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## Exploring eating disorders in athletes: A literature review and analysis of prevention strategies

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EXPLORING EATING DISORDERS IN ATHLETES: A LITERATURE REVIEW AND  
ANALYSIS OF PREVENTION STRATEGIES

A Thesis Submitted  
in Partial Fulfillment  
of the Requirements for the Designation  
University Honors with Distinction

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Entitled: Exploring Eating Disorders In Athletes: A Literature Review And Analysis Of  
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has been approved as meeting the thesis or project requirement for the Designation University  
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Date                      Dr. Elizabeth Lefler, Honors Thesis Advisor, Psychology

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## **Abstract**

Both clinical and subclinical eating disorders (ED) are marked by body image disturbance and preoccupation with food, weight, and body shape, and lead to harmful weight management behaviors if not prevented or treated (Bratland-Sanda & Sundgot-Borgen, 2013). While there is a multitude of risk factors that influence the likelihood of developing an ED, one particular factor that has garnered significant attention recently is participation in athletics. Studies show that while athletics can build self-esteem and promote overall well-being, there is evidence that athletes are at an elevated risk for ED development (Hinton & Kubas, 2005). Researchers suggest this risk can be attributed to pressure from coaches, increased awareness of their body concerning competitive performance, and pressure to achieve success (Sanford-Martens et al., 2005). Weight-sensitive sports such as aesthetic, weight-class, and gravitational sports place marked emphasis on the athlete's shape and weight and further exacerbate risk. Because of the high rates of clinical and subclinical EDs in athletes, prevention programs aimed at them are critical. Eating disorder prevention programs were designed to identify, understand, and ultimately reduce risk factors associated with the development of clinical and subclinical EDs. Researchers assert that if established risk factors are reduced, occurrences of problematic eating pathology should follow suit. This thesis explored common ED prevention programs and those modified to meet the unique needs of athletes, as well as made recommendations for future research. Even in the absence of a clinical diagnosis, EDs have lasting effects on mental and physical health; prevention and early identification are key to effectively reducing pathology and keeping people safe and healthy.

## **Exploring the Prevalence and Impact of Eating Disorders in Athletes:**

### **A Literature Review and Analysis -**

Eating disorders (ED) are serious mental illnesses that impact a larger percentage of our population than previously believed, with national estimates conservatively asserting that over ten million women and one million men will be impacted by a clinically significant eating disorder within their lifetime (Linville et al., 2010). Eating disorders are characterized by pathological eating behaviors, extreme weight management techniques, and negative attitudes towards one's body, and often become the main focus of daily life (Bratland-Sanda & Sundgot-Borgen, 2013).

This literature review will begin by exploring the diagnostic criteria of various eating disorders that impact people, including anorexia nervosa (AN) and bulimia nervosa (BN). I will then examine the phenomenon of subclinical eating disorders, which are defined by not meeting all necessary criteria to be formally diagnosed, but nevertheless are negative eating behaviors and attitudes that significantly impact health and well-being, and, if undetected, can progress into a clinical ED. Following clinical and subclinical eating disorders, I will explore demographic characteristics of eating disorders in general, including gender prevalence rates and manifestation differences, personal and environmental risk factors, and health risks associated with eating disorders.

Next, I will explore eating disorders in athletes. I will first analyze the risk factors that are unique to participation in sports and how they can increase the risk of developing an ED. Second, I will explore the athlete triad, which is a health phenomenon unique to athletes with EDs and appears in conjunction with other common health consequences. I will then examine the sports with the highest rates of eating disorders; namely, aesthetic, weight-class, and gravitational

sports, which have all shown increased rates of EDs in their athletes. I will conclude by analyzing prevention efforts, including those that target athletic populations specifically, as early identification and intervention is critical in preventing irreversible mental and physical health consequences. I will then make recommendations for future interventions and research to enhance our understanding of eating disorders in athletes and others.

## **Defining Eating Disorders**

### **Diagnostic Criteria for *DSM-5* Eating Disorders**

An eating disorder is present when a person exhibits persistent and continuous afflictions or disturbances in behaviors related to eating and/or body image; such behaviors must result in “altered consumption or absorption of food and... significantly impairs physical health or psychosocial functioning” (American Psychiatric Association [APA], 2013, p. 329).

The *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5; APA, 2013)* provides diagnostic criteria for feeding and eating disorders such as pica, rumination disorder, avoidant-restrictive food intake disorder, anorexia nervosa, bulimia nervosa, binge eating disorder, and other specified feeding or eating disorders. The diagnostic criteria for anorexia nervosa, bulimia nervosa, and other eating disorders most relevant for adolescents and adults will be discussed in the current paper.

### ***Anorexia Nervosa***

Anorexia nervosa is characterized by three criteria in the *DSM-5*, the first of which is “restriction of energy intake relative to requirements, leading to a significantly low body weight in the context of age, sex, developmental trajectory, and physical health” (APA, 2013, p.338), wherein “significantly low weight is defined as a weight that is less than minimally normal” (APA, 2013, p.338). Clinicians typically utilize the rough indicator Body Mass Index (BMI) to

assess whether a person's weight is considered appropriate for their height; however, assessments of weight can be difficult due to variations in body types and normal weight ranges across individuals. Nonetheless, per the *DSM-5*, body weight must be significantly below what is expected for a person's age and developmental level.

