



Weight pressures in sport: Examining the factor structure and incremental validity of the weight pressures in sport – Females

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ARTICLE INFO

Article history:

Received 17 July 2012

Received in revised form 12 November 2012

Accepted 15 January 2013

Available online 4 February 2013

Keywords:

Disordered eating

Weight pressures

Body image

Female athletes

Eating disorders

Gymnasts

ABSTRACT

Due to pressures within the sport environment, such as from coaches, teammates, uniforms and judges, female athletes may develop unhealthy eating practices to lose weight or change their body size/shape to become more competitive and meet societal and sport-related physique ideals. However, up until the development of the Weight Pressures in Sport for Females (WPS-F; Reel, SooHoo, Petrie, Greenleaf, & Carter, 2010) there was no way to quantify sport-specific weight pressures with female athletes. In this study, the psychometric properties of the scale were further examined using a sample of 414 female collegiate athletes. Sample 1 [$n = 207$; $M = 19.27$ years; $SD = 1.16$] and Sample 2 [$n = 207$; $M = 19.19$ years; $SD = 1.66$] participants were of a similar age and were used for exploratory and confirmatory analyses respectively. A two factor structure was confirmed and it was established that the scale was unique from general sociocultural pressures that all women experience, predicting female athletes' internalization, body dissatisfaction, dietary intent, and bulimic symptomatology. Specifically, the following factors, Coach and Sport Pressures about Weight (Factor 1) and Pressures Regarding Appearance and Performance (Factor 2), were found to have strong internal consistency and the emerging reliable and valid WPS-F has practical implications for screening and identifying weight-related sport pressures within female athletes. WPS-F can also serve to educate sport professionals about environmental pressures so that disordered eating and body image disturbances can be prevented.

Published by Elsevier Ltd.

1. Introduction

Female athletes experience pressure to change their body weight, shape or size to meet a perceived athletic ideal (De Bruin, Oudejans, Bakker, & Woertman, 2011; Thompson & Sherman, 2010). Furthermore, perceiving one's body as larger than the prescribed athletic ideal is associated with restrictive eating and disordered eating behaviors among female athletes (Haase, 2011). Disordered eating is a problem that significant numbers of female athletes experience (Greenleaf, Petrie, Reel, & Carter, 2010), and the unique pressures in the sport environment that athletes experience from coaches, teammates, uniforms, and judges likely contribute to this elevated rate.

Disordered eating among female athletes can range from subclinical behaviors (i.e., engaging in unhealthy weight control methods that do not meet clinical criteria) to diagnosable clinical eating disorders (i.e., Anorexia Nervosa, Bulimia Nervosa, Eating Disorder Not Otherwise Specified) (American Psychiatric Association, 2000). More than 25% of

female athletes could be classified as symptomatic/subclinical, whereas 2% to 7% of female athletes met the diagnostic criteria for clinical eating disorders in recent studies (e.g., Greenleaf, Petrie, Carter, & Reel, 2009; Reel, SooHoo, Doetsch, Carter, & Petrie, 2007; Sanford-Martens et al., 2005). For example, Greenleaf et al. (2009) found that 25.5% of female collegiate athletes sampled from 3 universities and 16 sports exhibited disordered eating symptoms: 7.8% engaged in binge eating, 15.5% exercised to burn calories, 15.6% dieted/fasted, and fewer than 3% of the sample reported vomiting, or using diuretics or laxatives. Only 2% of these female athletes were classified with a clinical eating disorder. More recently, Anderson and Petrie (2012) reported that 26.1% of their sample of female collegiate gymnasts, swimmers and divers displayed subclinical eating disordered symptoms; while 6.3% met criteria for clinical eating disorders, which included sub-threshold bulimia nervosa (76.9%), non-binging bulimia (15.4%), and binge eating disorder (7.7%).

