

Eating Disorders among Athletes: Research and Recommendations

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ABSTRACT

Garner, D.M. and L.W. Rosen. Eating disorders among athletes: research and recommendations. *J. Appl. Sport Sci. Res.* 5(2):100-107. 1991.—*Research is reviewed indicating that certain athletes, particularly those in sports that emphasize leanness to enhance performance or appearance (e.g., gymnastics, wrestling, figure skating, diving and ballet), are at risk for eating disorders. It is concluded that, even if mild variants of eating disorders (i.e., only some symptoms required for a formal diagnosis are present) are observed in athletes, they should be given immediate attention because they may severely compromise health and performance. Practical recommendations are made for coaches and trainers to identify the physical, psychological and behavioral symptoms of eating disorders. Finally, suggestions are made for addressing eating disorders in athletes.*

INTRODUCTION

There are a number of possible explanations for the recent surge in eating disorders, but the trend, at least in part, may be related to decades of social pressure on women to diet in order to conform to unrealistically thin standards of physical attractiveness (16). The cultural norms related to thinness and weight control are so widely accepted in their extreme that the attitudes and behaviors consistent with a diagnosis of either anorexia nervosa or bulimia nervosa are actually accepted by the public as common or normal (29). Although there are serious limitations to estimates of the incidence and prevalence of eating disorders, several studies have indicated that cases of both anorexia nervosa and bulimia nervosa may occur in as many as 1 percent to 4 percent of selected populations of female high school and

college students (7, 32, 38, 48). They may occur in as many as 12 percent to 15 percent of female medical students and graduate students (23, 24). Suspected cases of clinical eating disorders or subclinical variants (i.e., only some symptoms required for a formal diagnosis are present) are often more common among groups such as athletes who are exposed to heightened pressure to diet or maintain a thin shape.

EATING DISORDERS IN ATHLETES

There is a growing consensus that certain athletes, particularly those in sports that emphasize leanness to enhance performance or appearance, are at risk for eating disorders. The hypothesis that heightened pressures to diet or to be thin may increase vulnerability to eating disorders initially was tested in groups of female dance students. Garner and Garfinkel (14) reported that 6.5 percent of professional ballet students from several different schools met rigorous diagnostic criteria for anorexia nervosa, and those from the most competitive schools had the highest incidence of the disorder. Subsequent studies have confirmed the high risk of eating disorders among dancers (2, 15, 22, 49).

Brooks-Gunn et al. (2) compared groups of ballet dancers ($n = 64$), figure skaters ($n = 25$) and swimmers ($n = 72$) with nonathletes. They found that the dancers and skaters were lighter, leaner and more likely to have delayed menarche than the swimmers or nonathletes. Moreover, the dancers and skaters exhibited more eating disorder symptoms than the other groups, with the dancers having the highest scores.

Recent research has demonstrated that other athletes are vulnerable to eating disorders or disturbed eating patterns. Rosen et al. (43) surveyed 182 female college athletes

participating in different sports and found that potentially dangerous weight control behaviors were common. Self-induced vomiting was reported by 14 percent of the total sample; 16 percent indicated that they used laxatives to control their weight; 10 of 19 gymnasts reported self-induced vomiting; and seven of 19 used laxatives. Of those who reported using pathogenic weight control behaviors, 70 percent indicated they believed that their behavior was harmless. In another study of 42 collegiate female gymnasts, Rosen and Hough (42) found that 25 percent had used self-induced vomiting and all were trying actively to diet. Two-thirds of the gymnasts reported that they were told by their coaches that they should lose weight. In a study of nutritional intake for 11 gymnasts ages 9 to 17, Hickson and Kish (25) did not find elevated scores on a standardized measure of eating disorder symptoms, but the results may have been influenced by the apparent lack of anonymity in testing.

Dummer et al. (8) collected data on 487 female competitive swimmers ages 9 to 18 and found that drastic weight control behaviors were less common than among other athletic groups, but there was a significant subgroup of female competitors who were dissatisfied with their weight and were actively trying to lose weight. The swimmers' concerns about weight were more related to societal influences than to the demands of their sport. The reasons stated for wanting to lose weight were to look better (80.5 percent), to perform better (58.5 percent) and to improve health (21.9 percent). This is particularly noteworthy in light of one study of 284 competitive female swimmers showing that better performers had greater lean body mass, but that body fatness was unrelated to performance (45).

