

Eating disorders are predominantly thought of as a disease that teenage girls suffer from due to the attempts at resembling women portrayed in the media. However, eating disorders are not uncommon among others, such as athletes. Sports that emphasize weight requirements or appearance and coaches that focus on success rather than the athlete as an individual can instigate extreme eating and exercise behavior, defined by eating disorders. Eating disorders are typical among sports that emphasize the individual athlete rather than the team. These sports include gymnastics, figure skating, dancing, diving, synchronized swimming, as well as wrestling (Sudi, Ottl, Payerl, Baumgartl, Tauschmann, and Muller, 2004). We will be reviewing articles that address how culture and type of sport affect eating disorders. Moreover, we will discuss the types of assessments used when diagnosing an individual with an eating disorder, and which is the most accurate. The eating disorders that are common among athletes and that will be discussed are anorexia nervosa, bulimia nervosa, and female athlete triad.

Many athletes have the belief that reduced body weight will improve their performance, and therefore they focus on weight loss. Risk factors for athletes with eating disorders are low self-esteem, family dysfunction, history of physical or sexual abuse, and other traumatic life experiences. Moreover, an athlete is at a higher risk of developing an eating disorder if they have family members with eating disorders or if there are family or cultural pressures to be thin (Beals & Manore, 1999).

Anorexia nervosa is a serious eating disorder that predominantly affects young women. However, the disorder's victims are not limited to this demographic. Many of the sufferers of anorexia are athletes. Anorexia is an eating disorder that is defined by a reduced appetite or revulsion of food. Its boundaries exceed typical dieting. Someone who is anorexic restricts

their eating which can reach a point of starvation. It is a psychological disorder, where loss of weight becomes a way of controlling the patient's life (Montenegro, 2006).

Anorexia has some symptoms that can be spotted physically, while other indicators of the disorder are more illusive, especially due to the fact that the effected patient is secretive of the disorder's effects. The refusal to maintain body weight at a normal level is a physically evident symptom. These include extreme weight loss, stunted growth, thinning hair, pale complexion with sunken eyes, and bruising easily. Other physical repercussions of the disorder are amenorrhea, the constant feeling of cold, and headaches. Also, as a result of anorexia the effected individual may experience abnormal mineral and electrolyte levels in the body and well as possible zinc deficiency. Inadequate micronutrient intakes of calcium, zinc, iron, magnesium, and B-complex vitamins are especially trying to athlete's bodies, because they are involved in energy metabolism, normal immune function, hemoglobin synthesis, and maintaining bone function (Beals & Manore, 1999). The patient may also encounter a depleted white blood cell count and lowered immune function. Some other effects of anorexia are the fluid collection in the ankles of the body during the day and around the eyes in the evening. Lastly, it can cause poor circulation, which can result in pins and needles in extremities (Taylor, 1997).

Aside, from its physical deterioration of the body, anorexia is a psychological disorder, and carries with it psychological effects. Psychological symptoms include, the intense fear of gaining weight and a distorted self-image. The patient usually has a skewed image of their body and is constantly thinking of food and weight. The view of self in the effected individual typically revolves around body shape and weight. Moreover, the individual may have characteristics of a perfectionist and may suffer from obsessive compulsive disorder (OCD). For the patient, the problem reaches a point where food is not longer the issue. The patient

believes that food is a source of control. They may use food as a way of gaining power over their life. By controlling what they eat, they feel a sense of dominance, whereas in their own lives they may feel an extreme lack of control or hopelessness (Montenegro, 2006). The consequences of this disorder often lead to other emotional and social difficulties. Those who suffer from anorexia often have low self-esteem, depression, and mood swings. They have the tendency to withdraw from social situations, including with friends and family, due to their secretive eating and exercise behavior (Taylor, 1997).

Athletes with anorexia are slightly different than others with anorexia. This is due to the fact that they use their sport to legitimize their atypical behavior. They have the false impression that their behavior is necessary for success. They deny reality and use their sport to continue their behavior. Athletics are often used as an excuse not to eat and to burn excessive calories (Hughes & Hughes, 2004).

Several studies have compared different cultures and genders with the risk of developing an eating disorder such as anorexia. In a study run by Hulley, Currie, Njenga, and Hill (2006), UK and Kenyan female distance runners were compared to find if athletics, in itself, was a risk factor for eating disorders. They found that cultural values, individuality, and the athletic environment are all factors when predicting the development of such a disorder, and the sport itself could not predispose an athlete to become anorexic. Another study looking at ethnicity and gender and eating disorders found similar conclusions. This study conducted by Johnson, Crosby, Engal, Mitchell, Powers, Wittrock, and Wonderlich (2004) examined the views of Caucasian and African-American males and females on eating disorders and self esteem. They found that Caucasian females were the most at-risk for eating disorders due to lower self-esteem. In contrast, the self-esteem of African-American females was found to be equal to both African-

American and White males. These studies manifest the idea that eating disorders vary by culture and gender. The conclusion of these articles suggests that there are certain groups of people that may carry a higher risk for developing an eating disorder.