Although each sport presents a unique set of demands related to body weight, shape and size, sports that emphasize thinness, muscularity or a particular physique (e.g., gymnastics, figure skating) may be at even a greater risk for disordered eating and body image disturbances because there may be more direct appearance-, body-, or weight-focused demands and pressures during training and competition (Anderson, Petrie, & Neumann, 2012; Thompson & Sherman, 2010). For example, Smolak, Murnen, and Ruble (2000) found that female

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athletes in esthetic sports (e.g., figure skating) in which performance success is based on a particular “look” had significantly higher levels of disordered eating than either non-athletes or athletes in ball-game sports. Furthermore, [Torstveit, Rosenvinge, and Sundgot-Borgen \(2008\)](#) found that a higher number of female elite athletes in sports that emphasized a lean build (i.e., leanness-demand sports) (46.7%) met the criteria for clinical eating disorders than athletes in non-leanness sports (19.8%) or controls (21.4%). Regarding body image concerns, competitive synchronized swimmers reported significantly higher levels of body dissatisfaction than athletes in non-leanness demand sports or non-athlete controls ([Ferrand, Magnan, Rouveix, & Filaire, 2007](#)). Therefore, although female athletes from any sport may potentially experience weight pressures and could be vulnerable to develop disordered eating patterns, certain sports present an even greater risk due to a heightened focus on appearance as it relates to performance success, such as evaluation by judges and competing uniforms that reveal all perceived bodily flaws.

1.1. Types and sources of weight pressures for female athletes

There are numerous unique pressures within the sport environment that may contribute to the development of disordered eating attitudes and behaviors, including: the revealing nature of the team uniform, the perception of performance advantages gained at a certain weight or body size/shape, weight requirements and weigh-ins, comments from coaches, teammates, and judges, and attainment of an esthetic ideal that may resonate with judges and lead to higher scores ([Anderson et al., 2012; Reel, 2012; Reel et al., 2010](#)). Despite experiencing such pressures, only some female athletes will develop disordered eating attitudes and behaviors, a fact acknowledged by [Petrie and Greenleaf \(2012\)](#) in their etiological model of eating disorders among athletes. They not only identified both general sociocultural pressures (e.g., media) and sport-specific pressures about body, weight, and appearance as key risk factors in the development of body image concerns and disordered eating behaviors among female athletes, but also recognized that psychological and personality factors, for example, may moderate the influence of these pressures, increasing (or decreasing) athletes' risk. Once researchers are able to identify and validly measure the unique pressures within the sport environment, they then will be able to examine why certain athletes are affected more strongly by these pressures than are others.

Revealing team uniforms are thought to contribute to feelings of increased self-consciousness and negative body image across college athletes and dancers ([Reel, 2012](#)). For example, over half of college female cheerleaders (54%) mentioned that revealing team uniforms created feelings of body-consciousness ([Reel & Gill, 1996](#)), and cheerleaders who wore more revealing uniforms that displayed midriffs were more likely to experience body image dissatisfaction than cheerleaders with more modest uniforms ([Torres-McGehee, in press](#)). This uniform pressure also was identified by 45% of college female swimmers who said that tight, form-fitting swim suits were a source of body dissatisfaction ([Reel & Gill, 2001](#)). Almost all (99%) in a sample of college female dancers experienced negative body image and feelings of self-consciousness from costumes that failed to hide perceived bodily flaws and admitted that costumes that were perceived to make them appear unattractive were a performance distraction ([Reel, SooHoo, Gill, & Jamieson, 2005](#)).

