

RED-S: RELATIVE ENERGY DEFICIENCY IN SPORT

Understanding RED-S: A Must for Every Athlete

Fuel your body, protect your power — train smart, eat well, and keep your performance strong!

WHAT IS RED-S?

RED-S (Relative Energy Deficiency in Sport) occurs when an athlete's energy intake doesn't meet the energy they expend through training and daily activities. This lack of fuel affects the body's ability to maintain normal functions such as growth, hormone balance, bone health, recovery, and performance. Over time, RED-S can lead to fatigue, injuries, menstrual changes, poor recovery, and reduced athletic performance. Recognizing and preventing RED-S is essential for staying healthy, strong, and performing at your best.

When energy in \neq energy out \rightarrow the body doesn't have enough fuel to stay healthy and perform at its best.

WHEN TO ASK FOR ADVICE?

Talk to your team doctor or primary care doctor if you or a teammate experiences:

- Injuries or illnesses that don't heal properly.
- Irregular or missing periods.
- Consistent, unexplained under-performance.
- Persistent fatigue or low mood.
- Bone pain or frequent stress fractures.
- Difficulty recovering from training sessions.
- Low body weight or trouble maintaining weight.

WHAT CAUSES RED-S?

- Insufficient energy intake compared to energy expenditure.
- Intense or increased training without increasing food intake.
- Skipping meals or restricting food groups.
- Under-fueling around heavy training sessions.

WHAT HARM CAN IT DO TO YOUR BODY?

Low energy availability over time can affect:

- Metabolic rate.
- Menstrual function (amenorrhea in females).
- Bone health (higher stress fracture risk).
- Immunity (frequent illness).
- Protein synthesis and muscle repair.
- Cardiovascular health.

HOW TO AVOID RED-S?

- Balance training, recovery, and energy intake.
- Eat enough carbohydrates around training and prioritize post-training recovery nutrition.
- Increase food intake when you increase training load.
- Pay attention to how you feel — persistent fatigue or poor recovery may signal low energy availability.
- Work with a sports dietitian or medical professional if needed.

HOW RED-S AFFECTS PERFORMANCE?

Increased	Decreased	Impaired
Injury risk	Endurance performance	Judgement
Depression	Muscle strength	Concentration
Irritability	Energy (glycogen) stores	Training response
	Coordination	



KEY TAKEAWAYS

RED-S is caused by low energy availability, not just weight.

It affects performance, health, and recovery.

Early recognition and proper fueling prevent long-term problems.

If in doubt — speak up and get advice early.