



## Montane Lakeland 50 & 100 Coaching Article 4

### Nutrition Part 2

Last month in 'Nutrition Part 1' we talked about the 2 main fuel sources (fat and carbohydrate) and how you should optimise your body to burn fat, thereby allowing you to save precious carbohydrate stores. One of the key points from NP1 was to avoid excessive use of nutrition products during your longer sessions. Providing a ready source of carbohydrate via sports products can reduce the amount of fat used during training sessions. If you're using less fat during your training, you're not allowing your body to practice the fat burning pathway.

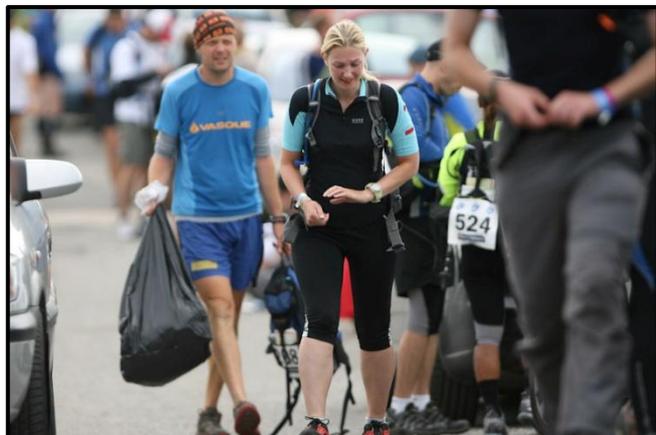
In simple terms, you have 2 fuel tanks, one filled with carbohydrate and one filled with fat. The one filled with carbohydrate is quite a small tank and can run low quite quickly, hence if you can take more from the 'fat tank' and less from the 'carbohydrate tank', your carbohydrate stores last longer.

### Eating during the event

Whilst 'Nutrition Part 1' focused upon 'training', 'Nutrition Part 2' will look more closely at what to do during the event. Your main priority throughout the course should be 'topping up' the 'carbohydrate tank'. As stated above, the carbohydrate tank is quite small and can run low quickly which would cause you to slow down significantly.

### There is one MAJOR problem

You can only absorb approximately 60g of carbohydrate per hour. Imagine that there are small boats which 'ferry' carbohydrate across the intestine wall into your blood stream. Unfortunately you only have so many 'ferry boats' so no matter how much you throw in there, the amount which can be ferried is limited to a pretty standard 60g.



### Why is the 60g limit a problem?

Each gram of carbohydrate equates to 4 calories and  $60(g) \times 4 \text{ calories} =$  a maximum absorption of 240 calories per hour. You will utilise anywhere between 500-1000 calories per hour depending upon how hard you are pushing yourself.

Initially this calculation may look pretty bad! If you can only absorb 240 calories and you are burning 500-1000 calories, how long before the tank runs dry!!

HOWEVER, it's not as bad as it sounds. Remember that when exercising you are using both fat and carbohydrate, the 500-1000 calories per hour comes from BOTH fuel sources.

## Confused yet?

There are 3 important things to consider:

1. How many calories do I burn per hour?
2. How many of them come from fat?
3. How many of them come from carbohydrate?

You **DON'T** need to worry about the calories coming from fat as your 'fat tank' will not run out. You **DO** need to worry about how many calories are coming from your carbohydrate tank as this **IS** the tank which will run out!

## Consider the following example:

1. A runner moving quickly over the course is burning 1000 calories per hour..
2. 25% of those calories come from the carbohydrate tank (25% of 1000 = 250 calories)
3. 75% of those calories come from the fat tank (75% of 1000 = 750 calories)

We know that the body can absorb 240 calories of carbohydrate per hour so if this runner is feeding effectively, he can replace pretty much all of his carbohydrate calories and keep his carbohydrate tank pretty full! Result!!

## There's some more bad news

Runners moving quickly over the course are very unlikely to be using fat as a fuel to such a large extent. We have tested hundreds of runners and examined fuel economy and at best, they will be using 30-50% when moving quickly. If you go back and do the maths, this means that these runners just can't absorb enough carbohydrate to replace what they'll be using.

## So what happens?

1. Your carbohydrate tank starts to run low and your blood carbohydrate (sugar) levels will drop, thereby reducing the amount supplied to your muscles.
2. Your body will force you to burn more fat to compensate for the drop in your carbohydrate tank\*, as discussed in Nutrition Part 1, fat is a poor fuel and therefore you slow down.

*\*Your body will desperately try to stop blood carbohydrate running too low, your brain feeds from carbohydrate and a large drop this could cause you to lose consciousness (as per diabetic coma).*

## Where is this article going?

To be honest I'm not that sure myself and this is not what I'd planned at the start of page 1 but let's push on.

## Things to consider:

1. Your fat burning should be optimised beforehand by training effectively (Explained in Nutrition Part 1)
2. During the event you should aim to consume 60g of carbohydrate every hour
3. During the event you should avoid going too hard, pacing is critical for fuel conservation!
4. 60g is optimal! Less than 60g is not enough and more than 60g can slow absorption

## How do I get the fuel?

1. Carbohydrate drinks are popular, as a simple guide 60g of powder is your supply for 1 hour
2. Carbohydrate gels are also popular and generally contain 20-30g each
3. Energy bars are also used and they generally contain 60g each

In ultra events most people cannot take gels, drinks and bars for the full duration and need savoury foods or more natural sources. I'm not going to discuss potential options, as that is a totally different and subjective discussion. There's no issue using different sources, just aim for 60g of carbohydrate per hour.

### Interesting research

There are lots of sports drinks on the market and pretty much every one of them is the same in content. They mainly consist of a carbohydrate named 'maltodextrin' which is a long chain of 'glucose' pieces. You'll see maltodextrin on the side of most commercial sports drinks containers.

### The science bit

Maltodextrin (glucose chain) has always been used for sports drinks and generally always used for research purposes. We spoke earlier about the 'ferry boats' which carry carbohydrate across the intestine wall and the fact that they can't carry more than 60g of carbohydrate, but it may not actually be the case. It may be true that we can only carry 60g of **GLUCOSE** across the intestine wall but glucose is not the only carbohydrate.

There are some 'other' ferry boats moored up which are waiting to carry 'another' carbohydrate, namely fructose. Because a lot of the early research **ONLY** used maltodextrin (glucose chain), the 60g of carbohydrate per hour limit might not be true, it may actually be 60g of specifically **glucose** per hour.

Research suggests that by combining 60g of glucose (as maltodextrin) with 30g of fructose, we may be able to take on board 90g per hour in total. A lot of the sports products claim to be better or faster and in truth, 95% of them are the same. However, the glucose (maltodextrin) and fructose mix is definitely worth a look and is probably one of the most significant findings in recent years:

<http://www.theendurancestore.com/product.php/218/high5-energy-source-2-2-kg-tub>

Nutrition Part 3 will be the final part of the nutrition series and will focus upon hydration during the event. To see any of the prior articles please follow the link below or copy into your browser:

<http://www.lakeland100.com/articles>

That article went on much longer than I expected. I struggled in the middle, got a bit lost and then felt disappointed that I had to stop.

You'll probably feel the same when you reach Coniston!

Happy training



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