NUTRITION FOR TRAINING AND RACING

Written for athlete by athletes from For Goodness Shakes.

When you sign up for a race one of the first things you do is sort out a training programme so that you can be sure you are able to handle the challenge that the event presents.

It's a great start but do you put the same amount of thought into your nutrition? Most athletes know that loading up with carbohydrates is an essential part of pre-race preparation. However by focusing on your nutrition as part of your training it will help you maximise every session so that you stand on the start line fitter and stronger with a pb in your sights.

DID YOU KNOW?
You don't get fitter and stronger during training. It is only after training in the recovery phase that your body adapts and improves, so you are ready to train again better or race at a new level.

Whether you're training for a 10k run or a multi-activity adventure weekend, the basic nutritional needs are the same for everyone. There are two main parts of performance nutrition that an athlete needs to ensure they get right.

1. **What they eat during their training period** - The training diet needs to ensure you're getting an adequate supply of energy and nutrients for day-to-day living plus the extra levels needed to meet the high-energy demands of training and to help in recovery after exercise.

2. **What they eat immediately before, during and after the event to encourage optimal performance and complete recovery**.

Nutrition for training

Working muscles obtain most of their energy from glucose, which is stored as glycogen in the muscles and liver. The bigger your stores of glucose and glycogen, the longer you can exercise before fatigue sets in. Maintaining high glycogen stores therefore is the key to maintaining quality training on a daily basis.

If you train with low glycogen stores you will constantly feel tired, be prone to injury and your training performance will suffer. The three main sources of energy are carbohydrates, fats and proteins.

Carbohydrates

Carbohydrates these provide the main fuel for exercise and are vital for maintaining our body's energy stores. Normal people need about 50% of their total energy intake coming from carbohydrate; however due to the increased energy needed during your training period, this should be increased to **60 – 70%**. High carbohydrate foods should form the bulk of your diet and include:

- Pasta
- Bread
- Potatoes
- Rice
- Breakfast cereals
- Fruit

Proteins

Proteins play a vital role in the growth and repair of muscle cells. They are essential for increasing muscle mass and repairing exercise-induced tissue damage. During a period of high training load, you are constantly breaking down muscle fibres, reducing the strength of your muscles and causing muscle stiffness and soreness. Your body therefore needs extra protein to repair these damaged cells so protein intake should make up 15% of your diet.

Foods high in protein include:

- Milk
- Meat
- Poultry
- Fish
- Eggs
- Nuts
- Cheese

Vitamins and minerals

Due to athletes high training load they need extra vitamins and mineral over the recommended daily amount to stay healthy and to aid performance. There are certain vitamins and minerals that are essential to athletes.

Calcium is needed for strong bones and to facilitate muscle contractions. Strong bones are vital to athletes in order to withstand the high pressure training puts on the skeletal system. Insufficient calcium levels also mean muscles are unable to contract and relax properly, severely effecting performance. The main sources of calcium in the diet are:

Dairy products – milk, cheese, yoghurt
Sardines
Green leafy vegetables
Tofu
Nuts
Dried fruits
Breakfast cereals

Iron is the main transporter of oxygen around the body. High iron levels mean more oxygen can be transported to the muscles so energy can be produced. This is vital for endurance athletes so they can maintain high performance levels over a long period of time. The main sources of iron are:

Red meat
Oily fish
Liver
Dried apricots
Dark green leafy vegetables
Whole grains

B-Vitamins aid the steady release of energy from carbohydrates, fats and proteins. High level of B vitamins can improve concentration, reduce anxiety and help prevent exhaustion, all of which are highly beneficial to endurance athletes. Foods high in B-vitamins include:

Cereals
Nuts
Baked Potato
Meat – especially pork
Poultry
Spinach
Marmite

Vitamin C is an antioxidant which protects the body against the stresses of exercise and infection. This is why it is so important to athletes who have a high training load. The also help maintain bones, tendons and ligaments and is involved in the regulation of body temperature. The main sources are:

Fruit
Peppers
Broccoli
Orange Juice

Fluid requirements during your training and the event

Everyday your body needs a minimum of 1.5 litres, excluding any additional requirements due to physical activity. Not consuming enough fluid can leave you feeling tired and reduces the effectiveness of your performance. Carrying a water bottle around is a good practical solution to ensuring that you can drink regularly and stay hydrated.