In addition to persistent energy intake restrictions, individuals must also display the *DSM-5* criterion of an intense fear of weight gain or becoming fat, or engaging in behaviors to interfere with weight gain (APA, 2013). Clinicians can infer this fear of weight gain through a patient's history and behavior, rather than requiring the patient to vocally affirm this fear, which they may be hesitant to do in front of a medical professional.

The final *DSM-5* criterion for AN is that of a disturbance in the way one's body shape is experienced, allowing body shape or weight to substantially influence self-esteem, or failing to recognize the gravity of low body weight (APA, 2013). These individuals may engage in harmful behaviors such as constant weighing, persistent body checking in the mirror, or the measuring of their body, with the attitudes towards themselves being unduly influenced by the numbers they see. The severity of anorexia nervosa is determined by the individual's BMI, categorized by the World Health Organization (APA, 2013).

### ***Bulimia Nervosa***

The second eating disorder to be discussed herein is bulimia nervosa, which is characterized by episodes of binge eating followed by compensatory behavior. Per the *DSM-5*, an episode of binge eating requires that a client eats an amount of food that is unusually large or "definitely larger than what most individuals would eat in a similar period of time under similar circumstances" (APA, 2013, p.345), with a timeframe of two-hours. To be considered binge eating, the client must experience a lack of control over the food being consumed, which may be

experienced as the inability to stop eating once an episode has begun, or even a state of mild dissociation (APA, 2013). A binge usually occurs in privacy or secrecy, as individuals may feel a great sense of shame as they eat until they are uncomfortably full on foods they would normally avoid and must occur at least once a week for three months, on average, in order to qualify for a diagnosis.

The second criterion of BN in *DSM-5* is that, after the binge episode is complete, the individual engages in compensatory behaviors “in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, or other medications, fasting, or excessive exercise” (APA, 2013, p.345). The actions are referred to as purging or compensatory behaviors and may be used in conjunction with one another or as a singular method. Essentially, the individual is attempting to compensate for the calories they took in during their binge, and uses the purging period as an attempt to rid the body of either the food itself (vomiting), or the calories associated with the food (exercise).

Similar to anorexia nervosa, a diagnosis of bulimia nervosa requires that the person’s self-esteem and self-evaluation be influenced by their perceived body shape and/or weight; the individual may also share the desire to lose weight as well as the fear of gaining weight. The severity levels of bulimia nervosa are categorized by the number of episodes of bingeing and purging that an individual partakes in per week, ranging from mild (1-3 episodes per week) to extreme (14 or more episodes per week; APA, 2013).

### ***Other Eating Disorders to Note***

While anorexia nervosa and bulimia nervosa are the two most well-known eating disorders of adolescence, there are a number of other, lesser-known eating disorders that impact individuals in a variety of ways. Binge-eating disorder (BED), as defined by the *DSM-5*, is

characterized by episodes of binge eating, that must occur an average of once a week for three months, wherein an individual eats an amount of food that is significantly larger than what other people consume in a similar time frame, and is paired with a feeling of lack of control over the eating that is taking place (APA, 2013). Next, the *DSM-5* specifies that these episodes are associated with at least three of the following: “A. Eating much more rapidly than normal. B. ...until feeling uncomfortably full. C. Eating large amounts...when not feeling physically hungry. D. Eating alone because of feeling embarrassed by [amount]. E. Feeling disgusted... depressed, or very guilty afterward” (APA, 2013, p. 350). The severity of the binge-eating disorder is determined by the number of episodes per week. Unlike BN, there is no compensatory behavior present after the binge-eating episode.

Additionally, the *DSM-5* details a category of eating disorders known as Other Specified Feeding or Eating Disorders, which can be utilized when a client displays “significant distress or impairment in social, occupational, or other important areas of functioning... but do not meet the full criteria for any of the disorders” (APA, 2013, p. 353). One example is atypical anorexia, wherein all of the diagnostic criteria for anorexia nervosa are met except that the individual falls in the ‘normal’ weight range. Bulimia nervosa and binge-eating disorder additionally have parallels within this category, differentiated by low frequency or limited duration of symptoms (APA, 2013). The existence of these diagnoses allows for more people to receive a diagnosis that can open the doors for self-understanding, therapy, treatment, and other forms of support, and will remain a focus of this literature review.

