

IRON DEFICIENCY IN FEMALE ATHLETES

Athlete Information Sheet

What is Iron and Iron Deficiency?

Iron is a mineral that plays an important role the development of red blood cells, carrying oxygen around the body, energy production and protection from infection.

Iron is present in food in two different types:

'haem' – found in animal products

Better absorbed by the body

E.g. Beef, lamb, liver, kidney, pork, chicken, and shellfish.

'non-haem' – found in plant and animal products

Less well absorbed. (e.g. green leafy vegetables)

Iron deficiency is the most common deficiency disease worldwide and female, adolescent and vegetarian athletes are at an increased risk.

Almost 50% of elite female New Zealand athletes report being iron deficient at some point in their athletic career.

Iron deficiency will negatively impact training, recovery, performance, and general wellbeing.

Symptoms of Iron deficiency include:

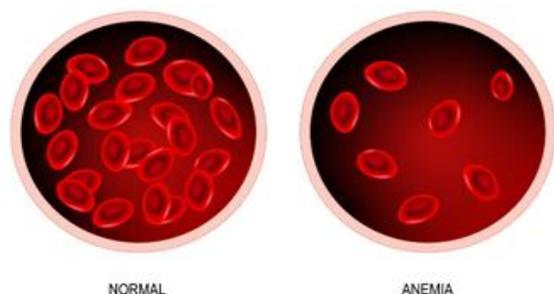
- Tiredness
- Fatigue
- Shortness of breath
- Under-performance
- Pale appearance
- Repeated infections

Athletes are at risk of developing Iron Deficiency because:

- Athletes have high needs - training stimulates the production of red blood cells that require iron.
- Athletes lose iron in sweat and in the gastrointestinal tract during exercise.
- Impact activity like running can cause some damage to red blood cells causing loss of iron.
- Some exercise may reduce the absorption of iron from food.
- Poor eating habits by athletes may mean not enough iron is consumed.

Why are Female athletes at risk of Iron Deficiency?

- Blood and iron losses during menstrual periods.
- 'Heavy' periods (menorrhagia) are associated with increased rates of iron deficiency.
- Up to 30% of elite female New Zealand athletes report 'heavy' periods.



Appearance of blood in a normal or iron deficient athlete

Preventing Iron Deficiency

The best means of avoiding iron deficiency is to ensure adequate iron is contained in athlete diets.

Some foods may either enhance or impair iron absorption.

Iron absorption is helped by combining the following with iron rich foods:

- Vitamin C found in citrus (e.g. oranges, kiwi fruit, fruit juice, green vegetables) Fermented foods or foods with a low pH (acidic) - Sauerkraut, miso, some types of soy sauce

Iron absorption is reduced by eating the following:

- Phytates (e.g. legumes, nuts, wholegrain cereals, unprocessed bran))
- Spinach, silverbeet & rhubarb ('oxalates')
- Soy protein (e.g. tofu)
- Dietary fibre (e.g. excessive quantities of wheat bran, oats)
- Calcium* (e.g. milk, cheese, yoghurt)

For athletes needing to optimise their iron stores, care maybe needed when consuming these foods when also consuming foods containing iron. Before considering removing any foods from your diet it is recommended that you speak with your nutritionist.

Diagnosing Iron Deficiency

- If Iron deficiency is suspected, it can be diagnosed by a simple blood test ordered by your Doctor. The key measures in the blood test include:

Ferritin

A protein that stores iron in the body

Haemoglobin

The molecule in the blood that carries oxygen around the body

Managing Iron Deficiency

Iron deficiency in athletes is often treated in combination with a medical practitioner, nutritionist, and physiologist.

Once diagnosed, it is important that the underlying of the iron deficiency is carefully evaluated. This may include:

- Further medical evaluation including menstrual history
- Further blood or other tests
- A full dietary assessment

The underlying cause of the iron deficiency should always be addressed.

When appropriate, treatment may include enhancing dietary iron to optimise iron content and absorption via foods.

Supplementation with iron tablets or injection may be required in some situations where dietary improvements are insufficient.

For further information:

Speak with your HPSNZ medical, nutrition or physiology team.

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