Assessment of Athletes With Eating Disorders: Essentials for Best Practice

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It is estimated that 1.6 million people in the United States are currently diagnosed with an eating disorder. Eating disorders (EDs) have high rates of morbidity and mortality and remain the most severe mental illness. Unfortunately, rates of EDs and disordered eating behaviors (DEBs) among athletes appear to be increasing. In this study, authors summarize ED-related risks that pose compromises in psychological and social functioning, medical health, and overall quality of life. The importance of early detection and formal evaluation in preserving the athlete’s health, well-being and sustaining successful sport participation, and performance are highlighted. Athlete-specific factors, which challenge the ease and accuracy of ED detection and assessment, are noted. The recommended components of effective ED assessment are identified, including use of self-report measures and clinical interviews conducted by ED certified and licensed professionals. The importance of being well informed in tenets of ED awareness, prevention and supporting early detection, and referral for formal ED assessment are noted. Conclusions reflect the vital roles that both the multidisciplinary sport personnel and the sport environment/culture play in reducing the serious health risks of DEBs and EDs. Each is needed to protect an athlete’s well-being while fostering safe and successful sport participation.

**Keywords**: eating disorders, ED assessment, ED detection

It is estimated that 10 million women in the United States and 1 million men, of diverse gender, ethnicity, socio-cultural origin, socioeconomic status and age will meet diagnostic criteria for ED during their lifetime, including anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorder (BED), other specified feeding or eating disorder (OSFED) or avoidant/restrictive food intake disorder (ARFID) (Linville, Benton, O’Neil, & Strum, 2010; Wade, Keski-Rahkonen, & Hudson, 2011). An eating disorder (ED) is a serious mental illness often characterized by disordered thought, emotion, and behavior with associated disturbance

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in factors such as body weight, appetite, eating, body image, exercise, and/or appearance. Eating disorders are substantially different from more common eating and body related frustrations and, once established, do not remit without professional treatment.

Rates of EDs among athletes appear to be increasing with rates varying from 6–45% in female athletes and 0–19% in male athletes (Glazer, 2008; Sundgot-Borgen & Torstveit, 2004). Among elite high school students, ED prevalence is higher among athletes than among non-athletes (7.0 vs. 2.3%) and prevalence is higher for females than males (14.0% vs. 5.1%) (Martinsen & Sundgot-Borgen, 2013). Unfortunately, detection and assessment of EDs is often challenging and, among athletes, may be particularly difficult. When undiagnosed and untreated, EDs threaten an individual’s medical safety, mental health and athletic aptitude.

Health Risk

All EDs pose risk of psychological, social, and life-threatening medical complications (see Figure 1) with serious compromise in overall quality of life (Styer, Conviser, Washburn, & Aldridge, 2014). Eating disorders and subclinical

![Figure 1 — Signs and symptoms of eating disorders: Academy of Eating Disorders: Guide to Medical Care, 2017.](image-url)
disordered eating behaviors (DEBs) influence energy availability and increase the risk of a health syndrome known as “Relative Energy Deficiency in Sport” or “RED-S” (Mountjoy et al., 2017). RED-S occurs when energy expenditure exceeds energy intake, creating an energy deficiency and a resulting compromise in health systems evidenced in one or more of the following: metabolism, menstrual function, bone health, immunity, protein synthesis, cardiovascular health and psychological health (see Figure 2) (Mountjoy et al., 2017). Early ED detection and assessment is vital for minimizing potential deleterious effects.

**Early Referral**

Early referral for ED evaluation preserves health, fosters safety, and promotes recovery (Fisher, 2006). Professional evaluation is recommended when one or more of the following symptoms are noted: restriction of nutrient intake, binge

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**Figure 2** — Relative Energy Deficiency in Sport, RED-S: IOC Consensus Statement, British Journal of Sports Medicine, 2014.
eating, purging, excessive exercise, marked change in weight or appearance, preoccupation with weight or body shape, use of medications or supplements to change weight and any expression of suicidal thinking (see Figure 3). For athletes in particular, evidence of DEB and ED risk may manifest in sport performance decrements, inability to improve strength and conditioning status despite continued training, increased anxiety, low energy or fatigue, poor sleep, and isolative behavior.

