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The Relationship between Gender, Type of Sport, Body Dissatisfaction, Self Esteem and Disordered Eating Behaviors in Division I Athletes

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ABSTRACT

The present study examined whether gender, type of sport (lean v. non-lean), body dissatisfaction and self esteem were associated with disordered eating behaviors in Division I college athletes. More female than male athletes displayed disordered eating behaviors; approximately one-quarter of the population was at risk for a clinically diagnosable eating disorder. The results also revealed that females in non-lean sports (basketball, tennis, golf, soccer, and skiing) and males in lean sports (track, wrestling) displayed the highest level of disordered eating behavior and body dissatisfaction. Finally, results showed that for women, disordered eating behaviors were predicted in order by: body dissatisfaction, self esteem and type of sport (lean v. non-lean), whereas for men, disordered eating behaviors were only predicted by body dissatisfaction. Information from this study will be useful for coaches and athletic trainers hoping to design interventions for athletes suffering from disordered eating behaviors.

Introduction

Eating disorders affect five to ten million Americans and seventy million individuals worldwide (Crowther, Wolf, & Sherwood, 1992). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, American Psychiatric Association [APA], 1994), anorexia nervosa is characterized by maintenance of weight below 15% of normal weight for age and height, an intense fear of gaining weight, and eventual amenorrhea. Bulimia nervosa is identified by a pattern of bingeing followed by compensation for the excessive caloric intake by vomiting, laxative use, fasting or over exercising. According to the U.S. Department of Health and Human Services (www.4women.gov/owh/pub/factsheets/eatingdis.htm), disordered eating refers to troublesome eating behaviors, such as restrictive dieting, bingeing, or purging, which

occur less frequently or are less severe than those required to meet the full criteria for the diagnosis of an eating disorder. Disordered eating can be changes in eating patterns that occur in relation to a stressful event, an illness, personal appearance, or in preparation for athletic competition. In the United States, as many as 10 million females and 1 million males are struggling with a clinically diagnosable eating disorder such as anorexia or bulimia (Crowther et al., 1992; Shisslak, Crago, & Estes, 1995).

The incidence and prevalence of eating disorders in athletes mirror those of the general population. Johnson, Powers, and Dick (1999) found in their study on "Athletes and Eating Disorders," that out of 1,445 Division I college athletes, 9% of the female athletes needed treatment for their eating disorders, and an additional 58% were at a high risk for developing eating disordered behaviors. In the same study, 1% of males had clinically diagnosable eating disorders, and 38% were at risk.

Elite athletes in the past decade have had health problems caused by both disordered eating behaviors and clinically diagnosed eating disorders that have resulted in serious illness or even death (Johnson et al., 1999; Thompson, Coovert, & Stormer, 1999). Other medical risks for athletes with eating disorders include electrolyte imbalances, cardiac arrhythmias, and the female athlete triad (Petrie & Rogers, 2001; Thompson, 1996). The female athlete triad is defined as a combination of an eating disorder, osteoporosis and amenorrhea all at the same time. Yet, female athletes in particular are increasingly getting smaller and leaner. In 1972 on the United States Women's National Team, the average height of a winning gymnastics team member was 5 feet 3 inches with an average weight of 106 pounds; in 1992, the average height was 4 feet 9 inches and the average weight was 83 pounds (Ryan, 1995). Rewarding a smaller, leaner physique has led athletes to drive for thinness. In a study done by the National Collegiate Athletic Association (Johnson et al., 1999), the goal of elite-female athletes was to achieve a body fat content lower than a woman needs for her body to function properly. In order to limit these occurrences, researchers need to find the factors that drive athletes to disordered eating.

With a 9 (female) to 1 (male) ratio of eating disorders, gender differences clearly play a large role as a risk factor for the development of disordered eating behaviors (APA, 1994). This large gender discrepancy is not unexpected given recent research findings. Muth and Cash (1997) found that compared to men, female undergraduates have more negative body-image evaluations, stronger investments in their looks, and more frequent body-image dysphoria. Evidence suggests that even if a woman is within a healthy weight limit, a woman is more likely than a man to think she is overweight and attempt to lose weight (Green et al., 1997). Women not only tend to have a lower body satisfaction, but they are also more likely to diet than are men. Although these studies show women to be more at risk of developing disordered eating behaviors, other studies have found little or no gender differences in body perceptions (Fernandez-Aranda et al., 2004; Wilcox, 1997). This absence of gender differences is likely related to an increase in body image dissatisfaction in males (Cash, 1997; Garner, 1997; Raudenbush & Zellner, 1997), as men are now complaining about being "too skinny" as well as being "too fat" (Muth & Cash, 1997). For example, Fernandez-Aranda et al. (2004) found that men are not as worried about body weight as they are about the muscular shape of their bodies. Regardless, men are becoming increasingly dissatisfied with their bodies, although it is for different reasons than their female counterparts. The fact that men are becoming less satisfied with their bodies is likely to be even more true for

