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Athlete's Guide to

Iron in Diet & Iron Supplements

Why is Iron Important for Athletes?

Iron is vital for athletes, helping deliver oxygen in the body for better performance and endurance. It's also key for brain development in children, affecting concentration and memory. Low iron can lead to anemia, causing fatigue and reduced physical and mental function.

How Does Low Iron Affect Athletic Performance?

Iron deficiency can weaken athletic performance by causing:

- earlier fatigue during endurance activities,
- lower VO2max (work capacity)
- more lactic acid build-up
- lower exercise intensity and tolerance,
- frequent illness, and
- poor training adaptation.

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> **"Normal" iron levels, like a hemoglobin above 120 and Ferritin over 15, is not sufficient for peak athletic performance.**

Studies show that athletes with "normal" hemoglobin levels can still experience reduced performance, especially during high training demands.

In fact, training intensity can worsen exertional fatigue, even when hemoglobin is "normal." When these athletes take iron supplements for 6 weeks, they improve their performance.

Optimal iron levels depend on the individual and age of athlete, so discuss with your sport physician or dietitian.

How do you Know if Your Iron is Low?

Athletes should ask their doctor for a blood test every 1-2 years to screen for low iron. It is helpful to ask for your results and track your iron levels over time.

What are Signs of Iron Deficiency?

Signs and symptoms of Iron deficiency include:

- Tired all the time, even if you sleep enough
- Frequent illness
- Not as fast and early fatigue during exercise
- Shortness of breath with exertion
- Pale or yellow “sallow” skin
- Unexplained weakness
- Rapid heartbeat
- Pounding or “whooshing” in the ears
- Headache, especially with activity
- Constantly cold hands, feet

Young athletes, especially during rapid growth phases, need more iron due to increased demands from sports.

Reasons include:

1. High exertion increases iron demands.
2. Dietary restrictions or lower calorie intake, common in female athletes, can reduce iron intake.
3. Intense exercise can decrease iron absorption.
4. Increased iron loss occurs through sweat and minor red blood cell rupture during activities like running.
5. Athletes training at high altitudes, such as skiers, require an extra 100–200 mg of elemental iron daily due to lower oxygen levels, which leads the body to produce more red blood cells.

Heme v.s. Non Heme

Two types of dietary iron exist: Heme iron from animal sources and Non-Heme iron from plant-based foods. Our body absorbs Heme iron better, with a 20% absorption rate, compared to 2-10% for Non-Heme iron. This difference in absorption rates is important when comparing iron content in foods.

Animal Food	Amount Heme Iron (mg)
Liver (75g)	4.6 – 13
Oysters or mussels (75g)	5 – 6.3
Lamb or beef (75g)	1.5 – 2.4
Clams (75g)	2.1
Sardines, canned (75g)	2.0
Tuna, mackerel (75g)	1.2
Chicken or pork (75g)	0.9
Salmon or turkey (75g)	0.5
1 egg	0.7

PLANT FOOD	Amount Non Heme Iron (mg)
Soybeans, cooked (3/4cup)	6.5
Beans or Lentils (3/4cup)	3.3 – 4.9
Pumpkin Seeds, roasted (¼ cup)	4.7
Cold cereal e.g. Shreddies or Raisin Bran (30g)	4.5
Veggie meatballs (150g)	3.2
Tofu, firm, chickpeas or edamame cooked (¾ cup)	2.4
Cooked swiss chard, beet greens, spinach ½ cup	1.8
Baked potato skin	1.9
Seaweed dried (½ cup)	1.7
Quinoa cooked (½ cup)	1.5
Oatmeal cooked (¾ cup)	1.4
Almonds, walnuts or pecans (¼ cup)	0.8 – 1.3
Green peas, cooked (½ cup)	1.3
1 slice bread	0.9
Tomato sauce, canned (½ cup)	1.2
Raisins or apricots (¼ cup)	1.9
Pasta (½ cup)	0.8
Beets cooked (1 cup)	1.1

CONSULT A HEALTHCARE PROVIDER BEFORE SUPPLEMENTING FOR IRON DEFICIENCY.

Taking too much iron is very dangerous. Never take an iron supplement without testing your iron levels first and talking to a health care provider.

Choosing Iron Supplements

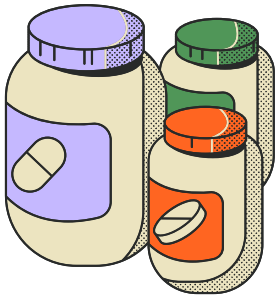
- **Take supplements every other day** in the morning for best absorption.
- Ferrous salt tablets are affordable and effective but cause side effects.
- **Common side effects** include nausea and constipation, but these can be managed by taking supplements every other day.

Recommended doses:

- **Children**: 1-3 mg/kg for mild deficiency, 3-6 mg/kg for severe deficiency.
- **Teens**: 100 mg elemental iron every other day.
- **Adults**: 150 mg elemental iron every other day.

Best Iron Supplements

1. **Ferrous fumarate**
   Effective, but has side effects
   Ferapro is best tolerated brand
2. **Feramax or Gentle Iron**
   Better tolerated, no side effects
   A little less effective than ferrous
3. **Heme Iron**
   Effective, Very Expensive
   No side effects



Selecting the Right Supplement

- You may consider taking a ferrous fumarate for its effectiveness and affordability.
- If you are concerned about side effects, consider alternatives like Ferapro, Feramax, or a Gentle Iron.
- For difficult cases, heme iron supplements are an option.
- Consult a healthcare provider for personalized advice.

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Boosting Iron Absorption from Diet

Iron Absorption Overview

Iron absorption from food is limited. Overall iron status depends more on the type of iron (heme vs. non-heme) consumed rather than the total amount.

Iron in Vegetarian Diets

Vegetarian diets often contain compounds that bind to non-heme iron and reduce absorption.

Spinach Iron Bioavailability

Spinach contains iron but it's poorly absorbed (as low as 2%).

Impact of Tea and Coffee:

Both black tea and coffee can inhibit iron absorption from meals.

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What Reduces Iron Absorption?

- Phytates (whole grains, soy, seeds, legumes, some nuts)
- Oxalates (green leafy vegetables, soy, almonds, potatoes, tea)
- Phosphates (dairy, meat, seafood, legumes)
- Tannins (tea, coffee, legumes)
- Polyphenols (fruits, vegetables, cereals)
- Antacids and calcium supplements

Dairy and Iron Absorption

Calcium in dairy products and supplements can inhibit iron absorption, but dairy as part of a balanced diet may not significantly affect iron status.

Enhancing Iron Absorption

- Adding meat to meals can improve iron absorption.
- Vitamin C enhances iron absorption in a single meal but doesn't have a significant impact on overall iron status.
- A healthy gut with prebiotics and probiotics might positively impact iron absorption, though research is ongoing.

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Interested in learning more?

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