**ED Assessment**

A variety of brief ED self-report measurement tools (SRMTs) are available for screening children, teens, adults, females and males, including: the Eating Attitude Test (EAT-26; Garner, Olmsted, Bohr, & Garfinkel, 1982), SCOFF (Morgan, Reid, & Lacey, 1999), Eating Disorder Questionnaire (EDE-Q; Fairburn & Beglin, 2008), Binge Eating Scale (BES; Gormally, Black, Daston, & Rardin, 1982), Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairburn, 1987) and the Eating Disorder Examination (EDE; Fairburn & Cooper, 1993). Special considerations for assessing children and teens (Micali & House, 2011) and males (Darcy

**Factors Indicating Need for ED Evaluation:**

- Significant weight change
- Change in eating behaviors (vegetarian, vegan, gluten free, lactose free, elimination of certain foods or food groups, or binge eating
- Sudden change in exercise patterns, excessive or compulsive exercise or extreme physical training
- Body image disturbance, desire to lose weight, or extreme dieting behavior regardless of weight
- Abdominal complaints in the context of weight loss behaviors
- Electrolyte abnormalities without identified medical cause (hypokalemia, hypochloremia, elevated bicarbonate)
- Hypoglycemia, bradycardia, amenorrhea or menstrual irregularities, unexplained infertility
- Type 1 diabetes mellitus with poor glucose control or recurrent diabetic ketoacidosis with or without weight loss
- Use of compensatory behaviors (i.e. self-induced vomiting, laxative abuse, dieting, fasting or excessive exercise or influence weight after eating or binge eating
- Inappropriate use of:
  - Appetite suppressants
  - Caffeine
  - Diuretics
  - Laxatives
  - Enemas
  - Ipecac
  - Artificial sweeteners
  - Sugar-free gum
- Inappropriate use of prescription medications, that affect weight (insulin, thyroid medications, psychostimulants or street drugs) or nutritional supplements marketed for weight loss

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**Figure 3** — Factors indicating need for ED evaluation: Academy of Eating Disorders: Guide to Medical Care, 2017.
& Lin, 2012) are available. A highly recommended ED screening tool called The Preparticipation Physical Examination Monograph (PPE) was developed by the American Medical Society for Sports Medicine and the American College of Sports Medicine (Bernhardt & Roberts, 2010). The PPE contains five questions: 1) Do you worry about your weight? 2) Are you trying to or has anyone recommended that you gain or lose weight? 3) Are you on a special diet or do you avoid certain types of food? 4) Have you ever had an eating disorder? 5) Have you ever taken any supplements to help you gain or lose weight or improve your performance? It is recommended this screening tool be used in conjunction with an 11-question screening tool developed by the Female Athlete Triad Coalition (see Figure 4) to identify risk of disordered eating, menstrual dysfunction, and low bone mineral density (see Figure 5) (De Souza et al., 2014).

The use of SRMTs for ED screening have benefited. For example, SRMTs are easily administered to larger groups, inexpensive, easily scored and provide a relatively quick source of relevant information. SRMT’s, however, have notable limitations. Previously, SRMTs for EDs targeted primarily females and were based on diagnostic criteria now considered obsolete (Darcy & Lin, 2012). SRMTs were not always inclusive of male relevant DEBs, such as overvalued muscularity, body image disturbance in males, unhealthy or dangerous weight loss practices, and steroid use (Mitchison & Mond, 2015), thereby challenging accuracy of symptom and risk identification. In addition, reliability and validity of SRMTs is influenced by the athletes perception of how collected information may or may not be used in the future and with whom. Privacy and confidentiality policies related to SRMT results may concern athletes given some uncertainty regarding future consequences of shared information. Informing athletes in advance of how SRMT results will be used and of related privacy rights, may improve the athlete’s willingness to disclose (Sungot-Borgen, 1993). SRMTs should be administered and interpreted by a qualified ED professional with referral for more formal assessment as indicated. It is recommended that SRMTs be used in conjunction with a personal clinical interview and reports from all members of the multidisciplinary team in order to confirm or refute ED risk or to diagnose (Martinsen & Sundgot-Borgen, 2013).

