Screening for Disordered Eating in Female Athletes

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Introduction

The female athlete is amongst the most at-risk population for disordered eating (DE)[3,6,7,12]. Undiagnosed or untreated disordered eating can lead to further serious health consequences; therefore, early recognition is of high importance. Various screening tools for diagnosis do exist, however there is a current lack of standardized protocol in athletics, making the prevention and recognition of disordered eating more difficult in organized sport settings (e.g. NCAA, NFHS). It is well accepted that the best method of prevention is early recognition through screening and education,[17] thus placing age-appropriate protocols in place would give athletic trainers, coaches, and other medical support personnel the ability to intervene early. The following information is intended to raise awareness of the current prevalence, risks, and consequences of DE, as well as provide recommendations and resources for further recognition.

What is Disordered Eating?

To discuss what we consider "disordered," we first must define what is "normal". Non-disordered eating is described as the mindless consumption of food when hungry, the ability to stop eating when full, and a diet that includes variety.[23] On the other end, eating disorders (ED) are clinical diagnoses made when the individual meets strict criteria. The DSM-V lists five types of clinical ED's[17]:

- Anorexia Nervosa
- Bulimia Nervosa
- Binge Eating Disorder
- Other specified eating and feeding disorders (OSFED)
- Avoidant/Restrictive Food Intake Disorder (ARFID)

You can visit https://www.nationaleatingdisorders.org/what-are-eating-disorders to learn more about the specific signs and symptoms of each eating disorder.

Disordered eating (DE), then, exists on a spectrum between healthy eating behaviors and clinical eating disorders[10,17]. Officially, DE is defined as "a wide range of abnormal and harmful eating behaviors, that are used in a misguided attempt to lose weight or maintain a lower-than-normal body weight.[1]"

The difference between DE versus ED comes down to the proportion and degree (mild to severe) of symptoms that are displayed. While symptoms may be the same, it is incorrect to use the terms interchangeably. The number of individuals who present subclinical symptoms is much higher than those with clinically diagnosed ED,[6] making disordered eating the more prevalent issue. Regardless of terminology, the key is to recognize that a problem exists in its early stages[6], since the greater the number and severity of symptoms of DE, the greater the possibility of developing an ED.[12,17]

DE can present itself in various ways across individuals, and not solely around food, but also including physical, emotional, behavioral, and medical signs[17]. The most commonly observed symptoms include:

- Binging and/or purging
- Food restrictions (intake, type)
- Over exercising
- Laxative use, diet pills[3,4,17]

A complete list of warning signs and symptoms can be found here:
https://www.nationaleatingdisorders.org/warning-signs-and-symptoms

Prevalence

The literature agrees that females are up to 10 times more susceptible than males to develop DE behavior, representing 90-95% of diagnosed cases in the U.S.[6,7,18], and of those seeking medical attention.[7] Additionally, the majority of the literature has reported that female athletes are more likely than female non-athletes to develop DE. This is due to the additional risk factors associated with their sport environment,[17] with the most recent reported prevalence in female collegiate athletes estimated to range between 6-45%.[17] Existing data also suggest that the type of sport additionally has influence on DE prevalence. Athletes participating in "lean" sports, or sports that put extra emphasis body weight through either a competitive advantage, classification, or aesthetic (i.e. running, gymnastics, swimming, diving, cycling, wrestling, rowing, etc.), have a greater risk and prevalence of DE compared to non-lean sports (i.e. basketball, soccer, softball, etc.).[12] The adolescent athlete is also at risk, with one study reporting a prevalence of 41.5% of DE in high school female athletes competing in lean sports.[24]

Risk Factors

Generally, there is a variety of both biological and psychosocial risks that increase the likelihood of developing DE, with some more difficult to treat than others. For example, predisposing risks for DE in all women (both athlete and non-athlete) could include factors such as history of sexual abuse, low self-esteem, mood disorders, genetics, pubertal timing, emotional intelligence, personality traits, and trauma[21].

Variable (i.e. situational) risk factors are where we are most likely to make a notable change for prevention and recognition.[22] This is particularly true in the female athlete, whom is exposed to additional risks due to the surrounding athletic culture. Athletics can normalize certain aspects of disordered eating symptoms by perceiving them as a dedication to the sport. Athletes who are already competitive in nature engage in a sport which requires one to be disciplined and can cause what would otherwise be concerning behaviors to get overlooked. This can be seen in DE behaviors like eccentric eating (identical meals day to day), restriction of food groups (i.e. no sugar, no carbs, etc.), compulsive exercise (overtraining), or even physical signs such as low body fat percentage.[10] The misconception of dedication presents an inherent risk for athletes without prior existing issues, or risk of furthering more serious symptoms and consequences for those that do.[11]

The athletic culture also pays extra attention to body image, particularly concerning is the unhealthy association between thinness and performance[4,7,17]. Internally, this can stress the athlete to look a certain way in order to perform to a certain standard, which is then usually exacerbated by external pressure from coaches, trainers, administrators, parents, and teammates. Good performance does not equate to good health, but the narrative within the athletic environment can drive the unhealthy behaviors if it focuses only on success and increasing performance while ignoring the detriments to health.

