What is it?
Iron deficiency and iron deficiency anemia are important, and occasionally, controversial topics in Sports Medicine. Iron is used by red blood cells to help deliver oxygen all throughout the body. When iron levels are too low, bodily functions are negatively affected. Iron levels in the body can be low for reasons such as a diet deficient in iron, inadequate iron absorption in the stomach and intestines, or by loss of iron, which is a common cause in menstruating women. Iron deficiency (ID) is the result of low iron stores. Occasionally, iron levels may be low enough to cause anemia, which is known as iron deficiency anemia (IDA). True anemia may have negative effects on immune function, cognitive abilities, and even athletic performance. This is particularly concerning to endurance athletes.

Symptoms
• Fatigue
• Weakness
• Shortness of breath
• Palpitations (a feeling of having an irregular heartbeat)
• Diminished athletic performance

Sports Medicine Evaluation and Treatment
When an athlete suspects that he or she may have low iron levels, he/she should visit a physician. A sports medicine physician will be aware of the association between low iron levels and decreased athletic performance, and will perform a thorough history and physical exam. Lab tests may be ordered, and are particularly important in assessing iron stores in the body. These include tests getting the level of hemoglobin, hematocrit, ferritin, and iron, among others. Routine screening for ID and IDA in female athletes and male endurance athletes is often recommended.
An athlete with low ferritin and iron levels, and normal hemoglobin and hematocrit, is considered to have ID, but not IDA. If the athlete also has low hemoglobin and hematocrit levels, then he or she has IDA. For athletes with IDA, the evidence is clear that a daily oral iron supplement is beneficial in improving athletic performance. However, there is controversy about whether iron supplementation in athletes with ID alone is helpful. The decision to start iron supplementation in ID should be shared between the athlete, physician, and potentially, a dietician. Iron supplementation without knowing iron levels is not recommended.

Iron is best absorbed in the form of food, as opposed to iron supplements, so increasing the intake of iron-rich foods is important to treating both ID and IDA. Iron-rich foods include animal protein such as red meat, chicken, and fish, as well as non-animal sources, including iron-enriched cereals and pastas, beans, and dark-green leafy vegetables. Iron supplement absorption is improved with vitamin C supplementation. Orange juice (without calcium) is a great option to take with the supplement. Iron supplements should not be taken with milk, coffee or calcium tablets, as these can reduce the absorption of iron. Finally, iron supplements can cause constipation, so increasing dietary fiber intake and considering a fiber supplement is important.

**Injury Prevention**
Eating a healthy diet with foods rich in iron is a good way to help maintain normal iron stores in the body. As meat is a good source of iron, athletes who adhere to a vegetarian or vegan diet should be particularly careful to ensure adequate dietary iron consumption.

**Return to Play**
Athletes with symptoms like weakness, shortness of breath, or heart palpitations will likely have difficulty in competition, and exercise restriction may be considered until the athlete feels better. As iron levels increase, the athlete will likely experience improved symptoms and expect to return to a normal level of athletic performance.

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References