There is some debate about the relationship between eating disorders and high-intensity running. Several authors have described individuals who have developed eating disorders after becoming seriously involved in athletics (30, 44). In a controversial and widely publicized report, Yates et al. (57) claimed that the exercise patterns, eating behaviors and personality features of a group of marathon and trail runners referred to as "obligatory runners" were the male analogue to anorexia nervosa. This study prompted a series of reports that have examined empirically the relationship between running and psychopathology found in eating disorders. Blumenthal et al. (1) used a standardized personality measure, and found that the runners sampled did not display personality patterns evident in clinical eating disorder patients. Although Owens and Slade (36) found that marathon runners scored as high as eating disorder patients on a measure of perfectionism, they did not have elevated scores on a measure of overall dissatisfaction and loss of control. Nudelman et al. (33) compared 20 runners with 20 sedentary to moderately active males and 20 women with bulimia nervosa. They found that the male runners did not

indicate food or weight preoccupations, and were dissimilar to eating disorder patients in terms of personality and self-esteem.

Among the elite female runners, Clark and colleagues (5) found that 13 percent reported a history of anorexia nervosa and 34 percent indicated disturbed eating patterns consistent with those found in eating disorders. This is in contrast to findings from several studies indicating that female distance runners do not show aberrant profiles on standardized psychological measures of eating concerns (36, 51, 54). For example, Warren and colleagues (52) compared a sample of NCAA Division I female athletes to nonathlete controls on the Eating Disorder Inventory (EDI) and Eating Attitudes Test (EAT) (standardized measures of symptoms common among those with eating disorders) and found that none of the highly trained athletes had scores indicative of eating disorders. This is in contrast to a survey of undergraduates by Richert and Hummers (40), who found that number of hours jogging per week was related positively to eating symptoms reported on the EAT. Although Davis (6) found no differences between women who exercise and those who do not on measures of diet and weight concerns, within the exercising group only there was a significant positive relationship between these measures and poor self-esteem.

How should these conflicting findings be interpreted? It may be that studies indicating increased risk for eating disorders in certain sports where weight is deemed important to performance provide inaccurate estimates of the problem. However, it is hard to imagine why study participants would anonymously over-report psychopathology. Negative findings, on the other hand, could be attributed to denial or fears regarding anonymity. Alternatively, it may be that the conflicting findings reflect marked differences across settings in eating pathology experienced by elite athletes participating in the same sport. None of these studies clearly answers the crucial question of whether individuals with excessive concerns about weight and shape selectively gravitate to sports demanding intense activity or whether dedication to regular exercise may promote increased concerns about weight, shape and dieting.

MENSTRUAL DYSFUNCTION, PHYSICAL ACTIVITY AND EATING DISORDERS

The pressures to be thin appear not only to heighten the risk for eating disorders but also to increase the physical complications associated with weight suppression and menstrual dysfunction. Studies have provided growing evidence that maintenance of suboptimal weight required in ballet may be linked to menstrual disturbance including delayed menarche and amenorrhea (11, 52). These menstrual disturbances, in turn, are associated with scoliosis and stress fractures in young ballet dancers (53).

Menstrual dysfunction also is common among athletes in a wide range of sports (10, 34). Vandenbrouke et al. (50) reported that both thinness and activity level were associated with delayed menarche for 648 young female athletes ages 10 to 14. This is in contrast to Rippon et al. (41), who reported that the EAT was superior to physical activity and body mass in predicting menstrual dysfunction in models, ballet dancers and runners. Further illustrating the relationship between intense exercise, menstrual disturbance and eating disorders, Gadpaille et al. (12) interviewed 13 amenorrheic and 19 regularly menstruating runners and found that eating disorders and depression clustered within the amenorrheic group. In contrast, none of the regularly menstruating runners reported affective or eating disorders.

