

Iron Depletion: What you and your doctor need to know

by Jeff Hess

Before you read on and decide that the following is either gospel or garbage, let me suggest that it's neither. I'm addressing a medical issue, but I'm just a high school track coach with degrees in English and Physical Education. I have no medical training, but I have watched enough athletes fade mysteriously from super-fitness to super-misery that I started researching the possible causes.

More than anything else my questions led to the same answer: Iron. Too often we've attributed declining performances among high school athletes (especially girls) to structural changes relating to puberty or injuries resulting from overtraining. It's my belief and I'm not alone here-that a great many of those cases are caused directly from iron depletion and could be remedied with proper nutrition and supplementation.

But don't take my word for it. Do your own research; talk to you coach, parents and doctor and make an informed decision about what's right for you. For starters though, you can continue reading and find out what I've learned over the last few years.

Iron is a particularly important mineral for endurance athletes due to its role in binding oxygen, which is circulated through the lungs and to the working muscles. Unfortunately, our bodies absorb only about 15% of the iron we ingest, and distance runners do just about everything possible to deplete the iron that they do consume.

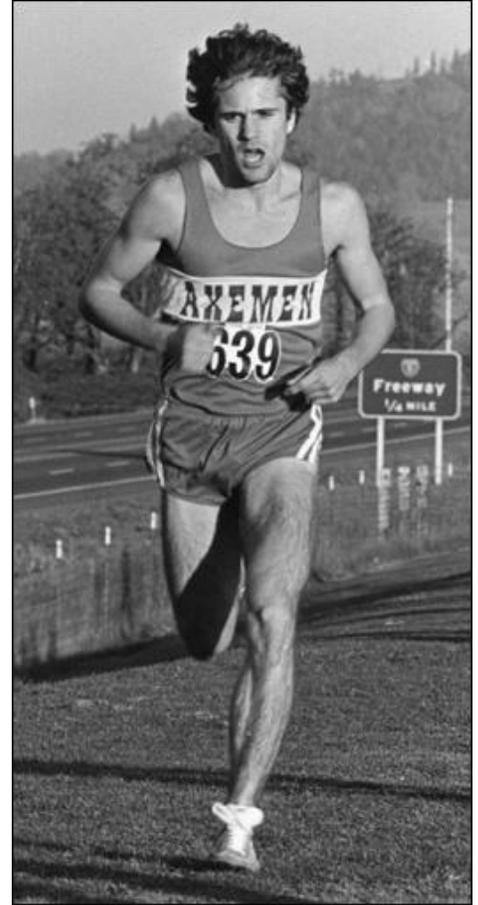
Iron is lost through sweat and gastrointestinal irritation. It is temporarily lost through "footstrike hemolysis" (bursting blood cells through foot impact with the ground). Iron absorption is inhibited by calcium, coffee, tea, carbonated beverages and non-steroidal anti-inflammatories (all that ibuprofen some of you swallow). Women lose a substantial amount of iron through menstruation, making them more susceptible to iron depletion, but it is a concern for all distance runners-male and female.

Anemia, clinical iron deficiency, is not rare among runners, but even more common than iron deficiency is "iron depletion" due to low ferritin stores. Ferritin is an iron-containing protein that is primarily responsible for iron storage in the bone marrow. It is common among distance runners to have acceptable hemoglobin and hematocrit counts even when ferritin levels are severely depleted. For less active people, low ferritin levels are much less significant and don't often draw the attention of medical professionals.

However, the results of low ferritin levels for distance runners are significant. While iron depletion rarely results in the general lethargy associated with true iron-deficiency anemia, distance runners with low ferritin will likely experience abnormal exhaustion, increased blood lactate, slow recovery, declining performances, heavy legs, muscular tightness, loss of motivation, and substantially increased risk of injury. Does any of this sound familiar?

And there's more. **Overuse injuries (the type of injuries distance runners get) double with ferritin levels under 20 and triple with levels under 12.** I think it's safe to suggest that iron depletion is rarely considered to be the root cause of these injuries. Instead we focus on mileage, running surfaces, shoes and the other usual suspects. If you were nodding your head thinking the previous symptoms sound like a checklist of your most recent season, go get your serum ferritin tested.

People within the medical and running communities have been aware of anemia for decades, but the prevalence and severe impact of iron depletion (low ferritin) is still far too much of a secret. The normal range for serum ferritin levels depends on whom you talk to. I have read everything from 50-150 nanograms per milliliter (ng/ml) to 10-300 ng/ml. However, we know that the lower the ferritin



South Eugene coach Jeff Hess--seen here in 1978--has now held the national high school record in the steeplechase for 26 years.

level, even within the "normal" range, the more likely a person is iron depleted. Virtually all female distance runners who have been training for a year or more are well below 50 ng/ml unless they take supplemental iron.

