



What Is the Female Athlete Triad?

The female athlete triad is a set of symptoms that produces damaging physical and psychological consequences. It is comprised of three linked medical conditions that occur in sequence: disordered eating, menstrual irregularities, and premature osteoporosis.

The components of the female Athlete Triad are related in the following way:

1. Disordered eating leads to inadequate nutrition.
2. Poor nutrition directly affects the production of hormones such as estrogen.
3. Because estrogen plays an important role in bone development, a lack of the hormone leads to weakened bones and significantly increases the prevalence of injury.
- 4.

The triad is observed most often in girls who participate in sports where performance is scored subjectively, a low body weight is emphasized, body contour-revealing clothing is required for competition, weight categories are used for participation and a prepubescent body is considered optimal for performance.

Disordered Eating

Anorexia Nervosa—A condition of self-starvation—
Includes the following symptoms:

- Body weight at or below 15% of normal weight for age and height
- A refusal to maintain a minimally normal body weight.
- Intense and irrational fear of gaining weight or becoming fat.
- Restricting Subtype: Uses dieting, fasting, or excessive exercise as the primary means for weight loss.
- Binge-Eating/Purging Subtype: Engage in binge eating, purging, or both.

Bulimia Nervosa—Binge eating and then purging—
Includes the following symptoms:

- Often retain a normal body weight.
- Episodes of uncontrollable and rapid binge eating.
- Overwhelming feelings of guilt, anxiety, and depression after bingeing
- Non-Purging Subtype: After bingeing, starves or exercises excessively.
- Purging Subtype: After bingeing, engages in self-induced vomiting or uses laxatives and/or diuretics.

Menstrual Irregularities (Amenorrhea and Oligomenorrhea)

Primary amenorrhea is characterized by a pre-adolescent who hasn't had a menstrual period by the age of 16 or has gone two years following the development of secondary sex characteristics without menarche. Eating disorders may lead to this delay. Secondary amenorrhea is when menstruation ceases for 3 months or longer in a female who has previously had normal females. This is part of the diagnostic criteria for anorexia nervosa. Oligomenorrhea is when the menstrual cycle occurs at irregular, erratic intervals. Secondary amenorrhea and oligomenorrhea occur in bulimics due to undernourishment.

Osteoporosis

Osteoporosis is a dangerous disease characterized by low bone mass and deterioration of bone. Disordered eating results in a lack of calcium and vitamin D—two nutrients that are imperative for healthy bone growth in young women. If primary or secondary amenorrhea or oligomenorrhea occur and hormone levels are reduced, bone mass will also be decreased. Research has shown that some active young athletes with amenorrhea have skeletons similar to 50- or even 70-year-old women.

How prevalent is the female athlete triad among the female athlete population?

Researchers estimate that between 15-62% of the female athletic population display disordered eating behaviors.

The extent of amenorrhea among female athletes falls between 3-66%, depending on the definition that is used.

Preventing and Treating the Female Athlete Triad

Preventing the triad can only happen through proper education—coaches, athletic trainers, parents and athletes must be well informed about the female athlete triad.

Specifically, the following actions would decrease the prevalence of the female athlete triad:

- Continue scientific research
- Mandate annual screening of the triad for female athletes/dancers
- Mandate preseason education
- Mandate education for parents of athletes who are 18 years of age or younger
- Mandate education for coaches and athletic trainers
- Clearly define referral guidelines
- Clearly define treatment guidelines
- Clearly define sports participation guidelines when symptoms of the triad become present
- Promote healthy stress-management behaviors and tactics
- Promote community awareness of the triad through educational programs

(Information compiled from Brzycki, M. & Bradley, M. (2004). *The Female Athlete: Train for Success*. Indianapolis, IN: Wish Publications.)

RESOURCES

Books

- Brzycki, M. & Bradley, M. (2004). *The Female Athlete: Train for Success*. Indianapolis, IN: Wish Publications.
- Maughan, R.J. (2004). *Food, Nutrition and Sports Performance II: The International Olympic Committee Consensus on Sports Nutrition*. Oxford, UK: Routledge.
- Metz, J.D. & Shookhoff, C. (2003). *The Young Athlete: A Sports Doctor's Complete Guide for Parents*. New York, NY: Little, Brown and Company.

Organizations and Websites

Female Athlete Triad Coalition

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Center for Young Women's Health

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