

## Sports Nutrition

We should all aim to eat a healthy, varied diet, which matches our energy needs. This advice further applies when taking part in regular physical activity, such as going to the gym, running or team sports. Eating healthily can support an active lifestyle, but your body will use up more energy when exercising. So, unless you are trying to lose weight you may find that you need to eat more food to give your body the extra energy it needs.

Eating well for physical activity and sport can have many benefits including:

- Allowing you to perform well in your chosen sport or activity;
- Reducing the risk of injury and illness;
- Ensuring the best recovery after exercise or a training programme.

A healthy diet for sport and exercise should contain plenty of the right starchy foods, plenty of fruit and vegetables and sufficient lean protein foods. It is also important to stay hydrated.

**Carbohydrates:** The main role of carbohydrates is to provide energy. When they are digested, carbohydrates are broken down into glucose to provide readily available energy. The body can store carbohydrates in the muscles and liver as glycogen, and use these stores as a source of fuel for the brain and muscles during physical activity. However, these glycogen stores are limited, so it is important to be fuelled at the start of any exercise (see below). Insufficient carbohydrate in your diet may make you feel tired and lacking in energy and not able to perform at your best, and may also impair your recovery.

So, regular intake of carbohydrate-rich, starchy foods is important to keep stores topped up. Focusing on wholegrain varieties and starchy vegetables is key as they not only provide essential energy, but also provide fibre, which is important for digestive health, and nutrients such as B vitamins, iron, calcium and folate (B9).

**What you should eat and when?** Having carbohydrates before exercise will improve performance and gym duration. A brisk walk or light jog on an empty stomach, however, is fine - for more intense exercise, eat some easy to digest carbs - a low sugar energy bar / a slice of wholegrain plain toast / half a banana with a glass of water - 30 minutes before to help provide fuel. Not an energy drink! You may need to refuel after exercise to bring energy levels up - so light carbohydrates are good. However, if you want to lose weight and burn fat then avoid carbohydrates up to 1.5-2hrs before the gym - they cause a rise in insulin, which when elevated during training limits fat oxidization - to prime your hormones to optimise fat burning

**Protein:** This is also vital for health and physical activity. The main role of protein in the body is for growth, repair and maintenance of body cells and tissues, such as muscle. Different foods contain different amounts and different combinations of amino acids (the building blocks of proteins). Essential amino acids (EAA) are those that are needed from the diet. The 9 EAAs are histidine, lysine, methionine, phenylalanine, threonine, tryptophan, valine, isoleucine, and leucine. The latter three are branched chain AAs used in muscle growth.

The requirements of a normal adult are **0.75g/kg** of bodyweight/day. For strength and endurance athletes, this is increased to around **1.2-1.7g/ kg** of bodyweight/day. If you are participating in regular sport and exercise, then your protein requirements will be higher than most people, in order to promote muscle tissue growth and repair. Most people in the UK generally consume enough protein, but it isn't always from lean sources. Including good quality, lean protein at each meal should ensure you get enough.

**Do I need extra protein to build muscle?** It is a myth that consuming lots of protein gives people bigger muscles. Quite often, people focus on more protein at the expense of carbohydrate - the most important source of energy for exercise. 20g of high quality protein (approximately half of a medium sized chicken breast or a small can of tuna) has been shown to be enough for optimum muscle protein synthesis following any exercise or training session. Any more protein than this will not be used for muscle building and just used as energy!

# HEALTH MATTERS!

**What you should eat and when?** The incorporation of some protein after exercise is important for building new muscle tissues and repairing the damaged ones, although it is now being understood that protein can be consumed up to 24hrs after a workout to be effective. Your body can't store protein, so if it doesn't get absorbed straightaway it gets passed through your gut, your liver, your kidneys, etc. This not only wastes protein/supplements, but it also taxes your body by forcing it to process something that it can't use. It's important that you get your protein from food and not from drinks – it's becoming widely accepted that you don't benefit from taking protein shakes. A healthy balanced diet with increased lean protein should suffice.