Interpretation of any collected information relevant to understanding complex psychiatric conditions like EDs must occur with caution. It is beneficial to consider the source of available diagnostic information (e.g., format of data collection,

**Recommended Screening Questions for the “Female Athlete Triad”:**

- Have you ever had a menstrual period?
- How old were you when you had your first menstrual period?
- When was your most recent menstrual period?
- How many periods have you had in the last month?
- Are you presently taking hormones?
- Do you worry about your weight?
- Are you trying to or has anyone recommended that you gain or lose weight?
- Are you on a special diet, or do you avoid certain types of foods or food groups?
- Have you ever had an eating disorder?
- Have you ever had a stress fracture?
- Have you ever been told you have low bone density?

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**Figure 4** — Recommended Questions for the Female Athlete Triad Coalition, 2014.
intended purpose, when the information was collected, and factors related to anonymity), in order to fairly interpret results (DiPasquale & Petrie, 2013). Assessment is an ongoing and evolving process that requires multidisciplinary observations (see Figure 6). Those individuals working closely with the athlete, regardless of particular discipline, are well positioned to observe signs and symptoms of concern and support timely referral for formal evaluation. It is not necessary to be certain that there is DEB or ED risk prior to making a referral for more formal evaluation.

**Clinical Interview**

EDs are commonly assessed via clinical interview conducted by an ED certified and sport/athlete-sensitive professional who is licensed to diagnose recommend
additional psychological, psychiatric and medical evaluation if indicated and draft initial treatment plans for EDs. Vital components of the diagnostic interview (see Figure 7) include: the reason for referral, source of the referral, and demographic information (i.e., age, education/occupation, and living/marital status). The collection of information regarding family and social relationships (past and present), is useful in understanding the context of the athlete’s experience and in identifying support systems that may facilitate the athlete's recovery. Academic, occupational, psychiatric, and medical history (i.e., illness, medications, accidents, injuries, surgery) are all important. Since EDs may co-occur with other mental illnesses, it is necessary to inquire about any history of mood and anxiety disorders, substance use or abuse, serious accidents, trauma, self-injury, and related treatment history.

**Eating and Weight History**

An important component of an ED diagnostic interview is gathering information related to the athlete’s eating and weight history. When possible, this information should be collected by the attending physician and/or registered dietitian (RD). Eating history may include: preferred foods, food allergies, affinity for food preparation, typical eating patterns, feared foods, 24-hour diet recall, and any financial concerns related to food and eating. Weight-related information must include: current self-reported weight, highest lifetime weight, weight fluctuation over time, frequency of self-weighing and personal perspective on 1) a hypothetical weight change, 2) how weight impacts sport performance and mood, and 3) perspective on ideal or desired weight. Any preference for eating-related or body-related change should be evaluated to understand the athlete’s personal eating-, body-, or appearance-related motivations.
Anthropometric Measurement

The athletic staff and care providers should be mindful of the serious risks of EDs at all body weights rather than assuming a certain body weight or athletic build and EDs are mutually exclusive. Caution should be used when conducting any anthropometric measurements and communicating results because the athlete may not be able to use that information in a safe and constructive manner and the information may further aggravate DEB and ED behaviors. Similarly, over-valuing “thin” or advising weight loss or weight gain negatively affects the athlete’s body image and DEBs. Finally, sport personnel and evaluators must be conscious of their own body image. All body-related attitudes, self-critical comments, weight-related bias, and body-or weight-related stigma within the training environment will influence the athlete’s self-perceptions and health.