EATING DISORDERS IN MALE ATHLETES

Steen and McKenny (46) studied 42 collegiate wrestlers and confirmed that strict dieting was common; it was also reported that wrestlers on one team used laxatives (5 percent), diuretics (5 percent) and self-induced vomiting (11 percent) to control their weight. Enns et al. (9) compared wrestlers who often deliberately restrict food and water intake to compete in a particular weight category with other athletes (swimmers and nordic skiers) who do not have weight requirements to compete in their sport. They found that the wrestlers had higher scores than the comparison groups on a standardized measure of eating disorder symptomatology with a small subgroup of wrestlers having extreme scores and body image disturbances common in eating disorder patients. Woods et al. (56) confirmed that dieting was common in wrestlers and that a small subgroup engaged in self-induced vomiting to control weight. Use of laxatives, diuretics and other dangerous weight control methods are common among male racing jockeys who also place extraordinary emphasis on maintaining a particular weight for competition (31).

WEIGHT TRAINING IN FEMALE ATHLETES

Research reviewed by Holloway and associates indicated that strength training for women has become enormously popular in the last decade (26, 27). Although there has been virtually no research on the effect of strength and power sports on attitudes toward weight and shape, it could be hypothesized that weight training would have a salubrious influence because it would seem to emphasize an image of female attractiveness that is contrary to the emaciated female form that has become popular in the past several decades. Weight training does not necessarily involve enormous change in body girth (26), and there is evidence that it could have a positive effect on self-concept (28). On the other hand, the sport

may attract women who have extreme concerns about body composition and are determined to keep body fat as low as possible. The popular press on fitness and bodybuilding for women seems to be little more than a minor variation on the standard exploitive doctrine on the virtues of thinness and weight loss. Pasma and Thompson (37) compared male and female runners and weightlifters and found that both exercising groups had higher scores than controls on one measure of eating disorder symptoms, but the scores were not extreme. Clearly, more research is needed to evaluate possible eating disorder symptoms and body image among competitive weightlifters (both powerlifting and bodybuilding) and those who engage in more causal strength and weight training.

SIGNIFICANCE OF EATING DISORDER SYMPTOMS IN NONCLINICAL SAMPLES

Although a number of studies have indicated that eating disorders are common in certain athletes, it is not completely clear whether these disorders are clinically significant or whether they markedly impair performance. Szmukler et al. (49) found that ballet students with symptoms of anorexia nervosa experienced considerable improvement in their eating disorder after one year without medical intervention. On this basis it was concluded that these students only superficially resembled actual clinical cases. Garner et al. (15) followed a group of 35 ballet students two to four years after an initial assessment and found that almost 40 percent of the sample had met criteria for anorexia nervosa, bulimia nervosa or a "partial eating disorder syndrome." Although most of those with eating disorders gained weight at follow-up, the conclusion that these syndromes were benign adaptations to the ballet subculture was sharply challenged because it was observed that many of the dancers continued to experience significant eating disorder symptoms for long periods of time.

Nevertheless, there is evidence that certain symptoms of eating disorders, such as extreme weight preoccupation and vomiting, may have different psychological significance for individuals identified in surveys of student and athlete populations (i.e., non-patients) than for patients diagnosed as having clinical eating disorders. Although a subgroup of these weight-preoccupied, non-patient dieters reported intense concerns with weight, body shape and eating closely paralleling eating disorder patients, most only superficially resembled clinical cases in terms of what has been described as core emotional disturbances found in eating disorders (17, 19, 35). Thus, it is unwarranted to conclude that individuals defined in nonclinical populations solely along the continuum of attitudes toward eating, weight and shape are suffering from the serious personality disturbances seen in most patients with a diagnosis of anorexia nervosa or bulimia nervosa.

However, this is not to say that these weight-preoccupied non-patients are free from risk of developing a definite eating disorder, because heightened concerns about eating, weight and shape probably presage the development of severe eating disorders in most cases. At least one prospective study has indicated that individuals with elevated drive for thinness and body dissatisfaction scales of the EDI are at risk for the development of eating disorders (15).

