

# FOOD AS MEDICINE: A GUIDE FOR ATHLETES

## Fatigue & Anemia

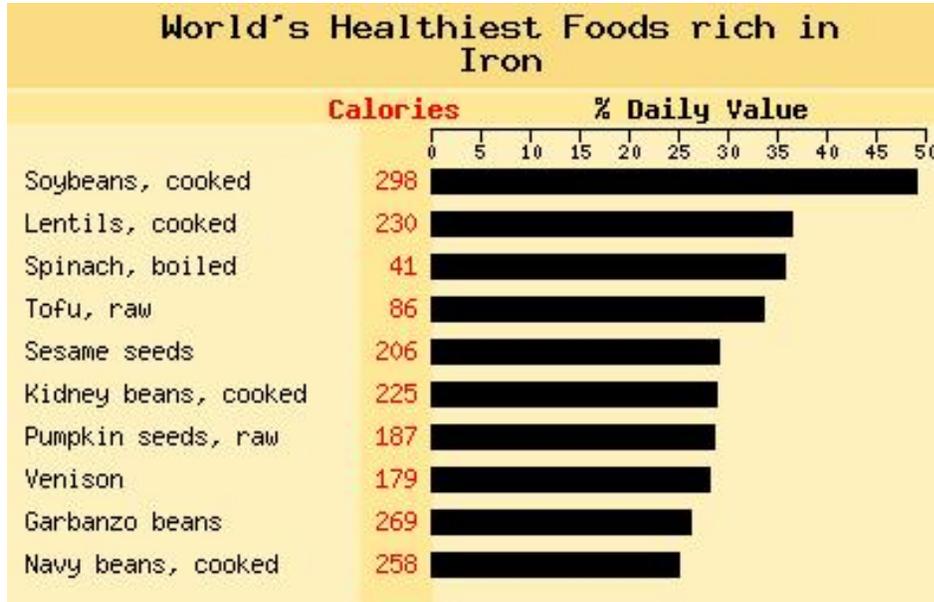
### What is it?

Anemia is technically a decrease in the number of red blood cells or hemoglobin (carrier of oxygen) in the body. It is caused by several possible nutrient deficiencies including: iron and vitamin B12. Nutrient levels can become low for several reasons including blood loss (menstrual or digestive system), poor nutrition or nutrient absorption as well as poor conversion mechanisms in the liver.

If you are experiencing fatigue, it is very important to determine whether the fatigue is even caused by anemia as well as the type of anemia you may have. Supplementing iron when it is not necessary increases your oxidative load as well as promotes inflammation. Each of these situations may decrease optimal performance.

### What can help?

- Iron Supplementation (if necessary)
  - (Ferrous citrate or a heme-based iron supplement are best, but talk to your doctor to find the right choice for you)
- B12 supplementation (if necessary)
- Dietary diversity
- Eating foods rich in iron and vitamin C at the same time. Vitamin C assists in the absorption of iron.
- Foods high in iron:



## Other things to Consider

While iron deficiencies are common in women, they are not always the cause of fatigue. More often than not, systemic nutrient deficiencies are the cause of chronic fatigues, especially in students or professionals with unrelenting stress. Considering a broad-spectrum multi-vitamin (especially in the winter) is an excellent way to ensure you are not becoming deficient in basic nutrients. General boosts to B vitamins are also an important consideration for fatigue. B vitamins are important in energy pathways in the body and become depleted with chronic stress and with medications such as oral contraceptives. Deficiencies in B vitamins can be easily overcome with basic supplementation.

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## A few words on Iron & B12

### Iron

Women generally require around 18mg of iron per day to maintain normally healthy blood levels.

Vegans often have a high dietary iron intake and although iron from plant sources is less absorbed than that from meat, high levels of vitamin C in the diet enhances iron absorption. Interestingly, studies show that the iron status of HEALTHY KNOWLEDGEABLE vegans is usually normal and iron deficiency is no more common than in the general population.

Good plant sources of iron include dried fruits, whole grains (including whole grain bread), nuts, green leafy vegetables, seeds and pulses. Other foods rich in iron but which are usually eaten in smaller amounts include soya flour, parsley, watercress, black molasses and edible seaweeds. The use of ironware when cooking foods also contributes to dietary intake.

