IMPORTANT IRON TESTING INFO

Why this is important: Iron is an essential component of proteins involved in oxygen transport. The majority of the body's iron is found in hemoglobin, the protein in red blood cells that carries oxygen to tissues. Iron is also in ferritin proteins that store iron and transports iron in blood. **Hemoglobin values can test normal even when serum ferritin levels are dangerously low.** "Serum Ferritin" is the storage form of iron. Serum Ferritin levels should be no lower than 20 in endurance athletes, levels in the 40s and 50+ is preferred for endurance athletes. Parents must specifically request **Serum Ferritin levels be tested** along with the typical hemoglobin level test.

Why Endurance Athletes/runners are more susceptible to dangerously low Serum Ferritin iron levels:

- Iron is leached through heavy sweating, urine and via G.I. tract
- Iron absorption/recycle uptake is blocked by our bodies production of Hepcidin up to 3-6 hours post-workout
- Iron is leached through infections, viruses, micro contusions
- Iron is additionally leached through female menstruation. Iron supplementation is almost always necessary for a female distance runner.

Supplementation is almost always necessary in athletes, however, iron supplementation dosage amounts need to be prescribed and monitored by a physician to prevent hemochromatosis (iron overdose). Please note supplemental iron absorption is blocked when taken with calcium (milk), and bran. Coffee and black tea can also increase the occurrence of iron leaching.

Where to Test? Econolabs is a cheap way to get tested. We suggest ALL athletes should be tested. If you go to your Pediatrician or Sports Medicine physician, remember, request the **serum ferritin test**. Scroll down for helpful script to follow when communicating with your physician.

Preferred supplementation is via liquid iron. You may need to request dosage prescribed for liquid iron. Supplemental iron is available in two forms: ferrous and ferric. Ferrous iron salts (ferrous fumarate, ferrous sulfate, and ferrous gluconate) are the best absorbed forms of iron supplements. You should also use a vitamin C catalyst along with the iron supplement. This can be done by eating an orange or drinking orange juice (make sure it is not calcium fortified orange juice). B-complex vitamins will also help work with iron for proper red blood cell growth.

When to take Supplements: Take your iron on an empty stomach with some form of vitamin C preferably between breakfast and lunch, or lunch and dinner, or both. (Remember exercise induces the increase of hepcidin which will block iron absorption/uptake recycle for up to 3-6 hours post workout).

Increasing iron intake through nutrition can help maintain iron levels once they are back in the healthy range as long as the nutrition intake is timed appropriately around workouts. There are two forms of dietary iron: heme and nonheme. Heme iron is derived from hemoglobin, the protein in red blood cells that delivers oxygen to cells. Heme iron is found in animal foods that originally contained hemoglobin, such as red meats, fish, and poultry.Heme is the easiest to absorb. Iron in plant foods such as beans is arranged in a chemical structure called nonheme iron.Please see our American Heart Association list of iron rich foods on the cross country website under nutrition.

Recommended Reading:

"Iron Level Upkeep for Runners"

"Low ferritin and iron deficiency anemia in distance runners"

"Are you suffering from an iron deficiency?"

"Iron Depletion"

"4 Things Every Coach, Parent, or Female Athlete Should Know About Running and Puberty"

"Iron Deficiency, Anemia and Endurance Athletes"

Script for Communication with Physician

"My child is an endurance athlete/runner. I am requesting to have his/her Serum Ferritin levels checked in addition to their hemoglobin levels. Several of my athlete's teammates have tested low to normal on their Hemoglobin levels but their Serum Ferritin levels have been dangerously low and now require iron supplementation monitored by a physician."

Please note Serum Ferritin test results will take a couple days to come back as those tests are processed in out of office labs. Hemoglobin tests are typically processed in office and may be received the same day. It is important to request the serum ferritin test and wait the couple of days for the important results. If your athlete's levels are low, please request the physician recommend which type of liquid iron and the dosage.

Symptoms of Iron Deficiency: Symptoms may be subtle

- Sugglishness general exhaustion
- Increased heart rate at resting or submaximal exertion
- No difference in heart rate between submaximal and maximal exertion (meaning your HR would remain in the same range whether you are running a general run or running intense speed intervals)
- Inability to maintain end speed
- Paleness
- Coldness in extremities
- Slower ability to recover in comparison to your teammates
- Anxiety
- Unexplained muscle injury
- Unexplained muscle pain