

The Female Athlete Triad: Media Scrutiny, Populations and Associated Risks

Nicholas Pitas

American University

Females participating in athletics enjoy a number of benefits to both their mental and physical health. Exercise promotes healthy body weight, has beneficial effects on bone mineral density (BMD) and is also linked to positive self image. Overtraining and poor nutrition can offset these benefits however, and may even cause irreparable damage through what is known as the female athlete triad. The female athlete triad is a progression of behaviors and associated conditions consisting of three components: disordered eating, amenorrhea, and osteoporosis.

Female athletes participating at elite levels of competition, especially those in sports which emphasize appearance or enforce weight restrictions, are at an increased risk of developing one or more of the components of the female athlete triad (Smith, 2004). Accurate data on the prevalence of the female athlete triad is difficult to obtain. This is due to the fact that the data is predominantly self reported, and therefore cannot be considered representative of the actual scope of the problem (Thompson, 2007, p.134). For many women, the admission of an eating disorder is a difficult process, and they may not recognize their own behavior as aberrant. Despite the lack of definitive data, the female athlete triad is a significant problem which warrants attention from both athletes and authority figures, as the repercussions are considerable and often irreversible.

This paper will examine the media scrutiny of female athletes, define the nature of the problems associated with the female athlete triad, as well as identify the risk to specific populations. Methods of prevention and care will also be discussed. Prevention methods consist primarily of education. Knowledge of the causes and symptoms of the separate components, as well as their short and long term consequences are instrumental in preventing their development. Methods of care include both pharmaceutical and therapeutic methods, although there are no guaranteed treatments.

Media Scrutiny of Female Athletics:

Today female athletes have a greater opportunity than ever before to participate in collegiate athletics. This is due in part to legislation such as Title IX, as well as greater fan interest generated by expanded media coverage. Increased exposure and media scrutiny is not without drawbacks however, as there is now more pressure than ever being placed on female athletes. With their bodies and physical attributes increasingly on display, female athletes may be at increased risk for the development of unhealthy mental attitudes and behaviors regarding nutrition and exercise. Often coverage of female athletes includes an increased emphasis on physical appearance in addition to performance, and the necessity to balance beauty and performance.

Women's sports make up approximately 5% of televised sports coverage (Angelini, 2008, p. 16). Although this may sound like a modest figure, it represents the current high water mark for women's sports. 1992 marked the first year that the total coverage of women's sports was greater than that of dogs and horses (Angelini, 2008, p. 16). The nature of coverage of women's sports is also inherently different from that of men's sports, with different traits being expressed and emphasized. Whereas male athletes are portrayed as self confident, in control, aggressive, strong and disciplined, female athletes are valued when they embody more feminine characteristics: beauty, passivity, grace, emotion and expressiveness (Angelini, 2008, p. 17).

Female sports are also more likely to be televised if they are individual focused as opposed to team sports. Sports which stress the beauty, grace and attractiveness of a single competitor are the most popular female sports. Gymnastics, ice skating and dancing combine an appropriate amount of femininity and athleticism to make them the most popular. For men's

sports the focus is often on a team of individuals acting in a masculine manner considered inappropriate for women. For this reason sports such as football, basketball and combat sports such as boxing rank among the most popular men's sports (Angelini, 2008, p. 17-18).

Some televised content of women's sports focuses on physical attractiveness, while other coverage places more emphasis on the skill set required for that sport. In sports where aesthetics are more clearly stressed, and the body more scrutinized, an appearance which emphasizes the thin ideal of American culture is more valued. It is not a coincidence that the uniforms of swimmers, gymnasts and figure skaters are also more revealing than those of basketball and softball players, who participate in sports where media coverage more clearly emphasizes skills and teamwork (Bissel, 2004, p. 455).

Although men are much less likely to view women's sports than men, women show no such bias. Some research suggests that women who watch women's sports are supporting individuals who they perceive to be challenging traditional gender roles. Conversely, men may feel uncomfortable watching women's sports which go against the traditional societal hierarchy which places men above women (Angelini, 2008, 19). Although men and women both report that they find watching men's sports more interesting, the physiological results do not bear the same conclusion. Skin conductance tests showed that there was no significant difference for men and women watching men's sports versus women's sports. This lends credence to those who theorize that we as a society have been taught to believe that sports with male athletes are inherently more exciting and arousing (Angelini, 2008, 27).