### B12

B12 is an important nutrient for a variety of reasons. Very low B12 intakes can cause something called megaloblastic anemia and nervous system damage. The only reliable vegan sources of B12 are foods fortified with B12 (including some plant milks, some soy products and some breakfast cereals) and B12 supplements.

## Vegetarian Diets

Vegetarian diets are tough at the best of times, but they are especially challenging for students and athletes who have high demands both mentally and physically. While complete dietary diversity is imperative for a healthy vegetarian diet, there are two

considerations of particular importance to the student athlete: protein and omega-3 fatty acids.

## **Protein (Special consideration for vegetarians)**

Based on weight (150lbs), your daily protein requirements are as follows:

While exercising (intermediate/advanced level): 45-50g/day.

Protein is essential to human health. Our bodies—hair, muscles, fingernails, and so on—are made up mostly of protein. As suggested by the differences between our muscles and our fingernails, not all proteins are alike. This is because differing combinations of any number of 20 amino acids may constitute a protein. In much the same way that the 26 letters of our alphabet serve to form millions of different words, the 20 amino acids serve to form different proteins. As a vegan you should not worry about getting enough protein if you eat a reasonably varied diet and ingest sufficient calories.

Here are some examples of vegetarian foods with high sources of plant protein. For more information about specific protein contents in these foods, visit [www.whfoods.com](http://www.whfoods.com)

**LEGUMES:** Garbanzo beans, Kidney beans, Lentils, Lima beans, Navy beans, Soybeans, Split peas

**GRAINS:** Barley, Brown rice, Buckwheat, Millet, Oatmeal, Rye, Wheat germ, Wheat, hard red, Wild rice

**PROTEIN:** Artichokes, Beets, Broccoli, Brussels sprouts, Cabbage, Cauliflower, Cucumbers, Eggplant, Green peas, Green pepper, Kale, Lettuce, Mushrooms, Mustard green, Onions, Potatoes, Spinach, Tomatoes, Turnip greens, Watercress, Yams, Zucchini

**FRUITS:** Apple, Banana, Cantaloupe, Grape, Grapefruit, Honeydew melon, Orange, Papaya, Peach, Pear, Pineapple, Strawberry, Tangerine, Watermelon

**PROTEIN IN NUTS AND SEEDS:** Almonds, Cashews, Filberts, Hemp Seeds, Peanuts, Pumpkin seeds, Sesame seeds, Sunflower seeds, Walnuts (black)

## **Omega-3 Fatty Acids**

The main components of all fats are the fatty acids, which might be saturated, monounsaturated, or polyunsaturated. Fats containing a high proportion of saturated fatty acids are solid at room temperature. These are commonly known as saturated fats and are usually derived from animal sources such as lard, suet, and butter. Most plant fats are high in either polyunsaturated or monounsaturated fats, except for palm and coconut oils which are highly saturated. Even though saturated and monounsaturated fats are not required (as they can be made in the human body) these fats are still an important element of a healthy diet.

Two polyunsaturated fatty acids (PUFAs) that cannot be made in the body are linoleic acid and alpha-linolenic acid. They must be provided by diet and are known as essential fatty acids. Within the body both can be converted to other PUFAs such as arachidonic acid, or eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA).

In the body PUFAs are important for maintaining the membranes of all cells for making prostaglandins, which regulate many body processes, including inflammation and blood clotting. Another requirement for fat in the diet is to enable the fat-soluble vitamins A, D, E, and K to be absorbed from food, and for regulating cholesterol metabolism.

The two main dietary polyunsaturated fatty acids are omega-6s (linoleic acid) and omega-3s (alpha-linolenic acid). Most people's diets, including vegetarian and vegan, contain sufficient amounts of omega-6 fatty acids. It is important to emphasize

omega-3s in your diet to aid with cell membrane integrity and decrease pathways of inflammation. When omega-6's significantly outnumber omega-3's, inflammation results.

### **Linoleic acid/Omega-6 Sources:**

- Vegetables
- Fruits
- Nuts
- Grains
- Seeds
- Safflower oil
- Sunflower oil
- Corn oil
- Soya oil
- Evening primrose oil
- Pumpkin oil
- Wheatgerm oil
- Alpha-Linolenic Acid/Omega 3 Sources:
- Flaxseeds (linseeds) – Ground  
flaxseed versus the oil
- Grains
- Spirulina
- Mustard seeds
- Pumpkin seeds
- Soya bean
- Walnut oil
- Green leafy vegetables
- NOTE: Avoid Canola as a source of omega 3s. It tends to bioaccumulate in the body.