Disordered eating, at any point on the spectrum, can trigger numerous problems within the athletes overall psychological and physiological health. DE does not have to be severe to have serious health consequences.[20] The athletic culture increases both the possibility of developing DE behavior and the difficulty in diagnosis of DE.[4] Difficulty in diagnosis may not only come from lack of screening, but from an athlete who…

- May be driven to a more secretive nature due to fear of removal from competition, aware of the seriousness of behaviors but doesn't want to be caught
- May be in denial and does not see a problem with their behaviors, considering themselves healthy

- May be uneducated on proper nutrition, unknowingly not matching expenditure to intake
- May be experiencing more emotional based symptoms that are not outwardly noticeable and/or is just not seeking help
- May see performance improvement from unhealthy behavior(s), encouraged to continue engaging in them

Most common, observable red flags you may notice in an athlete who is struggling with DE[17]:

Behavioral	**Physical**	**Psychological**
Restricts food/Avoids social setting around food	Dramatic weight fluctuation	Frequent mention/criticism of one's body image
Repeated immediate bathroom use after eating	Frequently ill and/or injured	Poor/declining mental health
Increasing preoccupation with weight and food	Wearing baggy clothes	Feels out of control with food

Consequences

Disordered eating is part of a larger term known as the Female Athlete Triad, which includes amenorrhea, and osteoporosis.[2,18] An athlete experiencing DE symptoms is likely to experience low energy availability[6,19], which will begin to cause a chain of other consequences due to the body not having enough fuel available to function properly in any of its systems (endocrine, skeletal, cardiorespiratory, etc.), especially for an athlete trying to engage in high-intensity exercise. Athletes with DE, thus, are putting themselves at risk for menstrual dysfunction and poor bone health, and multiple other dietary deficiencies, that will then lead to a chain of further health defects. There is an extensive list of possibilities, but common consequences include[6,17,18,21]:

- Low calcium/protein - can lead to reduction in bone mass, then leading to osteoporosis and more susceptibility to stress fractures
- Low iron/ferritin - can lead to anemia and amenorrhea, which can lead to hormonal imbalance, which can cause musculoskeletal injury, emotional changes, and fertility issues
- Low zinc - can lead to improper immune response, leading to higher susceptibility to sicknesses

DE consequences will eventually become detrimental to athletic performance, a unique factor for this population. In addition to the above-mentioned physical complications, there is also the mental aspect. There can be loss of confidence from lowered self-esteem, impaired judgement and concentration thus decreasing accuracy and skill, or further development of depression and anxiety leading to unmanageable competition nerves or lack of motivation.[7] Alarmingly, ED's also carry the highest mortality rate of any mental illness[7], either through cardiac arrythmia, multiple organ failure, or suicide.

Recommendations

Early recognition of DE through appropriate prevention methods (screening tools and education), consistently shows better outcomes through the literature[13,14,17]. In fact, the National Athletic Trainers Association, American College of Sports Medicine, and International Olympic Committee each recommend the use of screening tools.[8,11,15] While there are numerous

screening tools that exist today, the target population of the tool varies, and can impact the effectiveness in detection of symptoms and/or a diagnosis. The existing literature has identified[15] the Brief Eating Disorder in Athletes Questionnaire-2 (BEDA-Q2) as an effective tool to evaluate high school female athletes and the Physiological Screening Test (PST)[3] for the collegiate-aged female athlete.

All athletic trainers, coaches, team doctors, psychologists, and other institutional support personnel carry a responsibility to be knowledgeable about the signs and symptoms of DE. Even for those who are trained in the management of eating disorders, ongoing training is important, as a study in 2004 revealed that only 27% of collegiate athletic trainers were confident in their ability to identify an athlete with DE, and of those, only 38% were comfortable enough to approach that athlete.[11] The combination of ongoing training and education and having a protocol in place for early recognition will increase the potential to intervene early enough to prevent further consequences.[7]

To that end, the coach can play a critical role in education and prevention. Coaches have the most frequency interaction with their athletes and in most cases, heavily influence their belief systems regarding their sport. A coach that places extra emphasis on weight is likely to precipitate DE through the team environment,[11] both for those that already struggle with symptoms and those who would not have otherwise thought of weight as an issue. Rather, a focus on motivation, enthusiasm, and effort is shown to aid prevention as opposed to focus on body weight, shape, and punishment from poor performance.[4] The more we can alleviate the risks perpetuated by the athletic culture, the more we can help prevent and diagnose those who struggle with disordered eating.

Additional Resources:

More research and facts around DE/ED can be found here:
https://www.nationaleatingdisorders.org/statistics-research-eating-disorders

Looking to learn more information on disordered eating in the NCAA? Check out these fact sheets:
https://www.ncaa.org/sport-science-institute/disordered-eating

Are you, or is someone you know, struggling with disordered eating? If you need help, visit the National Eating Disorder Association website for easy access to more information on where you can chat, call, or text. https://www.nationaleatingdisorders.org/help-support/contact-helpline

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