### **Subclinical Eating Disorders**

In order to be diagnosed with one of the aforementioned eating disorders, an individual must meet all of the diagnostic criteria; however, failing to meet the entirety of these criteria

does not eliminate the possibility of a concerning eating or body image problem. The term subclinical eating disorder has been coined to represent individuals who “are not in treatment for an eating disorder and do not show all clinical aspects... as described in the *DSM*... [but] nonetheless demonstrate patterns of disturbance in body image and self-perception that are pathological” (Glazer, 2008, p. 332). These maladaptive eating behaviors, also referred to as disordered eating, exist on a continuum, with clinical eating disorders existing on the extreme end (Cotrufo et al., 1998). The remainder of the spectrum may include diets, attitudes, and beliefs about body shape, moderate restriction of energy intake, occasional bingeing, limiting food groups (i.e., carbohydrates; Beals, 2000), fasting, and diet pills (Bratland-Sanda & Sundgot-Borgen, 2013). Beals & Manore (2000), conducted a study aimed at discovering the behavioral, psychological, and physical characteristics of people with subclinical eating disorders, specifically female athletes, and the following list of features was compiled:

- (a) preoccupation with food, energy intake, and body weight;
- (b) distorted body image and body weight dissatisfaction;
- (c) undue influence of body weight on self-evaluation;
- (d) intense fear of gaining weight even though at or slightly below normal body weight;
- (e) attempts to lose weight using one or more pathogenic weight control methods;
- (f) food intake governed by strict dietary rules, accompanied by extreme feelings of guilt and self-hatred upon breaking a rule;
- (g) absence of medical disorder to explain energy restriction, weight loss, or maintenance of low body weight; and
- (h) menstrual dysfunction. (p. 138)

The current estimates of the presence of a subclinical eating disorder or other disordered eating behavior indicate a prevalence rate as high as 62% (Beals, 2000), a shockingly high number of people. Even though they are not as severe as eating disorders in the *DSM-5*,

subclinical eating disorders still have a negative impact on the health of an individual.

Additionally, the presence of a subclinical eating disorder, lacking early identification, often leads to the development of a clinical eating disorder (Beals, 2000), in both understudied male populations as well as female populations.

### **Demographic Characteristics and Risks**

#### **Males and Eating Disorders**

While there is a preponderance of women compared to men with eating disorder diagnoses, research has shown that eating disorders impact males at rates higher than previously thought. It has been estimated that the ratio of eating disorders was 10:1, with significantly more females meeting diagnostic criteria (APA, 2013). However, researchers are confident that the rates of eating pathology in men are steadily increasing (Strother et al., 2012). In fact, prevalence rates are likely to be an underestimate of the actual number of boys and men who are experiencing an eating disorder, as many may minimize or underreport their symptoms due to the stigma that eating disorders exclusively affect females.

Complicating this matter further, one criticism of the *DSM-5* criteria for eating disorders is that the criteria were created for and normed on women, and as such they may not be as applicable to men. Men and women may experience eating disorders differently, as studies show that men typically manifest their body dissatisfaction as a desire to be larger and more muscular, not smaller, as is codified in the *DSM-5* (Limbers et al., 2018). Rather, men may rely more heavily on excessive exercise as a compensatory measure (Strother et al., 2012), and thus their body weight may not show the decreases that are typical in women with AN. Due to this non-generalizability of the very criteria used for diagnosis, some researchers have created scales specific to measuring eating pathology in men. Some examples of items that are more relevant

for men include the absence of the requirement of a drive for thinness (Limbers et al., 2018).

Though not thoroughly validated, it is an essential step to ensuring that men are able to receive the diagnosis and treatment they may need (Stanford & Lemberg, 2012).

### **Risk Factors for Eating Disorders**

Risk factors for ED can be broken down into predisposing factors, trigger factors, and perpetuating factors (Bratland-Sanda & Sundgot-Borgen, 2013). These three risk factor categories will be discussed in turn. First, predisposing factors for an eating disorder include biological, psychological, and sociocultural factors such as gender, age, peer pressure, body dissatisfaction, concerns about shape and weight, cultural expectations of body size, negative affect, and the influence of media, all of which can place an individual at an elevated risk for an unhealthy relationship with food and their body. Considering these predisposing factors, many eating disorder experts assert that teenage girls who live in a post-industrialized culture are one of the most high-risk groups for developing an eating disorder. For example, while eating disorders impact both men and women, as mentioned earlier the rates are as much as 10 times higher in women for both AN and BN (APA, 2013). Additionally, experts have identified the age of onset for the eating disorders discussed herein is most often adolescence and young adulthood (Giel et al., 2016); as a time period that is marked by rapid physical development and change, it can leave individuals vulnerable to body dissatisfaction. Body dissatisfaction occurs when “there is a mismatch between an individual’s image of [their] own body, particularly body shape and weight, and the body perceived as ideal” (Kong & Harris, 2014, p. 142), and is associated with a variety of concerning attitudes and behaviors, such as future dieting behaviors. Additionally, professionals also believe that culture has an impact on the development of eating disorders, specifically, the beauty standards that we hold. The *DSM-5* asserts that living in a culture where

thinness is valued and celebrated can place pressure upon young people to conform to those unattainable standards, known as internalization of the thin-ideal (Stice, 2002). Men also face a unique risk, as studies suggest that sexuality plays a role in the development of eating disorders in men; young men who identify as gay or bisexual display higher levels of eating disorder pathology (Limbers et al., 2018).