With the increase in coverage of women's sports comes an increase in consumption of that coverage. Females in the teenage and college age bracket are voracious media consumers: 83% of teenage girls report spending a mean of 4.3 hours a week reading magazines, and

approximately 25% of their awake time watching television (Bissel, 2007, p. 4). Young women use messages they take in from mass media as a means of constructing their self-identities and a source of information for the formation of opinions about the world they live in (Bissel, 2007, p. 3). Because of this, if the messages they take in are negative, there is a serious risk that young women will develop skewed perceptions of themselves and the world around them.

Some research points to benefits of viewing sports rather than popular media about fashion and beauty, whereas other research claims that the specific sport being viewed makes a difference (Bissel, 2004, p. 455). Content analysis of entertainment television, fashion magazines and advertisements targeted at women confirms that the typical body shape portrayed in these messages is unrealistically lean (Bissel, 2004, p. 454). What is unclear is whether or not watching women's sports emphasizes the same thin ideal. Coverage of sports such as gymnastics and ice skating includes a focus on the physical attractiveness and leanness of the athletes. Other sports such as basketball or softball however, feature much less revealing uniforms and a greater emphasis on skills (Bissel, 2004, p. 455).

Females who participate in sports are much more likely to cite female athletes as media role models than other viewers. Those who have female athletes as role models are also more likely to have healthy levels of self esteem than those who cite media personalities as role models (Bissel, 2004, p. 37-38). This points to participation in athletics as a major buffer to the negative effects of media consumption. Another manner in which participation in athletics may do this is that the time spent practicing and competing may displace time spent viewing media, especially in elite athletes (Bissel, 2007, p. 40). Athletics also helps to raise self esteem in many cases, as it de-emphasizes the importance of physical attractiveness as the greatest measure of self esteem and raises physical competence (Bissel, 2007, p. 6).

Social comparison theory suggests that viewers of media look to images they perceive to be attainable and strive to attain a similar look. These same individuals then make comparisons between themselves, their peers and those idealized images. Actions are also affected, as individuals shift their behavior in a way that they believe will allow them to achieve a favorable comparison between themselves and those idealized images (Bissel, 2007, p. 9-10). Problems arise when the images that individuals have chosen are unrealistic or they fail to achieve the idealized look. Incongruence between reality and expectations can lead to unhealthy mental attitudes, and damage to self esteem (McCarthy, 2010, p. 32).

Self esteem is ideally multi faceted, and based on multiple factors in an individuals life. It is unhealthy for individuals to place undue emphasis on their physical appearance, and the attainment of an unrealistic body shape as portrayed by popular media. Self esteem is not static, but rather an ongoing process which is influenced by both external and internal factors and evaluations (McCarthy, 2010, p. 36). For women who are surrounded by a culture which emphasizes an unrealistically thin body type, and are constantly bombarded by media messages which reiterate this, achieving a healthy self image can be a difficult task. If an individual is unable to attain her ideal body type in a healthy manner, she may at increased risk for the development of disordered eating and the other components of the female athlete triad.

Definition of the Components:

Disordered Eating is any disruption in the normal eating patterns of an individual, and encompasses a wide variety of actions (Burney et al., 1988). Disordered eating includes a spectrum of behavior ranging from restricted calorie diets, to fully diagnosed eating disorders, such as Anorexia Nervosa and Bulimia Nervosa. Because of the societal expectations placed on

women, disordered eating is becoming an increasingly prevalent problem for the general population. As a whole, female athletes may not be at greater risk for disordered eating than the general population, but specific populations of female athletes are definitely more prone to the development of disordered eating (Picard, 1999). Athletes that participate in sports which emphasize their aesthetic qualities (such as gymnastics and dancing), as well as sports that place restrictions on the weight of competitors (such as wrestling and weight lifting) are at particularly high risk (Nichols et al., 2007, p. 1006).

