

The Importance of Iron in Endurance Athletes

Iron is a vital mineral essential to multiple body functions including energy metabolism and oxygen transport and is a required substance to create red blood cells. Without adequate iron, muscle function is compromised and if severe enough can lead to anemia (low red blood cell count). Since red blood cells carry oxygen from the lungs to the rest of the body (heart, muscles, brain etc.) anemia will certainly hinder an athlete's performance. ***However even iron deficiency without anemia can be detrimental to performance in endurance athletes.***

For a variety of reasons, iron deficiency is common in endurance athletes especially in females and vegetarians. While females are at higher risk due to menstruation, males are not immune. In a study from the 1980s, 17% of males and 45% of female high school XC runners on a team were found to be iron deficient with some of them starting with normal iron stores and then developing iron deficiency ***during the season.***

Symptoms of iron deficiency can include fatigue, weakness, decreased muscle strength and exercise performance. Obviously if you have these symptoms, you should see your medical provider and likely need more tested than just iron. However it is reasonable to screen all endurance athletes for iron deficiency even without significant symptoms.

Iron deficiency is best diagnosed with a blood test called ***ferritin*** which should be done along with a CBC (complete blood count) and can be ordered by your medical provider. This test is the best indicator of your iron stores. When you get your lab results, it will usually give a “normal” ferritin level down to 15 which is actually too low. ***Your goal ferritin should be between 50-100*** and if >100 then congratulations, you are not currently iron deficient.

If you are found to be iron deficient, then you must increase your iron intake to build up your iron stores. While this ideally should be done by increasing dietary iron, many will need to take a supplemental iron pill or liquid as well. Heme iron (meaning coming from meat and poultry) is absorbed 10X better than non-heme iron (from vegetables and fortified foods) and should be encouraged. Iron pills or liquid can be helpful as well but are poorly absorbed in the gut and sometimes cause nausea, abdominal pain or constipation and absorption can be inhibited by tea (up to 80% less iron absorbed), coffee (60% decrease in iron absorption), calcium and fiber intake.

What is the best iron pills or liquid to get? It's the one you can tolerate! Standard iron pills are commonly found as 325mg ferrous sulfate which contains 65mg of elemental iron (see pic for example).



Iron pills should be taken once daily and will be best tolerated if taken with food and best absorbed if you avoid taking it with tea or coffee. Also taking 500mg of vitamin C with the iron improves absorption. If not tolerating taking the pill daily, try taking it every other day or try a lower dose of iron. Ferritin levels should normalize 2 or 3 months. If they are not, there may be ongoing blood loss or a significant GI absorption issue. Iron pills also frequently turn your stool black which is normal.

Summary Points

- Iron deficiency in endurance athletes is common (especially in females) and can impair athletic performance
- You do not need to be anemic to be symptomatic from iron deficiency
- ferritin is the best blood test to diagnose or rule out iron deficiency and the goal level is 50-100
- Dietary iron (preferably heme/meat iron) should be increased as much as possible
- If iron supplementation needed, use 325mg ferrous sulfate pills taken daily or every other day, with food and vitamin C 500mg and avoid consuming tea or coffee with it

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Disclaimer: These are general medical guidelines but are not intended to take the place your medical provider's advice.