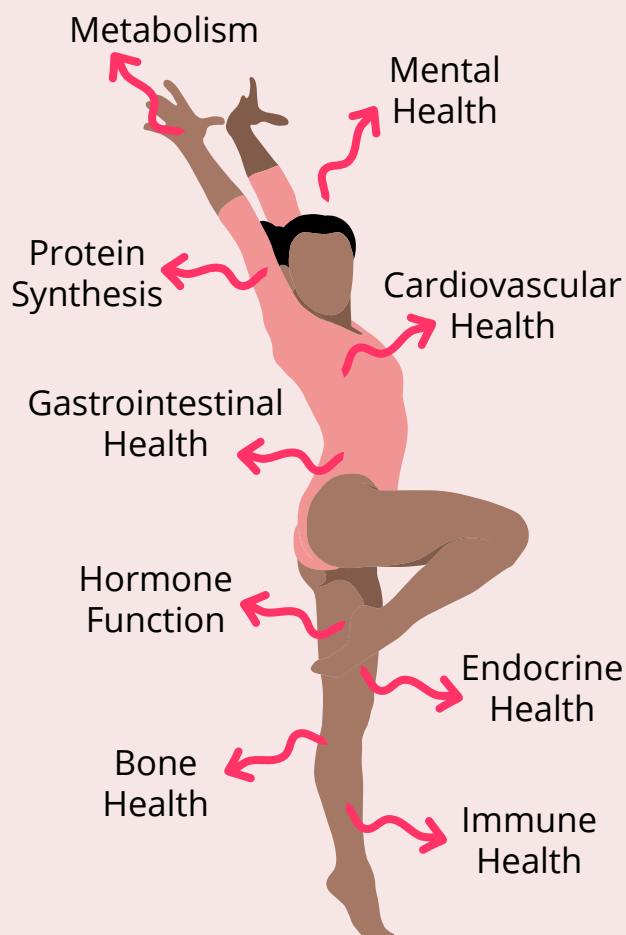
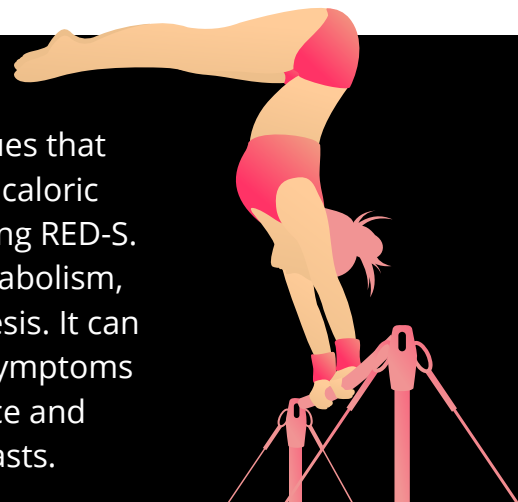


## What is RED-S?

Relative Energy Deficiency in Sport (RED-S) refers to medical issues that affect multiple body systems due to lack of adequate energy or caloric intake. Gymnasts who do not fuel properly are at risk for developing RED-S. RED-S causes multiple health issues including problems with metabolism, hormone function, bone health, mental health, and protein synthesis. It can lead to cardiovascular, gastrointestinal, endocrine, and immune symptoms as well. Gymnasts with RED-S may have decreased performance and overuse injuries. It can occur in both female and male gymnasts.



