

Iron for Athletes and Plant-Based Eaters

If you recently became a vegetarian or vegan, are a seasoned plant-based eater or want to meet your iron needs for exercise, here's what you need to know about iron for athletes and plant-based eaters.

It's important to understand why iron is essential, what it does for your body, and what happens if you don't consistently meet your needs. There are special considerations to be aware of when it comes to iron for athletes and plant-based eaters. These are the main things to know.

What is iron, and what does it do?

Iron is an essential mineral in the human body that forms hemoglobin, the substance in red blood cells that delivers oxygen from your lungs to your body tissues and provides energy. Hemoglobin is what gives the red color to our blood. Iron also forms myoglobin in muscle cells, a protein that carries and stores oxygen in muscle tissue. Even more, iron supports physical growth, [brain development](#), and several hormone syntheses in the human body. (1)

How much iron does the general adult population need?

Recommended Daily Iron Intake (2)

| Life Stage | Recommended Amount |
|---------------------------|--------------------|
| Adult men 19-50 years | 8 mg |
| Adult women 19-50 years | 18 mg |
| Adults 51 years and older | 8 mg |
| Pregnant women | 27 mg |

| | |
|----------------------------|------|
| Breastfeeding women | 9 mg |
|----------------------------|------|

What happens if you don't get enough iron?

Iron depletion can lead to serious health problems and cause iron-deficiency anemia. When the level of stored iron becomes too low, the oxygen-carrying capacity of red blood cells decreases. Not enough oxygen supply to the body tissues can cause weakness, tiredness, pale skin, poor appetite, reduced cognitive abilities, and more. (1) Also, iron deficiency adversely affects your physical capacity and work performance, and compromises the immune system, making it harder to [recover from exercise](#), infections, and diseases.

How much iron do you need if you exercise?

Athletes generally have a higher need for iron supplementation. These higher iron losses can be due to sweating large amounts during exercise, increased demand for red blood cells and small blood vessels, and extra blood loss in urine and the gut. (2) Therefore, athletes sometimes need 1.3-1.7 times higher dietary iron intake. (2) Female athletes, especially those who participate in endurance sports such as marathons and road cycling, are prone to iron deficiency. (3) This is largely due to iron loss through menstruation and exercise-induced energy mechanisms. (3) It is also common for many female athletes, like gymnastics and figure skaters, to not get enough iron due to overall calorie restriction for weight loss. Iron depletion not only harms the health of athletes but also impairs their athletic performance.

Sufficient iron storage in the body ensures an adequate amount of oxygen delivered to muscle cells. This can help an athlete reach his or her optimal physical strength and endurance. Distance runners have higher levels of hemoglobin in the blood and myoglobin and cytochromes in the muscle cells, which all need iron to be formed. (2) For athletes and exercise enthusiasts of all levels, iron-rich foods are part of a balanced and healthy diet. They can help improve athletic performance and recover from strenuous exercise more quickly since sufficient iron intake ensures the oxygen-carrying capacity of the blood. (3)



How much iron do vegetarians and vegans need?

A vegetarian diet excludes animal foods such as meat, poultry, [seafood](#), and fish, but includes [eggs](#) and dairy products. A vegan diet excludes all animal foods, including eggs and dairy products. Although a plant-based diet is associated with many health benefits, studies have shown that vegetarians/vegans have a higher risk of iron deficiency. (5) Therefore, vegetarians/vegans may need up to 1.8 times more iron. (1) This is because iron from plant foods is not as easily absorbed as the iron from animal foods. Luckily, there are plenty of plant-based foods loaded with iron, and pairing them with a source of Vitamin C can increase their absorption! Good vegan iron sources include [lentils](#), tofu, fortified grains and cereals, [pumpkin seeds](#), squash, leafy green vegetables, etc.

Sources of Iron

There are two forms of dietary iron: heme iron and nonheme iron.

Heme iron

The body can readily absorb heme iron, which only comes from animal proteins like meat, poultry, eggs, and seafood.