One common misconception is that disordered eating consists almost entirely of clinically defined eating disorders such as Anorexia Nervosa and Bulimia Nervosa. The actuality is that sub clinical, or Eating Disorders Not Otherwise Specified (EDNOS) make up one half of all disordered eating (Thompson, 2007, p. 129). A diagnosis of EDNOS is applied when only some of the symptoms of Anorexia or Bulimia are met. Although not life threatening, individuals diagnoses with EDNOS suffer from low self esteem, limited energy availability, insufficient micronutrient intake and overall poor nutritional status. It has been shown that diagnoses of EDNOS are increasing at a rate higher than either Anorexia or Bulimia (Thompson, 2007, p. 130). This is an important statistic to note, as EDNOS are often underreported due to a lack of diagnosis, or misdiagnosis. This may mean that more women suffer from them than are currently represented by the data.

Amenorrhea, the second component of the female athlete triad, is a disruption of the regular female menstrual cycle. Amenorrhea is the absence of a menstrual cycle for at least six consecutive months, while oligomenorrhea is the occurrence of a menstrual period approximately every six weeks (Thompson, 2007, p. 130). Although amenorrhea may occur naturally, it is only present in 2% to 5% of the non-athlete population. The rate among

competitive female athletes is higher, and depending on the sport in question may vary from 3% to approximately 60% (Burney et al., 1988). It appears that total body weight, rather than body fat percentage, has the greatest influence on the regulation of normal menstrual activity (Thompson, 2007, p. 133). Because of this relationship, proper nutrition and sufficient energy intake are crucial tools which must be used to reduce the prevalence of amenorrhea and oligomenorrhea.

Amenorrhea and oligomenorrhea are associated with a number of problems, despite a misconception that they are generally harmless (Burney et al., 1988). Amenorrheic women have lower levels of estrogen in their bodies, which can wreak havoc on a number of essential bodily functions. Low levels of estrogen act on bone density by slowing the bone formation and reformation phase (Nichols et al., 2007, p. 1008). Women who begin training before menarche (the onset of menstrual activity), or during puberty must make sure they intake sufficient calories to ward off amenorrhea, and should be screened for disruptions in their menstrual activity. Research has indicated that during puberty the formation of bones is much more sensitive to physical activity and nutrition than after puberty (Nichols et al., 2007, p. 1003).

Osteoporosis is the final aspect of the female athlete triad. This component is not limited to clinically diagnosed osteoporosis however, as it may also include osteopenia, lower than optimal BMD. Low BMD is directly related to the first two components of the triad, and may be seen as the end result. Female athletes who begin training early, especially before menarche, have a higher risk of low BMD. Low BMD is linked to an increase in the number of fractures sustained. Amenorrheic female athletes have been shown to suffer stress fractures at rates of two to four times that of eumenorrheic athletes. The rate of fracture for premenopausal, amenorrheic athletes is comparable to normal postmenopausal women (Nichols et al., 2007, p. 1007).

Osteoporosis not only affects the strength of bones, but also disrupts their reformation (Smith, 2004). Even developed bones are constantly undergoing a continual process of resorption and formation, known as bone remodeling. Bone remodeling is affected by three main factors: hormonal status, such as the lack of estrogen due to amenorrhea; weight bearing activity such as running or lifting weights; and dietary intake of both calories and micronutrients (Nichols et al, 2007, p. 1003). For any one of the factors to be disrupted is unhealthy, and the female athlete triad has a direct impact on all three.

The most important nutritional considerations for female athletes hoping to maintain bone health are sufficient overall caloric intake, as well as the intake of the micronutrients calcium and vitamin D. Protein is another nutrient that is important to the bone formation process, but most athletes aside from vegetarians and vegans do not suffer from a deficiency in protein (Nichols et al., 2007, p. 1008). Female athletes, and particularly amenorrheic women have greater calcium requirements than most women. The United States Government has set the adequate intake level (AI) for calcium at 1300 mg/day for women aged 14 to 18, and 1000 mg/day for women ages 19 to 50 years (NIH, 2008). For amenorrheic women of the ages 19 to 50, it may be beneficial to increase calcium intake to 1500 mg/day (Thompson, 2007, p. 130).

Populations and Associated Risk

There is little evidence to suggest that female athletes as a whole are more at risk for the development of the components of the female athlete triad women in the general population (Picard, 1999). This may be misleading however, with data regarding the prevalence of the female athlete triad being largely unreliable, as was discussed previously. Female athletes may be less likely to report that they have an eating disorder than non athletic women. This is due to

the fact that weight loss is done with different goals in mind: athletic women often strive to lose weight under the pretense of improving performance, while non athletic women may do so strictly to achieve a more desirable physical appearance (Picard, 1999).