Perceived performance benefits also may serve as a reason for athletes across sports to change their body weight, size or shape ([Reel, 2012](#)). Competitive collegiate female swimmers (42%) reported a perceived performance advantage associated with weight loss ([Reel & Gill, 2001](#)), and adolescent female swimmers emphasized the need for a “swimmer's body” (i.e., thin and lean with broad shoulders) to perform at their best ([Porter, Morrow, & Reel, 2012](#)). College female dancers expressed feeling the pressure to portray long and thin bodily lines during performances rather than attain a particular body weight ([Reel et al., 2005](#)). Interestingly, all dancers (100%) reported mirrors being a weight pressure during training, whereas 97% stated that

being lighter was a performance advantage. Among cheerleaders, particularly those who believed the flyer position (i.e., cheerleader who is thrown in the air by a base) was more prestigious than being a base, there was an association between lighter weight and better performance. In fact, gaining weight could jeopardize a cheerleader's flyer status ([SooHoo, Reel, & Pearce, 2011; Torres-McGehee, in press](#)). Ski jumpers, rowers and equestrian athletes also have reported believing that they needed to keep weight low to excel in their sports (e.g., [Sherman & Thompson, 2009; Torres-McGehee, Monsma, Gay, Minton, & Mady-Foster, 2011](#)).

Although many athletes have reported changing their weight to improve performance, others may do so simply to meet formal weight requirements and pass weigh-ins throughout the season ([Reel, 2012](#)). For example, female college cheerleaders (54%) faced a maximum weight limit (e.g., 115 lb or less) that was usually not based on height or frame in order to be eligible to try-out for the squad. These women (40%) also were subjected to weekly weigh-ins to monitor weight loss and weight gain because they were expected to lose additional weight throughout the competitive season ([Reel & Gill, 1996, 1998](#)). Athletes in weight class sports (e.g., boxing, wrestling) also are subjected to weigh-ins and the pressure to “make weight” to remain competitive ([Sherman & Thompson, 2009](#)).

Weight, body, and appearance pressures also emanate from certain influential individuals (e.g., coaches, teammates, judges) within the sport environment ([Reel, 2012](#)). Adolescent and adult female competitive swimmers reported that coaches encouraged them to lose weight, increase upper body muscularity and strive to look like a “triangle” ([Howells & Grogan, 2012](#)). Female college cheerleaders (70%) identified the coach as the most salient weight pressure ([Reel & Gill, 1996](#)). For gymnasts, 44% reported receiving negative comments about their bodies from coaches and 71% of those gymnasts were more likely to feel they should lose weight than those who had not received a negative body comment ([Kerr, Berman, & De Souza, 2006](#)). Over half (57%) of college dancers reported that their choreographer noticed weight gains or losses and selected the thinnest dancers for the most important performance roles ([Reel et al., 2005](#)). [Greenleaf \(2004\)](#) found that in addition to coaches being a source of weight pressure, over half of college synchronized skaters thought that appearance and weight was important to judges (64%) and teammates (54.7%).

Furthermore, [Reel et al. \(2010\)](#) investigated a sample of college female athletes ($N=204$) with an average age of 20.16 years ($SD=1.31$) from three universities that represented 17 sports. Sports included both leanness and non-leanness demand sports and athletes represented all years of school. Researchers discovered in this study that teammates noticing weight-gain represented the most frequently reported weight pressure (37%), followed by the importance of body weight and appearance from friends outside of sport (36%). When separated by sport, cheerleaders (100%), cross country runners (100%), divers (100%) and gymnasts (80%) were most likely to report teammates as a source of pressure about body and weight. High school (42%) and college (30%) female cheerleaders said that having a stunt partner notice weight changes was a source of pressure to them ([Reel & Gill, 1996, 1998](#)). In a longitudinal study, [Anderson et al. \(2012\)](#) confirmed that weight and appearance pressures from coaches and teammates that female athletes experience at the beginning of a season predicted increases in body dissatisfaction over the course of the season. Female athletes may experience unique pressures regarding body, weight and appearance from various sources within the sport environment and such pressures are associated with increases in disordered eating attitudes and behaviors. Thus, it becomes essential that researchers have an accurate way to assess such pressures.

1.2. Assessment of weight pressures in sport

Although earlier studies have examined weight pressures within select groups of athletes (e.g., [Reel & Gill, 1996, 1998, 2001](#)), there

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