Second, trigger factors can include negative comments or traumatic experiences that may lead to the onset of poor eating behaviors. Negative comments may come from peers, family members, coaches, or another person whose opinion is valued by the individual; these comments may focus on an individual's eating habits, body weight, or shape (Bratland-Sanda & Sundgot-Borgen, 2013). Such comments may be made in passing or without regard to the influence they may hold, but nevertheless can set the stage for an individual to begin engaging in unhealthy behaviors. Similarly, traumatic experiences may include a sudden injury, a death in the individual's life, or another similar life change; experts believe that, in the absence of control over life events, individuals seek control in other areas of their lives, most notably, eating behaviors (Stice, 2002).

Lastly, perpetuating factors are what allow the eating disorder to persevere, and may include initial positive comments about weight loss, outside approval by others, or other such factors (Bratland-Sanda & Sundgot-Borgen, 2013). As previously mentioned, our culture values thinness and weight loss is often praised, and regard may not be given to the unhealthy measures by which it was obtained, such as extreme restriction or purging. Individuals who receive praise and attention for their weight loss may associate positive attention with their physical appearance, continue to internalize the value of being thin and small, and therefore may persist in

unhealthy behaviors. Predisposing, trigger, and perpetuating risk factors, should they result in a clinical or subclinical eating disorder, lead to devastating health consequences for an individual.

### **Health Outcomes and Mortality Rates of Clinical and Subclinical Eating Disorders**

There are a myriad of health problems associated with eating disorders, notably due to nutritional deficits or harmful compensatory measures. Primarily, anorexia nervosa may lead to severe malnourishment and vitamin deficiency, which impacts virtually every organ system in the body (Joy et al., 2016). A significant number of medical complications of anorexia nervosa are directly related to weight loss, malnutrition, and vitamin deficiency because starvation causes the breakdown of protein and fat molecules and can lead to “loss of cellular volume and function, resulting in adverse effects on, and atrophy of, the heart, brain, liver, intestines, kidneys, and muscles” (Mehler & Brown, 2015, pg. 1). AN can cause multisystem organ failure due to a lack of sufficient nourishment, making it one of the more dangerous eating disorders to be diagnosed.

While individuals with bulimia nervosa may experience nutritional deficits similar to those with anorexia, BN predominately impacts the body negatively due to compensatory measures, such as repetitive vomiting eroding away at the teeth or esophagus (Eating Disorder Foundation, n.d.). In fact, dental professionals remain some of the first to see signs of self-induced vomiting due to the damage to the teeth (Mehler & Rylander, 2015). Additionally, by repeatedly inserting one’s fingers down the throat to induce vomiting, an individual with BN may also experience skin abrasions on their hands, commonly known as Russel’s sign (Mehler & Rylander, 2015). The compensatory measures of bulimia nervosa, in conjunction with nutritional and caloric deficits, can have a lasting negative impact on the body even years after recovery.

Additional independent medical consequences of prolonged disordered eating behavior may include bradycardia, which is a significantly slowed heart rate (Mayo Foundation for Medical Education and Research, 2019), “hypotension, electrolytes disturbances, gastrointestinal manifestations, low bone density, increased fracture risk, altered body composition, and amenorrhea” (Nagata et al., 2017, p. 1394). In addition to the aforementioned physical consequences, eating disorders may also cause significant psychological disturbances, such as food obsessions, and often appear in conjunction with other mental health disorders, such as depression, anxiety, substance use disorder, and obsessive-compulsive disorder (Joy et al., 2016).

Even in the absence of a formal diagnosis, disordered eating behaviors can still be detrimental to physical and mental health, as insufficient energy intake can deprive the body of the fuel it needs to support day-to-day activities (Beals, 2000). Although not as clinically severe as eating disorders in the *DSM-5*, subclinical eating disorders can nevertheless have a negative impact on the health of an individual. Chronic energy restriction can negatively impact metabolism, and many essential micronutrients may not be consumed if an individual is restricting a specific food group. Moreover, the psychological, emotional, and mental burden that comes with consistently disregarding the body’s need for nourishment can be extensive and can lead to other mental health concerns such as anxiety, depression, low self-esteem, and food obsessions (Beals, 2000).

The most severe consequence of a continued and sustained eating disorder is death; eating disorders have one of the highest mortality rates among all psychiatric diagnoses (Nagata et al., 2017). Studies have shown that women who suffer from anorexia nervosa are 6 to 12 times more likely to die a premature death (Arcelus et al., 2011), most commonly due to suicide or cardiac arrhythmia. Almost 20% of patients who die with an anorexia nervosa diagnosis die due

to suicide, while the rate is higher for those with bulimia, at 23% of deaths attributed to suicide (Smink et al., 2012). As eating disorders have such a high mortality rate, it is essential to work to lower the prevalence in order to keep individuals safe and healthy.