male athletes who are trying to fit the stereotypical athletic body for their sport. If an athlete sees his or her body as anything less than ideal (either being too thin, too fat or not muscular enough), he or she is at an increased risk for body dissatisfaction and disordered eating behaviors (Krane, Stiles-Shipley, Waldron, & Michalenok, 2001).

Gender differences aside, of all factors involved, body dissatisfaction has the most empirical support as a predecessor to disordered eating behavior (Thompson et al., 1999). According to Friestad and Rise (2004), body image is a significant factor leading to dieting behaviors for both genders. Research has demonstrated a correlation between exposure to the ideal body image by Western media and restrictive dieting and eating pathologies (Krane et al., 2001; Stice, Maxfield, & Wells, 2003; Thompson et al., 1999). There are also ideal images presented for athletes in different sports (Petrie & Rogers, 2001). A runner is tall and thin, a gymnast is short and petite, and a football player is muscular. Athletes who do not fit the ideal body type for their sport are more likely to have both internal and external pressure to achieve that specific body image. For athletes, athletic stereotypes can lead to the risk of body dissatisfaction (Krane et al., 2001).

Studies have found that a decrease in self esteem contributes to poorer body image (Abell & Richards, 1996; Gleason, Alexander, & Somers, 2000) and bulimic symptoms (Vohs, Bardone, Joiner, Abramson, & Heatherton, 1999). A person who fits the ideal physical stereotype is perceived to be more sociable, mentally healthy, and intelligent (Feingold, 1992). People who believe that they meet this physical stereotypical standard will experience psychological benefits in their self esteem (Feingold, 1992). Further, low self esteem has been shown to have a negative effect on dieting and bingeing behaviors in adolescent girls (Lindeman, 1994; Neumark-Sztainer, Beutler, & Palti, 1996). Friestad and Rise (2004) also found that self esteem was a predictor for dieting in both genders, but it was only a significant predictor for males. This study revealed both body dissatisfaction and low self esteem as predictive factors for eating disorders in both genders. Although athletes strive to meet an ideal body type, if this body shape is unattainable to that athlete, it will result in unhealthy thoughts and behaviors (Krane et al., 2001).

Athletes tend to view losing weight as a performance enhancer (Davis, 1992; Rosen, McKeag, Hough, & Curley, 1986). Yeager, Agostini, Nattiv, and Drinkwater (1993) found that the pressure to excel was a common factor for athletes with one or more of the female athlete triad conditions. If an athlete does lose/gain weight and performance increases, the pressure to keep going in that direction intensifies. Losing or gaining weight and increasing performance at the same time boosts the athlete's self esteem, giving reason for an athlete to keep gaining or losing weight.

Sports such as gymnastics, track, swimming, etc. demand a thin physique and low body weight/body fat. Numerous athletes and coaches believe extra weight decreases speed, endurance and agility. Bruch (1981) argued that people with disordered eating view their behavior as a response to the demands put on them by others, not as something they want to do. According to Thompson and Sherman (1999), obsessively exercising to increase performance, denying pain in order to keep training, conforming with coaches/trainers requests, and pursuing and accepting nothing less than perfection defines a good athlete to most coaches. At the elite level, performance tends to be the number one concern. Given that, coaches put extreme pressure on their athletes to perform. This pressure could be demanding excessive dieting, increasing the

training load, or pressuring the athlete to engage in other techniques harmful to the body in order to reach top performance (Swoap & Murphy, 1995). For an athlete to make it to the elite-level, the athlete must have a competitive edge. To keep going at that level or even higher, the athlete will find any way possible to be superior. Athletes with the personality and mentality to be the best will put their health at risk if it maintains or improves their performance (Kirk, Singh, & Getz, 2001).

