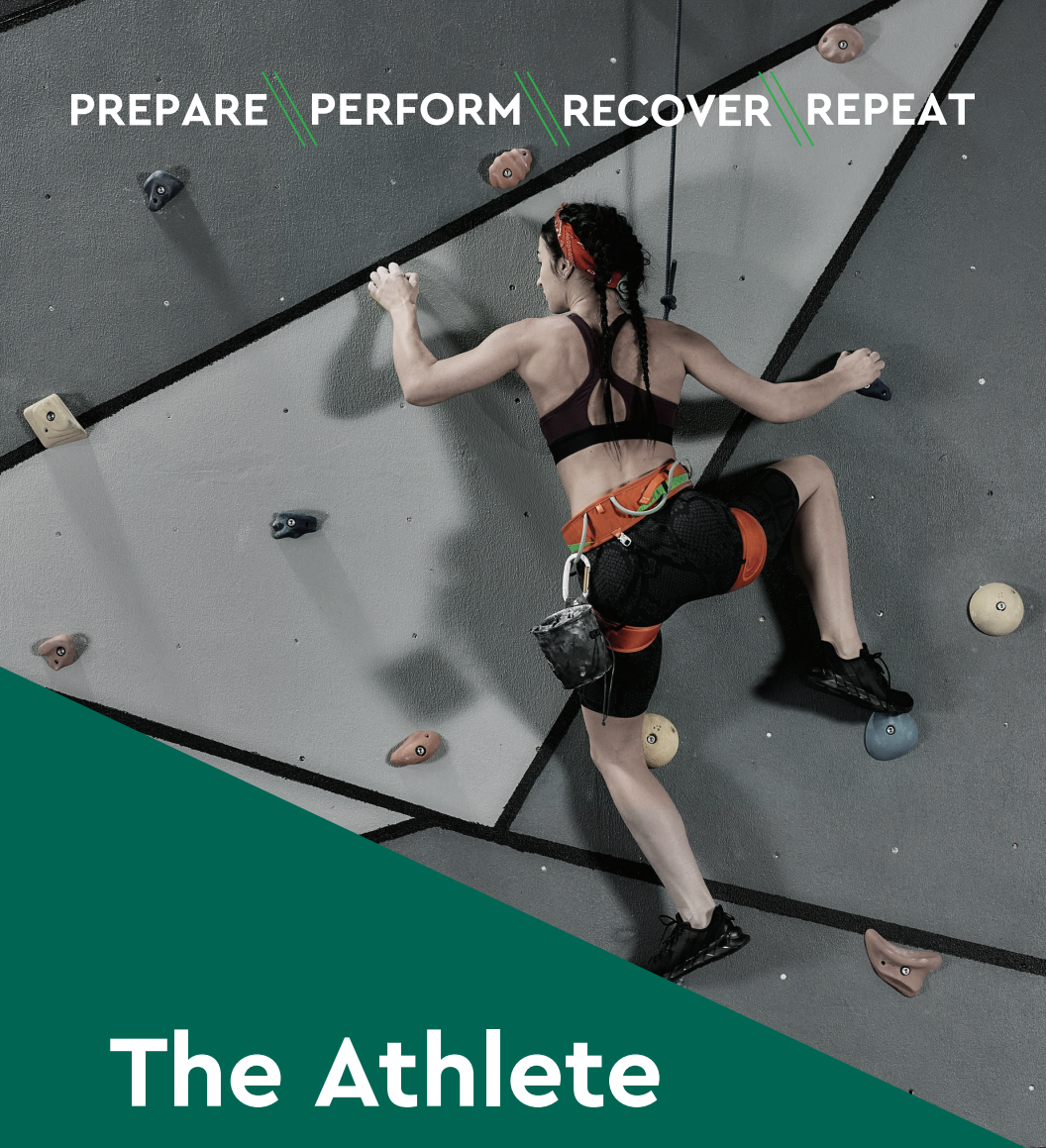


PREPARE // PERFORM // RECOVER // REPEAT



The Athlete Triad

SPORTS MEDICINE
CENTER



Children's Hospital Colorado

THE ATHLETE TRIAD

For any athlete, good nutrition is essential to performance. Especially in high-output sports like gymnastics, soccer and track, rigorous training demands high energy input to keep the body at its peak.