WEIGHT CYCLING AMONG ATHLETES

Many athletes engage in weight control practices that may affect metabolism, body composition, performance and overall health (4). There is evidence from both animal and human studies that yo-yo dieting or intermittent weight loss followed by regain may make weight reduction and maintenance even harder over time. Metabolic efficiency, and thus the tendency to maintain or even gain weight on fewer calories, may be enhanced by repeated cycles of weight loss followed by weight gain; returning to the initial weight often does not completely reverse the diminished metabolic rate (3, 39). Brownell et al. (3) found that rats became more efficient in their utilization of energy with repeated periods of weight loss and regain. Reed et al. (39) found that repeated weight cycling not only produced a four-fold increase in metabolic efficiency, but also increased dietary fat selection, produced larger adipose deposits and greater plasma insulin values in female rats. Thus, there is evidence that dieting, if it is followed by return to initial weight levels, results in a lower metabolic rate, making subsequent weight loss more difficult.

There are some data on cycling and body weight for humans. Steen, Oppliger and Brownell (47) reported that

wrestlers who experienced repeated cycles of weight loss and regain had a 14 percent lower resting metabolic rate than those who did not display this pattern of weight change. It could be predicted on the basis of this study and the animal research cited earlier that wrestlers would have greater difficulty in losing weight as they extend their careers.

Rapid weight loss has other adverse consequences for wrestlers. Although restriction of food intake reduces body mass, it also produces water loss. This, combined with fluid restriction and dehydration through the use of saunas, rubber suits, diuretics, laxatives, self-induced vomiting and exercise, can have potentially dangerous consequence. Fluid loss and accompanying electrolyte disturbances can increase the risk of cardiac arrhythmias, renal damage, impaired performance and even injuries (See 46 for an excellent summary). It also can influence cardiac output and core temperature, which may have dangerous consequences (55). Fluid and food restriction with only moderate dehydration may produce a marked and enduring effect on isotonic and isometric endurance (46). Thus, wrestlers may experience poor performance and fatigue because of questionable weight-loss practices and repeated weight cycling.

IDENTIFYING EATING DISORDERS AMONG ATHLETES

It is evident from a review of the literature that there is a subgroup of athletes for whom eating disorders are a serious problem. Sometimes eating disorders come to the attention of training staff and coaches by way of team members who become aware of symptoms in a peer. Other times, there are subtle or even obvious signals that should make the coaches or training staff aware that an eating problem exist. **Table 1** summarizes some of the more conspicuous signs and symptoms of which coaches and training staff should be

Table 1. Physical Features That May Indicate an Eating Disorder

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- Weight that is too low for athletic performance
 - Precipitous weight loss
 - Extreme fluctuations in weight
 - Bloating or edema
 - Swollen salivary glands (puffy cheeks or jaw just in front of the ear)
 - Amenorrhea (loss of menstrual periods)
 - Yellowish appearance on palms of hands or soles of feet (carotinemia)
 - Sores or callouses on knuckles or back of hand from inducing vomiting
 - Hypoglycemia
 - Cardiac arrhythmias, bradycardia
 - Muscle cramps
 - Gastrointestinal complaints
 - Headaches, dizziness, weakness due to electrolyte disturbances
 - Numbness and tingling in limbs due to electrolyte disturbances
 - Renal dysfunction due to electrolyte disturbances
 - Proclivity to stress fractures
 - Loss or thinning of the hair
 - Downy hair appearing on the face, back or extremities (lanugo hair)

Table 2. Psychological and Behavioral Symptoms That May Indicate an Eating Disorder

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- Excessive dieting
 - Excessive eating without weight gain
 - Excessive exercise that is not part of the training program
 - Guilt about eating
 - Claiming to feel fat at normal weight despite reassurances from others
 - Preoccupation with food
 - Avoidance of eating in public, denial of hunger
 - Hoarding of food
 - Frequent weighing
 - Evidence of binge eating
 - Evidence of self-induced vomiting
 - Use of drugs to attempt to control weight (abuse of laxatives, diet pills, diuretics, emetics)

aware in attempting to identify those who may be suffering from an eating disorder. These symptoms do not necessarily signify the existence of an eating disorder, but their presence should alert training staff and coaches of the need to explore the issue further.