## **Inflammation**

### **What is it?**

Inflammation is an adaptive response that results from harmful stimuli such as injury or infection and represents the body's attempt to protect itself from further

injury. Inflammation can be classified into two categories: acute and chronic. Acute inflammation is an important protective mechanism to prevent further injury and to surround the injury with health-promoting cells. Chronic inflammation can present more of a problem and usually results from a chronic injury or when the body does not appropriately respond to healed tissue.

## What can help?

- Acute inflammation (RICE)
  - Rest
  - Ice
  - Compression
  - Elevation
- Chronic Inflammation (72 hours or greater)
  - Alternating hot and cold (ice 5 minutes, cold 5 minutes)
  - Rest
  - Acupuncture, physio, etc...
  - Food

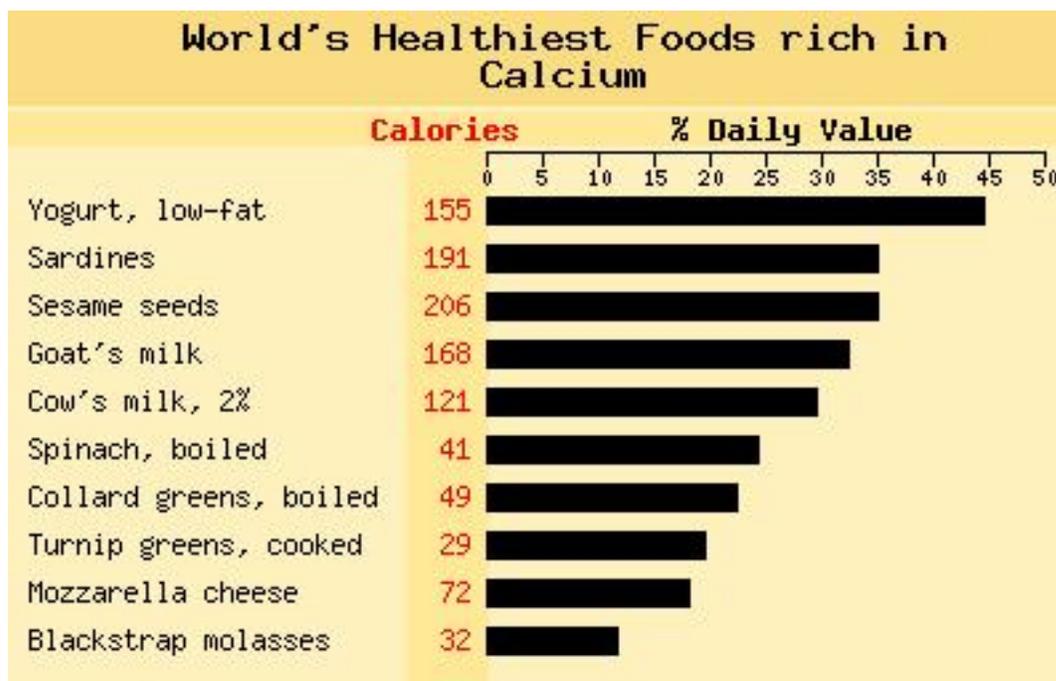
Foods that decrease inflammation: Dark green leafy vegetables, berries, turmeric, alkaline foods (lemon, greens, fish, etc)

Foods that promote inflammation: Sugar, nightshade vegetables (tomatoes, potatoes, eggplant, peppers), red meat, coffee, dairy (for some people)

## Bone Health

Shin splints can be painful and debilitating for an athlete. As with any injury, managing the acute and chronic aspects of the injury is essential. Generally speaking, bone health can be best addressed with appropriate nutrition and an elimination of perpetuating factors.

### Sources of Calcium:



### Foods that decrease optimal bone health:

- Sugar
- Carbonated soft drinks
- Foods that promote acidity in the body (red meat, processed foods)

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## **Other vitamins important for optimal bone health:**

- Vitamin D
- Vitamin K (eat your greens: kale, collard greens etc)

## **Food Allergies/Intolerances:**

The most common food allergies seen in adult populations include:

- Soy
- Dairy
- Wheat
- Nightshades