

Female Athlete Triad: What You Need to Know

The female athlete triad is a condition of low energy availability leading to impaired reproductive and bone health in female athletes. In this handout, you will learn about the female athlete triad and how doctors diagnose and treat the condition.

WHAT IS THE FEMALE ATHLETE TRIAD?

The **female athlete triad (TRIAD)** is a condition that affects female athletes. It includes the following 3 characteristics:

- Low energy availability caused by not balancing calories burned during exercise with calories consumed
- Amenorrhea (loss of menstrual periods or delay of first menstrual period) caused by low energy availability
- Low bone density or osteoporosis (a decrease in bone density that causes weak, brittle bones that break easily)

HOW DOES THE TRIAD AFFECT BONE HEALTH?

TRIAD can cause **low bone density for age** and **osteoporosis**. Osteoporosis in children and teenagers is defined as low bone density associated with a significant fracture history, especially if the injury that caused the break is a low-impact injury.

When calories consumed during exercise are not balanced by a sufficient intake of calories, estrogen production may decrease. Estrogen is very important for optimal bone health, particularly in a growing teenager. Other hormones that affect bone are also adversely impacted by low energy availability. Further, TRIAD raises your child's risk of breaking other bones in the future, which can affect their athletic performance.

HOW DO DOCTORS DIAGNOSE THE TRIAD?

If the care team thinks your child might have the TRIAD, they might do one or more of the following tests:

- Assessment of your child's current diet, exercise routine and menstrual cycle
- Physical exam
- Blood tests, which include checking nutrient and hormone levels
- A dual-energy X-ray absorptiometry (DXA) test (imaging test that measures bone density)

HOW DO DOCTORS TREAT THE TRIAD?

Treatment depends on your child's symptoms and test results. Early treatment can help prevent further bone compromise and help return your child to good health. The care team will talk with you about creating a treatment plan for your child.

Common TRIAD treatments include:

- A new diet and nutrition plan to increase calorie consumption
- Changes to your child's exercise routine
- Hormone and vitamin supplements

Did you know?

It is always important to live a healthy lifestyle and eat well, especially before age 25. This is when a person reaches their peak bone mass (highest levels of bone density). There is no guarantee of restoring bone mass a person might have lost before age 25. Most people have a higher risk of fractures as they approach age 50 or as women reach menopause. People with lower peak bone mass are more likely to have fractures earlier than those who do not have lower peak bone mass.