

Eating Disorders - Part III - Athletes

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Nursing

Colleen Symanski-Sanders, RN

Objectives

1. Describe the factors associated with athletes that can promote eating disorders.
2. Explain the difference between eating disorders and disordered eating.
3. Discuss the female athlete triad and the significance of amenorrhea and osteoporosis.
4. Explain the differences and similarities between the male and the female athlete with an eating disorder.

Article

Athletes and Eating Disorders – Part Three

Author: Colleen Symanski-Sanders, RN, Forensic Nurse Specialist

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3. Discuss the female athlete triad and the significance of amenorrhea and osteoporosis.
4. Explain the differences and similarities between the male and the female athlete with an eating disorder.

"Athletes and Eating Disorders" completes the series on Teens and Eating Disorders. Part one focused on the prevalence and screening of teens with eating disorders. Part two focused on the diagnosis and treatment of teens with eating disorders.

Introduction

Today's youth have access to a wealth of information and opportunities for success unlike generations before them. They should be healthier and more confident than the parents before them. It is indeed alarming that our youth are not healthier or more satisfied. Generations before them, saw lower divorce rates, lived with both parents, and usually had a home where one parent didn't work. One of the strongest influences on children is the media – it has not been a nurturing one. The media has been one of change – "change how you look cause you can't belong --- looking like that!". One thing that hasn't changed over time is the need of belonging and acceptance.

Athletes are assumed to be tremendously healthy because they can superbly outperform the average person. There is also the unproven belief that lower body fat enhances performance. Yet, the very personality traits of young athletes – perfection, precision, and a drive for performance make them vulnerable to detrimental eating (pathogenic) patterns and unhealthy exercise habits. This can lead to eating disorders when combined with sports that focus on lean bodies, are weight conscious, or require public presentation. At-risk athletes for eating disorders are often those anxious and critical of their own athletic performance and express concerns by dissatisfaction with their bodies.

Sports and Eating Behaviors

Accurate determination of the prevalence of eating disorders and/or disordered eating in athletes is difficult because of denial and secrecy when teens are surveyed or interviewed. Also, many athletes do not feel that pathogenic eating practices are dangerous. Their self-perceptions can be distorted or they do not answer truthfully due to fears of negative reactions from coaches and/or other athletes.

Female athletes are especially at risk in sports where there is an emphasis on a thin body or appearance. These higher-risk sports include gymnastics, ballet, figure skating, swimming, cheerleading, and horseracing. The one exception

where male athletes are at higher risk is in wrestling and bodybuilding. Disordered eating can be seen in athletes participating in all sports. Gymnasts and ballet dancers have a higher incidence of eating disorders than that found in the general population. These individuals see themselves as gymnasts and dancers and if weight gain is perceived as a threat to performance it can be damaging to delicate identities. The non-athletic anorexic (particularly females) typically associates thinness with self-esteem, while the athletic female in addition adds the belief that the weight loss is synonymous with reaching a desired achievement. Performance in sports may all too often be used to define one's self. Identity issues may be of primary importance when the athlete has trained for his/her sport since childhood.

Disordered Eating

Part one and two in this series focused specifically on DSM-IV defined eating disorders (anorexia nervosa, bulimia, and binge eating). In addition to eating disorders, it is necessary to address disordered eating when discussing athletes and eating behaviors. Disordered eating is not limited to strictly defined criteria like those of eating disorders, as outlined in the DSM-IV. The clinical definitions of anorexia nervosa and bulimia nervosa were developed for non-athletes; therefore, many athletes do not meet the criteria although they do have disordered eating behaviors by restricting food intake, using diet pills, and encountering periods of bingeing and purging. The classification of "not otherwise specified" (NOS) in the DSM-IV manual can be of assistance, because not all of the criteria for anorexia or bulimia have to be met. Disordered eating in athletes' ranges from failing to meet energy demands with an appropriate diet on one end of the spectrum to the defined diagnoses of anorexia nervosa and bulimia nervosa on the other end of the spectrum. Disordered eating behaviors (if not altered) can ultimately develop into one of the strictly defined eating disorder categories.

Disordered eating may result in adverse health consequences, with the risk of morbidity and mortality increasing as the severity of the behavior increases. These eating patterns may impair athletic performance and increase risk of injury. Decreased energy (caloric) intake and fluid and electrolyte imbalance can result in decreased endurance, strength, reaction time, speed, and ability to concentrate. The body initially adapts to these changes and a decrease in performance may not be initially evident. Athletes may believe myths such as disordered eating practices are harmless. Food restriction and purging can result in menstrual dysfunction, potentially irreversible bone loss, depression, fluid and electrolyte imbalance, and changes in the cardiovascular, endocrine, gastrointestinal, and thermoregulatory systems. Some of these complications are potentially fatal.

