

Food for thought – fuelling for the big race - part 2: carbohydrate loading

So, you're training for a Spring race, perhaps a marathon or a shorter distance. You'll have been working to a plan that has led you to increase your mileage and/or put in some speed sessions. As you get nearer to race day, you should also be thinking about carb loading and taking energy on board during the race.

Please, don't leave considerations of what to eat and drink until the last minute. You should practice your race strategy for taking on carbs (and drinking) during a few long training runs before the event. Not everyone readily tolerates gels, jelly beans or other carb sources and you don't want to find out on race day that they upset you!

Realistically, if you are racing 5km there's unlikely to be any benefit in carb loading, above your normal diet, before your race. If you are running a longer distance, however, you need to maximise your store of muscle glycogen as this is one of the fuel stores used in endurance running.

The carb loading regime promoted in the 1970's involved 3 or 4 days of low carb diet followed by 3 days high carbs and exercise taper. Studies showed that runners were able to maintain their race pace for longer after this regime, however most of those subjects were essentially untrained men. Subsequent studies, conducted in the 1980's, showed that just the 3 days high carbs, with exercise taper, was effective in trained runners. Even more recently, it has been shown that 1 day of rest and high carb intake was sufficient to significantly increase muscle glycogen in trained runners.

Many studies into carb loading have been completed and the overall conclusion is that it is a strategy that will enable you to maintain race pace for longer, but it won't make that race pace any faster. For more highly trained runners, carb loading brings a benefit only in longer distance races. For most of us, at club level, the point at which carb loading comes into play is probably after 65–75 minutes at race pace. In other words, for a faster runner, that could be a race of 12 miles or more whereas for those of us at other end of the performance scale it is anything significantly longer than 10km.

How much do you need to eat to achieve carb loading? The recommendation is 7-12g carbohydrate per kg body weight. As an example, a 65kg runner aiming to achieve 10g/kg might eat the following on a carb loading and exercise taper day:

Breakfast: 2 cups cereal + milk + banana, glass of fruit juice. Snack: 500ml soft drink, 2 thick slices toast + jam. Lunch: 2 large whole wheat bread rolls + filling, 200g (large) yogurt. Snack: muffin or 100g dried fruit, glass of fruit juice. Dinner: 3 cups cooked whole wheat pasta + $\frac{3}{4}$ cup bolognese sauce, dessert. Snack: 2 crumpets and honey, glass fruit juice. Sounds like a lot of food? It is! But, that's all good carbohydrate fuel.

It is worth noting that some runners will switch to low fibre and low residue foods on the day before a major race, which should ease any feelings of gastro-intestinal fullness.

Such foods would include white breads and pasta and the use of a liquid meal replacement, sport drinks and gels.

When race day arrives, the single most important factor to consider is maintaining adequate hydration (but that's a topic for another article). If you have tapered and done your carb loading to maximise your muscle glycogen stores, you should have enough carbohydrate fuel available for 1-2 hours racing. This is a wide range and it varies between individuals depending upon training levels and pre-race carb intake.

If you are racing for longer than the 1-2 hours, it is advisable to take on board carbs during the race. Physiologically, it is only possible to absorb and digest relatively small amounts of carbs (1g/kg body weight/hour); it is not a case of 'more is better' as there is a delicate balance between the benefits of taking on carbs and the risk of gastro-intestinal upset.

It is absolutely vital to practice your racing regime before the big day. Jelly beans or similar glucose-containing sweets suit some people; there are gels and sport drinks available and these enable you to calculate your rate of carb intake relatively easily. For example, 500ml Lucozade Sport contains 32g carbohydrate and powdered versions contain 45-50g. Depending upon your body weight, you would consume something like a bottle every half hour to provide carbs. The drinks will provide much needed water, and electrolytes, but you may need a support team to carry the bottles for you! Assuming that you start the race with good levels of carbs, you should start eating / drinking to maintain those levels after around 30-60 minutes.

A note of caution here for the slowest and lightest runners: our utilisation of carbohydrate fuel and our water loss may be occurring at a considerably lower rate than that of the faster runners, so all quantities should be reduced to avoid risks of gastro-intestinal upset and hyponatraemia (too much water).

Just to recap, until the last day of carb loading the best forms of training carbohydrates are the 'slow release', or low GI, varieties. Meals based on wholewheat pasta or bread, baked potatoes, brown rice and whole grains are ideal. Try to avoid large quantities of processed foods (processed foods are high GI and they include highly refined sugars and grains (white flours)).

To support yourself nutritionally as you train now for the big race in the Spring, you need to consume plenty of carbohydrates, some protein with each meal and lots of vegetables and fruit. Establish your race strategy for hydration and carbohydrate feeding by practising during training runs, so that you are confident before race day comes. Stock up on carbs as you taper in the last 2 or 3 days before your race, and then enjoy race day.

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