

Food for thought – recovery drinks

Recovery after exercise such as running, walking or cycling involves a number of different physiological processes. Our recovery goals are to rehydrate, to replace energy and fuel stores (muscle glycogen) and potentially to optimise subsequent performance.

In the short term (3 to 4 hours) rehydration is the number one priority, so we need water and some electrolytes. The formula for calculating how much fluid we need is to drink 150% of the volume lost in sweat, within the first 1-2 hours post-exercise. The second priority, the replacement of glycogen fuel stores, requires carbohydrate. The amount of carbohydrate will depend upon how much energy has been used during the exercise, i.e. how many calories were burned.

But what about protein? You may have seen protein-containing recovery drinks promoted as the must-have for the serious runner or cyclist. The rationale for including protein in recovery nutrition is three-fold.

Proteins are continually being broken down and re-synthesised within the body. When we run or cycle hard, the rate of protein breakdown will exceed the rate of protein synthesis, as the vigorous exercise results in micro-level muscle damage. Post-exercise recovery requires the protein synthesis rate to increase in order to repair the damage. We need to ingest certain (so-called essential) amino acids in our diet in order for protein synthesis to take place and studies have shown that the rate of synthesis of muscle protein increases when protein is included in the recovery regime.

Secondly, some studies have shown that the inclusion of milk protein in a recovery drink leads to improved fluid retention and thereby more effective rehydration. Thirdly, there is also evidence to suggest that the combination of protein with carbohydrate improves the uptake of carbohydrate and hence hastens the replacement of glycogen stores.

Having established that we need fluid, some electrolytes, carbohydrate and protein, the next question is how to find the best source of all these recovery goodies.

There are many options available and arguments for and against various aspects, but here are a few suggestions:

Water – cheap and easy to obtain, however studies have shown that athletes voluntarily consume greater quantities of flavoured and cooled drinks than plain water after prolonged exercise, so this option may leave you less than fully rehydrated.

Sport drinks – usually contain 4% - 8% carbohydrate, plus sodium and potassium (electrolytes); at this concentration the carbohydrate is rapidly absorbed and the

electrolytes help to maintain thirst and improve fluid retention; so this option scores well for rehydration and refuelling. (If the sport drink is labelled as 'lite' then it has far fewer calories and hence less carbohydrate, which means that it doesn't provide much fuel at all!)

Protein-containing recovery drinks / liquid meal supplements – generally contain a good balance of carbohydrate, electrolytes, protein and sometimes added vitamins and minerals; highly portable and convenient; can be expensive but they do cover all the bases. The protein component is often whey protein, i.e. protein from milk, as this contains the essential amino acids

Milk – moderate and low fat options available; good source of protein (containing essential amino acids), moderate carbohydrate, greater levels of electrolytes than a regular sport drink, and a bonus of calcium (an essential mineral for longer term bone health).

Flavoured milk – all of the constituents of milk listed above plus more carbohydrate than the sport drink; this option also covers all the bases.

If you feel able to eat shortly after exercise, a drink of water and a sandwich (e.g. tuna – low fat, meat or cheese – higher fat) will provide fluids, carbohydrate, protein and electrolytes. If you need more carbohydrate, there's always cake!

Nutrient comparison for 500ml recovery drink

	Semi-skimmed milk	Skimmed milk	Chocolate milk	Standard sport drink
Energy (kcal)	235	175	375	140
Carbohydrate (g)	24	24.5	55	32
Protein (g)	18	18	17.5	trace
Fat (g)	8.5	1.5	8.5	nil
Sodium (mg)	220	225	250	250
Potassium (mg)	805	835	980	450
Calcium (mg)	620	645	525	trace

In practice, many runners and cyclists find a flavoured drink to be the more palatable and well tolerated recovery option immediately post-exercise. If that's your preference, why not try a milk-based drink, with a little extra carbohydrate (such as a banana), or a flavoured and sweetened milk (such as chocolate milk).

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