

What is Energy Availability?

Energy availability is the amount of dietary energy remaining after exercise, available for other physiological functions such as growth, muscle recovery and homeostasis.

Low energy availability (LEA) occurs when the calorie intake of an athlete is insufficient to meet the energy required for daily living plus the demands of training. Energy intake should never drop below resting metabolic rate.

Low Energy Availability in Sport

LEA is associated with the majority of consequences of relative energy deficiency in sport (RED-S) and the Female Athlete Triad. Consequences include, but are not limited to: suppressed metabolic rate; menstrual dysfunction (females) or reduced testosterone levels (males); and impairments of bone health, immunity, protein synthesis and cardiovascular health. The consequences can occur in as little as five days and be acute, intermittent or chronic.

Performance Consequences



Signs and Symptoms of LEA

- Reduced training capacity
- Repeated injury or illness
- Delayed or prolonged recovery times
- Change in mood state
- Failure to lose weight
- Reduced or low bone density
- Reduced libido
- Cessation or disruption in menstrual cycle
- Excessive fatigue

Risk Factors for Developing Low Energy Availability

The following scenarios may place an athlete at risk of LEA:

- ▶ Participation in aesthetic, weight-making or endurance sports
- ▶ Failure to increase calorie intake with increased or hard training loads
- ▶ Attempts to lose weight when training loads are high
- ▶ Restricted calorie intake due to physical impairments, gut tolerance, or medical conditions
- ▶ Excessive focus by coaches and other support staff on weight and body fat as opposed to performance in sport
- ▶ Presence of disordered eating behaviors, either in the athlete or in their training partners
- ▶ Inadequate food availability (e.g. limited financial resources, hectic travel schedule, cramped living/cooking spaces or very busy lifestyles where food is of low priority)
- ▶ Diets very high in fiber and low in energy density (e.g. large salads lacking in carbohydrate, tendency to only eat very specific "healthy" foods, extensive use of diet products)

Health Consequences



Why Be Concerned?

- Potential negative impact on training response/capacity (acute or long-term)
- Suppressed metabolism, which can cause long-term difficulties with body composition
- Reduced bone density, increasing the risk of stress fractures and other bone injuries
- Increased risk of psychological harm
- Acute and chronic health problems

If you suspect an athlete may have LEA, disordered eating or body image issues, refer them to a sport dietitian, sport psychologist or sports medicine practitioner for assessment and management