Eating Disorders: Anorexia and Bulimia

Some athletes with anorexia nervosa are able to compete well despite an eating disorder. They flaunt their awards, medals, and achievements to dispute claims of something being wrong. The anorexic athlete may be a compulsive exerciser and use workouts as one way of purging calories with the belief of "no pain, no gain". Eventually performance is likely to suffer but athletes, instead of admitting that undernourishment is the cause, will insist that he or she needs to lose more weight to achieve previous levels of success. Excuses for not eating can be multiple – including "not enough time due to competitions, training schedules, practice sessions, and traveling" or "eating before practice or competition is impossible because of nervousness, feeling heavy, or sluggish", or "eating may cause bloating or nausea".

Hunger is a primary binge trigger, but so are uncomfortable emotional states. Bulimic athletes may binge and vomit before they compete to reduce high anxiety levels or may comfort themselves after defeat by indulging in binge foods, which are often high in fat and otherwise "forbidden". Team-centered meals can be a difficult time for the athlete who binges. They may have to battle over avoidance of eating by making excuses or staying and eating with the team. Staying with team can spark a full-fledged binge followed by purging. This puts an additional social stress on the athlete. He or she may worry about being discovered during a binge or purge episode that could potentially lead to a confrontation.

Gender and eating disorders: Females

Approximately 90% of eating disorders occur among females. Reported prevalence rates of eating disorders range from 15% to 60% of female athletes. This wide range is primarily accounted for by varying sports. The spectrum of disordered eating behaviors ranges from mild (slight restriction of food intake or occasional binge eating and purging) to severe (significant restriction of food intake, as in anorexia nervosa, or regular binge eating and purging, as in bulimia nervosa).

One study of young elite swimmers revealed that approximately 61% of average-weight girls and 18% of underweight girls were trying to lose weight. Most of the girls were trying to lose weight by decreasing food intake, but nearly 13% used vomiting, 2.5% used laxatives, and 1.5% used diuretics. The following beliefs and/or influences may pose as a risk factor:

- Females gain weight more easily than men.
- Males generally have more lean muscle tissue and less fatty tissue than females.
- Males tend to have higher metabolic rates than females, because muscle burns more calories faster than fat does.
- Females have a harder time losing weight, and keeping it off, than men do.
- Powerful media influences and social pressures push the issue of being thin.
- Participation in certain sports may place too much value on performance, low body fat, and an idealized, unrealistic body image (shape, size, and weight).

Gymnasts and ballet dancers for example, who often begin training at early ages (eight or nine), may not go through a normal development or height spurt. They don't gain an expected weight or height resulting in late onset of menstrual periods – sometimes not until 16, 17 or 18 years of age. This may be further compounded by difficulties with eating a normal diet, and because of their lack of normal hormones, they may develop low bone mass. While their size and height may be considered a competitive advantage, it is not an advantage for the woman as she ages.

Some physically active females, particularly adolescents, may develop an energy deficit when the energy/calories they expend exceeds their energy/calorie intake. This may be unintentional, resulting from inadequate replenishment of the caloric (energy) demands or may be intentional – a conscious attempt to lose weight or body fat in the interest of improved appearance or athletic performance. These athletes often restrict food intake but may develop other disordered eating behaviors, such as binge eating and/or purging by vomiting or use of laxatives, diuretics, or diet pills. Compulsive exercise (excessive exercise in addition to a normal training regimen) is another form of purging overlooked in these athletes.

The Female Athlete Triad

Exercise and sports are good for children and adolescents, and as we advocate for such healthy behaviors, we as professionals need to have awareness for medical complications when young female athletes are involved. A combination of three special clinical findings result in a condition termed the "female athlete triad". The triad consists of:

- Amenorrhea or menstrual dysfunction;
- Osteoporosis; and
- Excessive physical activity with disordered eating

Although these clinical findings can also be seen in the non-athlete, this material focuses on the physically active and athletic female. The American College of Sports Medicine (ACSM) published their position in the May 1997 issue of *Medicine and Science in Sports and Exercise*, appealing to professionals who work with physically active girls and women to learn about the "female athlete triad" and to develop plans to prevent, recognize, and treat this disorder. The American Academy of Pediatrics shares this position as well.