## **Athletes**

### **Eating Disorders in Athletes**

Eating disorders, both clinical and subclinical, pose serious threats to the health of those affected. One subgroup of the general population that requires additional consideration is athletes. Although participation in athletics is often seen as a protective factor against mental illness (e.g., building self-esteem, promoting overall well-being), there is evidence that athletes are at an elevated risk for the development of eating disorders (Hinton & Kubas, 2005). It is believed that a variety of sport-specific risk factors may contribute to this occurrence, including pressure from coaches, increased awareness of their body and its capabilities and limitations as they relate to competitive performance, and pressure to achieve success (Sanford-Martens et al., 2005). The environment that coaches create can have a notable impact on the development of pathological eating behaviors, as coaches may believe that the weight of their athletes is directly and significantly related to their success. For instance, a coach who is preoccupied with the weight and shape of their athletes may increase the risk that they develop an eating disorder (Sanford-Martens et al., 2005). As an athlete's body is their means to compete, perform, and achieve success, an athlete may be increasingly aware of their body, and this increased body focus may lead to unhealthy methods of food restriction and/or weight management.

Additionally, Sundgot-Borgen et al. (2004) reported that the pressure to achieve athletic success may influence an athlete's risk for developing eating disorder symptomatology; as an athlete's competitive level increases, so does their risk for developing an eating disorder.

Researchers who study eating disorders in athletes have named a trio of health consequences that often cluster together in those with disordered eating behaviors. This trio is known as the *athlete triad*, or, more recently, *Relative Energy Deficiency in Sports*, and develops as a result of the imbalance of low energy intake versus high caloric expenditure (Bar et al., 2015). In women, this triad presents itself in the form of 1) low energy availability, which occurs when athletes do not take in adequate calories as compared to caloric expenditure from physical activity, 2) menstrual dysfunction, most commonly defined as when menstruation is absent for three or more months, and 3) low mineral bone density (Ströhle, 2019). Within men, the triad presents itself as 1) low energy availability, 2) hypogonadotropic hypogonadism, a condition where the testicles produce low levels of sex hormones, and 3) low bone mineral density (Tenforde et al., 2015). Both the male and female triad can have a devastating impact on athletic performance, including a higher risk of stress fractures and bone breaks due to low bone density, and a lack of energy to continue in the high energy expenditure required by the sport (Tenforde et al., 2015). Beyond athletic performance, athletes with eating disorders suffer from the same impairment and risks associated with eating disorders in the general population as described above.

In order to understand the ways that eating disorders impact athletes, researchers often separate high-risk sports into three categories: aesthetic sports, weight-class sports, and gravitational sports (Bar et al., 2015). These sports, as opposed to team sports and ball sports, often place a higher emphasis on the weight and shape of the athlete (Giel et al., 2016), and therefore place athletes at a higher risk for the development of an eating disorder. First, aesthetic sports, commonly referred to as leanness-focused sports, include sports where the physical appearance of the athlete has an impact on judging and scoring, such as dance, gymnastics,

figure skating, and diving (Krentz & Warschburger, 2011). This category of sport often requires the athlete to be lean or to meet the aesthetic expectations that judges may have for the sport. Specifically, judges (and even spectators) may believe that heavier athletes are slower or less flexible, therefore placing pressure on the athletes to conform to their expectations about body shape. One study found the rates of eating disorders among this group of female athletes to be 42%, with some estimates reporting the prevalence to be closer to 60%, making it one of the most at-risk categories for the development of pathological eating (Sundgot-Borgen & Torstveit, 2004; Statistics & Research on Eating Disorders, 2021). While less frequent, men also compete in sports that emphasize their leanness and appearance, such as bodybuilding and diving; national estimates assert that up to one-third of men in leanness sports are impacted by an eating disorder (Statistics & Research on Eating Disorders, 2021).

Next, weight class sports include things like wrestling, boxing, judo, lightweight rowing, and other sports that depend on a participant's weight to determine their competitive category (Statistics & Research on Eating Disorders, 2021). Male wrestlers often engage in weight control behaviors in order to qualify to wrestle in a weight class lower than their normal weight, while remaining at the highest possible end of that weight class. In order to reach a low weight prior to their official weigh-in, wrestlers may engage in problematic exercise and sauna use, for example (DeFeciani, 2015). Reports of the prevalence of such behaviors range from 3 to 78% (Tenforde et al., 2015), with many experts believing the actual rate to fall on the higher end of that range. After successfully making weight, wrestlers will often engage in bingeing behaviors. Sundgot-Borgen & Torstveit (2004) reported that 18% of males surveyed in this category meet the requirements for a clinical ED diagnosis, in addition to 30% of females surveyed.

Lastly, gravitational sports are those where it may be seen as advantageous to have lower body weight, such as endurance running or cycling (Bar et al., 2015). Many coaches, and even athletes, hold the belief that smaller, lighter athletes will run or bike at a faster pace if they do not have as much weight to carry. It was found that 24% of females and 9% of males in this category met the criteria for an ED diagnosis (Sundgot-Borgen & Torstveit, 2004)

Across the board, there is a higher rate of eating disorders in female athletes than nonathletes, and male athletes as compared to male nonathletes (Sundgot-Borgen & Torstveit, 2004; Bratland-Sanda & Sundgot-Borgen, 2013). Although both men and women participate in all three aforementioned sport types, women nevertheless outnumber men in eating disorder diagnosis. Women often face the unique circumstance of being exposed to both the general social pressure to be thin *and* sport-specific pressure in regard to body shape. Additionally, as previously stated, ED diagnostic criteria were created with primarily women; therefore, men may simply be missed in the process.

