

**Q** As a coach of a small club standard endurance group, I would like to give them some basic nutrition advice to supplement their training schedules. However, I don't want to bore them with too many details – just some good common-sense guidelines. What do you think I should be prioritising?

**A** Correct fuelling is an essential part of preparation for endurance athletes and even knowing that your athletes reach the start line having eaten and hydrated well is something some people take for granted.

Endurance events can seriously deplete the stores of fuel and fluid in an athlete's body and the more intense, the more the stores can be depleted. An endurance runner who starts a race knowing they have paid attention to their food and drink choices in the days and hours leading up to the start, are far more likely to have the

edge over an athlete who does not.

Some main considerations you may want to pass on to your athletes are:

**Carbohydrate and protein**  
Before any type of exercise, all athletes should aim to take in enough carbohydrate so that

they can meet the requirements of their training schedule. Likewise, an athlete then has to ensure that they adequately restock the stores they have used up, either from a training session or a competition.

With your endurance athletes this is even more important and a key action they can take to enhance performance is to increase their intake of carbohydrate in the 2 or 3 days prior to the exercise, session or race.

Carbohydrates are present in many foods and drinks, but athletes may also consider energy bars, gels and liquid meals as a supplement to their

diet to help increase their carbohydrate intake. For very long endurance events such as marathons and ultra distance racing, athletes may want to aim for an intake of 30-60g per hour of exercise. Proteins are also important and can ensure that your athletes are consuming sufficient calories across the whole of their diet.

### Hydration

Performance can suffer if an athlete is not fully hydrated prior to starting exercise and water should be drunk in addition to sports drinks and food in order to contribute to the fluid required.

Although the intensity of the exercise is important, as a general rule athletes should aim to drink during an exercise if it lasts in excess of an hour. An example of this in action can be seen in some top athletes who may not require much water during the course of a half marathon race, however if they compete in a marathon they can be seen taking drinks on board from the very early miles.

Ideally, your athletes should opt for an isotonic sports drink that will help make sure fluids are replaced as well as delivering some carbohydrate. Some athletes prefer fruit juices or other types of sugary drinks, however as these generally contain no sodium, they may not be as good as opting for a sports drink.

### Where, when and what?

Almost as important as what your athletes eat is when they eat it and how much they eat! For example an athlete will benefit more from the carbohydrate they consume after exercise if they eat as soon as possible – ‘the window of opportunity’ to help enhance glycogen (carbohydrate) fuel storage. Likewise they need to start drinking as soon as possible in order to replace lost fluids and electrolytes from sweating.

Refuelling is a key part of the recovery process, and the sooner you can start your recovery, the better shape you will be in the next time you need to train or race. This is even more important if an athlete is training more than once a day and may have only a matter of hours before their next training session.

Endurance athletes should aim to have a high carbohydrate meal ideally 3-4 hours before their session or race although obviously race preparations and preferences in routine will differ from athlete to athlete. In order to ensure the athlete does not feel uncomfortable, it is recommended that the high carbohydrate foods are low in fibre as high fibre foods can be quite bulky and potentially cause stomach upsets. After exercise, regular carbohydrate intake every couple of hours will help refuel and should consist mainly of high

Glycaemic index foods such as:

- some breads, bagels and rice cakes
- some breakfast cereals, e.g. corn flakes, weetabix
- baked or mashed potatoes
- tropical fruits, e.g. watermelon and ripe bananas
- pretzels and plain popcorn
- jelly beans
- sports drinks

### Main points your athletes should know:

- plan your nutrition in and around an event as specifically as your training and tactics
- taper down your exercise during the few days where you increase your intake of carbohydrate to help maximise fuel stores
- plan and even practice eating and drinking up to, in and around events – don't experiment with a new approach before an important race!
- adjust your refuelling to take into account weather, temperatures and other external factors

**Q** I am an athlete who mainly competes over the 60m and 100m although I have also competed in the long jump since I was young. I thought that I was pretty good at judging what was good for me in my diet but recently someone recommended I have a look at what I am eating to see if this makes a difference to my performance – particularly in terms of what I eat post track session.

The problem is there seems to be two schools of thought and everyone thinks they are right! On one side, lots of fellow athletes tell me that I ought to be prioritising carbohydrates – and previously that is what I was doing. On the other side, some sprinters in my group tell me carbohydrates will slow me down and I need to avoid them as a sprinter. Can you tell me who's right and who's wrong?

**A** First of all, well done for taking a look at your diet – it is always worth questioning what you are doing in your training and continually challenging yourself as to whether you have made the right decisions for your performance.