At South Eugene High School, we became aware of the consequences of low iron in the spring of 2001 when three of our female distance runners all came back from blood tests with ferritin levels below 10 ng/ml. All three had all run their best times two years before but had been plagued with injuries and frustration since. During those two years, they had multiple blood tests, but the doctors never checked their serum ferritin levels.

Within four weeks of beginning an aggressive supplementation program, all three felt substantially more energy while running; their enthusiasm and joy for running returned, and they began to run much faster. Within two months, their levels were between 35 and 55 ng/ml. All three went on to compete collegiately and ran times far superior to what they ran in high school.

Since that initial experience, we have suggested that all the girls on the team have complete iron tests. Only five out of the dozens who have been tested, have been within the acceptable range for serum ferritin, and those five were either big meat eaters or had been taking supplemental iron for years. Half of the girls tested have been below 12 ng/ml.

Most of those tests were conducted at the beginning of the year, giving the girls enough time to boost their levels by the end of the season. It makes better sense to have everyone tested (boys and girls and absolutely all vegetarians) long before the season begins, so that any deficiencies can be addressed before the more strenuous training begins. Obviously, the best attack against this problem is not allowing it to occur in the first place. Those taking supplemental iron and eating an iron rich diet will most likely never develop an iron deficiency.

When a blood test reveals that iron supplementation is called for, there are many options for correcting the deficiency. Begin by increasing the amount of iron-rich foods and foods high in Vitamin C in your diet, avoid caffeine with meals, use cast iron cookware, and consider taking supplemental iron.

With our athletes, we have noticed significantly faster and more dramatic results among those who are supplementing with ferrous sulfate or ferrous gluconate elixir and ascorbic acid than with those who have taken iron tablets. Obviously, this is something that should be undertaken only after consulting with a physician, but many doctors still appear to be unaware of the problem of iron depletion. You may need to educate your doctor before your doctor can help you.

As a competitive distance runner, you should know about the importance of iron, but it's not a cure-all, and it should be a blame-all either. I've had a few athletes develop instant cases of iron depletion the day after a hard workout or a late night of homework. It doesn't work that way. Iron consumption is only one piece of the big nutrition puzzle, and nutrition is only one piece of the enormous How-to-be-the-best-runner-I-can-be puzzle, but if you're truly devoted to completing the enormous one, you might help yourself get there by giving your doctor a vial of your well-pumped blood.

(Jeff Hess grew up in Eugene when it was the running mecca and states that he is looking forward to "being part of its renaissance". Jeff coached 25 state champions at Glendale High School (OR) between 1990 and 1999. He then came back to his alma mater, South Eugene High, in 1999 and served as an assistant track coach and co-head cross-country coach until taking both head positions in 2003. The SEHS girls team was the Oregon State XC champs in 2001, runners up in 2002 and 2005, and the boys were runners-up in 2004.

Jeff's Personal Running Stats:

4-time Oregon high school state champion
Junior National Champion - Steeplechase 1979
High School National Record Holder - Steeplechase 8:50.1
US Olympic Trials finalist 1984 – SteeplePR of 8:25.41)

Iron

Note: Consult a doctor before taking iron.

Ferritin Test

A ferritin blood test checks the amount of ferritin in the blood. Ferritin is a protein in the body that binds to iron; most of the iron stored in the body is bound to ferritin. Ferritin is found in the liver, spleen, skeletal muscles, and bone marrow. Only a small amount of ferritin is found in the blood. The amount of ferritin in the blood shows how much iron is stored in your body.

Get a complete blood count done if you're already getting the blood. The relevant parts of this for most people are the WBC (white blood cell count), hemoglobin/hematocrit, platelets, MCV (mean corpuscular volume) and RDW (RBC distribution width).

Usually doctors don't check for Ferritin Serum and if they do, they think 8-12 is normal. But distance runners need it to be over 40-50. Doctors might give a red blood count, which is essentially worthless. Think about this, if you are low in iron, it's like living at high altitude because your muscles won't get enough oxygen. You might be able to walk around at high altitude and not notice much of an effect, but once you start running, you will become winded and very tired quickly. A doctor might think a ferritin level of 12 is ok because a normal person will probably be ok, but an athlete trying to run their maximum effort will soon see the negative effect.

Athletes have noticed that it takes about 3-4 weeks of iron supplementation to work, but once it does, it is like a switch turns on one day and their performance will quickly return to normal.

Supplementation

- **Iron Form:**
 - Ferrous Gluconate *or* Ferrous Sulfate
 - How Much:
 - 14-18 year old with Low iron levels
 - 4-6 mg per kilogram of body weight, (lbs – kg divide lbs by 2.2)
 - Roughly Max dosage = 325 mg
- **Ascorbic Acid:**
 - Vitamin C
 - Helps in absorption of the iron
 - Dosage: Max = 1,000 mg
- **When:**
 - 1 – 2 hours before or after meal, not on a full stomach.
 - Take daily dosage all at once or split into two ingestions.
 - Take two days on and one day off to allow absorption of iron.