Although the aforementioned research suggests that athletes are at a higher risk of developing eating disorders and disordered eating behaviors, other research has actually found that they are at less of a risk than are non-athletes. A factor in this debate is the level of competition at which the athlete performs. Picard (1999) found that athletes at a higher level of competition were at a greater risk for disordered eating behavior than were athletes at a lower competition level. Not only is the competition level a factor, but also the type of sport is influential in the development of disordered eating behaviors.

Specific studies suggest there is a strong relationship between athletes with eating disorders and disordered eating behaviors and sports that require thinness (Dick, 1991; Patel, Pratt, & Greydanus, 2003; Smolak, Murnen, & Ruble, 2000; Stoutjesdyk & Jevne, 1993; Sungot-Borgen, 1994; Thompson et al., 1999). Thinness can be viewed as beneficial in both performance and appearance. The consensus of previous research is that athletes in sports requiring leanness are at a greater risk for developing eating disorders and disordered eating behaviors (Dick, 1991; Patel et al., 2003; Smolak et al., 2000; Stoutjesdyk & Jevne, 1993; Sungot-Borgen, 1994; Thompson et al., 1999). However, athletes in sports not requiring leanness have shown symptoms of disordered eating behaviors (Berry & Howe, 2000). For example, sports such as football and power lifting drive athletes to gain body mass resulting in an increase of body enhancers, steroids, and a change in eating habits (Lucas, 1993; Perry, Andersen & Yates, 1990; Pope & Katz, 1994; Wang, Downey, Perko, & Yesalis, 1993).

There are countless factors that could drive an athlete to disordered eating behaviors. Gender is the most obvious contributor (APA, 1994). However, other factors influence body image dissatisfaction and disordered eating behaviors aside from gender. For example, performance and body dissatisfaction are key factors in the development of disordered eating behaviors. The present study examined the prevalence of disordered eating behaviors in athletes at a highly competitive level. According to Picard (1999), disordered eating behaviors were more profound at a higher level of competition. Thus, Division I college athletes (see http://www.ncaa.org/about/div_criteria.html for institutional Division I criteria) were investigated in the present study in order to see the prevalence of disordered eating behaviors at this level of competition. In addition, several studies say type of sport (lean v. non-lean) contributes to disordered eating behaviors (Dick, 1991; Patel et al., 2003; Smolak et al., 1999; Stoutjesdyk & Jevne, 1993; Sungot-Borgen, 1994; Thompson et al., 1999), whereas other studies show that type of sport does not matter, or other factors contribute more to the risk of unhealthy eating habits than does type of sport (Berry & Howe, 2000; Lucas, 1993; Perry et al., 1990; Pope & Katz, 1994; Wang et al., 1993). Thus, in the present study athletes were defined as participating in lean sports (wrestling, track, gymnastics) and non-lean sports (basketball, soccer, skiing, tennis, golf). Classifications of athletes as participating in lean versus non-lean sports were assigned based on previous research (Smolak et al., 2000). Wrestling was also categorized as a lean sport because it

is a sport that is dependent on the athlete's weight and has an emphasis on low body fat content (Petrie & Rogers, 2001).

In addition, the present study will examine the relationship between disordered eating behavior and self esteem in athletes (Abell & Richards, 1996; Gleason et al., 2000; Lindeman, 1994; Neumark-Sztainer et al., 1996). Self esteem is a well-known factor contributing to the development of eating disorders, but there are few studies examining the relation of self esteem to disordered eating behaviors in athletes.

In summary, based on inconsistencies in previous research concerning whether some athletes are more at risk for the development of eating disorders and disordered eating behaviors than are others, Division I athletes at a large, Pacific Northwest public university were surveyed on their eating behaviors, type of sport they were involved in (lean v. non-lean), body dissatisfaction, and self esteem. Hypotheses were as follows: 1) there will be more disordered eating behavior in women than in men; 2) athletes in lean sports (gymnastics, wrestling, and track) will be more likely to exhibit disordered eating than will athletes in non-lean sports (Dick, 1991; Patel et al., 2003; Smolak et al., 2000; Stoutjesdyk & Jevne, 1993; Sungot-Borgen, 1994; Thompson et al., 1999); 3) body dissatisfaction will relate to disordered eating in both men and women; 4) Self esteem is expected to be a predictor for disordered eating behaviors in both males and females. Finally, the importance of each variable (self esteem, body dissatisfaction, and type of sport) on disordered eating behaviors in athletes has not been examined. This study will explore this question by conducting stepwise regression for each gender to determine which variables have the strongest relationship to disordered eating behaviors. As this is an exploratory analysis, no hypotheses are being made.

