



Ātrās uzskodas

A look at refueling for recovery

What's the first thing to do after training – stretch, shower, relax? According to Jeanette Crosland you better start eating.

RECOVERY between bouts of exercise is a big factor in an athlete's ability to maintain their training program. In the competition situation there are those who will have to perform several times with breaks in between – relatively short breaks in some cases. Endurance athletes will perform over long distances but probably want to return to training fairly soon afterwards.

Therefore, there are several aspects to refueling for recovery which are important to all athletes.

1. The bodies stores of glycogen must be replaced to provide energy for the next session;
2. Exercise causes damage to muscles and repair is needed;
3. Where muscle gain is an aim, the body needs to re-synthesize protein to assist muscle development;
4. Re-hydration must be achieved by ensuring a sufficient fluid and electrolyte replacement.

REFUELING

Refueling is essential for athletes who train repeatedly. During exercise the body uses its reserves of glycogen (the body's store of carbohydrate). It is important that these reserves are topped up to allow the next training session to take place. All athletes need carbohydrate as a fuel for muscles or training will not take place or will not be maintained at the standard needed for improvement. Quantities will depend on the discipline, time spent training and intensity of the session, etc.

HOW DOES REFUELLING OCCUR?

Eating and drinking as soon as possible after training is the key. The body has a window of opportunity after sport, whereby it is more effective at turning carbohydrate into glycogen. This lasts for around two hours. Those who train regularly need to take this opportunity if they are to refuel before the next session and for athletes who train twice a day this period is vital. Each individual must refuel to their appropriate level.

Take a local club situation as an example to illustrate this process. There may be members who only train once or twice a week, and they have no aspiration to extend their training or competition level. Re-fuelling may not be a major issue for these

individuals – although if they have missed a meal in order to train, some fuelling is needed to ensure they can cope. If that individual is a youngster, they may only train twice a week but may also be taking part in football and athletics at school, spend several hours in-line skating as well as having swimming lessons and entering the odd swimming competitions. On top of this they need extra energy for growth. Without post training snacks these youngsters will not maintain the sports they are keen to do. Appropriate refueling should be considered for everyone. For some it might affect competitive performance for others it may affect their continuation in sport.

HOW AND WHEN TO REFUEL?

The two-hour window has already been mentioned and the clock starts as soon as the session ends. In an ideal world the time to start refueling is straight after the session and targeting the first half hour is a good idea. It is easy to talk to friends, coach, change clothes, take a shower, travel home and suddenly two hours has vanished. Serious athlete should be eating the next meal by this time.

Some individuals may even try to begin refueling prior to stretching. In practice this may be uncomfortable if solid food is used but it may be that the fluid consumed during this period contains some carbohydrate – e.g. isotonic sports drinks. In this case refueling has begun.

The fastest rate of glycogen recovery will happen in those individuals who have eaten enough and eaten it within the right time scale. Over the first six hours following long or intense training, this would mean taking one gram of carbohydrate per kg body weight during the first hour and repeating it every two hours until the normal meal pattern is returned.

For those who have expended less energy and/or have longer to recover such large quantities are not required and the emphasis on repeating the refueling need not be so intense. A good general target is to have a post training snack immediately and a meal within two hours.

This needs to fit into a daily strategy for refueling which might provide 5-7g of carbohydrate/kg body weight/day for regular training. This may rise to 7-12g/kg/day for moderate to heavy endurance training and for extreme exercise programs (on those loading carbohydrate prior to long endurance events) to 10-12g/kg/day.

The carbohydrate consumed post event should have a high Glycaemic index (GI). Food with a high GI enter the blood stream more rapidly and are therefore available for use by the body more quickly. This is a good principle although it has to be remembered that post exercise some athletes have problems eating and drinking and, they may be picky about their choice of food, the amount of carbohydrate is the most important factor in refueling.

MUSCLE REPAIR AND DEVELOPMENT

This necessitates an adequate intake of protein in the diet. The subject of the quantity of protein needed and the timing of protein intake is the subject of much current research. However, there are some key points.

The requirements for protein are raised in athletes compared to non-athletes. Endurance athletes need between 1.2 to 1.4g of protein/kg per day. However, during intense training periods requirements may exceed this. Strength and power athletes will normally need 1.4 to 1.8g of protein/kg each day. These quantities of protein can easily be provided by well balanced diet and supplements are not necessary to achieve them.

There is some evidence that including protein in post training snacks may enhance the recovery and development of muscles by promoting protein synthesis or retention. It may be that the body is better at resynthesizing protein post exercise in similar way to the process for glycogen synthesis. However, the time scale for this process is not yet defined.

It is important that protein is not allowed to limit the amount of carbohydrate taken by the athlete. Carbohydrate replacement is paramount and by eating foods rich in carbohydrate the athlete will be consuming some protein at the same time as bread, flour based products, cereals, etc. all contain some protein.

HYDRATION

Following exercise rehydration is vital. The exercise is likely to have resulted in mild to moderate dehydration and individuals should be aware of their own status and sweat rates in order to guide their fluid needs. Just as food should be planned for recovery, so should fluid. Leaving rehydration to chance rarely works because the thirst mechanism is not adequate to encourage the body to drink sufficiently.

Generally, fluid is needed at the rate of 150% of losses to ensure that rehydration occurs prior to subsequent training. The fluid should ideally contain sodium to replace the sodium lost in sweat and to encourage more fluid to be drunk. Sports drinks often contain sodium, although in hot conditions extra salt may be needed. Sports drinks also contain carbohydrate and therefore rehydration strategies can be combined with refueling strategies to ensure good intakes of carbohydrate and fluid. Next I'd like to make some specific refueling recommendations based on the particular demands of the session completed.

REFUELING FOR ENDURANCE

This is the group where there are the most clearly defined guidelines because this is the type of activity where energy expenditure is consistently high.

1. The IOC Consensus conference suggests that in the post recovery period 1 to 1.2g of carbohydrate/kg body weight/hour are needed particularly where training sessions are long or hard, and where the athlete has to train again within a short period (e.g. within eight hours);
2. The intake of carbohydrate needs to be consumed at frequent intervals to ensure refueling;
3. Hydration is essential (especially in hot weather) in endurance events and carbohydrate from fluid is likely to contribute to total carbohydrate for recovery;
4. Some protein may be beneficial in recovery snacks but should not be allowed to prevent the consumption of foods containing carbohydrate;
5. Snacks should be consumed quickly after the end of training or competition – beginning with drinking as soon as the session is over may be a good tactic.

