition to impairment in health and everyday life, an eating disorder can lead to a decline in sports performance (Dosil, 2008). Subclinical forms, where some, but not all symptoms are exhibited, and which are often referred to as disordered eating, might already be associated with negative consequences and bear the risk of aggravation (Dosil, 2008; Petrie, Greenleaf, Reel, & Carter, 2009). In order to enable elite athletes to perform to their highest potential while maintaining their health, knowledge of the risk for eating disorders in sports is important.

Past research has shown the prevalence of eating disorders is only slightly higher among athletes (combining all sport types and performance levels) when compared with the normal population (Hausenblas & Carron, 1999; Smolak, Murnen, & Ruble, 2000). Though, high rates of disordered eating occur in elite-sports where competition results depend on judges' opinions and aesthetic evaluation, as in gymnastics, figure skating, diving, and dancing

(De Bruin, Oudejans, & Bakker, 2007; Sundgot-Borgen, 1994). Different terms such as 'leanness', 'appearance-oriented' or 'judged' have been applied for such types of sports. In this study, the term 'aesthetic sports' will be used, according to the classification by Sundgot-Borgen (1994). Success in aesthetic sports calls for a lean, sometimes even prepubescent body to fulfill aesthetic standards and to facilitate flexibility in movements or on particular apparatus (Thompson & Sherman, 2010).

Two meta-analyses provide evidence for the higher risk in aesthetic sports. Hausenblas and Carron (1999) found small to medium effect sizes for anorexic symptoms and drive for thinness in female athletes from aesthetic sports. Smolak et al. (2000) identified the highest risk for eating disorders in dance and performance sports at the elite level with a medium effect size. Heterogeneity in the effect found by Smolak et al. (2000) raises the question of which elite athletes in aesthetic sports are more vulnerable than others. Research on factors that might trigger disordered eating in such sports at a high-performance level need to consider the demands of the specific sport discipline (Sundgot-Borgen & Torstveit, 2010).

A theoretical framework to analyze risk factors for eating disorders in athletes was provided by Petrie and Greenleaf (2007).

* Corresponding author. Tel.: +49 177 5995521; fax: +49 331 9772794.

E-mail addresses: eva.krentz@uni-potsdam.de, evamariakrentz@gmx.de (E.M. Krentz).

Their model is based on sociocultural theory (Stice, 1994) and takes both specific sport pressures and societal pressures to be thin into account. Empirical support for the relation between social pressure from the sports environment and disordered eating comes from several studies (De Bruin et al., 2007; Sundgot-Borgen, 1994). For example, athletes displayed more disordered eating if they had received critical comments about body weight and shape (Kerr, Berman, & Souza, 2006; Muscat & Long, 2008). Since most studies have analyzed direct forms of social pressure, such as teasing or critical comments (De Bruin et al., 2007; Kerr et al., 2006; Muscat & Long, 2008), less is known about indirect forms of social pressure in sports, such as norms and modeling behavior. Perceived body weight norms or dieting team-mates could however be substantial, especially since studies on non-athletic samples have demonstrated the influence of indirect forms of social pressure on disordered eating (Helfert & Warschburger, 2009).

Apart from sport pressures, the other risk factors in the etiological model by Petrie and Greenleaf (2007) were derived from non-athletic samples and were not adapted for athletes. For example, body dissatisfaction is posed as a risk factor and assumed to mediate the relation between social pressure and disordered eating. However, body dissatisfaction is lower among athletes of all kinds of sports, including aesthetic sports, as compared with non-athletic control groups (Hausenblas & Downs, 2001; Smolak et al., 2000). Torstveit, Rosenvinge, and Sundgot-Borgen (2008) even found body dissatisfaction to be lower among elite athletes in 'lean sports' compared with other types of sports – in the face of more disordered eating in 'lean sports'. This suggests that eating disorders in elite athletes from aesthetic sports do not occur more often due to a higher general dissatisfaction with their own body.

It might be necessary to consider another type of body dissatisfaction for elite athletes which refers to the ideal for participating in the specific sporting discipline (Dosil, 2008). As the results by Tiggemann (2000) suggest, body dissatisfaction varies depending on the situation. In fact, Russell (2004) found an ideal performing body (e.g. in relation to their sport) apart from an ideal social body (e.g. in relation to sociocultural beauty ideals) in athletes. In relation to their sports, athletes' perceptions of their bodies appear to be functional and are based on the specific performance requirements (Loland, 1999). In aesthetic sports, the ideal body for competitions is especially lean (Thompson & Sherman, 2010) and athletes could be dissatisfied if they perceive a discrepancy between the own body shape and the perceived ideal body shape for best performance.