To ensure that you are optimally hydrated before, during and after training follow these guidelines below:

Drink 500ml 2 hours before and 125-250mls just before training

Drink 125-250mls every 15 minutes during training. Minimum intake during a 1hr session should be 500mls. Sweat losses during 1 hour of running are usually between 500mls -1 ½ litres. This depends on how hard the training session is, (the harder you work the more you sweat), how humid the air is, (if the air feels sticky and muggy you will sweat more) and how hot it is, (the hotter the temperature the more you will sweat).

Minimum intake after a 1hr session should be 1 litre. Drinking until you are not thirsty anymore only replaces 30-70% of sweat lost so you must ensure you drink extra than you feel you need.

Along with water, sweat contains a large amount of electrolytes (salts) and other components including iron, zinc and other minerals. The substantial loss of sweat, which occurs during training and racing, will reduce the body's reserve of these electrolytes and these need to be re-stocked for full recovery to occur. Although water intake is important, immediately after training you need to consume liquids that contain these salts. Rehydration can only be achieved if these salts are replaced as well as the water. Isotonic drinks or milk are an effective way to replace these lost electrolytes. Milk also contains high levels of calcium, which is vital in order to produce muscle contractions. Post exercise milk consumption quickly and effectively restores these calcium levels back to normal, as well as supplying the protein and salts needed for complete recovery.

What to eat the night before

It is essential that your glycogen stores are fully charged before your event to supply the energy needed for your endurance race. This is achieved through a process known as carbo-loading. This involves reducing the training load and eating a high carbohydrate diet in the 4 days leading up to the event, above what you have already been eating. This high carbohydrate food should be non-bulky and low in fat, such as pasta with sauce, sandwiches or low fibre cereal.

What to eat before the race

A high carbohydrate meal or snack should be eaten **2 – 3 hours before competition**.

Carbohydrates can be split into two groups – low GI and high GI. Low GI food should be eaten pre-competition as they provide a slower more consistent release of energy needed during long distance events. These foods will also produce higher blood sugar levels during the latter stages of your event; giving you an extra boost of energy when you really need it. The meal or snack should also be low in fat; as this means the body can absorb and use the energy sources quicker.

Below is a list of excellent pre-race meals:

Baked beans on toast
Porridge, made with milk, with honey and banana topping
Bowl of muesli with fruit and yoghurt.
Peanut butter sandwich
Bowl of pasta with tuna or tomato sauce (only if you have a least 4 hours until the race starts)
A carbohydrate and protein mix Breakfast shake (really effective if you can't stomach a full meal before competition)
Oatmeal with milk and banana topping

What to eat during your race

This section slightly depends on what event you are taking part in. For races that last less than 1 hour (10k for example), it might not be necessary to consume anything during your event, providing you have consumed a high energy meal prior to the start.

If your event lasts longer than this then it is advisable to eat small snacks throughout the event in order to maintain energy levels during the whole race. If your energy stores are depleted, even by a small amount it will cause a substantial decrease in your performance and may even cause you to stop!

High GI foods are best during a race as they give you an instant surge of glucose, providing you with high amount of immediate energy.
These include:

Energy bars
Jaffa cakes
Jelly sweets
Bananas
Raisins
Sports drinks

During you race, you should aim to have something every hour in order to keep your energy levels high, even if it is just a couple of sweets or a few sips of an energy drink.

The same applies to fluid intake during the race. It is not necessary to take on fluids during shorter events (under 1 hour), again providing you are fully hydrated before you start and that you replace the lost fluids immediately after. Longer events require you to take on fluids during the race as performance will be reduced if dehydration occurs.