**RED-S can impact numerous  
body systems.**

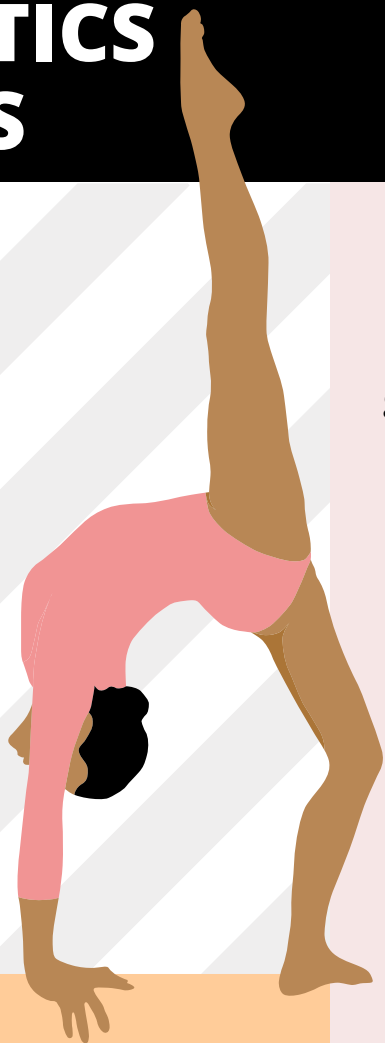
## Why Does RED-S Occur in Gymnasts?

RED-S in gymnasts is common but often underreported. Gymnasts can train many hours each week and have little time off throughout the year. There are false perceptions that gymnasts must have a certain body type or be a certain weight in order to perform well. However, this can lead to negative health outcomes, severe injuries, and poor performance. Gymnasts who do not eat enough for how much they are training are at risk for RED-S. This underfueling may be intentional or unintentional.

- **Intentional Underfueling:** Like dancers and figure skaters, gymnasts may feel pressure to have a certain body appearance. Gymnasts who skip meals, avoid certain foods, or limit their calorie intake, may be intentionally underfueling.
- **Unintentional Underfueling:** Gymnasts who train multiple days a week may not be eating enough for how much they workout. Unintentional underfueling occurs when gymnasts do not realize they need to eat more for how much they are training.

# GYMNASTICS and RED-S

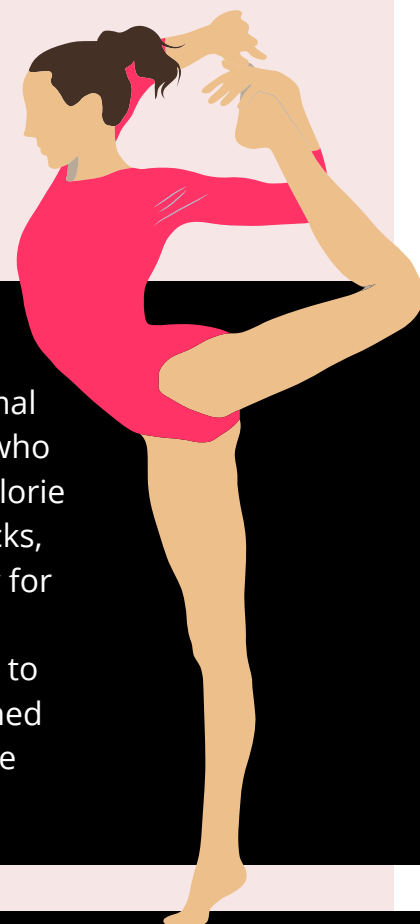
**SPRING**  
FORWARD FOR GIRLS



## Symptoms of RED-S in Gymnasts

RED-S can have negative impacts on short-term health, long-term health, and performance in gymnastics. Symptoms include but are not limited to:

- Decreased endurance (trouble making it through a floor routine)
- Decreased muscle strength (struggling with conditioning)
- Lack of focus/concentration (increased falls)
- Irregular periods/no periods in female gymnasts
- Bone injuries (e.g. stress fractures)
- Injuries that are taking longer to recover
- Mental burnout
- Frequent illness
- Sleep problems
- Depression, anxiety
- Irritability



Written by Emily Sweeney M.D.

## How Can I Prevent RED-S?

RED-S stems from a lack of energy intake relative to energy output. Optimal nutrition is necessary for gymnasts who want to perform well. Gymnasts who increase their training hours or intensity will likely need to increase their calorie intake. Eating at least 3 meals per day, having pre- and post-workout snacks, ensuring adequate hydration, and recognizing symptoms of RED-S are key for gymnasts to perform well. Gymnasts should also incorporate recovery strategies (e.g. days off, adequate sleep, fully treating all injuries) in order to prevent RED-S. For more strategies to prevent RED-S or if you are concerned about symptoms of RED-S, it is important to meet with a sports medicine physician or registered dietitian.

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