Method

Participants

A total of 176 Division I student-athletes from an institution in the Western Athletic Conference participated in this study. The sample population consisted of 99 females (56%) and 77 males (44%). The age of the participants ranged from 18 to 23 years with a mean age of 19.84 (*SD* = 1.44). Approximately 90% of athletes were Caucasian. The eight varsity sports evaluated were men's and women's basketball (*n* = 28), track (*n* = 67), and tennis (*n* = 15), women's golf (*n* = 8), gymnastics (*n* = 15), soccer (*n* = 18), and skiing (*n* = 4), and men's wrestling (*n* = 21). For the purpose of analyses, athletes were grouped into sport category: lean sport (*n* = 273; gymnastics, wrestling, track) and non-lean sport (*n* = 73; basketball, tennis, golf, soccer, and skiing) based on previous research (Petrie & Rogers, 2001; Smolak et al., 2000). In the lean sport category, there were 48 female athletes and 55 males. In the non-lean sport category, there were 51 females and 22 males.

Measures

Body image dissatisfaction. Body image was assessed by the Body Shape Questionnaire (Cooper, Taylor, Cooper, & Fairburn, 1987; see Cooper et al. for discussion on validity), which asked how the athletes felt about certain aspects of their body (e.g., Have you pinched areas of

your body to see how much fat there is?). Responses were rated on a 6-point scale (*1=never, 6=always*), with higher scores indicating greater body dissatisfaction. This questionnaire demonstrated good reliability in the present study (a = .95).

Self esteem. Levels of self esteem were measured using the Rosenberg Self Esteem Scale, which has been shown to be both valid and reliable (a = .93; Rosenberg, 1989). This scale uses a variety of questions assessing personal feelings about oneself as well as positive and negative emotions (e.g., "I feel I have a number of good qualities."). Responses were measured on a 4-point scale (*1=strongly agree, 4=strongly disagree*).

Disordered eating behaviors. Disordered eating behaviors were assessed by the Eating Attitude Test (EAT-26; Garner, 1993; 1997). The EAT-26 consists of 26 forced-choice items measured on a 6-point scale, where items marked never, rarely, or sometimes are scored 0, often is scored 1, usually is scored 2, and always is scored 3. The EAT-26 has questions relating to dieting behaviors, bulimia behaviors, preoccupation with food, and oral control (e.g., “I avoid eating when I am hungry”). In addition to utilizing raw scores on the EAT-26, the EAT-26 uses a cutoff score of 20 to determine if a person is at risk for a clinical eating disorder. Thus athletes were classified as at risk or not at risk for an eating disorder based on their cutoff score. The EAT-26 was chosen for this study because it has been shown to be reliable and valid in several populations (Mintz & O’Halloran, 2000), including athletes (Kirk et al., 2001; Picard, 1999) and demonstrated adequate reliability in this study (a = .96).

Procedure

After coordinating with the coaches of each sport, teams were surveyed before or after team practice or organized weight lifting workouts. Participation by the athletes was completely voluntary and confidential. If the athlete did not wish to disclose information on the survey, he/she was not asked to do so. Prior to initiating the study, the Institutional Review Board approved all procedures.

Results

The Influence of Gender and Type of Sport (Lean v. Non-lean) on Disordered Eating Behavior

To test the hypothesis that females would display more disordered eating behavior than their male counterparts, we ran a 2 x 2 Chi Square analysis to examine the relationship between gender (male/female) and being at risk of a clinical eating disorder (yes/no). As hypothesized, the Chi Square analysis revealed that there was a significant difference, X^2 (1, N = 176) = 19.53, $p < .001$. Of the population of athletes surveyed, 26% (N = 45) scored above the cutoff for being at risk for a clinical eating disorder on the EAT-26, 84% of the athletes at risk for an eating disorder were female (N = 38) and 16% male (N = 7).