Level of competition may also play a part in determining the risk of developing the female athlete triad. Athletes who are extremely competitive may be more susceptible to the development of the components of the triad. Many of the same traits that predispose an individual to an eating disorder are also valuable for an athlete trying to excel in their sport. Many great athletes are perfectionists who seek to push their bodies to the limit, as are many of the women who suffer from eating disorders.. An obsession with thinness, and the belief that lower body weight will translate directly to better performance are dangerous misconceptions (Burney et al., 1988).

A study of Division II female athletes found that there was not a significant relationship between participation in athletics and the prevalence of eating disorders. The study also concluded that there was no relationship between the prevalence of eating disorders and self esteem, social pressure to be thin, body image issues and actual BMI. It is worth noting that the university studied did not host several of the sports which traditionally emphasize the physical attractiveness of the athletes, and the thin ideal: gymnastics, dance, swimming and cheerleading. This may reflect the fact that demands placed on NCAA Division II athletes are not nearly as acute as those placed on Division I athletes, and that the pressure to conform to certain body types is not as acute (Smiley, 2008).

In a study conducted by Christine Picard, a masters student at the University of Vermont, the eating habits of athletes in different levels of competition, as well as those of non athletes were studied. Picard distributed the Eating Aptitude Test (EAT) to women from four varsity

teams at NCAA Division I and NCAA Division III colleges, as well as a control group of non athletes. A higher EAT score indicates that an individual displays more of the symptoms of a possible eating disorder, and is more concerned with food. The data indicated that women from the Division I teams had significantly higher EAT scores than the Division III, and non athlete participants. This suggests that there is a higher prevalence of disordered eating among women who compete at high levels of competition.

Furthermore, women who were on teams that traditionally emphasize a lean body shape, such as cross country, scored higher than women at their own institution who participated in sports that do not emphasize a lean body shape. Data taken from the EAT also indicated that women participating in non lean sports did not differ significantly from non athletic women. This data lends support to the observation that female athletes as a whole are not a population that is at high risk for the development of disordered eating, and subsequently the female athlete triad (Picard, 1999).

Another study, performed by researchers at the University of Saint Louis, revealed similar results. The study compared college aged groups of female athletes in both lean and non lean sports, as well as a group of non athletes. All of the groups had lower mean desired body weights than actual weights, with the non athletes having the lowest mean desired body weight. Among the athletes, those in the lean sports had much lower mean desired body weights. The athletes showed less distorted views of their bodies, with lower scores on an inventory of body dissatisfaction. Athletes also scored lower on an index of feelings of “general inadequacy, insecurity, worthlessness, emptiness, and lack of control over one’s life” (Reinking et al., 2005, p. 49). Overall, the designers of the study concluded that athletes in lean sports are at greater risk

for disordered eating than either athletes in non lean sports or non athletes (Reinking et al., 2005).

An area that has not been researched explicitly is the connection between minority populations and the development of the female athlete triad. African American women face less pressure to achieve what is considered an “ideal” body shape as portrayed by mainstream American media (Schooler et al., 2004, p. 40). Part of this is due to the fact that African American women view less thinness promoting and depicting media (TDP). Although they watch on average a greater amount of entertainment television, the particular programs viewed most by African American women are less likely to feature overtly thin female characters (Bissell “ESPN,” 2004, p.17). Because the media models they are viewing are not being rewarded for an unnaturally thin body, there is less motivation to achieve a thin body type.

Another factor may be that among African Americans, a more voluptuous figure is considered to be attractive (Sekayi, 2003, p. 472). It has also been shown that among their peers, African American women are less likely to judge one another for being overweight (Lokken et al., 2008, p. 392). When compared with white women of similar age and education, black women consistently identified heavier body types as ideal (Bissell “ESPN,” 2004, p. 7). It may also be that popular media promotes the ideals of femininity more strongly in white female characters. If this is the case, pressures to achieve an unnaturally thin body type may be linked to a desire to appear feminine and attractive among white women (Bissell “ESPN,” 2004, p. 18).