To answer your question, it is easy to see why people have come to these conclusions, but neither group are fully correct. As a sprinter, your need for carbohydrates will be less than that of a 10,000m athlete of course – and you probably shouldn't be challenging any of your endurance clubmates to a pasta eating contest! However

what mustn't be ignored is that carbohydrates are required to maintain muscular endurance and volume of strength training.

As a proportion of your intake should be protein based, it is sometimes thought this in turn means to reduce your carbohydrate intake. However, studies have shown that athletes who opt for a low carbohydrate diet will find high-intensity exercise performance is rapidly compromised.

### General guidelines

In order to get the balance right, try following these basic guidelines relating to carbohydrate intake.

### What to do?

After training, try to consume some carbohydrate within an hour of exercise finishing, as a guideline between 0.5g-1.0g of carbs per kg of body weight should be taken. However, the exact amount will depend on the intensity and duration of the session you have just finished. This would mean an athlete weighing 70kg should look to eat 35g-70g of carbohydrate inside that 'window of opportunity' (see chapter three on carbohydrates for lists of foods which fulfil this requirement).

### Why?

Carbohydrates can reduce the breakdown of muscle tissue post training session, glycogen is quickly replaced in the muscle and there is an

improvement in how the body is able to absorb amino acids.

### What about protein?

Certainly combining some protein with your intake of carbohydrate can help promote the development of muscle – however the amount needed is quite modest perhaps only 10-20g of protein in a snack that is mainly carbohydrate based. This can then be followed by a balanced meal 1-2 hours later which also contains both carbohydrate and protein.

### How do I take in that protein?

#### You've just said I should take in carbohydrate!

Fortunately, many of the carbohydrate based snacks can be combined with some protein to make a very good post training recovery snack. Here are some examples of foods that are easy for you to integrate into your post training routine:

- smoothies, low fat flavoured milk or yoghurt drinks
- breakfast cereal with low fat milk
- sandwich or baked potato with a protein based filling, e.g. low fat cheese, lean meat, chicken, tuna or egg plus a sports drink to help top up those carbs
- baked beans on toast
- low fat yogurt with fresh or dried fruit

### No great shakes

There are a number of protein based milkshakes, supplements and foods on the market aimed

at athletes – these can often be found in health food shops, although more and more they are appearing on supermarket shelves. However, it should be noted that often these are not the best option for an athlete as they can contain excessive amounts of protein and very low levels of carbohydrate. You will not benefit from excessive amounts of protein as it will not build muscle and it is better replaced with the correct amount of carbohydrates to ensure energy is restocked. On a more serious note, you need to be aware of the risks associated with ingesting supplements which may be contaminated and result in an adverse anti-doping result. The safest approach is to realise that correct amounts of carbohydrate and protein can be ingested through normal food intake and it will probably be healthier for your wallet too!

### Main points to remember:

- protein is important to you but excessive intake is not required
- make sure you recover after a session by having a snack based on carbohydrate with some protein within an hour after the work out
- real food is recommended over supplements
- in looking after your post training snack, don't neglect your pre training preparations – make sure you have eaten properly and hydrated well

**Q** I am 19 years old and on the world class talent programme and have been looking across the five rings model and making sure I question all factors that could affect my performance. I have been a vegetarian since the age of 12 and although I do not believe this has harmed me in any way, I would like to know if it is realistic for me to continue avoiding meat whilst training to be a world class athlete. Whilst some vegetarians I know can easily list several names of world beating athletes who avoided meat – I also can list several athletes who were widely reported as having to give up on being vegetarian as they suffered ailments which could be traced back to their diet.

I wouldn't like to have to eat meat again but I would rather work on the premise that prevention is better than cure! What do you think?

**A** It's a good question and one that there is no definitive answer to. I agree that whenever the question of being a vegetarian arises there is usually a great debate with examples of it working well or not.

Only you can decide if you want to change your diet – and what I would say is that a vegetarian diet can be as healthy but you do need to be aware of potential deficiencies that can – occur and box clever with your food choices!

The obvious risks with a vegetarian diet is lower levels of protein, iron, zinc, calcium, riboflavin, vitamins D and B12 – particularly if the diet is very

strict and dairy foods are also omitted in the case of vegans.

The table below shows some essential nutrients and what you may need to consume in place of meat and animal products in general.