There may be circumstances where it is desirable to anonymously administer a standardized screening instrument such as the Eating Disorder Inventory (13, 18) to the entire team to determine the overall level of eating concerns that may exist. Anonymity as it pertains to any single athlete should be maintained in order to encourage honest responses. Alternatively, there may be circumstances where athletes are comfortable revealing their identity to a consultant not directly connected with the team. In these instances, the EDI can be used as an economical first step in a two-stage screening process in which individuals who score above a particular cut-off are interviewed by experienced clinicians to determine whether diagnostic criteria for an eating disorder are met.

One of the major obstacles to coaches and trainers relates to the willingness of the athlete to be completely candid in revealing that he or she is suffering from serious eating problems. The affected athlete often is struggling with the dilemma of wanting help and at the same time not wanting to reveal anything that may jeopardize his or her standing on the team. The following discussion is based on earlier recommendations by Rosen et al. (43) for intervention with athletes who seem to be having difficulties in this area.

RECOMMENDATIONS FOR ADDRESSING EATING DISORDERS IN ATHLETES

If there is evidence that an athlete is experiencing symptoms in the areas outlined in Tables 1 and 2, then the coaching or training staff member with the best rapport with the athlete should arrange a private meeting with him or her to discuss the concerns. It is important to be direct

but supportive in stating the nature of the concerns. It is also important to make it absolutely clear that your discussion with the athlete is confidential and that everything possible will be done to prevent an admission that an eating problem or other problem exists from jeopardizing his or her role on the team. Competition should be limited only if there is evidence that performance is compromised or that an eating disorder has threatened the athlete's health in a way that could lead to injury if participation is continued. This point may need to be articulated and reaffirmed repeatedly. If the athlete admits that a problem exists, then educational readings may be a first step in clarifying the signs and symptoms of eating disorders. Emotional difficulties that predate the development of the eating disorder must be differentiated from secondary symptoms related to starvation and dieting (20). It often is reassuring to athletes to learn that distressing symptoms such as poor concentration, lability of mood, irritability, anger, depression, feelings of inadequacy, anxiety, obsessional thinking, poor decision making and social withdrawal may be consequences of dieting rather than necessarily signaling deeper emotional disturbances (20).

There are instances in which eating disorders have been unwittingly romanticized or given positive connotations in the popular press and the sport media, which can precipitate cases or make those with eating disorders more resistant to change. In one summer dance school program where there was an outbreak of weight loss and disordered eating, it became clear that its origin was revelation by an emaciated but widely celebrated prima ballerina that she long had suffered from anorexia nervosa. The students had interpreted this to mean that success as a dancer was predicated on having anorexia nervosa.

In most instances, it is advisable to provide the athlete with a referral to a clinician familiar with eating disorders and hopefully familiar with the special demands

experienced by athletes. It should be made explicit that the information shared with this clinician is confidential and will not be shared with the coach or training staff without the athlete's express permission. Again, it should be made clear that the athlete's health and well being take precedence over his or her role as an athlete but that every attempt will be made to preserve his or her status on the team or dance company.

Many athletes who engage in in drastic weight control do so under the assumption that weight reduction will improve performance. It is important for the athlete to have a realistic idea of the impact of weight and diet on performance. Moreover, it needs to be clarified that the presence of an eating disorder almost certainly interferes with performance as an athlete. Although there are some notable instances in which athletes have been quite successful while suffering from an eating disorder, these are the exceptions. The metabolic consequences of symptoms such as vomiting and laxative abuse undoubtedly have a negative effect on performance and can be fatal (20).

In gymnastics, wrestling, figure skating, diving and ballet, it may be very difficult for coaches, teachers or choreographers to convey a healthful attitude about body weight because of the tremendous demands for thinness or weight control that have prevailed in these sports. It is important to understand the role that past or present coaches or trainers may have had in the development of heightened concerns about weight or shape. Coaches have a powerful influence over the thinking and behavior of their athletes. It is not uncommon for athletes to have been told to lose weight by coaches and trainers. In a study of 42 collegiate women gymnasts, 28 (67 percent) reported they were told by their coaches that they were too heavy, and 21 of these (75 percent) resorted to dangerous weight controls methods including vomiting, laxative or diuretic abuse (42). It may be reassuring for the athlete to understand that present concerns have resulted from comments by influential coaches or trainers. In some instances coaches and trainers have had eating difficulties themselves and may have developed destructive attitudes related to weight control and thinness that are conveyed to athletes. In these instances, the particular staff member may have to be confronted by others to address these issues. This may be best accomplished by a professional consultant who has an understanding of eating disorders as well as an awareness and an appreciation of demands of the particular sport.