Facts such as these may seem to indicate that African American female athletes would be at a lower risk to develop the female athlete triad than their white counterparts. This may not be the case however. African American women may be buffered against societal pressures to be thin due their lower levels of internalization of sociocultural norms regarding beauty (Lokken et

al., 2008, p. 390). Among athletes however, that may not provide the same protection. Social comparison theory states that individuals make comparisons between themselves and like others (Schooler et al., 2004, p. 39). If female African American athletes identify themselves strongly as athletes, they would strive for the same levels of thinness as their white counterparts.

Care and Prevention:

Although there are options available for the treatment of the female athlete triad, the most effective approach is to take preventative measures. It is important that authority figures, as well as the athletes themselves, take part in the prevention of the development of the female athlete triad. Education about the causes, symptoms, and consequences of disordered eating is a possible course of action (Burney et al., 1988). It would be beneficial if female athletes were to realize that their actions do not only affect their short term health, but also their lifelong wellbeing and quality of life. Early detection of the symptoms of disordered eating can allow professionals to intervene, and perhaps help the athletes to avoid the development of an eating disorder (Burney et al., 1988).

There is more to proper nutrition than simply the number of calories consumed, and it is vital that female athletes have a more comprehensive understanding. Athletes who consume restricted calorie diets often consume insufficient amounts of micronutrients as well. For example, a study of female track athletes found that eumenorrheic athletes consumed approximately 80% of the recommended amount of calcium, while athletes in the amenorrheic group consumed only approximately 42% of the recommended amount (Smith, 2004). Even the athletes with regular menstrual activity consumed, on average, insufficient amounts of the mineral most responsible for the maintenance and construction of healthy bones.

In addition to knowledge of the nutrition aspects of the problem, athletes should also be taught to recognize that media portrayals of beauty are often unattainable (Burney et al., 1988). It would be helpful to reinforce healthy images of women, and discourage unrealistic, overly thin images of women. This is a difficult task in part due to the way that women are portrayed in popular media. Women and girls are bombarded with messages from popular media depicting the leanest women as powerful, successful and attractive. As a result, they internalize the notion that body shape and size are a defining factor in their lives (Bissel, 2004, p. 458).

Treatment can either be rendered through the use of pharmaceuticals or through behavior modification. Oral contraceptives may help to regulate the menstrual activity of a woman, and it is possible that they may help to slow or stop the loss of BMD. There is no solid evidence to support this however, and there is not a conclusive pharmaceutical method to fully treat the loss of BMD in those suffering from the female athlete triad (Nichols et al., 2007, p. 1008). Because pharmaceutical measures to stop or reduce loss of BMD are inconclusive, behavior modification is the most effective manner of treatment.

Through a joint effort by coaches, athletes and authority figures, behavior can be modified in ways that can stop the loss of BMD. Treatment is best done by a multidisciplinary team, which may include as members physicians, nutritionists and mental health professionals (Burney et al., 1988). It is absolutely imperative that athletes suffering from any component of the female athlete triad increase their energy intake, and perhaps reduce energy expenditure (Nichols et al., 2007, p. 1008). Increasing the energy reserves in the body can help to restore normal menstrual activity, and also aid in the reformation of healthy bones. Mentally, it is important to address the issues surrounding the intake of food. If an athlete is unwilling to begin taking in more energy, no treatment will make any difference.

The National Collegiate Athletic Association (NCAA) publishes a handbook for coaches about the female athlete triad. The purpose is to help coaches identify female athletes who may have one or more of the symptoms of the triad, and to help coaches manage and prevent the female athlete triad. The handbook contains a brief overview of the three components of the triad, a primer on proper nutrition for female athletes, as well as guidelines for coaches to encourage their athletes to seek rehabilitation.

Although coaches are in a good position to recognize the symptoms of the female athlete triad, it may be a difficult position for that coach. Many of the characteristics of an outstanding athlete overlap uncomfortably with the symptoms of a clinical eating disorder. For example, the handbook acknowledges that women who suffer from an eating disorder often work extremely hard, strive to please those around them, act selflessly and are often very compliant to requests by teammates or coaches. Identifying an individual with an eating disorder is complicated by the fact that many great athletes without eating disorders share these same characteristics, and many coaches are unable to believe that their star athlete has a problem such as this.