The harsh reality is that athletes with anorexia are at a higher risk of fatal diseases. Due to their intense schedule and lack of calorie intake, athletes with this disorder can become deficient in electrolytes and are at a higher risk for cardiac arrhythmias, which can lead to cardiac arrest, if not treated.

Bulimia nervosa is another form of eating disorder whose main characteristics are binge eating and compensatory behaviors in order to prevent weight gain. Bulimics are caught in the devastating and addictive binge-purge cycle. For individuals suffering from bulimia, the binge can be seen as a reward within itself and a way to cope with daily stresses and feelings. Bulimic binges usually consist of a consuming larger than normal quantity of food that typically is high in caloric intake. Feelings of losing control, shame, and low self-esteem accompany the binge eating. After binge eating, the patient recourses to concealing vomiting, laxative, and diuretics abuse or excessive exercise. Sometimes all acts are involved simultaneously (Stone, 1999).

Individuals who engage in bingeing and purging have many of the same health complications as those with anorexia nervosa. However, there are some distinctive health effects including gastrointestinal problems, dental caries, abdominal cramping, hemorrhoids, cardiovascular complications, and electrolyte imbalance, particularly hypokalemia and acid- base imbalance. Those who turn to excessive exercise to avoid weight gain have higher risk of overuse injuries and also place themselves in a stage of negative energy balance (Dunford, 2006).

Today we see a visible increase of eating disorders in athletes and some sports are well known to be associated with anorexia nervosa and bulimia (Stone, 1999). According to Macardle and Katch (2005), eight percent of college wrestlers and 12% of high school wrestlers reported that “they often ate in binge and they considered it out of control”. Athletes with bulimia nervosa engage in regular binge-purge cycles. However, their eating disorder may be less clear compare to their sedentary counterparts. Due to their increased energy requirements, athletes generally consume more food than average individuals. Moreover, the varied energy needs of athletes make it difficult to characterize the binge eating condition. For example, excessive eating might be considered normal under certain circumstances, such as carbohydrate loading before a competitive event. Athletes tend to engage in excessive exercise after a binge compare to non-athlete who are more likely to purge and to use laxative. Since bulimic athletes have a dual purpose of weight loss and performance enhancement, poor performance can serve to multiplying binge and purge cycles (Dunford, 2006).

One study conducted by Reinking and Alexander (2005) sought to compare disordered-eating symptoms between college athletes (in lean and non lean sports) and non-athletes. Researchers evaluated 84 collegiate athletes and 62 non-athletes among undergraduate females who volunteered to participate. The Eating Disorders Inventory was used which consisted of 91 questions in order to assess symptoms associated with disordered eating. Based on the result, the athletes had significantly lower scores in body dissatisfaction and ineffectiveness than non-athletes. This means that the athletes had greater satisfaction with their body shape and size than non-athletes. Furthermore, there was no difference in mean body weight between the two groups, but the non-athlete group had a significantly lower desired body weight. However, when comparing the lean-sport athletes with non-lean-sport athletes, the first group had a higher score

on body dissatisfaction and lower actual desired body weight. These data suggest that lean-sport athletes are at greater risk for disordered eating than athletes in non-lean sports (Reinking, & Alexander, 2005).

Disordered eating behaviors can be very difficult to recognize during the early stages of illness. The spectrum of disordered eating varies in severity and may also change with training and competition. Therefore, screening and treatment are very crucial and complex tasks. It is up to outsiders to recognize the signs and symptoms and initiate intervention. Identification methods include self-report survey and questionnaires, direct observation, and physiological screening. According to Dunford (2006), the best method for identifying athletes with disordered eating is direct observation.

Another research study conducted by Black, Larkin, Costers, Leverenz, & Abood, in 2003 focused on developing and evaluating a physiologic screening test specifically designed for collegiate female athletes engaged in athletic competition. One hundred forty-eight athletes from twelve different sport teams participated in this study. The first screening session included the “Eating Disorder Inventory” and “Bulimia Test-Revised” screening tests. The second test series were the Eating Disorder Examination and the Physiologic Screening Test. The tests’ result supported that the Physiologic Screening Test more accurately detected disordered-eating athletes than either the Eating Disorders Inventory or Bulimia Test-Revised. Researchers concluded that questions on physical signs and symptoms may appear more objective and, therefore, reduce response bias, especially if a physiologic test is included as part of a mandatory pre-study participation and also during follow-up visits.

After identification it is crucial to be sensitive yet firm when approaching an athlete who is suspected of having an eating disorder. And finally treatment involves the application of specific therapeutic modalities such as psychological, nutritional and medical techniques. People, especially athletes, coaches, and judges need to be educated about these important issues and understand the harm that is put upon the athletes.