In instances where there is compelling evidence that an eating problem exists but the athlete denies it, a referral should be made to a clinician experienced with eating disorders and athletes. It is vital that the athlete understands that assistance is available and that seriously pursuing help might be the single most important thing that

can be done to achieve or preserve success in his or her sport. In these instances, there is a need for close contact between the clinician and the team contact person to assure that issues are being addressed openly and that progress is being made. Obstacles encountered during recovery from an eating disorder may be particularly demoralizing to athletes who are used to judging themselves by the highest standards of performance. Coaches and trainers should help athletes to recognize that their eating problems are not a sign of personal failure and that recovery may be a lengthy and convoluted process.

It is necessary for the team coach or trainer to make specific follow-up appointments with the athlete to review the progress made. There may be circumstances in which it is advisable for the coach or trainer to seek permission from the athlete to consult with the clinician he or she is seeing for treatment. For example, consultation may be appropriate if an athlete is observed to experience obvious eating difficulties, if there is deterioration in his or her physical or psychological state or if there are practical questions with regard to optimizing the opportunities for recovery. In some settings, it also may be possible to have particular clinical consultants available to team members to seek out on their own with the understanding that there will be no ties between the clinician and the coaches or trainers. This arrangement places a premium on confidentiality and thereby reduces the threshold for seeking help on the part of the athlete.

There are certain strategies that are not recommended when an eating disorder is suspected (43). It is inappropriate to talk to other teammates rather than the athlete in question about potential eating problems. Admonishment, immediate discipline or demand for the problem behavior to cease immediately will not only be ineffective, but may also threaten to drive the outward manifestation of the behavior underground until there is a major crisis. Trainers and coaches should not be reluctant to seek outside assistance. It is a mistake to assume that the problem will correct itself if the athlete wants to succeed badly enough at his or her sport. It also is a serious misconception to assume that addressing the issues directly will only reinforce the problem behavior.

The recovery process may be turbulent, and not infrequently there will be a decrement in athletic performance during this period. It has been our impression that this is the very point when coaches, trainers, parents, friends and sometimes the athletes themselves may undermine or discontinue treatment. This is shortsighted and extremely destructive to the athlete's hope for recovery. Often the greatest progress occurs when the athlete must confront squarely the toll that the eating disorder has taken on his or her performance. During the recovery process, the athlete should be viewed as injured and thus, there should be markedly lower expectations for

performance. This will mitigate the pressure, anxiety and guilt that the athlete is likely to experience and will optimize the chance of complete recovery.

It is important to be aware of different motivations that may operate in the development of an eating disorder. We have emphasized the significance of excessive dieting to meet the demands of sports in which leanness is assumed to improve either performance or appearance. These motivations may be overshadowed by other factors that are even more salient for a particular athlete. For example, in a small minority of cases, an eating disorder may represent an attempt to resolve performance fears whereby disqualification due to an eating disorder is perceived as more acceptable than athletic failure. Other background or personality factors may predominate in many cases. Eating disorder patients often have been described as perfectionistic, concrete, achievement-oriented, compliant and physically active. Some individuals with incipient or full-blown eating disorders are drawn to athletics because the environment is congruous with personal achievement expectations, and it initially may offer greater tolerance for excessive dieting and weight control.

Finally, it is important to comment briefly on the need for reflection regarding the evolving aesthetic ideals for weight and shape in some sports. Particularly in those where the premium is placed on appearance and where adjudicators prevail (diving, figure skating, gymnastics and dance), questions should be raised from within the sports community regarding the potentially destructive standards for shape and weight. When these standards seriously compromise the health and well-being of all but the small minority who are constitutionally gaunt, it is a matter for sincere concern for all of those involved with the sport.

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