Sport History

The athlete’s sports history and current goals are vital elements of the clinical interview. How the athlete first started in his or her sport experience, the length of time in the sport, awards earned, records set, current and past interest, motivation to participate and compete, and nature of relationships with coaches and teammates...
all inform the diagnostic process. The athlete’s sport history may highlight factors that contribute to either the athlete’s ED-related resilience (e.g., later age sport specialization, minimal sport-related emphasis on weight and appearance, positive coaching and training environment) or factors that may contribute to greater ED or mental health risk (e.g., early age sport specialization, sport environment emphasizing weight and appearance, required weight change to accommodate sport-related needs such as weight class or required aesthetic, harshly punitive training environments).

**Assessing Patterns of Excessive Exercise**

An ED assessment should include evaluation of all exercise patterns and any tendencies to over-train. Signs of over-exercising include changes in mood, anxiety, energy, self-worth, body image, or confidence associated with a change in the exercise regimen. In addition, any difficulty changing exercise patterns after advised to do so by a coach, medical professional, or athletic trainer may be evidence of DEB or ED. Athletes who extend workouts beyond regularly scheduled team training time or have urges to exercise when injured should be monitored for ED risk. Athletes who calculate the caloric expenditure of their exercise or training regimen or worry about body or shape when decreasing exercise activity should undergo ED re-evaluation (Maine, 2000).

**Medical Evaluation**

A comprehensive evaluation by a medical physician with prior training in EDs and experience working with athletes is a necessary component of an ED assessment (See Figure 8). Results may indicate current level of safety or risk and some measure of predictive risk. Results assist in decision making regarding the components of subsequent monitoring or treatment and decisions in planning the initial appropriate level of care (see Figure 9). The medical criteria for hospitalization are noted (see Figure 10).

**Differential Diagnosis**

Eating and body-related frustrations are common in the current culture and not always indicative of mental illness. Several critical questions may help clarify the severity of any DEBs or EDs and differentiate DEBs and EDs from other common but subclinical weight-, body-, and eating-related conditions. These questions are: How much is your mood affected by any change in eating or exercise patterns? How much of your waking day do you think about body, weight, shape, exercise, food, or eating? How willing are you to make changes to eating, exercise, or body weight if your medical team recommends them? Are you willing to receive medical and psychological care should it be advised? In this regard, it is noted that the athlete’s ability to follow professional recommendations for additional ED evaluation or adjust exercise and eating behaviors when medically advised are significant diagnostic features of EDs.
Impeding Detection

Unfortunately, several factors may delay or impede ED detection among athletes. For example, signs of DEBs and EDs are not always obvious or evidenced by body weight or shape. Athletes of low, normal, and high weight may be malnourished and engaging in unhealthy weight control practices. Athletic body types can elevate body mass index, one indicator of ED risk, and mask the outward appearance of poor nutrition. Eating disorders do not always immediately result in a decline in fitness and sport performance. Athletes may appear healthy to others (Sundgot-Borgen & Garthe, 2011), particularly if recent athletic performance is temporarily maintained or improved. Athletes with ED risk may also go unnoticed if they push through discomfort and persist despite experiencing low energy.
low mood, and physical discomfort. In addition, athletes with EDs may view
themselves as healthy and not realize the extent of any ED risk since the inability to
accurately perceive the seriousness of the illness is an inherent feature of EDs
(Styer et al., 2014).

Athletes, sport personnel, and medical care professionals may have little
formal training in recognizing ED signs and symptoms (Torres-McGehee et al.,
2012), and without ED specific training, it is difficult to realize the full extent of any
associated risk. The sport community may unknowingly believe that ED health
risks will be outwardly observable, deny the gravity of ED risk, falsely assume that
DEBs and EDs will resolve without professional intervention, view preoccupation
with body and dietary intake to manage weight (upward or downward) as normal
and benign within the sport culture, prioritize the athlete’s privacy and confiden-
tiality (McArdle, Meade, & Moore, 2016), and minimize the long-lasting and
serious health consequences of DEBs and EDs (Markser, 2011).

Sport communities are committed to protecting the athlete’s health and
maximizing successful athletic performance; however, the ED detection and referral
process may be perceived as a threat to the athlete’s status in training and
competition. Loyalty to the athlete’s and team’s success may dissuade detection
and referral if sport personnel view this process as detrimental to the individual or
team or if the seriousness of this illness is not fully appreciated. Prioritizing the
athlete’s longer-term health must be a priority.

