

Helping us understand sugars, nutrition and health



Exercise helps you to maintain a healthy weight but it has health benefits beyond this. It can improve your emotional well-being and reduce the risk of a number of other common illnesses like diabetes and heart disease. Whether you exercise to keep fit or are training at elite level, understanding the right type of diet to maximise performance, and where sugar fits into that diet, can be confusing. Different experts recommend many different regimes from low GI foods to energy drinks and herbal supplements. This information sheet explains the role of carbohydrates, including sugar, in providing energy for exercise and how adjusting your carbohydrate intake as part of a healthy balanced diet can improve your sporting performance.

exercise

DID YOU KNOW?

IT IS IMPORTANT TO REFUEL AFTER EXERCISE

Replenishing your glycogen stores with carbohydrate foods after sporting events particularly those that are repeated within or over a few days, such as during an athletics meeting, tennis competition or rowing regatta is essential.

Not restoring your muscles energy reserves – glycogen – between sessions can reduce your performance and leave you feeling tired.



How your muscles use sugar

Sugar is a carbohydrate and carbohydrates are the major fuel for exercise. They break down to glucose in the body. Your muscles take up the glucose from your bloodstream to provide them with the energy they need for everyday movement. They also store some extra glucose as glycogen for a quickly accessible source of energy during periods of increased activity, like exercise.

However, your muscles can only store a limited amount of glycogen, so if you do prolonged or intense exercise, you need to modify your carbohydrate intake to ensure your muscles do not run out of glycogen. If they do, your muscles become tired and your performance will be affected.



Exercise and your carbohydrate needs

How much carbohydrate you consume and when you do will depend on your nutritional needs, and on a number of factors including the type, duration, frequency and intensity of the exercise. In general:

- Less than 45 minutes of exercise – no adjustment to your diet is necessary
- 45-90 minutes of high to moderate intensity exercise such as running or playing a fast game of netball or soccer

 have a high-carbohydrate meal or snack within 4 hours of the sporting activity.
- More than 90 minutes of moderate to high intensity exercise such as running a half or full marathon or a long cycle – you may need to increase carbohydrate intake 1-4 days before the main sporting event and taper your exercise. This is called 'carbohydrate loading'.





Which carbohydrates are best and when?

Everyone is different and so the choice of food and drink is up to you. A balanced diet can act as a base to be adapted to the needs of exercise. It usually involves making sure total energy (kilojoule) needs are met, carbohydrate intake is balanced with the amount of exercise, and a variety of nutrient rich foods are eaten.

Pre-Exercise -

As a general guide it is suggested that a meal can be consumed 3-4 hours before exercise or a snack 1-2 hours before exercising depending on the type of exercise to be undertaken. Carbohydrate foods that are also low-fat, low-fibre and low to moderate protein are less likely to cause a stomach upset. The pre-event meal/snack should be consumed early enough so that it is digested and absorbed, so that the muscle has time to take up and store the glycogen. Examples include fruit salad with low fat yoghurt or a crumpet with jam and glass of milk. If you only have an hour before exercise, try a cereal bar, fruit smoothie or sports drink.

During Exercise -

Carbohydrates during exercise keep the glycogen stores 'topped up'. Scientific studies show it significantly improves performance. It can slow onset of fatigue towards the end of the session and help maintain concentration. Examples include energy bars or gels, which are convenient and easy to consume. Sports drinks are commonly used as they provide water as well as sugar and electrolytes to maintain hydration.



Post-Exercise -

Muscle recovery after exercise helps prepare the body for the next workout. Having carbohydrate as soon as possible after exercise helps maximise glycogen storage in the muscle. The amount and form of carbohydrate chosen will depend on the individual, however a carbohydrate rich snack should be eaten within the first hour of finishing. Examples of recovery snacks would be a sandwich with lean meat and a piece of fruit, or an energy bar and sports drink. Flavoured milk shakes and smoothies provide protein as well as carbohydrate and are seen as a good all-around approach.

For more advice visit the nutrition section of the Australian Institute of Sport (www.ausport. gov.au/ais/nutrition) or High Performance Sport New Zealand (www.hpsnz.org.nz/)



THE SHORT AND SWEET OF IT

We all need carbohydrates to exercise - the more intense and longer the exercise, the more carbohydrates needed.

- carbohydrates to provide them with energy and store a little extra as glycogen. This acts as an energy store during physical activity.
- of exercise so if you are doing sugar, before, during and

Sugar and other moderate to high GI carbohydrates can provide an easy way to top up energy reserves

- glycogen stores 'topped up'.
- used during exercise sessions as they provide water as well

Information based on an overview of the scientific evidence. For individual health advice see a qualified health professional.

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- Burke LM, Kiens B, Ivy JL. Carbohydrates and fat for training and recovery. Journal of Sports Sciences, 2004; 22, 15–30. Wallis GA, Wittekind A. Is There a Specific Role for Sucrose in Sports and Exercise Performance? Int J Sport Nutr. Exerc. Metab., 2013; 23, 571-583. Commonwealth of Australia, 2012

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