To test the hypothesis that athletes in lean sports (gymnastics, wrestling, and track) would be more likely to exhibit disordered eating than would athletes in non-lean sports, we conducted a 2 (gender) x 2 (type of sport: lean v. non-lean) Analysis of Variance (ANOVA). As displayed in Table 1, there was an effect of gender on the amount of disordered eating behaviors, F (1, 171) =

35.93, $p < .001$, with females being at a greater risk than males. There was also an effect of sport on disordered eating behavior, F (1, 171) = 6.87, $p < .01$, with athletes in non-lean sports being at greater risk of developing eating disorders than those in lean sports. In addition, a significant interaction was found between gender and sport on amount of disordered eating behavior, with females in non-lean sports and males in lean sports displayed the highest level of disordered eating behavior, F (1, 171) = 17.02, $p < .001$. </TD<< TR>

Table 1. Means (and Standard Deviations) of Amount of Disordered Eating Behaviors by Gender and Sport

Sport	Female Lean Sport	Female Non-Lean Sport	Male Lean Sport	Male Non-Lean Sport
Body Dissatisfaction	2.92 (1.00)	3.22 (.92)	1.99 (1.10)	1.44 (.69)
EAT-26	12.77 (12.97)	28.67 (22.17)	8.36 (8.13)	4.82 (4.68)
Self esteem	3.03 (.57)	2.60 (.96)	3.43 (.86)	3.55 (.42)

The Influence of Body Dissatisfaction and Self Esteem on Disordered Eating Behavior

To examine the hypothesis that body dissatisfaction would relate to disordered eating in both men and women, we conducted separate correlations between body dissatisfaction and disordered eating behaviors for men and women. Body dissatisfaction was significantly correlated with disordered eating behaviors in both men, $r = .49$, $p < .001$, and women, $r = .68$, $p < .001$.

To examine the hypothesis that self esteem will predict disordered eating behaviors in both males and females, we conducted separate correlations between self esteem and disordered eating behaviors for men and women. Individuals with low self esteem were significantly more likely to display disordered eating behaviors in both men, $r = -.31$, $p < .01$, and women, $r = -.60$, $p < .001$.

The Importance of Lean Sport, Body Dissatisfaction, and Self Esteem as Predictors for Disordered Eating Behavior

The importance of each variable (self esteem, body dissatisfaction, and type of sport) on disordered eating behaviors in male and female athletes has not been examined previously. As all of the variables were significantly related to disordered eating behaviors in the previous analyses, to examine which of the three factors (body dissatisfaction, type of sport, or self esteem) had the strongest relationship to disordered eating behavior a separate stepwise regression for each gender was conducted. For women, body dissatisfaction was the primary variable relating to disordered eating behaviors, *Model F* (1, 95) = 77.48, $p < .001$, followed by self esteem, *Model F* (2, 94) = 56.55, $p < .001$, and finally, type of sport, *Model F* (3, 93) = 47.19, $p < .001$ (see Table 2). Whereas for men, only body dissatisfaction related to disordered eating behaviors (see Table 3), *Model F* (1, 70) = 21.63, $p < .001$. </TD<< TR>

Table 2. Summary of Stepwise Regression Analysis for Variables Predicting Disordered Eating Behaviors in Women

Variable	*B*	*SE B*	*β*
Step 1			
Body Dissatisfaction	14.02	1.59	.67***
Step 2			
Body Dissatisfaction	10.38	1.67	.50***
Self Esteem	-8.62	1.92	-.36***
Step 3			
Body Dissatisfaction	10.30	1.57	.50***
Self Esteem	-7.10	1.85	-.30***
Lean Sport	9.85	2.68	.25***

Note: *** $p < .001$

Table 3. Summary of Stepwise Regression Analysis for Variables Predicting Disordered Eating Behaviors in Men

Variable	*B*	*SE B*	*β*
Step 1			
Body Dissatisfaction	3.50	.75	.49***

Note: *** $p < .001$

Discussion

An important finding in this study was the prevalence of athletes who are at risk for a clinically diagnosable eating disorder in our athlete population. By evidence of the EAT-26, 26% of the athletes surveyed were at risk of having a clinically diagnosable eating disorder. In addition, although participating in a lean sport was related to disordered eating behaviors in males, we found the opposite relationship in females. These findings are contradictory to previous studies that suggest there is a relationship between eating disorders and sports that require thinness (Dick, 1991; Patel et al., 2003; Smolak et al., 2000; Stoutjesdyk & Jevne, 1993; Sungot-Borgen, 1994; Thompson et al, 1999). The regression analysis revealed that what may be a

driving difference in disordered eating behaviors is likely body dissatisfaction rather than type of sport. Below we will explain possible reasons for this.