What to eat after your race

Recovery is the most important part of your race. During this period it is essential to replace the energy used during the race and also provide your body with the necessary nutrients to ensure maximum recovery. Unless you allow your body to recover fully, your training session becomes worthless and any subsequent sessions will be less effective. Your recovery strategy may depend on how much time until your next training session or race. If there is only a short period of time, it is crucial recovery begins immediately.

There are three main aims of the recovery process:

- To restore fluids and electrolytes
- To replenish fuel stores
- To repair any damaged tissues and remodel tissues to allow adaptations to occur.

Fluid and electrolytes replacement

The amount of fluid consumed after the session must cover the amount lost during the session plus the continued loss of fluid that will occur during the recovery period. Remember that although water is the obvious solution for rehydration, you must remember to replace the salts and sugars that are lost through sweating

Fuel store replenishment

Carbohydrate is the main fuel used by the muscles so your muscle glycogen stores need to be restored in the recovery period after training. In order to achieve this, you need to eat high GI foods. The simple sugars contained in these foods are rapidly absorbed into the blood stream and taken up by the muscle cells, replenishing glycogen levels. It is best to do this within the first 30 minutes after exercise as the muscles are most sensitive to glucose during this time.

Foods that are best include:

- Bagels
- Honey sandwiches
- Cereal bars
- Baked potatoes
- Bananas

Damaged tissue repair

In the recovery period, synthesis of new proteins is very important as during your race or training session a large amount of muscle damage will have occurred. This can leave you feeling stiff and sore in the hours after your event and the next day. In order to repair these damages your body needs protein to rebuild the torn muscle fibres. Without this intake you can end up prolonging muscle stiffness and delaying the recovery response.

Foods that are highly recommended are:

- A sandwich with ham, cheese or tuna

Pasta with a meat or cheese based source
Pre-made recovery drinks
A glass of milk

The first two options might not be available immediately after you finish your training or race and it can be hard and uncomfortable to consume large meals straight after finishing exercise. For these reasons pre-made recovery drinks are a popular option as they are easy on the stomach and require no preparation so can be ingested on the finishing line!

There are products out there that will answer all three of these recovery needs as they contain protein, carbohydrates and electrolytes. For Goodness shakes is a prime example of one product which contains the correct ratio of these substances with 3 part carbohydrate to restore energy stores and 1 part protein to repair damaged muscle cells. The benefit of drinking something like this is that it is easy to digest, available immediately after finishing and best of all it tastes nice too!

TOP TIPS TO REMEMBER

It takes 24 hours to replenish the body's carbohydrate stores after fatiguing exercise. This means if you're training once or twice every day, you must consume a high carbohydrate diet throughout your training period.

If you find it difficult to work out the % of each macronutrient you need think of your plate as a pie chart when planning your training meals. Try to have ½ of it filled with carbohydrates, ¼ filled with proteins and the other ¼ filled with vegetables.

Don't forget the protein – while you're stacking up the miles, your body is being put under huge stress during the training process and will need to repair itself. If you are training day after day without a rest, this will lead to muscle damage. To combat the effects of heavy training, you need to eat plenty of protein. This extra protein you need will not build you massive muscles but simply repair the damage done during your training.

Keep it complex – apart from within the first 15 minutes after your session, concentrate on eating meals which contain complex carbohydrates such as bread, pasta, rice and pulses. These will release energy into the bloodstream at a slower rate, giving you the sustained energy you need.

Timing is key – It's important to remember, that it's not just what you eat but also when you eat it! Eating too close to your training session or having too long a gap between your meal and your workout will lead to impaired performances. Similarly not re-fuelling your body after your run will result in fatigue, slower recovery and any subsequent performances will be reduced. Allow 2 – 3 hours between eating and training and eat something within the first 20 minutes after exercising, in order to get the most out of your training session and any following sessions.