Unfortunately, many athletes underestimate their caloric needs, sometimes drastically. This nutrition imbalance can lead to a performance-sapping and potentially dangerous set of symptoms known as the **athlete triad**:



**LOW ENERGY
AVAILABILITY**



**REPRODUCTIVE
DYSFUNCTION**



**LOW BONE
MINERAL DENSITY**

Low energy availability

Low energy availability results when the body has more calories going out than coming in. This imbalance can occur when athletes consume too few calories relative to their activity level. It can also be due to disordered eating, which, whether due to societal pressures or other factors, tends to occur more commonly in female athletes. However, both female and male athletes can experience consequences from low energy availability.

Reproductive dysfunction

If an adolescent girl has not begun having periods by age 15, misses three consecutive periods or frequently has periods that occur more than 35 days apart, that's menstrual dysfunction. Persistent low energy availability can affect hormone levels that regulate menstrual cycles. Young female athletes with signs of menstrual dysfunction should see a pediatric healthcare provider for further evaluation.

Young male athletes concerned that they may be under fueling should see a pediatric healthcare provider for further evaluation.

Bone mineral density

Altered hormone levels can also lead to low bone mineral density and ultimately, in severe cases, osteoporosis. Bone mineral density accumulates primarily during childhood and adolescence, so it's especially important to promote good bone health during this time.

Stress fractures can be an indication of low bone mineral density and should prompt an evaluation for other components of the athlete triad.

Risk factors

Particularly susceptible to the triad are young athletes who participate in high-energy output sports or sports that emphasize a lean physique, such as:

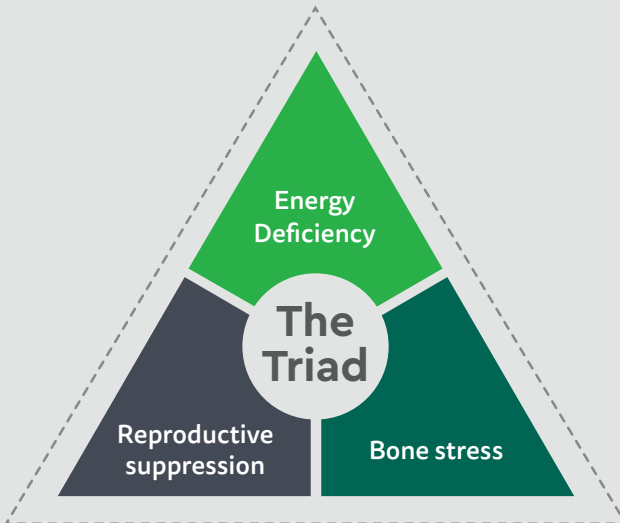
- Dance
- Climbing
- Cycling
- Figure skating
- Gymnastics
- Rowing
- Running
- Wrestling

The following symptoms indicate an athlete may be struggling with one or more aspects of the triad:

- Fatigue or decrease in performance
- Preoccupation with food, weight loss or body image
- Stress fractures
- Depression or low self-esteem

The female and male athlete triad model

The athlete triad is a spectrum, with high energy, optimal bone health and normal reproductive function on the healthy end, and reproductive suppression, low energy availability and osteoporosis at the unhealthy end.



THE ATHLETE TRIAD

Prevention and treatment

Proper nutrition is very important to preventing and managing the athlete triad. To optimize bone health, adolescents should get 1300 milligrams of calcium and 600 international units of vitamin D daily.

Early recognition is key to treatment. If you notice elements of the athlete triad, the Sports Medicine Center at Children's Hospital Colorado can evaluate and help get young athletes back to performing at the top of their game.



Sports Medicine Center Locations

Same-day appointments are offered five days a week in locations throughout metro Denver.

 Scan the QR code to find a location near you.



 720-777-3899

 childrenscolorado.org/Sports

**SPORTS MEDICINE
CENTER**

 Children's Hospital Colorado