Prevalence of Disordered Eating Behaviors

The American Psychiatric Association (1994) estimated that 90% of the population with eating disorders was female. Our results indicated that of the participants who scored above the cutoff score for the EAT-26, 84% were female and 16% were male. Further, research on the athlete population (Johnson et al., 1999) found 9% of females and 1% of males had clinically diagnosable eating disorders. The present study found that 38% of females and 9% of males in this athlete population were at risk for developing a clinical eating disorder. As stated by Picard (1999), athletes at a higher level of competition are more at risk for disordered eating behavior. At this level, an athlete will go to any extent to increase performance. In our population, the high level of competition in which the student-athletes compete at gives reason to explain the large percentage of athletes at risk for an eating disorder (Picard, 1999).

Studies suggest a strong relationship between athletes with eating disorders or disordered eating and sports that require thinness (Dick, 1991; Patel et al., 2003; Smolak et al., 2000; Stoutjesdyk & Jevne, 1993; Sungot-Borgen, 1994; Thompson et al., 1999). Whereas, other studies suggest there is not a significant relationship between sport and eating disorders (Berry & Howe, 2000; Lucas, 1993; Perry et al., 1990; Pope & Katz, 1994; Wang et al., 1993). Contrary to this study's hypothesis, the results suggested that it may not be type of sport (lean v. non-lean) that is contributing to the difference in rates of being at risk for developing a clinical eating disorder. For males, those in lean sports were at a greater risk of developing clinical eating disorders than those who were in non-lean sports. However, females showed more risk for an eating disorder in sports that do not have a direct emphasis on weight. Thus, it is likely that being in a lean sport is not what makes athletes at a greater risk of developing an eating disorder. Rather, as indicated by the regression analysis, it is likely that the females in non-lean sports and the males in lean sports in our study were at a greater risk for eating disorders because they had higher body dissatisfaction than did their counterparts (see Friestad & Rise, 2004).

Factors Relating to Disordered Eating Behaviors

To examine how different factors relate to disordered eating behaviors in male and female Division I collegiate athletes, stepwise regression analyses were conducted for each gender. Regression analyses for females revealed that body dissatisfaction was the most strongly related variable to disordered eating behaviors, followed by self esteem and type of sport. The finding that body dissatisfaction is closely related to disordered eating behaviors is not a new finding (see Friestad & Rise, 2004; Thompson et al., 1999), nor is it unusual to find that self esteem was closely related to disordered eating behaviors (see Friestad & Rise, 2004; Lindeman, 1994; Neumark-Sztainer et al., 1996). What was interesting was the reverse finding for the impact of type of sport on disordered eating behaviors in women. In the present study it was females in non-lean sports rather than females in lean sports who exhibited more disordered eating behaviors, unlike previous research (Dick, 1991; Patel et al., 2003; Smolak et al., 2000; Stoutjesdyk & Jevne, 1993; Sungot-Borgen, 1994; Thompson et al., 1999). The regression analyses for females suggest that perhaps what previous studies took to be differences in type of

sport might actually have more to do with differences in body dissatisfaction. Future studies should not neglect to examine this important variable when attempting to predict disordered eating behaviors.

It is speculated that female lean-sport athletes at the Division I level have a thin physique. Therefore, it could be assumed that they are not as likely to strive to meet the ideal body shape. This speculation could result in lower body dissatisfaction and a higher self esteem in women in lean sports in this study, whereas, women in non-lean sports do not have such a specific body physique to conform to, but the idea that losing weight leads to better performance is prevalent (Davis, 1992; Thompson & Sherman, 1999; Rosen et al., 1986). In this population of female athletes, the results could be related to performance. For example, if the lean-sport athlete population performed better overall in their sports, they would have a higher self esteem, which, in the present study, is correlated to lower body dissatisfaction, and less disordered eating behavior. If the performance is lower in the non-lean sports, than performance is likely to be predictive of a lower self esteem which leads to higher body dissatisfaction and more disordered eating behavior (Abell & Richards, 1996; Gleason et al., 2000; Lindeman, 1994; Neumark-Sztainer et al., 1996) in attempt to increase performance.