Another issue identified in the handbook which further complicates the identification of disordered eating is that athletes with eating disorders may perform very well. Although there will be long term effects on their health, for a period of time the extra weight loss or their driven personality may allow those athletes to perform at a high level. At issue here is the fact that delays in identification put the athlete at greater risk physically and psychologically for long term and irreparable damage.

As amenorrhea is so common among female athletes, it is even less likely than disordered eating to be recognized as a significant problem. Although it may be the norm among female athletes, it is not healthy, and the long term healthy impacts of amenorrhea make it a medical

problem warranting treatment. The handbook recognizes that the coach need not be the one who directly communicates with athletes regarding their menstrual activity, and instead recommends that a team physician, trainer or nurse handle this responsibility. The earlier that amenorrhea is identified, the sooner treatment can occur.

It is recommended by the NCAA that a medical professional meet regularly with female athletic teams, and reiterate the importance of menstrual functioning. This meeting would serve to educate the athletes about the importance of reproductive health, as well as open lines of communication between athletes and medical professionals. Often the treatment for amenorrhea involves raising caloric intake and possibly reducing physical activity. There may be significant resistance to this intervention however, especially when a clinical eating disorder is present. In some cases, athletes may require treatment by a specialist in eating disorders. Treatment of disordered eating and amenorrhea is extremely important in the prevention of osteoporosis. Once the athlete has progressed to osteoporosis, and the effects on their bone mineral density may be permanent.

Just as coaches are in a position to recognize the female athlete triad, their actions have a great deal of influence on whether or not problem behaviors manifest in the first place. The handbook discourages coaches from asking their athletes to lose weight, adopt restricted calorie diets or over train. It also includes information on alternate strategies for coaches to address performance issues, and athletes with poor nutrition (such as those who may overeat). Proper behavior by coaches is essential, as the athletes they oversee may place considerable trust in their coaches, and be susceptible to whatever suggestions they may make (NCAA, "Managing the Female Athlete Triad," p. 1-53).

Conclusions:

More women have the opportunity to participate in sports at the collegiate level today than ever before, and the amount of media coverage of those sports has increased in a similar fashion. The increased coverage has also lead to increased media consumption of female sports by young women. While the effects of increased viewing of female sports is unclear, it has been shown that when young women cite female athletes as role models rather than media personalities, their self esteem is significantly higher. However, failure to achieve the idealized body types of elite female athletes can lead to incongruence between expectations and reality. This incongruence can have a subversive effect on self esteem, and lead to unhealthy attitudes regarding exercise and nutrition.

There is little evidence to support the claim that all female athletes are at an increased risk for the development of the components of the female athlete triad. It is certain however that specific sub populations are at increased risk. Athletes that participate in sports which emphasize aesthetic appeal, or which enforce weight limits are at increased risk to develop disordered eating. Athletes in these sports often hold on to the misconception that the smaller they are, the better their performance will be. Weight regulation is beneficial to a certain point, but the extreme reduction of body weight is detrimental to performance. Reduced energy stores not only affect performance, they also may lead to a disruption in normal menstrual activity, and also in the reformation of bone mass.

It is important that both athletes and authority figures have considerable knowledge of the different components of the triad. Data regarding the prevalence of the female athlete triad is inconclusive and difficult to collect. However, it is undeniable that female athletes are at risk of suffering greatly at the hands of a completely preventable problem. Lowering the number of

athletes afflicted with the female athlete triad, or any one of the components, will rest heavily on the shoulders of effective education programs. Not only do athletes require education about the female athlete triad, but coaches as well. The relationship between coach and athlete is significant, and there is the potential for extremely positive or negative outcomes as a result of this. Coaches who understand the causes, symptoms and consequences of the female athlete triad are in a unique position to prevent and manage it.

Treatment is difficult, and there are no guaranteed options. For problems which are as complex and multi causal as disordered eating and amenorrhea, treatment is problematic at best. Pharmaceutical options may be effective, but there are also unwanted side effects which may make their use less desirable. Because of this, prevention remains the most desirable strategy. A deeper understanding of the problem among both athletes and the individuals around them is needed. It will be crucial as the numbers of female athletes competing at elite levels continues to rise, for education to improve if there is any hope of making progress and reversing the alarming situation surrounding the female athlete triad.

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