Nonheme iron

You can find nonheme iron in plant-based foods like [grains](#), grain products, legumes, fruits, and green leafy vegetables. Nonheme iron is less easily absorbed than heme iron in the body.

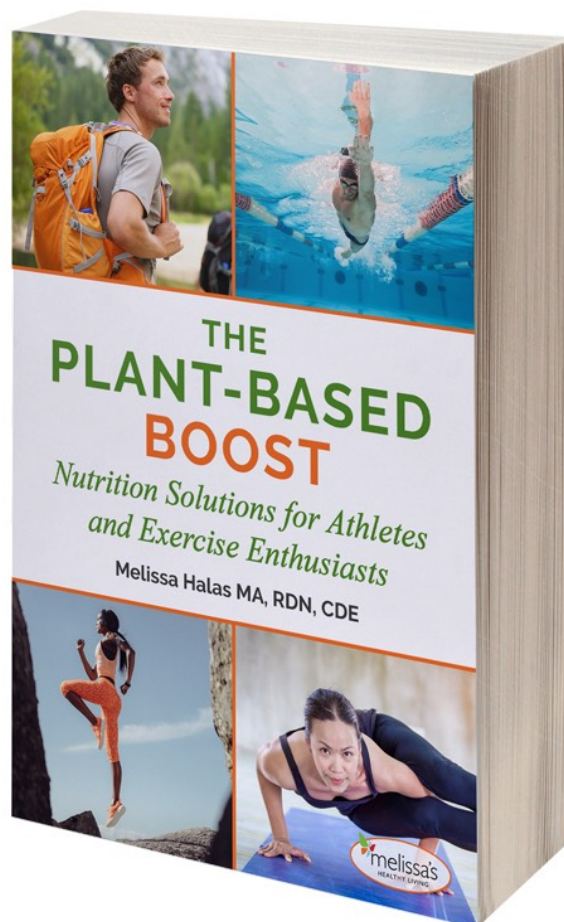
Table 2. Iron-Rich Food Sources (1,2)

| Plant sources (Non-heme) | Iron (mg) | Animal sources (Heme) | Iron (mg) |
|--|------------------|------------------------------------|------------------|
| Fortified breakfast cereals, 1 cup | Up to 18 | Sardines, 3 oz | 4.4 |
| Spinach , 1 cup, cooked | 6.4 | Ground beef, 3 oz | 2.1 |
| Tofu, 1/2 cup, cooked | 3.3 | Tuna, 3 oz. canned in water | 0.97 |
| Lentils, 1/2 cup, cooked | 3.3 | Egg, 1 whole | 0.96 |
| Pumpkin seeds, 1/4 cup | 2.4 | Chicken breast, 3 oz | 0.8 |
| White beans, 1 cup, canned | 3.6 | Wild oyster, 3 oz | 7.8 |
| Kidney beans , 1 cup, cooked | 5.2 | Turkey, 3 oz, roasted | 1 |
| Oats , 1/2 cup, uncooked | 1.8 | Beef liver, 3 oz, pan-fried | 5 |

Tips for Improving Iron Intake

- Eat foods that are rich in Vitamin C (such as oranges, [kiwi](#), tomatoes, and broccoli) along with iron-rich foods. Vitamin C improves the absorption of iron in your gut.
- Avoid tea and coffee during mealtime since both contain tannins. Tannins are organic compounds that reduce the absorption of iron from other foods.
- Use vinegar or lemon juice when cooking plant foods to increase iron absorption.
- Use cast-iron pots and skillets. Cooking with cast-iron cookware can boost your dietary iron intake by adding iron into your foods.
- Have a well-balanced diet with iron-rich foods. Besides animal sources like red meat and egg yolks, many plant-based foods, such as fortified grains and cereals, legumes, and leafy greens are also good sources for iron.

Want even more information about iron for athletes and exercise enthusiasts? Check out my new book, [The Plant-Based Boost, Nutrition Solutions for Athletes and Exercise Enthusiasts](#).



Reference

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