Low self esteem was not a significant factor for the male lean sport population, but these athletes were at the highest risk for body dissatisfaction and disordered eating behavior for the male athletes in this population. In fact, the regression analysis revealed that for males, body dissatisfaction was the only variable that related to disordered eating behavior. This information proposes that these athletes are dissatisfied with their bodies and have unhealthy eating habits created by the ideals of their sport. Athletes have specific stereotypes for their sport (Krane et al., 2001). For example, wrestlers are constantly attempting to decrease their body fat to wrestle at the lowest weight possible, but they need a balance of endurance and muscle at the same time. It could be speculated that they are dissatisfied with their bodies because they are constantly trying to lose weight or because they think they are too small due to the demands put on them from the sport. In addition, male track athletes are likely to think the same way, “I know I need to lose weight to be a better track athlete, but I will be too skinny.” Male athletes in sports demanding a thin physique have high body dissatisfaction and disordered eating behaviors because they are conforming to the physical demands of their sport. Therefore, body dissatisfaction is related to performance not self esteem giving reason to explain why self esteem is not significantly correlated to body dissatisfaction or disordered eating behaviors in the category of male lean sport athletes.

Limitations

There were several limitations that might have affected the results. First, only athletes at one large public institution were examined. Athletes at other institutions or at private institutions might display different results. Second, only Division I athletes were examined. This population was chosen to examine athletes at an elite level of competition. It is possible that this skewed the results, however. Future studies should examine athletes at both public and private schools and from all Divisions. Third, the athletes surveyed were primarily Caucasian and of traditional college age. Future studies should include athletes with a wider range of age and ethnicities. Finally, this study is correlational in nature. Thus, the present study cannot say that being an

athlete makes one prone to developing body dissatisfaction or eating disordered behaviors. It could be that individuals prone to those behaviors are more likely to be drawn to athletics in the first place.

Conclusion

No previous studies had examined the impact of gender, body dissatisfaction, self esteem, and type of sport (lean v. non-lean) on disordered eating behavior in Division I collegiate athletes. It was important to examine these behaviors in Division I athletes because Picard (1999) found that level of competition affected disordered eating behavior. The present study examined athletes at the highest level of collegiate competition in order to maximize this chance. In addition, this study also had a broad context of sports rather than just sports requiring leanness or just female sports (Berry & Howe, 2000; Krane, 2001; Picard, 1999; Smolak et al., 2000; Stoutjesdyk & Jevne, 1993; Sungot-Borgen, 1994). Thus, it was essential to study this specific population in helping to identify differences in sports and gender for risk factors associated with disordered eating behaviors. The present study helps to identify specific risk factors associated with Division I athletes in order to help prevent disordered eating behaviors in future high-performance level athletes. It would be useful to run the same analysis on different athlete populations to see if similar findings emerge. For future research in this area, researchers should take overall team/individual performance (wins/losses) into account for a factor associated with disordered eating behaviors because performance plays a role in self esteem, which has shown to correlate with both body dissatisfaction and disordered eating behavior (Abell & Richards, 1996; Gleason et al., 2000; Lindeman, 1994; Neumark-Sztainer, et al., 1996).

Identifying factors that lead to the risk of disordered eating behaviors is essential in limiting problems associated with disordered eating behaviors. Results indicate that females are generally more at risk than are males for developing an eating disorder, but amount of body dissatisfaction is a significant factor related to disordered eating behaviors. This study is a step toward identifying what factors are associated with eating disorders in high-performance athletes. Continued research on this specific population will help in the prevention of what could be a deadly disease.

Although this study cannot determine why athletes are at risk for developing clinical eating disorders and body dissatisfaction, because the chance of being at risk of developing a clinical eating disorder or displaying body dissatisfaction is high, coaches could help prevent these problems by having someone involved with the athletes' monitor the athletes eating habits during pre-season and during sport related trips (e.g., athletic trainer). If there are any signs of disordered eating behavior, the issue could then be immediately addressed. In fact, Thompson and Sherman (1999) found that deemphasizing weight and eliminating group weight-ins were effective in reducing disordered eating behaviors in athletes. In addition, less pressure from coaches and athletic trainers to lose weight results in less dieting (Thompson & Sherman, 1999). In general, coaches and trainers need to be aware of the possibility of disordered eating behaviors in athletes (especially in athletes under extreme pressure), and watch for noticeable weight fluctuations and unhealthy eating habits. These small steps could help decrease the amount of eating disordered behavior in athletes, but more research on these issues is needed to develop more effective prevention measures.

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