Amenorrhea

There are two types of amenorrhea: "primary amenorrhea", which is the absence of menstruation by age 16 in a girl with secondary sex characteristics and "secondary amenorrhea", which is the absence of three or more consecutive menstrual cycles after menarche. A higher prevalence of both primary and secondary amenorrhea has been reported in female athletes (from 5% to as high as 45%) compared to non-athletes (2% to 5%). The highest frequencies have been found in ballet dancers and runners. Menstrual dysfunction falls along a spectrum (also noted with disordered eating). On one end may be abnormally long menstrual cycles and on the other end is amenorrhea. A diagnosis of amenorrhea associated with exercise may be made once any underlying medical pathology (such as pregnancy or thyroid dysfunction) is ruled out. Amenorrhea is probably the easiest identified component of the female triad; however, many athletes go without seeking medical attention because from their perspective a loss of menses may mean that they are "training hard enough" and/or alleviates the inconvenience of menstruation.

Excessive exercise, low weight, low fat content, stress, hormonal changes, and nutritional composition may be causative factors for the menstrual dysfunction. However, there appears to be insufficient scientific evidence that low body fat is the direct cause. Research is pointing to "a mismatch between energy demand and supply" as a primary factor in menstrual dysfunction. When the body responds to an on-going energy deficit it reacts by diverting energy to vital organs and systems and away from non-essential body systems such as the reproductive system.

Amenorrhea or irregular menstrual cycles needs to be taken seriously; even brief episodes are associated with osteoporosis and infertility problems. Amenorrhea is associated with low concentrations of ovarian hormones, which can negatively impact bone health. Estrogen is needed for calcium absorption and deposition into bone. Disturbing decreases in bone mineral density have been reported in amenorrheic athletes, especially given the occurrence at a time in their life when they should be building peak bone mass. Even after altering training and diet behaviors, so that menses resume, bone mineral levels appear to fall below those expected for others of the same age. Ironically, weight-bearing exercise is needed to stimulate bone growth but for athletes with this triad, low bone mineral density leaves them vulnerable to traumatic and osteoporotic fractures later in life.

Osteoporosis

Osteoporosis is a disease of the skeleton in which the amount of calcium present in the bones slowly decreases to the point where the bones become brittle and prone to fracture. The bone loses density, thus becoming porous. The bone substance is normal but there's just not enough of it to connect, on a microscopic level, in a normal fashion. This makes the bone much more vulnerable to fractures. Adequate levels of estrogen slow bone resorption and improve or maintain bone mass. The prevalence of osteoporosis in adolescent females is unknown. Amenorrheic adolescents, both athletes and non-athletes, have been found to have lower bone mass density (BMD). High-intensity exercise in some sports for many years may actually increase BMD in specific skeletal sites despite amenorrhea. Elite adolescent ice skaters and gymnasts have been found to increase BMD in the lower skeleton, compared with controls, despite menstrual dysfunction. Girls who begin menarche at a later age and have a lower weight during adolescence have been found to have the lowest BMD when compared with their peers. An increased incidence of stress fracture in dancers has been associated with an older age at menarche.

Gender and eating disorders: Males

The stereotypical anorexic, bulimic, and binge eater is female but this can be misleading. Males may have been protected somewhat by their basic biology and different cultural expectations. There is evidence that male athletes share the risk with female athletes for certain types of eating pathologies and or disorders. Males also develop eating disorders but at a much reduced incidence (approximately 90% female to 10% male). The prevalence in males seems to be increasing though. Twenty years ago it was thought that for every 10 to 15 women with anorexia or bulimia, there was one man. Today researchers find that for every four females with anorexia, there is one male, and for every 8 to 11 females with bulimia, there is one male.

Men with eating disorders showed higher rates of psychiatric co-morbidity and more psychosocial morbidity than men without eating disorders. However, males with eating disorders are similar to females with eating disorders on most variables. Studies have confirmed clinical similarities between men with eating disorders and women with eating disorders. They also reveal that both groups suffer similar psychosocial morbidity. Males often begin an eating disorder at older ages than females do and were more often overweight as children, when compared to women. Other risk factors for men are participation in sports that "demand" thinness (similar to females). For example, runners and jockeys are at higher risk than football players and weight lifters. Body builders (males or females), on the other hand, are at risk if they deplete body fat and fluid reserves to achieve high muscle definition.

There is also concern that the media is targeting the once sanctioned male sex. The U.S. market for men's toiletries is in excess of 3.5 billion dollars for products that traditionally were "feminine". Men's magazines are defining standards for "beauty" and their powerful message cannot be ignored. The following statements and observations were taken from Men's Health Magazine's Internet site.

