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Boeckner, Linda S., "NF98-361 The Female Athlete Triad" (1998). *Historical Materials from University of Nebraska-Lincoln Extension*. 533.

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NebFact



Published by Cooperative Extension, Institute of Agriculture and Natural Resources,
University of Nebraska-Lincoln

The Female Athlete Triad

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As more and more females become active in sports, physicians, coaches, trainers, parents and athletes need to be aware of a potential condition termed the *Female Athlete Triad*. This term was first described in 1992 by the American College of Sports Medicine as a condition in which three disorders are present: osteoporosis, amenorrhea and disordered eating.

Female athletes are particularly vulnerable to the *Female Athlete Triad* because of the qualities that make them successful □ competitiveness and perfection. Because females often participate in sports in which weight could affect success, such as gymnastics, figure skating, cross country running, ballet, and swimming, they may feel an extra push toward weight manipulation to achieve perfection. That is bolstered by a society that seems obsessed with weight and appearance. Some of the warning signs or symptoms of the triad are listed in *Table I*. Further descriptions of each of the triad components follow.

Table I. Signs and symptoms of the Female Athlete Triad.

Fatigue	Erosion of dental enamel from frequent vomit
Anemia	Abdominal pain and bloating
Depression	Constipation
Stress fractures	Dry skin
Decreased ability to concentrate	Lightheadedness
Cold intolerance	Chest pain
Cold and discolored hands and feet	Irregular or loss of menstrual cycles
Sore throat	Lanugo (fine, downy hair covering the body)

The Components of the Female Athlete Triad

Disordered eating

The triad is likely to be initiated by attempts to lose weight which can develop into disordered eating patterns. Disordered eating behavior ranges from moderate restriction of food intake, binge eating and purging to severe food restriction. *Table II* provides some of the behavioral signs of disordered eating.

Table II. Behavioral signs of disordered eating.

- Preoccupation with food and weight
- Expressed concern with being too fat
- Frequent eating alone
- Use of laxatives
- Trips to the bathroom during or immediately following a meal
- Increasing criticism of self
- Continual drinking of no-calorie beverages

Amenorrhea

Females are classified as amenorrheic if they have reached the age of 16 and not begun regular menstrual cycles or if regular menstrual cycles have ceased without reasonable cause such as pregnancy. The monthly menstrual cycle is created by complex hormonal balances. Food restriction and weight loss as well as intense physical training may interfere with hormonal balances and disrupt menstrual cycles. Estrogen levels are often low during amenorrhea.

Osteoporosis

Estrogen is needed for proper bone construction. If estrogen levels are low and calcium intake is reduced because of food restriction, there's a good chance that bones will be weakened. The outcome may be frequent stress fractures in the short run and permanent damage to bones over a lifetime.

What to Do

The American College of Sports Medicine believes the *Female Athlete Triad* exists not only in elite athletes but in physically active girls and women who participate in a wide range of physical activities. Females who are found to have one component of the triad should be screened for the other two. For example, if a physical exam reveals that regular menstrual cycles have ceased, females should be questioned about their eating patterns, weight-loss history, and whether they are prone to stress fractures. Or, if female athletes have repeated stress fractures, they should be interviewed to determine if there are irregularities in their eating patterns and whether they are having regular menstrual cycles. Although the triad may begin with a pattern of disordered eating which disrupts hormonal balances and leads to cessation of regular menstrual periods and loss of bone density, the repeated presence of stress fractures in a female athlete is a more visible triad symptom.

If triad symptoms exist, a multidisciplinary approach to treatment is necessary. Parents, coaches, physicians, dietitians, and mental health professionals as well as the athlete herself are all potential participants in treatment. Adequate food intake will need to be restored while the issues that originally contributed to the disordered eating patterns are addressed. In some cases hormone replacement therapy may be necessary to restore estrogen levels.

Summary

It is critical that those who work with athletes and those who provide medical care learn to recognize some of the signs and symptoms of the Female Athlete Triad mentioned in this NebFact. Early intervention is key to putting a stop to a series of interrelated conditions that have long-term consequences. All physically active girls and women should be advised about normal nutritional habits, safe training practices and the warning signs of the triad.

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File NF361 under: FOODS AND NUTRITION
C-3k, Special Diets
Issued May 1998

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Elbert C. Dickey, Director of Cooperative Extension, University of Nebraska, Institute of Agriculture and Natural Resources.

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