



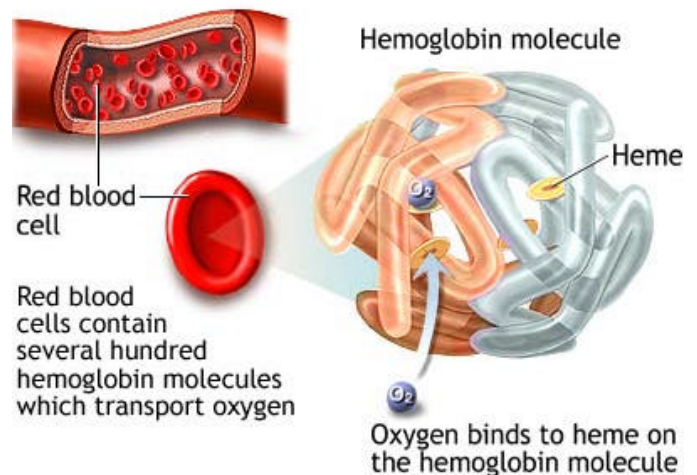
Iron

Iron is critical for energy during workouts since, in simple terms, it's involved in carrying oxygen to every cell and muscle. You can therefore see that if you do not have enough iron (as in anemia), you will feel fatigued, may experience shortness of breath (even doing simple things like walking up a stairs), might have dizzy spells, plus pace and race times will drop considerably (or you will struggle tremendously to keep your "usual" pace). It is therefore *critical* to performance!

WHAT DOES IRON DO?

- As a component of hemoglobin, the blood's oxygen carrying pigment, it supplies energy to every cell
- Iron is also found in myoglobin, which supplies oxygen to muscles
- It is involved in keeping our immune system strong
- It is important for our brain

So you can see, Iron ensures we don't get sick and, again, that we have enough oxygen for our muscles, cells and brain!



HOW or WHY DO ATHLETES HAVE LOWER IRON LEVELS?

- Although minimal, iron loss through **sweat**
- **Destruction of red blood cells** caused by the jarring of feet against the ground as in running (footstrike hemolysis)
- **Crushing of red blood cells** by intense muscular contractions (compression hemolysis)
- Internal (gastrointestinal) **bleeding** --- in a study on male triathletes 80% had faecal blood. Bleeding is more common in endurance athletes
- Endurance training expands our baseline blood **plasma volume** by up to 20% thereby diluting our iron stores/serum ferritin concentration (haemodilution)
- When we train our **muscles get bigger** and stored iron is shifted into the muscle thereby lowering our iron stores (serum ferritin level - increase in myoglobin mass)

WHO IS MOST AT RISK?

Due to losses from **menstruation** in addition to all of the above, a **female endurance athlete** is particularly at risk - but *all* endurance athletes should be aware of their iron levels particularly if they are feeling a little tired, cold, possibly craving sugars or experiencing other iron-related symptoms.



Also, there are two types of iron in foods – “heme” and “non-heme” sources. Heme sources are from animal foods and the absorption rates are much higher (true for all nutrients – but especially iron - remember it’s not how much we *take in* – it’s how much we *absorb*). This therefore puts **vegetarians** – or those who consume minimal meat - at a greater risk and a female, vegetarian endurance athlete should without question get their iron checked periodically. Even though anemia may not be diagnosed, they may find that iron levels are low so it would be beneficial to add more iron-rich foods to the diet.

So be especially prudent about consuming iron-rich foods if you fall into one or more of the following categories:

- Runners
- Endurance athletes
- Women of menstruating age
- Vegetarians
- Those who sweat heavily
- Any condition which leads to excessive bleeding
- Those who drink large amounts of coffee, tea or consume foods rich in soy protein isolates (all can interfere with iron-absorption)

WHERE DO I FIND IRON?

Good sources of iron rich foods include:

- Meat (heme -iron)
- Poultry (heme -iron)
- Fish (heme -iron)
- Dark leafy greens (kale, spinach, parsley etc.)
- Beans
- Black strap molasses
- Pumpkin seeds, nuts – almonds, cashews, walnuts, brazil, pecans

Helpers: Vitamin C and citric acid help the absorption of iron. So include some vitamin C rich foods like strawberries, tomatoes, peppers, broccoli, orange juice and some citrus fruits for citric acid to help the absorption.

SUGGESTIONS TO EAT MORE OF THESE FOODS?

- **Dark leafy greens** in salads, raw juices or as a side-dish. **Parsley** – as a garnish (to eat!), in raw juices or can be used for flavoring/as a herb in most dishes
- **Pumpkin seeds, almonds, brazil nuts, cashews, walnuts, pecans** as a snack, a butter, in a salad, as a ‘breading’ for fish/tofu
- **Black Strap Molasses** as a substitute for honey/jam/whatever sweetener on breads, oatmeal, it can also be substituted if making muffins, cakes or breads or if you know you’re deficient in iron I would recommend just taking a spoonful every day (if the other options don’t work)



- **Beans** in soups, salads, side dish, meals. Also garbanzo beans as a hummus or chickpea flour is good for baking (higher in protein too)
- **Meat, poultry, fish** easy to eat in regular meals, salads, grilled, in sandwiches

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If you would like to contact Mel for a health consultation or for more details on the programs she offers she can be reached at mel@melanieashmore.com. Happy Eating!