Another very common condition amongst athletes is the female athlete triad. The female athlete triad is a complicated condition that consists of three important health problems that include amenorrhea which is the loss or irregular menstrual periods, eating disorders and an increased risk of bone fractures that can lead to osteoporosis (Dunford, 2006). When the athlete is suffering from the symptoms of the triad, there is a tendency that the athlete can also suffer from, low energy, unhealthy weight loss, and fatigue from the eating disorders that can either be anorexia or bulimia. Sore throats and erosion dental enamel is common as well due to the excessive vomiting. The stomach acid burns the lining of the throat and the enamel of the teeth as time progresses (Kleposki, 2002). The inadequate amount of calories can cause vitamin or mineral deficiencies which turn in to anemia, low levels of iron; constipation, abdominal pain and bloating due to inadequate fiber intake and dry skin which is a symptom of inadequacy of several vitamins and minerals that are necessary to be consumed through the diet (Kleposki, 2002).

Most often, the female athlete triad happens with physically active girls and women who will do almost anything to improve their performance. Their personalities are very competitive and they are very determined to be the best in their sport and will not let anything stop them from reaching their goal. This disorder can happen in any sport, but is most likely seen in the sports that have a great emphasis on thinness and appearance (Torstvei & Sunndgot-Borgen 2005). The

sports that emphasize thinness and appearance such as dance, ballet, gymnastics, swimmers, divers, figure skaters and runners have more of an emphasis on weight and have a greater probability of the triad (Kleposki, 2002). It is also more common in sports that require constant weigh-ins and slim fitting uniforms. These sports have more of an emphasis of obtaining a particular look and the perception of carrying less weight. In addition to the athlete's personality, external surroundings such as teammates, coaches, parents and the demand of the sport can influence them to lose weight to lead them to believe that their performance will improve. (Kleposki, 2002).

In a study conducted by Torstveit and Sundgot-Borgen in 2005, athletes tend to acquire the triad more often than the average person. However, several of the controls in the study did have a few components of the triad as well. The study was thorough enough that it was able to specify which sports tend to get the triad more frequently. The study was able to conclude that six of those athletes with the triad were involved in leanness sports like swimming, bicycling and climbing and two who competed in non-leanness sports like team handball and volleyball (Torstveit & Sundgot-Borgen 2005). The same study concluded that the controls also had several characteristics of the triad as well. At the conclusion of the study, the subjects were categorized into different stages, Triad Stage I which classified the athlete or control as moderate to severe or Triad Stage II which classified the athlete or control as severe (Torstveit, & Sundgot-Borgen 2005). Through the methods, the subjects were categorized accordingly.

Since eating disorders are more evident in females, they are easily overlooked in male athletes (Baum 2006). They might not be a candidate for the triad but they do cause severe harm to their body just like the female athlete. The male athletes not only have eating disorders such as binge-purging and severely dehydrating themselves, but they have a tendency of using anabolic

steroids to bulk up (Baum 2006). The use anabolic steroids is common in sports such as football, baseball or with body builders which is the precursor of several other health problems.

Sports such as wrestling, horse racing, and rowing which require constant weigh-ins tend to have athletes with eating disorders (Baum 2006). Just like the female athletes, the males participate in bingeing and purging, extreme calorie and fluid restriction, and the use of laxative and diuretics but do not get diagnosed until the problem is in its extreme stages (Baum 2006). In some situations, the coaches might notice the problem, but choose not to say anything about it.

The amount of athlete's with eating disorders is increasing throughout the realm of athletics. It is imperative that athletes, as well as everyone involved in the athlete's life such as coaches, nutritionists, family, and friends, be educated about eating disorders in order for prevention and treatment to be effective. We examined several articles on the topic and found that eating disorders are prevalent in athletes around the world and need to be recognized as serious problems. Our studies found that ethnicity plays a great role in the risk of developing such a disorder. We found that Caucasian females are more likely to develop an eating disorder than African-American females (Johnson et al., 2004). We further discovered that UK women were more likely to have an eating disorder than Kenyan women (Hulley et al., 2006). We believe this is due to cultural pressures and demands. For example, in the African culture families are matriarchal and women are greatly respected. Further, some research has found that African-American males prefer larger females. For this reason, there is less pressure for females to look lean. We believe that some societies favor leanness over others, which may cause lower self-esteem for individuals who do not believe they fit into this category. It is these individuals that are at a higher risk of developing eating disorders.

Furthermore, two of the studies that we examined demonstrated that athletes participating in certain sports are more likely to develop eating disorders than other sports. We found that leanness sports, such as bicycling, swimming, and gymnastics have a higher rate of athletes with eating disorders than non-lean sports such as handball and volleyball (Reinking & Alexander, 2005; Torstveit & Sundgot-Borgen, 2005). We believe that this is due to the increased pressure on the athlete to maintain a certain weight and the incorrect belief that decrease in weight will increase performance.

Lastly, the final study that we explored reflected on types of treatment of eating disorders. There are many tests that are available to screen eating disorders. This study found that physiologic tests were more accurate than other tests (Black et al., 2003). In our opinion, this may be due to false information provided by the individual in psychological or eating disorder questionnaires due to the fear of repercussions. Overall, we found that all the research agreed that athletes at-risk for developing eating disorders vary by culture, gender, and sport. Some individuals are at a higher risk, but we found that there are many facets to examine when determining the risk of eating disorder development.

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