Relative Energy Deficiency in Sport (RED-S)

What is it?

Relative Energy Deficiency in Sport is exactly as it sounds, a condition caused by an in-balance between energy intake (dietary) and energy expenditure. We require a certain amount of energy input through food to complete our normal, daily bodily functions. RED-S commonly occurs in adolescents as on top of their daily needs and exercise, they are also requiring energy (and increased food intake) for growth.



It is often elite adolescent athletes and teens with high training loads that suffer from this and it is often poorly identified. In some instances, this may be due to an underlying eating disorder. The prevalence of RED-S is also high amongst athletes who do not suffer from disordered eating. High training load with unintentionally inadequate fuelling or lack of recovery is the main contributor to RED-S in this population.

RED-S is most common in sports where leanness and/or weight are important for performance (long distance running, road cycling); aesthetics/appearance (gymnastics, dancing); or to meet a weight category (wrestling, boxing, combat sports).

E: admin@ibphysio.com.au | T: 02 9976 3540 | F: 02 9976 3290 | Suite 14, Level 2, 22 Darley Road, Manly, NSW 2095 Australia



Figure 2

What are the symptoms?

Symptoms of RED-S will differ however the most common symptoms are outlined in the diagram.

Why should we be concerned?

Due to the low energy availability, RED-S will result in:
a) Impaired growth and development
b) Reduced overall health and wellbeing
c) Have adverse effects on performance.

Due to the changes in bone structure (through dietary insufficiencies, hormonal deficiencies and compulsive exercise), there is a significantly increased risk of stress fractures in people who are suffering from RED-S. The bone density loss seen in many of these athletes, simply due to having lower energy availability, is in some cases irreversible.

Some of the signs and symptoms to look out for in RED-S in both male and female athletes include:

- Recurrent injury (soft tissue and/or bone) or illness
- Unexpected fatigue

E: admin@ibphysio.com.au | T: 02 9976 3540 | F: 02 9976 3290 | Suite 14, Level 2, 22 Darley Road, Manly, NSW 2095 Australia

- Disrupted sleep patterns
- Change in mood
- Reduced social interaction
- Problematic relationship with food and/or training
- Stagnation and deterioration in performance

Awareness of RED-S will be the best tool for health professionals, coaches, athletes, and parents. Regularly checking in on training loads, injury, mood, sleep and eating patterns is a great way to keep ahead of any burn out and potential RED-S symptoms.

Ensure the athlete understands the importance of all the above factors on their long-term health and performance and if necessary, create goals to help support overall wellness.

If you think you or someone you know is at risk of RED-S, gaining professional help is paramount to the athlete's recovery and success.

Article by Jim Burke

E: admin@ibphysio.com.au | T: 02 9976 3540 | F: 02 9976 3290 | Suite 14, Level 2, 22 Darley Road, Manly, NSW 2095 Australia