

Sports nutrition

1 Introduction

There are several factors that affect performance:

- genetics
- sleep
- rest
- training
- skills
- mental attitude
- equipment
- nutrition.

You can change your **nutrition**, i.e. manipulate your diet, to:

- improve endurance
- aid recovery
- alter your body composition
- reduce fatigue
- ***improve mental performance and skill.***

2 Carbohydrates

Practical tips

1. Enjoy a variety of carbohydrate-rich foods to optimize your nutrient intake, focusing on nutrient-dense carbohydrates that are also rich in vitamins, minerals and fibre (wholegrain cereals, fruit and vegetables).
2. Split your carbohydrate needs into several meals and snacks throughout the day.
3. Always have portable choices such as fruit, yoghurt, sports bars and dried fruit on hand.
4. Carbohydrate-rich foods are sometimes classified according to the speed at which they are absorbed from the blood. This is referred to as the glycaemic index (GI). High GI, carbohydrate rich foods are absorbed more quickly (sports drinks, energy bars, bread and jam) and are therefore good choices after exercising.
5. If you have little appetite and /or suffer from stomach discomfort (for instance, before exercising), then compact easily digestible carbohydrate foods should be eaten – sweetened, low-fibre breakfast cereals, white bread with honey or jam, or sugar. Carbohydrate glucose polymer powders can be added to foods and drinks to boost your carbohydrate intake. Liquid meal supplements can also be used.
6. Decrease your carbohydrate intake when your training decreases (for instance, in the off-season or when injured) to prevent unnecessary weight gain.
7. Sports drinks can help you meet your daily carbohydrate needs, but not as a main source of carbohydrate, because this will reduce your vitamin, mineral and fibre intake and may lead to weight gain.

3 Fat

Practical tips

1. Limit your intake of both “added” and “hidden” sources of fat. Butter, margarine, avocado, peanut butter and oil are examples of added fats whereas hidden fats are those found in high-fat cheeses, many processed meats such as salami and snack items such as chocolates, crisps and nuts.
2. Try not to double-up on fat at a meal. Choose between peanut butter, margarine or avocado as a spread on bread and choose either olives or salad dressing with salad.
3. Read labels to get an indication of the fat content and always choose the lower fat options.
4. Use low-fat cooking methods, grill with little oil, stir fry, steam or oven bake.
5. Vegetable sources of fat such as sunflower, olive or canola spreads are healthier than hard margarine or butter.

4 Protein

Practical tips

1. Choose a variety of protein-rich foods.
2. Protein should be distributed throughout the day. Do not let protein dominate a meal and leave enough space on your plate for all the carbohydrate needed.
3. Always choose lean meat and low-fat dairy products as many of these protein-rich foods contain hidden sources of fat.
4. If you are a vegetarian you need to make a special effort to ensure that your diet provides enough good quality protein. By mixing different vegetable proteins such as baked beans on toast, lentils and rice, or a peanut butter sandwich, you will achieve good protein combinations.
5. Many proteins are expensive so it is important to explore ways of extending or stretching the protein without reducing the nutritional value. Dried beans and lentils can be added to stews and soups. Other good economical sources of protein include fish, sardines, eggs and skim milk powder, which can be added to many drinks, cereals and soups.
6. Commercially available, specially formulated liquid meal replacements that provide carbohydrate and protein can also be used.
7. To increase your muscle mass you need to follow your eating plan and training program. If you concentrate on a high protein intake without enough carbohydrate, then the protein will be used for energy instead of being used to build muscle! Too little carbohydrate will lead to low energy levels, which will make it very difficult for you to train and perform at your best.

5 Vitamins and minerals

Vitamins are organic compounds required in very small amounts. The human body is unable to synthesise them. Most vitamins regulate processes essential for normal metabolism, growth and development. Those vitamins involved in energy metabolism are like the spark plugs of an engine. They do not provide energy but are involved in the production of energy from fuel stores by acting as catalysts for metabolic reactions. They are responsible for the storage and utilization of energy in the body.

Vitamins are either:

- fat soluble: A, D, E and K, which are stored in body tissues, so consuming excessive amounts of these vitamins, especially vitamin A, can lead to toxicity and organ damage, or
- water soluble: B and C, which are not stored in the body and any excess intake only results in expensive urine.

Practical tips

1. The first approach to correcting dietary deficiencies should always be through food, because nutrients co-exist in foods. Supplementation is a second approach and the assistance of a dietician is recommended.
2. Eat a variety of fruits and vegetables, the more colour and crunch the better. Aim for 5 – 9 fruit and vegetables a day.
3. Preferably choose fresh seasonal produce, otherwise frozen vegetables.
4. Shop regularly for fresh vegetables and don't store them for too long.
5. Avoid overcooking and limit the amount of water used.
6. Don't add bicarbonate of soda to green vegetables as it destroys the vitamin B.
7. Use fortified cereals.
8. When eating non-meat sources of iron, add a vitamin C rich food as it increases iron absorption.
9. Avoid tea or coffee with meals as they decrease iron absorption.
10. An iron supplement will not correct other nutritional inadequacies.

6 Planned eating

A winning diet involves science and art. The science is what you should be eating, the art is putting this knowledge into practice.

Cooking and food preparation

Reduce fat by:

- Grill, bake, barbeque, microwave or steam food.
- Limit oil to 1 -2 teaspoons per person.
- Use Lemon juice, low fat yoghurt, wine or stock to baste or marinate food.
- Modify recipes to use reduced-fat ingredients.
- Replace roast and fried food with dry baked food.
- Use herbs, spices, lemon juice or crumbs to flavour vegetables instead of margarine, oil or butter.

