



## Iron - Are you getting enough?



Iron deficiency is the most wide spread micronutrient deficiency in the world, by some estimates 25% of the worlds population is iron deficient. The incidence of iron deficiency in no greater in athletes than the general population however exercise can contribute to an iron depleted state. Athletes, especially endurance athletes risk potential iron deficiency because of increased iron losses in sweat, urine and faeces. Many athletes also fit into the 'at risk' group for iron deficiency especially female endurance athletes, gymnasts, vegetarian athletes and those undergoing restricted energy intakes or any athletes with an imbalanced diet containing an insufficient amount of iron.

Iron is essential for transporting oxygen throughout the blood, within the muscle fibres and to the areas in the muscle where oxygen is required for producing energy. Therefore if there is a lack of iron, less oxygen will flow throughout the body and produce symptoms such as general fatigue, weakness and breathlessness. You may appear pale and notice an elevated resting pulse. Symptoms can often be confused with conditions such as flu, overtraining or being 'run down', affecting motivation and your ability to undertake every day activities.

Iron depletion results in greater lactate production during maximal exercise and a higher subjective feeling of exercise overload, both affecting training ability. Research has found that if an athlete is diagnosed Anaemic, the most severe case of deficiency, oxygen carrying capacity of the blood will be so low exercise performance will be negatively affected.

Iron also plays a fundamental role in maintaining a healthy immune system and together with other stressors of training can increase the athletes risk to frequent infections.

- **So how much is enough and where does it come from..?**

The recommended daily amounts required for the general population are as follows:

AGE	MALES	FEMALES
11-18 years	11.3mg	14.8mg*
19-49 years	8.7mg	14.8mg*

\*Women with high menstruation losses will have higher needs.

However athletes may need more due to their trained adaptation of increased red blood cell mass and the increase in iron losses in result of heavy prolonged training, and these losses can be 70% more than in the general population. Requirements are also higher through periods of growth.

These needs can easily be meet through the consumption of a well balanced diet that is sufficient in energy to meet daily requirements. Supplementation of iron is not always required and should only be undertaken under medical supervision. Iron intake is proportional to energy intake and the recommended daily allowance of iron can be meet with an intake of >2400Kcal from a varied diet. When energy intake is found below this the prevalence of a deficiency is more likely.

Iron can be found in meat known as heme iron and plant foods known as non heme iron. 10-30% of ingested heme iron is absorbed in the gut whereas only 2-10% non heme iron is, making meat sources by far superior to that of plant sources. Putting vegetarians or restricted meat eaters at risk.

However the absorption of iron from these plant sources can be promoted with the help of vitamin C foods if digested at the same time. Many natural substances found in food such as tannins in tea, phytates and excessive fibre can also prevent the absorption of non heme sources of iron.

The body is a clever machine and iron absorption is a function of its storage – the larger the store the poorer the absorption and vice versa. Therefore if you have low stores the body will optimise its absorption capacity regardless of diet.

- **Iron boosting foods...**

<b>FOODS</b>	<b>PORTION</b>	<b>Mg IRON</b>
<b>Meat &amp; fish &amp; alternatives</b>		
Roast chicken	1 medium breast	0.8
Minced lean beef	Small average portion	4.7
Lean Roast Lamb	Average portion	2.0
Tuna in Brine	1 small can	1.0
White fish	1 average piece	0.3
Salmon	100g	1.5
Liver (lamb, cooked)	2 slices	8.0
Eggs	100g (2)	2.0
Tofu	100g	1.9
<b>Cereals</b>		
Wholemeal bread	2 slices, medium loaf	1.9
White bread	2 slices, medium loaf	1.2
Wholewheat biscuits	2 biscuits	2.4
Bran flakes	40g serving	8.0
Muesli, swiss style	3 tablespoon	2.3
Pasta cooked	1 cup	1.0
Malt loaf	2 slices	1.7
<b>Vegetables</b>		
Peas	Large portion	2.5
Broccoli	½ cup	0.8
Spinach	145g cooked	4.4
Baked beans	420g can	6.8
Red kidney beans	220g	4.4
<b>Nuts &amp; Seeds</b>		
Peanuts (plain)	100g bag	2.5
Sunflower seeds	2 tablespoons	1.8
Sesame Seeds	2 tablespoons	1.8
<b>Fruit</b>		
Apricots (semi dried)	4	3.4
Dates (dried)	6	1.7
Raisins	2 tablespoons	0.8

- **Top Iron tips...**

- Choose a variety of iron rich foods everyday.
- Eat lean red meat, poultry or fish daily (i.e. in sandwich or at evening meal)
- Eat lean red meat (i.e. beef, lamb) 3-4 times a week
- Choose Iron fortified breakfast cereals, porridge and muesli are very nutritious but not iron enriching
- Add vitamin C foods (fruit, fruit juice, broccoli, cabbage, salad) to meals to enhance absorption of iron
- If vegetarian, choose iron rich foods such as pulses, dried fruit, nuts, seeds, wholegrain cereals and green vegetables and add vitamin C foods to enhance absorption of non heme iron sources
- Avoid or limit intake of iron inhibitors such as bran and wheat germ
- Avoid drinking strong tea and coffee with meals

- **Iron Boosting Meals...**

Breakfast

Branflakes & semi skimmed milk & fresh orange juice  
2 slices wholemeal bread & low fat spread/jam

Lunch

Baked beans on wholemeal toast, or  
Lean beef salad sandwich on wholemeal bread, or  
Liver pate on wholemeal toast with salad, or  
Baked potato with beef chilli with kidney beans and salad, or  
Lentil soup and wholemeal bread, or  
Poached egg on wholemeal toast.  
& fresh orange juice

Evening Meal

Lean mince bolognaise with spaghetti and green salad, or  
Liver stew and vegetables, or  
Salmon Steak with green vegetables, or  
Vegetable and tofu Stir fry, or  
Roast Beef and vegetables  
& fresh orange juice

Snacks

Apricots/Nuts/Seeds