#### Four essential menu tips

It can be hard to keep track of every nutrient you need to be ingesting, especially when you are having to think of substitutes to meat products. Here are four quick wins you can make in your everyday diet to ensure you are covering many of the bases:

1 If you are not a vegan and choose to eat dairy products as a way of ensuring adequate intake of nutrients – opt for low fat versions to ensure fat intake does not rise too high

2 Good choices for snacks pre and post training session are dried fruit, nuts, cereal bars and bagels. Good toppings and fillings include peanut butter, hummous and low fat cheese

3 A low fat smoothie, milk or yoghurt drink is an excellent recovery drink for an athlete, vegetarian or not!

4 Breakfast cereals are not just for breakfast! They are a great

way of boosting iron intake throughout the day

#### Main points to remember:

- keep an extra eye on your diet to ensure you are not falling short on any essential nutrients
- additional vitamin C will enhance iron absorption
- make sure you include protein rich alternatives to meat including nuts, beans seeds and dairy products
- in making sure you include protein – don't neglect your carbs! Breakfast cereal, pasta, rice and potato will help meet your requirements!

Nutrient	Found in	Non-meat alternatives
Protein	Meat and poultry products	Milk and dairy products, eggs, peas and beans, quorn/tofu/soy-protein, and grains, e.g. rice, pasta, breakfast cereals and breads
Iron*	Red meat, liver, offal products	Pulses, dark green leafy vegetables, eggs, nuts, seeds, dried fruit and fortified breakfast cereals and breads
Zinc	Red meat, fish, shellfish, poultry	Milk and dairy products, eggs, bread and cereals, green leafy veg, pulses
Calcium	Milk and dairy products (avoided if athlete is a vegan)	Fortified soy products, leafy green veg, pulses, nuts, seeds and white flour products, e.g. bread, breakfast cereals
Vitamin B2 (Riboflavin)	Liver and offal	Yeast extracts, green leafy vegetables, dairy products, fortified breakfast cereals and breads
Vitamin D	Oily fish	Fortified margarines, breakfast cereals and soya products
Vitamin B12	Meat, fish and poultry	Eggs, dairy food, fortified breakfast cereals, yeast extract/vegetable stock and soya milk

\*To help with absorption of iron from plant foods, consume food rich in vitamin C, e.g. fresh orange juice as a drink or lemon juice over vegetables and fish

**Q** My athlete is competing in a couple of grand prix this summer in Europe. She has been away with a GB team before, however that was a one off and was slightly different to the routine she will have. A couple of the events are close together so will mean her travelling straight from one to the other. She will then return to GB only to fly out again within 2 days. Do you have any tips for making sure her trips abroad don't compromise what I think has become quite a good diet routine recently, and also anything else we need to be considering?

**A** Travelling is a significant part of an elite athlete's life, yet despite this you would be surprised at how often some athletes are badly prepared for the journey. It doesn't seem to make sense – to put in all that work and hard graft in training only to perform badly because the journey wasn't considered in preparation!

Unfortunately eating and drinking correctly can be one of the first things to be neglected, but one of the biggest factors affecting performance! Luckily you recognise this.

The main areas of travel that can impact on the nutritional requirements of an athlete are:

- limitation of food available throughout a journey
- further limitations on

refuelling caused by unexpected delays – long journeys can result in eating out of boredom

- time zone changes can interfere with eating and drinking routines
- type of travel can determine problems e.g. on a flight, air conditioning can be dehydrating and fluid quantities freely available may be smaller than required
- accommodation can vary widely – along with quality of food and facilities on offer
- stadiums and venues are not typically reliable venues to pick up a nutritious snack – choices available may be too high in fat and not enough

carbohydrate

- standards of hygiene and general safety vary widely from country to country
- cultural and language barriers can prevent you getting hold of what you want/need and you may be prevented from taking your own

### How to cope

Simple solutions to some of the problems above are as follows:

- pack and carry your own essential food and drink – chose options that you will be allowed to travel with and won't be confiscated at the airport or in customs!
- plan an eating and drinking routine and stick to it
- in certain countries it's important you avoid 'high risk' foods such as fruit without skins, ice cubes in drinks, salads, seafood and non-pasteurised milk and dairy products
- research in detail both the accommodation and the venue you will be at and what is likely to be available and plan around that accordingly
- if you are able to, choose your accommodation accordingly, and look at options for self

catering and preparing your own meals and snacks

- eating out can sometimes help by having more control over what you order plus you may be able to ask for it to be prepared differently if the menu version does not suit your requirements, e.g. ask for sauces and dressings on the side; baked potatoes instead of chips
- learn how to ask for bottled water in the native language – and make sure any you do get is sealed when it arrives
- don't be influenced by your team mates/fellow competitors' choices – every athlete is different and your own personal routine is the most important thing
- don't experiment. You're competing – not on holiday!

### Foods that travel well

Cereals, muesli, energy bars, powdered milk, liquid meal supplements, dried and tinned fruit, low fat biscuits, jelly babies, and other dried non-perishable items.

### Drinks

Bottled water, sports drinks and sports drink powders.

