Psychology of Sport and Exercise xxx (2014) 1–9

Contents lists available at ScienceDirect

Psychology of Sport and Exercise

journal homepage: www.elsevier.com/locate/psychsport

Prevalence and correlates of disordered eating in female figure skaters

Dana K. Voelker [a,*], Dan Gould [b,1], Justine J. Reel [c,1]

[a] The College at Brockport, State University of New York, Department of Kinesiology, Sport Studies, & Physical Education, 350 New Campus Drive, Brockport, NY 14420, United States
[b] Michigan State University, Department of Kinesiology, 210IM Sports Circle, East Lansing, MI 48824, United States
[c] The University of Utah, Department of Health Promotion and Education, 1901 E. So. Campus Drive, #2142, Salt Lake City, UT 84112, United States

ARTICLE INFO

Article history:
Received 18 February 2013
Received in revised form
12 December 2013
Accepted 17 December 2013
Available online xxx

Keywords:
Sport
Figure skater
Disordered eating
Eating disorder
Body image
Weight pressure

ABSTRACT

Objectives: The purposes of this study were to (a) examine the prevalence of disordered eating among female figure skaters, (b) compare levels of disordered eating between skaters and their same-age peers, (c) compare levels of disordered eating between elite skaters and their sub-elite counterparts, and (d) examine general and sport-related correlates of disordered eating (i.e., four sport-related weight pressures, general and sport-related body dissatisfaction, positive and negative perfectionism, self-esteem, and athletic identity).
Design: This study employed a cross-sectional design.
Methods: Participants completed paper–pencil surveys, including measures for disordered eating, four sport-related weight pressures, general and sport-related body dissatisfaction, positive and negative perfectionism, self-esteem, and athletic identity. Participants included 272 female figure skaters ages 12–25 ($M = 15.63$) across five US states.
Results: Thirteen percent of participants scored within range of problematic eating attitudes and behaviors but were no more symptomatic than their same-age peers when compared to existing normative data. Levels of disordered eating did not significantly differ between those competing at the elite and sub-elite level. After controlling for body mass index and age, disordered eating was significantly predicted by self-consciousness of weight and appearance, general and sport-related body dissatisfaction, and positive perfectionism.
Conclusions: Disordered eating occurs in female figure skaters across competitive levels. Concern over weight and appearance, dissatisfaction with one's body in general and in sport, and positive perfectionism may serve as important tools in the prevention and detection of disordered eating in female figure skaters.

Disordered eating represents a spectrum of problematic eating attitudes, behaviors, and body image distortions (American Psychiatric Association, 2013) that is measured by symptoms related to pathogenic weight control behaviors (e.g., restrictive dieting, binge eating, vomiting, laxative use) and weight, shape, or body size concerns (e.g., Mintz, O'Holloran, Mulholland, & Schneider, 1997). Pernick et al. (2006) found that 19.6% of high school female athletes were classified with disordered eating as defined by dietary restraint, unhealthy weight control behaviors, and concern over eating, shape, and weight. Among collegiate female athletes, 2% were eating disordered based on criteria from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), and 25.5% were symptomatic (Greenleaf, Petrie, Carter, & Reel, 2009). Sundgot-Borgen and Torstveit (2004) found that 20% of elite female athletes met DSM-IV criteria for a clinical eating disorder (i.e., anorexia nervosa, bulimia nervosa, eating disorder not otherwise specified) or were classified with "anorexia athletica" based on symptoms thought to be athlete-specific. Female athletes in aesthetic sports that emphasize appearance, leanness, or low body weight (e.g., figure skating, gymnastics, diving) report a disordered eating frequency of 42%, which is greater than in endurance (24%), technical (17%), and ball game sports (16%) (Sundgot-Borgen & Torstveit, 2004). Using the Eating Attitudes Test (EAT-26), Krentz and Warschburger (2011b) also found that aesthetic sport athletes reported more unhealthy eating attitudes and behaviors than their ball sport counterparts. Thus, disordered eating occurs among females at varying competitive levels, especially in aesthetic sports.

* Corresponding author. Tel.: +1 585 395 5979.
E-mail addresses: dvoelker@brockport.edu (D.K. Voelker), drgould@msu.edu (D. Gould), justine.reel@hsc.utah.edu (J.J. Reel).
[1] Contributed equally to this work.

1469-0292/$ – see front matter © 2014 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.psychsport.2013.12.002

Data on the prevalence of disordered eating in athletes is limited as most estimates are derived from large categories of sport types (e.g., aesthetic, endurance, technical, ball game). With little consistency across studies as to which sports represent each category, prevalence estimates may be imprecise. Hausenblas and Carron (2002) recommend that researchers obtain sport-specific prevalence estimates by gathering data from larger samples of athletes from a single sport. Anderson and Petrie (2012) reflected this effort in an examination of disordered eating and pathogenic weight control behaviors among female collegiate gymnasts ($n = 280$) and swimmers and divers ($n = 134$). Based on DSM-IV criteria, 28.9% of gymnasts and 20.9% of swimmers and divers were considered subclinical, whereas another 6.1% and 6.7% were classified with a clinical eating disorder, respectively. The present study sought to similarly collect sport-specific prevalence data with a large sample of figure skaters.