Increase the nutrient-dense carbohydrate content by:

- 1 Add lentils to rice.
- 2 Include vegetables, salads and fruit in every meal.
- 3 Add beans or lentils to soups and stews.
- 4 Enjoy fresh or stewed fruit as desert.
- 5 Leftover rice or pasta can be frozen and reheated.

Eating out tips

1. Boost your carbohydrates with extra servings of potato, steamed rice, and unbuttered bread or vegetables.
2. Avoid battered, fried, sautéed, creamy and crumbed foods.
3. 'Healthy' does not mean low in fat
4. Avoid creamy sauces, gravies, dressings, butter, and cheese.
5. For desert, order fruit salad, fruit sorbet, frozen yoghurt, fruit mousse.

Post competition recovery

- Drink to a plan. (And not: I drink, I get drunk, and I fall asleep!)
- The post flight rehydration goal should be to replace any fluid that has been lost during flight, plus any losses that continue after the flight.
- Avoid alcohol and caffeine in the post flight period.

Travelling

Additional challenges while travelling:

- Delays in transit
- Long distance travel and jet lag
- Hotel food
- Budget constraints and limited food availability
- Official functions
- Foreign menus and unusual food
- Food hygiene standards
- Menu fatigue and boredom
- Holiday atmosphere

Travel tips

- 1 Be clear about your nutritional goals, stay committed and avoid temptation to eat whatever you are served.
- 2 Investigate the food at the destination ahead of time.
- 3 Find out about food hygiene and water safety in foreign countries.
- 4 If important foods are likely to be unavailable or expensive take your own supplies.
- 5 Special meals on planes and in hotels can be organised in advance.

7 Fluid and hydration

The importance of fluid

Duration and intensity of exercise will determine requirements. Different people have different requirements. In general, women sweat less than men. People with more muscle have a greater water reservoir and are less affected by dehydration. Body composition therefore affects dehydration. Exercise capacity is reduced in hot climates. Reducing body heat before exercise can extend performance.

Observe the nothing new rule in competition. Practice your fluid replacement strategies when training to determine your requirements under different conditions.

The role of fluid

Water is the main solvent in the body. It provides the medium for bio-chemical reactions within cell tissues. It maintains blood volume, acid-base balance, kidney and heart function and regulates body temperature.

Risks of dehydration:

- Increased core body temperature which causes the body to overheat.
- Strain on the heart as the heart rate increases due to increased blood viscosity.
- Perceived effort is increased and concentration, skills and mental functioning are diminished.
- Rehydration is much more difficult to achieve because of the subsequent gastrointestinal discomfort and upsets.

Early signs of dehydration are:

- Headache and fatigue
- Loss of appetite
- Flushed skin
- Heat intolerance
- Light-headedness
- Dry mouth and eyes
- Urine is dark and has a strong odour

Advance signs of dehydration, which require urgent medical attention, are:

- Difficulty in swallowing
- Clumsiness
- Shriveled skin
- Sunken eyes and dim vision
- Painful urination
- Numb skin
- Muscle spasm and delirium

Practical tips

- 1 Take off in a well – hydrated condition. Use all opportunities to drink before take off.
- 2 Use a fluid replacement plan that has been practiced in training. Drink as much as is practical and comfortable in attempting to match sweat losses.
- 3 The drink must be cool, not cold, and palatable, and contain the optimal amount of carbohydrate for your event.
- 4 Make the most of opportunities to drink.
- 5 Make sure your drink is readily available. It should be in a container that allows easy drinking with minimal interruption of pre take off or in flight activities.
- 6 Replace fluid losses as completely as possible between periods of exertion. Note that after exertion you will continue to lose sweat for some time. Fluid replacement after flight is assisted by the simultaneous replacement of electrolytes, sodium and potassium. Make active cooling part of your recovery plan.

8 The ideal drink

Sports drinks are specially formulated to meet the dual aims of carbohydrate and fluid delivery, with palatability being another important feature.

Practical tips

- 1 Allow for adequate recovery and rest after flight.
- 2 Keep hydrated during flight - but don't overdo it.
- 3 Sports drinks are a good option since they empty from the stomach more quickly than soft drinks while also helping to replace sodium losses.
- 4 Adopt a pattern of drinking small amounts of fluid at regular intervals during flight rather than trying to drink large volumes at once.
- 5 Eat salty food – sandwiches with yeast extract, pretzels, and beef jerky and salty crackers.
- 6 Follow the pre-match eating guidelines.

9 Alcohol

Alcohol reduces reaction time and impairs balance, accuracy, hand-eye coordination, strength, power, endurance and body temperature regulation. After flight, alcohol interferes with the recovery of carbohydrate stores and acts as a diuretic, thereby aggravating dehydration.

Tippling tips

- 1.** Stick to the 24-hour rule – avoid alcohol in the 24 hours before a competition and during multi-day competitions.
- 2.** After training or competition, you should first rehydrate and refuel with carbohydrates – ensure that plenty of non-alcoholic drinks are available.
- 3.** Alcohol should be avoided if you have any soft tissue injuries or bruising.
- 4.** Note that although some alcoholic beverages do contain carbohydrate, the alcohol content of the drink affects performance, so you should drink other, more appropriate, sources of carbohydrate.
- 5.** Alcohol intake can be reduced by:
 - Plenty of ice in spirit drinks – this dilutes the alcohol while increasing the volume, so you drink less
 - Quenching your thirst with nonalcoholic beverages first so that the alcoholic drink is not used as a thirst quencher
 - Ordering mineral or soda water with the alcohol
 - Choosing low alcohol wines or beers
 - Soft drinks, fruit juices and mixers increase the energy content of alcohol.
- 6.** You tend to eat more while drinking alcohol.