

# The Female Triad

The female triad, a syndrome that affects many female athletes, refers to disordered eating, amenorrhea and osteoporosis. Active women or girls who are driven to excel in sports may develop this syndrome.

Disordered eating can range from poor eating habits such as restricting the nutrients fats, carbohydrates, and protein, to an eating disorder like anorexia and bulimia. Amenorrhea is the result of female athletes with too low body fat or weight, have poor nutrition, or over exercise who stop menstruating or have irregular periods. Osteoporosis or the onset of early bone loss is a result of poor nutrition and changes in estrogen.

Both internal and external pressure may foster the development of the female triad syndrome. Usually stemming from pressures to be thin or pressure to lose weight from coaches, peers, or parents to excel in a sport. The problem with extreme leanness is a body fat below 12 percent for the female athlete, which is incompatible with good health. When body fat drops below this there is an increase in illnesses, injuries and recovery time; decreased physical performance; and an increase in eating disorders.

**Signs and Symptoms** The symptoms are multi-factual and often are the same as a person with anorexia and bulimia. These include: fatigue; anemia; depression; stress fractures; decreased ability to concentrate; increased cold intolerance with cold and discolored hands and feet; sore throat; callused knuckles from pressure against teeth during induced vomiting; erosion of dental enamel from frequent vomiting; abdominal pain and bloating; constipation; dry skin, face and extremities; edema, light headedness; bradycardia; changes in blood pressure; chest pain; and lanugo.

**Breaking the Triad** Because the triad can lead to irreversible bone loss and death, early detection is imperative and a multidisciplinary approach to treatment is required. This includes a healthcare team (physician, dietitian and psychologist), involvement of coaches and parents, adequate nutrition, adequate calcium, vitamin D, iron, "good fats", and protein.

**Nutrition is the Key *Calcium*** Calcium helps make bones strong to withstand the stress of exercise. In healthy people bones adapt to exercise by depositing more calcium and becoming increasingly dense in the areas of stress. Athletes can develop stress fractures from too much stress or weak bones. Inadequate calcium can lead to weak bones making them more susceptible to stress fractures. Calcium needs of the female teenage athlete are 1,300 milligrams (mg) per day, and for the adult female athlete is 1,000 mg per day.

*Increase Your Calcium Intake...* Try yogurt topped with crunchy breakfast cereal for a snack. Sprinkle cheddar cheese on an English muffin, bagel, or favorite bread and heat to make a cheese melt. Add a bowl of fortified cereal with milk or fortified soy milk to your breakfast menu, or have it for a snack.

Look for products that say "calcium-rich" or "an excellent source of calcium." Enjoy a glass of milk, calcium-enriched soy or rice milk as an afternoon pick-me-up. Snack on calcium-fortified breakfast bars.

*Not as Simple as Calcium* Estrogen enhances calcium deposit on the bone and has a positive effect on bone strength. Female athletes with too low body fat or weight have poor nutrition or over-exercise and stop menstruating or have irregular periods. This is called amenorrhea and can have significant effects on a woman's bone density. Less estrogen means less calcium deposited in the bones. The short-term effects of low-bone density are stress fractures. The long term is osteoporosis.

*Get Adequate Vitamin D* Vitamin D helps deposit calcium in bones. If you drink milk you are likely to get enough to protect against bone disease. Your body makes vitamin D when ultraviolet light touches your skin so spending a few hours a week in the sun will help build strong bones. We recommend receiving at least 15 minutes, several days a week, with exposure to at least the arms and face. Ideally the sun should be avoided to periods of peak exposure, such as the middle of the day. Sunscreen can block the body's ability to produce Vitamin D, so wait 15 minutes before applying during non-peak (mid morning or late afternoon) periods.

*Iron* The female athlete with amenorrhea experiences a loss of menstruation. It can interfere with health and performing by causing: stress fractures, osteoporosis, early onset of heart disease, and the inability to conceive when you are ready to start a family.

*Iron and the Female Athlete* Iron forms red blood cells, which carry oxygen throughout the body, assist in turning food into energy, and help to fight infections. Iron deficiency or anemia will cause you to get easily winded from even small amounts of exercise and will impair physical performance. Iron needs for the teenage female athlete is 15 mg per day and for the adult is 18 mg per day.

*Increasing Iron in Your Diet* All types of meat (beef, chicken, and fish) contain a more easily absorbed form of iron. The iron in beef, poultry, and fish help absorb the iron in vegetables. Good plant sources are green leafy vegetables, dried beans and peas, nuts and seeds, and peanut butter. Look for cereals, pastas, grains, and breakfast bars fortified with iron. Include good sources of vitamin C in your diet. Vitamin C helps you absorb iron.

*Fats* Not all fats are created equal. Learning to distinguish between good and bad sources of dietary fat will not only benefit the young athlete in terms of performance and injury prevention, but also in maintaining a "healthy lean" figure. Good sources of "good fats" are avocado, nuts and seeds (almonds are an excellent choice), flax (as flax oil or flaxmeal), and fish. Female hormones are derived from fats, which is why maintaining a minimum bodyfat percentage is essential. If adding enough healthy fats, or essential fatty acids, to the diet is challenging, then consider supplementation with an Omega-3 oil or capsule.

*Resolving the Problem of Amenorrhea* It may be as simple as exercising a little less and eating a little more. If poor nutrition is a concern from constant dieting and restricting certain foods, the following steps should be taken: throw away the scale, don't crash diet, follow a sensible plan that includes all food groups, and eat adequate protein. Also, include small portions of red meat two or three times per week, eat at least 20 percent of calories from fat, and maintain a calcium-rich diet.