### **Prevention**

Most people will never receive clinical treatment for their eating disorder. If they do, the effectiveness is limited; only 44% of those who complete cognitive-behavioral therapy, the most empirically supported treatment for BN, cease their bingeing and purging. The same treatment has even lower efficacy rates for those with AN (Becker et al. 2012). This is compared to an approximately 50-75% effectiveness of CBT for social anxiety disorder, for example (Hedmen et al., 2016).

Due to lower efficacy rates of eating disorder treatment as compared to treatment rates in other mental illnesses, as well as high rates of relapse, many experts have shifted their focus to *prevention* efforts. The notion here is that once an eating disorder reaches a clinical level, it is

quite difficult to treat, so preventing individuals from ever reaching a clinical level might show more promise. Such prevention efforts are typically classified into three distinct categories based on the populations that are targeted: universal prevention selected prevention, and indicated prevention (Bar et al., 2015). Universal prevention targets the general population as a whole and can include educational materials and sharing of information about eating disorder symptoms and dangers. Selected prevention is aimed at individuals who are regarded as being at a higher-than-average risk of developing an eating disorder, such as adolescent girls. Lastly, indicated prevention targets individuals who present the greatest risk of development, including those who may have already begun to show symptoms of eating disorders (Stice et al., 2013).

Stice et al. (2007) conducted a meta-analysis to examine the effects of 38 prevention programs on reducing incidences of eating disorder pathology. The authors studied both universal and selected prevention programs, and examined the intervention type and content, the populations targeted, and the key findings. Only 35% of the programs included in the meta-analysis targeted both males and females, and these were exclusively universal programs, as men are not considered to be at heightened risk. The review concluded that 53% of the prevention interventions resulted in the reduction of at least one risk factor for the development of an eating disorder (e.g., thin-ideal internalization, body dissatisfaction), and 25% resulted in the reduction of eating pathology behaviors. The review determined that larger effects occurred in selected prevention programs as compared to universal programs, likely because low-risk individuals have less room for reductions in eating pathology (Stice et al., 2007). Further, interactive sessions were found to be more effective than didactic sessions, as they allowed participants to be engaged in the information and content of the program, as opposed to passively consuming information. Additionally, larger effects were found in programs that contained multiple

sessions, were delivered by a professional (as opposed to a coach or a teacher) and were offered to those ages 15 years and above (Stice et al., 2007). In regard to program content, Stice et al. (2007) concluded that programs with psychoeducational (i.e., educational facts about ED) content were less effective in producing behavioral changes in those at risk for eating disorders. Programs that instead focused on body acceptance and utilized dissonance-induction content, designed to reduce the internalization of the thin-ideal, produced larger effects as they addressed body dissatisfaction (Stice et al., 2007).

### **Prevention Tailored to Athletes**

While the aforementioned meta-analysis focused on prevention programs as a whole, it is essential to review prevention programs aimed at athletes in order to address the risk factors or needs that may differ from the general population. As participation in athletics has only recently begun to be explored as a risk factor for EDs, research on athlete-specific prevention has just begun. This research is needed to further expand our breadth of knowledge, due to the alarmingly high rates of EDs in athletes, especially in aesthetic and weight-class sports. In a review article on ED prevention in athletes, Bar et al. (2015) concluded that selective, primary interventions that include multiple targets (i.e., involving athletes, coaches, and administration) and utilize interactive approaches appear to be the most effective in reducing eating pathology among athletes.

I will focus on one tailored prevention effort in particular to illustrate the point. Specifically, Becker et al. (2012) provided an excellent example of two prevention strategies aimed at female athletes. The authors examined whether two existing evidence-based prevention programs could be modified to meet the needs of athletes, such as addressing the female athlete triad and consideration for the fact that athletes face pressure about their body size in relation to

their sport as well as in relation to the thin-ideal that we hold in society. Researchers defined a new term to be used in these sessions, the athlete-specific healthy-ideal, as “however an athlete’s body looks when she is doing everything possible to simultaneously maximize physical health, mental health, quality of life, and sport performance” (Becker et al., 2012, p. 35). Participants were 157 female college athletes, representing nine varsity sports (i.e., basketball, swimming & diving, softball, tennis, cross country, soccer, volleyball, golf, and track & field) and varsity cheerleading at a competitive Division III university. Of those surveyed, 74.4% identified as Caucasian. The participants were given the same survey on four separate occasions in order to measure the effectiveness of the prevention program they received, which was randomly assigned so that half of the participants in each sport received each program. Interventions were run within teams, both to facilitate team bonding as well as to tailor conversations around concerns that may be specific to each sport type (e.g., pressures specific to cheerleading vs. basketball; Becker et al., 2012). The researchers measured established risk factors of EDs, including thin-ideal internalization, dietary restraint, bulimic pathology, shape concern, weight concern, and body dissatisfaction, and negative affect using various validated measures and scales.