- There are six photos of muscle bound "six-packed" men – not the typical man, but perhaps "Barbie's" male counterpart. (The male super heroes by the way have been transformed into a muscle bound hulks that in real life would be 5feet-10 inches tall with a 62 inch chest and 32 inch biceps).
- "Get lean and hard with a testosterone plan"
- "Get more definition than the dictionary by working out less"
- "Unleash the power of your testosterone. Maximum muscle growth – minimal time."

- "Build Grade A Muscles".

Deaths in runners, gymnasts, and wrestlers have triggered re-examination of extreme weight-loss measures common in male sports. The deaths of three young male athletes in the late 1990's put the consequences of this problem before the public eye. They were going to school in North Carolina, Wisconsin, and Michigan. Authorities believe they were trying to lose too much weight too quickly in order to compete in lower weight classes. The wrestling coach at Iowa State University had been quoted as saying, "When you have deaths like this, it calls into question what's wrong with the sport. Wrestlers believe that, foremost, it's their responsibility to make weight, and that mind set may come from the fact that they find themselves "invincible". Two of the males wore rubber sweat suits while they worked out in hot rooms. One died from kidney failure and heart malfunction. The other died of cardiac arrest after working out on an exercise bike. He refused to drink fluids needed to replenish those lost by sweating. This was all because of four to six pounds of weight.

A study conducted of NCAA (The National Collegiate Athletic Association) athletes found that binge eating occurred more often in male athletes (compared to female athletes) and more than three times as many male athletes used saunas or steam baths to lose weight than female athletes. Similar percentages of males and females used steroids to improve athletic performance. Female athletes were four times more likely than males to use vomiting to lose weight. In a study of high school wrestlers, 31% restricted fluids once a week, 26% fasted once a week, 13% used a sauna once a week, and purging such as vomiting and or laxative and diuretic was used once a month by 6% and weekly by 2%. Wrestlers binge eat before a match to load carbohydrates and then purge to make weight in a lower class. Results like this have brought about changes in competition rules, sports medicine protocols, and guidelines for coaches. Hopefully, this will improve the detection and treatment of male athletes with pathogenic eating behaviors or eating disorders.

Screening and Treatment

The physical examination that precedes participation in sports provides the ideal opportunity to screen athletes, especially since the school's sports physical is already required. It does, however, raise the question whether annual screening is sufficient. Dietary practices, exercise intensity, duration, and frequency, and menstrual history need to be part of the physical evaluation.

Treatment of athletes with eating disorders is similar to the treatment for non-athletic teens with eating disorders. Treatment often requires a team approach as discussed in part two of this series in addition to cooperation by coaches and teammates. The coach can be a double edge sword – if the teen views the coach as a contributor then inclusion needs to be carefully implemented.

Education and counseling needs to be provided to athletes, parents, and coaches regarding disordered eating, menstrual dysfunction, decreased bone mineralization, and adequate caloric and nutrient intake to meet energy demands and maintain normal growth and development. Athletes and coaches need to be provided with a "range" of weight and body fat values rather than specific values. Reinforcing a weight is not an accurate calculation of fitness or fatness – when weight is lost, muscle and fat is also lost. Females with menstrual dysfunction or amenorrhea attributed to exercise should be encouraged to increase caloric intake and modify excessive exercise activity. If an athlete's weight is low, consideration should be given as to whether the athlete is to gain weight before he or she is allowed to resume athletic activity.

The health and well being of the athlete is no longer the only consideration. Liability exposure for the team or facility can exist as well. An NCAA News Brief dated May 22, 2000 featured eating disorders as a legal issue. Barbara Bickford, an assistant professor of exercise and sport science who specializes in legal issues in college sports, reported, "by addressing the issue of eating disorders, coaches, trainers, and administrators protect their school as well as the student-athlete's well-being". After all, isn't that what the mental and medical health professional is all about? An "athletic patient-centered" method must incorporate a professional clinical approach. The NCAA website mission statement perhaps says it best of our responsibilities to teens and athletes – "promote a healthy and safe environment for student-athletes regarding optimal nutrition, positive body image, and peak performance by providing education and awareness".

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About the Author(s)

Colleen Symanski-Sanders, RN, Forensic Nurse Specialist, has been a Registered Nurse for over 18 years. She has extended her education into forensic nursing, criminal profiling, and psychopathy receiving a Certificate as a Forensic Nurse Specialist. She has over 16 years experience in public health and home care nursing.

Colleen has been an author of educational material for St. Petersburg College, St. Petersburg, Florida. She has also lectured on a variety of topics at numerous nursing symposiums and conferences across the country. She is on the Editorial Board for "Home Health Aide Digest" and "Private Duty Homecare" publications.



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