As for body dissatisfaction, the reasons for dieting in athletes should also be viewed in relation to the demands of the specific sport type. For example, Sundgot-Borgen (1994) found that elite athletes mainly diet in order to enhance their sports performance. Harris and Greco (1990) asked female gymnasts what effects weight loss would have on their performance. More than half of the gymnasts reported that even a small weight loss of 3 lb (1.36 kg) would positively affect their performance. Also, the perceived importance of one's weight, body shape and physical appearance for performance is related to dieting behavior, as De Bruin et al. (2007) found in Dutch female athletes from aesthetic sports (even though only significant in non-elites, possibly due to the small sample size of elites). These studies suggest that the desire to be leaner to enhance sports performance might be a sports-related correlate of disordered eating in athletes from aesthetic sports.

In the previous sections, we have reviewed sports-related factors that are associated with disordered eating and may potentially increase the risk for elite athletes in aesthetic sports. Since most studies were based on samples of female athletes only, the question arises if these results apply for male athletes as well. It was already shown that disordered eating exists among male

athletes from aesthetic sports and is even more frequent than for male non-athletic control groups (Hausenblas & Carron, 1999). It is therefore important to know which sports-related factors are associated with disordered eating for male athletes in aesthetic sports. Results on non-athletic samples have shown that even though psychosocial risk factors are less prevalent in boys, the relations between variables are similar in boys and girls (Keel, Klump, Leon, & Fulkerson, 1998; Ricciardelli & McCabe, 2004; Tiggemann, 2005). Gender differences have been found with regard to body dissatisfaction, where a subgroup of boys desires a larger, more muscular body (Ricciardelli & McCabe, 2004), but the drive for muscularity is related to other problem-behaviors, such as anabolic steroid use (Ricciardelli & McCabe, 2004), rather than to a drive for thinness (McCreary & Sasse, 2000). For example, Petrie, Greenleaf, Carter, and Reel (2007) found no difference between male athletes with and without disordered eating in their drive for muscularity. Since we were specifically interested in variables associated with restricted eating patterns, we did not include the dimension of muscularity.

In order to understand the higher risk for disordered eating in aesthetic sports better, the aim of this study is to analyze potential sports-related correlates of disordered eating in a sample of male and female elite athletes from aesthetic sports. An adolescent sample was chosen as the incidence of eating disorders is highest during puberty (Van Son, Van Hoeken, Bartelds, Van Furth, & Hoek, 2006), and therefore the effects of risk factors might be most potent. In the first part of this study, athletes from aesthetic sports were compared with a non-athletic control group to determine whether results from mostly US-American and Canadian studies regarding disordered eating and body dissatisfaction could be replicated in this German sample. For both genders, we hypothesized more disordered eating and less body dissatisfaction in the athlete group. In the second part, we explored sports-related variables in the athlete sample, such as sports-related body dissatisfaction, the desire to be leaner to improve sports performance, and social pressure from the sports environment. We hypothesized that sports-related variables explain an additional amount of variance in eating disorder symptomatology in athletes from aesthetic sports. We then tested mediational models, hypothesizing that social pressure from the sports environment forms the background (as proposed in the model by Petrie & Greenleaf, 2007) against which sports-related body dissatisfaction and the desire to be leaner to improve sports performance develop, and in turn influence disordered eating. Since we expected no gender differences in the mode of actions (Keel et al., 1998; Ricciardelli & McCabe, 2004; Tiggemann, 2005), the mediational models were tested for the whole athlete sample.

Method

Participants and procedure

The study was approved by the ethics committee and the local ministry of education. We obtained written informed consent from all participants and their parents. Athletes from aesthetic sports from six different German sports institutions with high-performance levels such as elite sport schools or Olympic training centers were selected. 96 athletes (61 girls, 35 boys) between 11 and 18 years of age filled in a questionnaire during or after a training session. Types of sports included were ice figure skating ($n = 30$), gymnastics ($n = 25$), ballet ($n = 15$), roller-skate figure skating ($n = 11$), diving ($n = 12$), and rhythmic gymnastics ($n = 3$).

The control group included adolescents from three different German high schools, and were part of a larger study on eating disorders funded by the Federal Ministry of Education and Research

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