**Scope of Practice**

EDs must be diagnosed and treated only by those professionals with specialty
training, credentials, and experience. Sport personnel may be tempted to provide
advice or recommend strategies for ED remediation, but they should work within their scope of professional practice. Although well-intended, it is not appropriate to enact the role of “therapist” without formal training and appropriate licensing. Some empirically-supported treatment recommendations are counterintuitive to a non-professional, so laymen advice risks conflicting with the treatment plan and best science. Therefore, attempts to “help” an athlete with an ED, or suspected ED, may delay formal treatment and pose further complication.

Privacy Protection

A primary objective for professionals who work with athletes is accessing and coordinating timely and appropriate medical assistance while protecting the athlete’s private health information. Since health-related information is federally protected, confidentiality is of the utmost importance. Sport and treatment professionals must obtain written permission prior to obtaining or sharing information. Coaching staff can support the athlete while being cautious to avoid communicating private health-related information to other athletes, athletic personnel, press, family, or friends without prior written permission. Finally, the coaching staff and treatment providers must remain cognizant of having a single role when working with an athlete rather than multiple roles in order to preserve privacy in communication and avoid ethical risks associated with dual relationships.

Stigma and Bias

It is important to be attuned to the sensitivity of the illness and referral process when making a referral for ED assessment or treatment. Unfortunately, much mental health related stigma and bias exists within the current culture. Mental illnesses, including EDs, may be falsely characterized as “weak”, “bad choices”, or simply “not trying hard enough”. Many may unnecessarily feel embarrassed about seeking treatment or believe that they should recover without professional support. In fact, most who acknowledge having mental health problems do not seek treatment (Eisenberg, Golberstein, & Gollust, 2007). College athletes, for example, may minimize the severity and acuity of any concerns and even refuse additional assistance. Providing objective observations of the concerning behaviors (e.g., low energy, mood/weight change) will inform the recommendations of the assessment/treatment providers regarding any next steps. Empathic communication of ED-related concerns and assessment recommendations improves likelihood of compliance.

A sports culture that is well informed of DEBs and EDs risks will improve early detection, referral, and treatment as needed. Denial, the inability to accurately perceive the severity of the illness, will be pervasive in clients with EDs and is an inherent component of the illness. Concerns about an athlete’s DEB should not be easily abandoned when met with resistance. Assumptions such as: “The athlete will get over it.”, “EDs are not that serious.”, and “The athlete’s mental health is not my responsibility.”, should be avoided in service of supporting the athlete in making healthy decisions regarding sport participation and treatment.
Conclusion

Care providers, sports personnel, athletes, and family members should recognize that ED assessment is not a benign process and work together to build safe and effective procedures for prompt ED detection and assessment. They should appreciate that any forced disclosure of hurtful or traumatic history is traumatizing and ill advised. Assessing medical and mental health professionals must be competent and culturally sensitive, consider the impact of any assessment procedures for each athlete, and know how much detail, if any, needs to be collected or shared, how quickly to do so, and in what format. Assessing professionals should also prioritize building a trusting and therapeutic relationship since it will serve as a necessary foundation for positive change (Hay, Touyz, & Sud, 2012). They must respect diversity of identity and values (Linville et al., 2010) and protect the athlete’s rights to privacy and confidentiality.

Illnesses and sport communities are inextricably linked. The individual having a mental illness may be blamed for their illness and considered weak or deserving of its deleterious consequences. The influences stemming from the larger environment may go unnoticed and unlabeled. For example, the diver, distance runner, or gymnast may slip into food restriction, and resulting anorexia may be attributed to vanity rather than the relevant sport cultures required thin aesthetic. Focusing on the individual athlete alone as the “problem” and the “patient” without regard for the larger context within which the illness exists may impede opportunities for treatment mediated by the sports environment.

Although the sport environment influences risk of mental illness, sport personnel and the sport environment play vital roles in reducing risk of DEBs and EDs by being well informed in ED awareness and prevention and supporting early detection and referral for formal ED assessment.

References