Figure skating has been identified as a sport that places youth at an abnormally high risk for disordered eating. In the popular media, disordered eating was claimed to be as high as 85%, especially among elite competitors (Coker, 2011). Although figure skaters have been grouped with similar sports to represent aesthetics and leanness in other studies (e.g., Krentz & Warschburger, 2011a), literature specifically on figure skaters is limited. Prevalence estimates of disordered eating among figure skaters are based on samples that have not exceeded 67 participants (e.g., Barkley, 2001; Rucinski, 1989; Ziegler et al., 1998), only one study of 41 pairs skaters and ice dancers made comparisons to same-age peers (Taylor & STE-Marie, 2001), and no studies have compared disordered eating across competitive skating levels.

Anecdotal evidence suggests that higher stakes competition, heightened levels of scrutiny, and increased expectations from coaches, judges, parents, and the media are reasons for weight and appearance-related concerns in elite skating (Ryan, 1995). In a qualitative study, Gould, Jackson, and Finch (1993) found that weight management, appearance, and critical evaluation from others on weight, shape, and body size were indeed major sources of stress among female national level skaters. Skaters competing at sub-elite levels, in which performance expectations are presumably lower, may not experience the same degree of weight and appearance pressures as their elite peers. Few researchers have examined the prevalence of disordered eating across competitive levels within a single study, although preliminary evidence indicates that disordered eating may be more frequent at higher competitive levels. For example, Picard (1999) found that NCAA Division I athletes showed more signs of abnormal eating and were at greater risk for a clinical eating disorder than their Division III counterparts. Thus, the present study compared disordered eating between skaters competing at the elite (i.e., those who competed nationally and internationally) and sub-elite level (i.e., those who never competed above a local, regional, or sectional level).

In addition to prevalence, personal and contextual factors associated with disordered eating in sport have interested researchers. Petrie and Greenleaf (2012) proposed a theoretical model suggesting that societal and sport-specific pressures as well as moderating psychological characteristics are associated with disordered eating among athletes. They also note that due to a dearth of athlete-specific studies, much of our knowledge on factors associated with disordered eating in sport is generalized from findings with non-athlete populations. In line with efforts to study athletes specifically (e.g., Krentz & Warschburger, 2013), a primary aim of this study was to examine correlates of disordered eating (i.e., four sport-related weight pressures, general and sport-related body dissatisfaction, positive and negative perfectionism, self-esteem, and athletic identity) selected based on the extant literature, their hypothesized relevance to figure skaters, and their consistency with Petrie and Greenleaf's (2012) theoretical model.

Sport-related weight pressures

Female athletes are exposed to pressures to change their weight, shape, or size to obtain bodies that are considered ideal for society and their sport (Petrie & Greenleaf, 2012). Societal weight pressures include those that encourage thinness among females and are reinforced by parents, peers, and the media (Striegel-Moore & Bulik, 2007). Unique from the societal pressures that women and girls face in general, female athletes also experience weight pressures from their sport, such as revealing sport attire; weight requirements and weigh ins; comments by parents, teammates, coaches, or judges; and perceived performance gains following weight loss (Reel, Petrie, SooHoo, & Anderson, 2013). Petrie and Greenleaf (2012) propose that societal and sport-related weight pressures promote disordered eating in some athletes. To explain this relationship, longitudinal data show that body dissatisfaction, a strong factor in the development of disordered eating, results directly from sport-related weight pressures among female collegiate gymnasts, swimmers, and divers (Anderson, Petrie, & Neumann, 2012). Like other aesthetic sport athletes, figure skaters believe that their sport is linked to weight pressures (Taylor & STE-Marie, 2001). Thus, four sport-related weight pressures subtypes (i.e., self-consciousness of weight and appearance, perceived importance of weight and appearance, coaches/skating peers/sport, and having a weight limit) were examined in this study.

General and sport-related body dissatisfaction

Body dissatisfaction involves negative thoughts and feelings about one's body and a perceived discrepancy between current and ideal body size (Grogan, 2008). Body dissatisfaction is thought to derive from the internalization of societal and sport-related weight pressures (Petrie & Greenleaf, 2012), which has been preliminarily supported through longitudinal research (Anderson et al., 2012). Those who are body dissatisfied may respond behaviorally (e.g., restrict dietary intake) or affectively (e.g., experience negative emotions), both of which have been shown to contribute to the onset and maintenance of eating pathology (Stice, 2002).

Body dissatisfaction has been shown to be context-dependent such that those who are highly dissatisfied in a body-focused environment (e.g., beach) may be less so in a non-body-focused environment (e.g., home) (Tiggemann, 2000). From this research, Krentz and Warschburger (2011a) theorized that in addition to general body dissatisfaction (i.e., discrepancy between current and ideal body size), sport-specific body dissatisfaction (i.e., discrepancy between current and ideal body size for sport performance) may also influence disordered eating. Body dissatisfaction experienced in a body-focused context like figure skating, where weight, shape and size are critiqued, may be especially important in the development of disordered eating. Thus, both general and sport-related body dissatisfaction were evaluated in this study.

Positive and negative perfectionism

Perfectionism is defined as an enduring personality trait characterized by setting high performance standards to please oneself and others (Hewitt & Flett, 1991). Terry-Short, Owens, Slade, and Dewey (1995) identified a distinction between positive perfectionism, in which an individual is motivated to achieve goals that promote favorable outcomes, and negative perfectionism, in which an individual is motivated to achieve goals that prevent adverse outcomes. Petrie and Greenleaf (2012) identified perfectionism as a

Please cite this article in press as: Voelker, D. K., et al., Prevalence and correlates of disordered eating in female figure skaters, *Psychology of Sport and Exercise* (2014), http://dx.doi.org/10.1016/j.psychsport.2013.12.002