**Fat:** This is an essential nutrient for the body and a rich source of energy. Consuming too much fat can lead to excess energy intake, leading to weight gain over time. It is important to ensure fat intakes are no more than 35% of total energy intake, with saturated fat not exceeding 11% of total energy intake. Fats in foods typically contain a mixture of saturated and unsaturated fatty acids, but choosing foods, which contain higher amounts of unsaturated fat, and less saturated fat, is preferable.

**Micronutrients in exercise:** These play an important role in energy production, haemoglobin synthesis, bone health, immune function, and protection against oxidative damage. They assist with synthesis and repair of muscle tissue during recovery from exercise and injury. Exercise stresses many of the metabolic pathways where micronutrients are required. Greater intakes of micronutrients may be required to cover increased needs for building, repair, and maintenance of lean body mass during exercise.

- **B Vitamins:** Adequate intake is important to ensure optimum energy production and the building and repair of muscle tissue, and have two major functions directly related to exercise. B1, B2, B3, B5, B6 and Biotin are involved in energy production during exercise, whereas B9 and B12 are required for the production of red blood cells, for protein synthesis, and in tissue repair and maintenance including the central nervous system.
- **Vitamin D:** This is required for calcium absorption, regulation of serum calcium and phosphorus levels, and promotion of bone health. It also regulates the development and homeostasis of the nervous system, immunity and skeletal muscle. Supplementing from 400iu – 1000iu/daily is key at all times, especially in winter.
- **Antioxidants (Vitamins C and E,  $\beta$ -Carotene, and Selenium):** These antioxidant nutrients play important roles in protecting cell membranes from oxidative damage. As exercise can increase oxygen consumption up to 15-fold, it is thought that long-term exercise produces a constant "oxidative stress" on the muscles and other cells leading to lipid peroxidation (damage) of membranes.
- **Iron:** This is required for the formation of oxygen-carrying haemoglobin and myoglobin, and for energy producing enzymes. Oxygen-carrying capacity is essential for endurance exercise as well as normal function of the nervous, behavioural, and immune systems.
- **Zinc:** Plays a role in growth, building and repair of muscle tissue, energy production, and immune status. Zinc status has been shown to directly affect thyroid hormone levels, BMR, and protein use, which in turn can negatively affect health and physical performance.
- **Magnesium:** Has a variety of roles in cellular metabolism (glycolysis, fat, and protein metabolism) and regulates membrane stability and neuromuscular, cardiovascular, immune, and hormonal functions. Magnesium deficiency impairs endurance performance by increasing oxygen requirements to complete submaximal exercise.
- **Sodium and Potassium:** Sodium is a critical electrolyte, particularly for athletes with high sweat losses. Potassium is important for fluid and electrolyte balance, nerve transmission, and active transport mechanisms.

**How to stay well hydrated:** Sufficient fluid intake is essential for exercise and optimum recovery. Exercising can cause a loss of water and salts through the skin. The amount varies from person to person and depends on:

- Intensity and duration – longer and higher intensity exercise can cause greater sweat loss.
- Environmental temperature – in hot, humid conditions sweat loss can increase.
- Clothing – the more clothing that is worn, the quicker you are likely to heat up which may cause greater sweat loss.
- Genetics – some people are just more likely to sweat than others.

**What to drink?** For the average workout of 60 minutes or less, you typically won't need anything more than water. More than this, or if it's hot and humid outside, then you may need the extra calories and electrolytes that sports drinks provide. Each individual has different needs based on weight; sweat rate, and how hard you're working. Simple mineral water is the best way to go.

**Please Note:** This handout should only be used as a guide to help inform you as to the diet and lifestyle modifications that **may** you get the best out of your exercise. It **should not** be used as definitive guide to sports nutrition. If you'd like more specific information then please contact a qualified nutritionist.