The first type of prevention program was a cognitive dissonance-based program (DBP), which utilizes the theory that “inconsistencies between behavior and beliefs will produce dissonance, and in order to reduce dissonance, a change in beliefs should occur” (Becker et al., 2012, p. 31). During this type of program, participants discuss the standard of beauty and the thin-ideal, speaking and acting against it in order to create dissonance. That is, once a person speaks against the thin-ideal, cognitive dissonance makes it more difficult to hold themselves to that ideal. The program was modified to be inclusive of the pressures that are unique to athletes,

such as managing both sport-specific thin ideals as well as the traditional thin-ideal, and including athlete-specific language and role-play sessions. In the Becker et al. (2012) study, 79 women, or 50% from each sport represented, were randomized to this intervention, and the structure of the three sessions was as follows:

Session 1: In this session, participants defined both the sport-specific and traditional thin-ideals and contrasted them with the athlete-specific healthy-ideal, examined the ways in which the traditional thin-ideal may influence the sport-specific thin-ideal, explored the costs of pursuing both thin-ideals (via writing and discussion), and were asked to complete a homework assignment. Homework consisted of a mirror exercise in which participants were instructed to write down positive qualities about themselves (both physical and emotional) while standing in front of a mirror with as little clothing as they felt comfortable wearing.

Session 2: Participants discussed the female athlete triad, listed ways to avoid the triad, participated in role plays which included speaking against sport-specific thin-ideal, and were given a homework assignment. This homework assignment consisted of writing a letter to a teammate in which participants were asked to write (but not send) a letter to a hypothetical teammate they felt might be at risk for or struggling with an ED or body image issues.

Session 3: In this session, participants created verbal challenges for times when they felt pressure to pursue either thin-ideal (participants typically focused on the sport-specific thin-ideal), listed the top ten ways to resist the sport-specific thin-ideal, and were asked to complete a homework assignment. The homework assignment consisted of a self-affirmation exercise (to be completed in the next week) in which participants could

choose from such things as: making a pact with a friend to end negative body talk or practicing accepting compliments. (pg. 36)

The second prevention program was the Healthy Weight Intervention (HWI), which is generally aimed at girls and young women with body dissatisfaction. In this intervention, participants are encouraged to maintain a healthy weight by making small, incremental lifestyle changes concerning eating and exercise (Becker et al., 2012). This program was modified to meet the needs of athletes by adjusting the language to reflect the reality that athletes do not need to increase their physical activity to benefit their health and may instead benefit from a reduction in training. Additionally, changes were made to ask athletes what they can do to improve their performance that does not include weight loss. In the Becker et al. (2012) study, 89 women were randomized to this intervention, and the structure of the three sessions was as follows:

Session 1: As in AM-DBP, participants defined the traditional thin-ideal, sport-specific thin-ideal, and athlete-specific healthy-ideal, contrasted the athlete-specific healthy-ideal with both thin-ideals so that all participants were on the same page with regards to definitions. In contrast to AM-DBP, participants then discussed the benefits of pursuing the athlete-specific healthy-ideal, discussed energy intake/output balance, discussed the female athlete triad, and were asked to complete a homework assignment. The homework consisted of filling out a food and exercise log for three days (two weekdays and one weekend day) and filling out a healthy changes goal setting worksheet in which they wrote down a specific goal pertaining to eating behaviors and a specific goal pertaining to exercise sleep behaviors to be completed in the week before the next session.

Session 2: Participants contrasted healthy and unhealthy dietary restriction, discussed society's effect on food choices, discussed ways to make participants' diets healthier,

discussed benefits of exercise/physical activity, discussed the importance of sleep, and were asked to repeat the eating and exercise/sleep goal-setting activity from last week for homework before the next session (participants were expected to choose new goals for this week).

Session 3: In this session, participants created a list of top ten reasons to pursue the athlete-specific healthy-ideal, discussed barriers to pursuing the healthy-ideal and ways to overcome those barriers, and discussed ways to promote the athlete-specific healthy-ideal as a team and/or as an athletics department. (p. 36)

At the conclusion of this trial, the authors concluded that both athlete-modified DBP and athlete-modified HWI reduced all dependent variables (i.e., thin-ideal internalization, dietary restraint, bulimic pathology, shape concern, weight concern, and negative affect) at the 6-week follow-up, and effects remained at the 1-year survey for negative affect, bulimic pathology, and shape concern (Becker et al., 2012). This suggests that by talking against pressures to be thin and giving athletes small, incremental changes to support their health, athletes are less likely to engage in behaviors and thought patterns that significantly elevate their risk for an eating disorder.

These results suggest that when modified to meet the unique needs of female athletes, dissonance-based prevention and healthy weight intervention are both capable of reducing some risk factors at the 1-year follow-up. These modifications include adding information about the athlete triad, discussing the double pressure that female athletes face in regard to weight in general but also weight in relation to sports, and tailoring language to athletes. Future research is needed to determine if the results are generalizable to more competitive programs, such as Division I colleges or national training camps, as Sundgot-Borgen et al. (2004) reported that the

level of competitiveness is correlated with the risk of ED development. However, this initial exploratory investigation suggests that modifying prevention efforts to meet the needs and pressures of female athletes is worthy of being further explored.

