

Refuelling and recovery after exercise

Why is refuelling important?

Why do you need protein as well as carbohydrate in the recovery period?

I am an endurance athlete who does not want to gain muscle mass. Should I still have protein in the recovery period?

How much protein do you need in the recovery period?

Practical tips to help refuelling

This information is taken from 'Fuel for Performance, Nutrition for Sport', a sports nutrition resource updated and revised by the following Welsh sports dietitians:
Rhian Owen, Chris Cashin, Elaine Hibbert-Jones and Gill Regan.
Every acknowledgement is given to all the sports dietitians who contributed to the original publication of this resource, which was first published in 1998.

Refuelling and recovery after exercise

Why is refuelling important?

- Every time you exercise your stores of glycogen in your liver and muscles decrease. These stores need to be replenished by eating a high carbohydrate diet before you next exercise. Visit www.lssa.com to see a graph which illustrates how a high carbohydrate diet before, during and after exercise aids the recovery of depleted muscle glycogen stores. On a high carbohydrate diet, muscle glycogen stores do not fall as low during subsequent exercise and are rapidly topped up after.
- If your stores of glycogen are not fully replenished by the next training session, the quality of your training may be reduced and fatigue may occur, resulting in a reduction in performance. You may not be able to train properly, you may feel tired and your performance may suffer.
- Your muscles may feel heavy and tired if you do not refuel properly. Endurance training, sprint training and team sports e.g. hockey and football can all reduce the amount of glycogen in your muscles.
- The harder and more frequently you train, the more the stores of glycogen will be used and the more carbohydrate you will need for refuelling. Many other factors also affect glycogen stores e.g. presence of muscle damage, exercise in the recovery period, type, timing and intake of carbohydrate.

“Athletes should aim to achieve carbohydrate intakes that meet the fuel requirements of their training programs and also adequately replace their carbohydrate stores during recovery between training sessions and competition.”

International Olympic Committee (IOC) consensus
statement on sports nutrition, 2003

- Good nutrition is essential to help athletes recover from exercise both in training and during competition. A nutritious meal / snack / drink which provides both carbohydrate and a small amount of protein should be consumed in the recovery period.

It is important to refuel after each exercise session, so you need to fit your eating around your training. If you have trained late into the evening, it is better to eat late at night rather than not at all. You still need to refuel - but keep the fat content of the meal down.

This information is taken from 'Fuel for Performance, Nutrition for Sport',
a sports nutrition resource updated and revised by the following Welsh sports dietitians:

Rhian Owen, Chris Cashin, Elaine Hibbert-Jones and Gill Regan.

Every acknowledgement is given to all the sports dietitians who contributed to the original publication
of this resource, which was first published in 1998.

Why do you need protein as well as carbohydrate in the recovery period?

There is some evidence to suggest that consuming essential amino acids found in foods with protein of high biological value, such as meat, fish, eggs and dairy products, in combination with carbohydrate may help maximise the amount of glycogen stored. This may be useful, particularly in athletes who may not consume enough carbohydrate to meet their requirements e.g. gymnasts, boxers. The protein may also help repair any muscle damage that has occurred during the exercise session and is thought to promote important physiological training-induced adaptations in muscle fibres. These benefits are thought to be important for both endurance athletes and resistance and strength trained athletes.

I am an endurance athlete who does not want to gain muscle mass.

Should I still have protein in the recovery period?

Yes! Carbohydrate and protein are particularly important in the recovery period. The protein will only be used where it is needed. You will not increase muscle mass by just eating a large quantity of protein.

How much protein do you need in the recovery period?

The amount of protein needed in the recovery period is very small in comparison to your carbohydrate needs. For most athletes, consuming a meal / snack / drink which contains 6 - 20g of high biological value protein and 50 - 100g carbohydrate in the immediate recovery period will easily meet needs.

Remember, if you take **too much** protein, there is only so much your body will need and use. The excess protein will be wasted and will give you extra calories which you may not need and could also take the place of any extra carbohydrate, which would have been more useful for your body!

Beware of recovery drinks / supplements which contain very high levels of protein.

This information is taken from 'Fuel for Performance, Nutrition for Sport',
a sports nutrition resource updated and revised by the following Welsh sports dietitians:

Rhian Owen, Chris Cashin, Elaine Hibbert-Jones and Gill Regan.

Every acknowledgement is given to all the sports dietitians who contributed to the original publication of this resource, which was first published in 1998.

Practical tips to help refuelling

- ❑ Be organised and have suitable food and drinks available at the exercise venue. After exercise is often the time when you least feel like eating but try!

- ❑ Training in the evening means that you will need to eat a high carbohydrate meal after training, even if it's late at night. Planning and preparing these meals in advance will help.

- ❑ As a general guide, aiming for an intake of 50 - 100g carbohydrate every 2 hours until normal meal patterns are resumed will help start the refuelling process.

- ❑ Small, frequent meals may assist in achieving a high carbohydrate intake with minimal gastric discomfort.

- ❑ Choose carbohydrate foods that are low in fat because high fat foods may fill you up, reduce your appetite and provide more calories than you need.

- ❑ Carbohydrate drinks, sports products (drinks, bars, gels etc) and sugary foods may provide a practical and compact carbohydrate source but can contribute to tooth decay. It is important to maintain good dental hygiene and take advice from your dentist if you are relying on them regularly.

This information is taken from 'Fuel for Performance, Nutrition for Sport', a sports nutrition resource updated and revised by the following Welsh sports dietitians:
Rhian Owen, Chris Cashin, Elaine Hibbert-Jones and Gill Regan.
Every acknowledgement is given to all the sports dietitians who contributed to the original publication of this resource, which was first published in 1998.