It is essential to focus on the prevention of eating pathology in young people, especially athletes who may be at an elevated risk. Clinically significant eating disorders typically begin as negative attitudes about one's own body and other subclinical behaviors; thus, prevention and early identification may prevent the development of serious eating problems. Since eating disorders have one of the highest mortality rates of any psychiatric disorder, even small, incremental steps are critical in ensuring that our young people and athletes are healthy and safe.

### **Recommendations**

While researchers have made significant strides in discovering aspects of eating disorders, there is still so much more to learn. In the realm of eating disorders, especially prevention, the focus remains on young white women and their experiences. Indeed, the very criteria we use for clinical diagnosis were created around white women and how they experience eating disorders (Strother et al., 2012). While any research that furthers our understanding of these serious mental illnesses is welcome and valuable, it is critical that we expand our sample to include more diverse populations. Namely, we do not fully understand how EDs may impact people from cultures other than post-industrialized ones such as ours, and we are still learning about how they impact men and women of color. It is our moral obligation to seek to understand how eating disorders manifest in ways that we may not be aware of; researchers should seek out diverse samples and experiences when conducting future studies.

Additionally, consideration should be given to the notion that since athletes often experience the pressure of EDs in a sport-specific way (i.e., weight-class athletes may focus

more on the number on the scale, while aesthetic athletes may be more concerned with the shape of certain parts of their body), efforts should be made to tailor prevention and education programs to meet their unique needs. Previous research has affirmed the effectiveness of targeted, selected prevention of EDs for women from various sports who are high risk, and this might be translatable to sport-specific prevention programs. Customizing goals, expectations, and focal points to meet the needs of those they serve will be extremely beneficial to reducing instances of eating disorders in our communities. For example, a prevention program for female endurance runners might include information on the female athlete triad and the dangers of chronic energy restriction, whereas a prevention program for male wrestlers, who engage in dangerous purging and other weight cutting behaviors, might focus more on harm reduction as it is unlikely that the emphasis on weight will ever be lessened.

Additionally, it is essential to involve a variety of individuals, in all levels of athletic culture, to reduce instances of EDs. Bar et al. (2015), in their review to understand shared components of successful athlete interventions, found that having multiple targets for systemic change (i.e., providing programming to athletes, coaches, and administration) is a common marker of successful programs. Involving people at all levels supports systemic change in a culture that places athletes at elevated risk for EDs. Coaches, counselors, and athletic trainers should be aware of and educated about the risk factors associated with the development of eating pathology, especially in regard to athletic participation and weight-sensitive sports.

Administrators should have a plan in place to identify at-risk individuals, such as requiring an ED screening as part of yearly physicals. Coaches should be aware of the influence that they hold in regard to creating a culture of weight-preoccupied athletes; coaches and trainers should emphasize the overall health and well-being of an athlete rather than focusing on weight and

appearance. The athlete-specific healthy-ideal, as defined by Becker et al. (2012) should be adopted as standard practice in relation to how we talk to athletes and their relationship with their body.

Athlete-modified prevention has been shown to be effective in reducing risk factors and instances of EDs (Bar et al. 2015; Becker et al. 2012), and as such, school and athletic organizations should look to incorporate aspects of these modified preventions. Elements of HWI, such as inviting trained nutrition professionals to teach athletes about the importance of fueling their bodies for success and the importance and necessity of quality nutrition, especially athletes that are in charge of their own meals (i.e., college athletes), may help athletes make informed decisions about the food they are eating. Teaching athletes skills to improve their performance that do not include weight loss, such as the importance of sleep and rest, are additional aspects of HWI that can easily be adopted into any coaching philosophy.

Finally, sports administrators (i.e., Athletic Directors) should establish methods for athletes to report coaches or other staff who do not uphold a culture of care and respect for athlete's bodies, who pressure athletes to be thinner or a certain weight. Additionally, they should have direct and immediate consequences for fans who engage in derogatory comments towards athletes and their bodies, therefore contributing to environmental pressures that can trigger dangerous eating behaviors. Athletic Directors have the responsibility of setting the tone for an entire university's athletics program; as such, they carry responsibility and moral obligation to provide a safe environment for their athletes.

### **Conclusions**

Eating disorders are complex mental illnesses that impact far more people than previously thought; while we do not fully understand all aspects of ED, strides are being made in

the fields of prevention and education. Research has shown that emphasis should be placed on prevention in an attempt to stop the development of an eating disorder before it begins.

Prevention programs that are modified to fit the unique needs of athletes show promise but warrant further research. In addition to formal prevention programs, coaches, peers, family members, and medical professionals have important roles to play to decrease the rates of EDs. This can include de-emphasizing the importance of weight in athletic success, emphasizing healthy nutritional goals, and affirming the notion that all bodies are different and are worthy of being taken care of; sporting organizations have a moral obligation to their athletes to actively work to develop and implement prevention programs. Education, prevention, and early identification of at-risk individuals are critical steps in lowering the rates of eating disorders, both in the general population as well as the athletic population.

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