

Zero Calories Five Days 100 Miles

Done it! Today we achieved our objective: to demonstrate that entering into a state of ketosis (fat burning) by consuming <50g carbs for more than 2-4 weeks can allow the body to access its vast reserves of fat to fuel a lean body for five days including 100 miles of running and walking. Woo-hoo! What a journey

Mental clarity and physical performance: honestly today was actually my best day of running and I felt the most energetic and mentally focussed. I really think today I achieved a state of focus and performance that would have allowed our ancestors to go out and gather or hunt most efficiently. It makes so much sense from an evolutionary perspective. Yesterday's 'rest day' certainly help restore my muscles and I had no knee pain (I think there's no substitute for listening to one's body and tuning in; I didn't use to do this: I used to carry on, injure myself and had to rest for weeks.) Kilometre 160 was my quickest: I ran at a pace of about 3:45, which is about as fast as I can sprint. I can imagine Usain Bolt performing better accessing his glycogen stores over 100m, but realistically how many of us race at that level or power output? If you're riding a 100km sportive cycle ride, to me it makes no sense to stress your gut so badly, and spike your blood sugar badly, with highly processed simple carbohydrate gels, cereal bars, or bananas every 30 mins. Why do this when there's an almost limitless supply of fat stored in your body to fuel whatever you want to do for days on end?

Lab rat time: 75.5kg, so overall ~1kg a day lost, which is what we expected. Calorimetry testing showed that fat burning was down from 100% to around 85%. This could indicate some muscle protein breakdown (but see below). I would be happy to accept a small amount of this: I'm consuming a rather large quantity of protein this evening and our experiment has been designed to demand an amount of energy from our bodies that is less than our available fat stores. If we have slightly miscalculated I'm not too fussed. What I wouldn't want to expose myself to is starvation and waste a large amount of my muscle mass. That just wasn't going to happen here. Pre-run ketones were 5.0 mmol/L indicating I'm in fat burning mode. Lactate slightly lower at 2.7 mmol/L, which appears to go against the calorimetry results which showed I appear to be burning 15% glucose... so where could that glucose be coming from if its not being converted by the liver from amino acids? Perhaps just measurement inaccuracy: ECAL is an indirect method after all and best for relative changes rather than an academic research tool. Probably leave this one to the specialists!

Today's route: I had a relatively small 18km run to do today, feeling good on the start line, and up for it. Not so much beauty today... running along the path following the A4 until the path disappeared and we had to get off and navigate our way around a 5km section. We had some rain too but that actually felt great as it cooled us down nicely. The stoppage really struck me... its not good to stop moving and then start again. Anyone that's ever run a marathon or done a long sportive ride might have felt the annoying slowness and aches as they get going again after a feeding station. On a *fasted* endurance event this doesn't happen unless you get lost like we did, there are no feeding stops

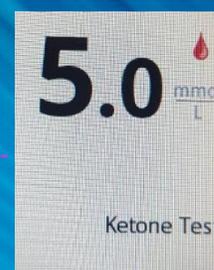
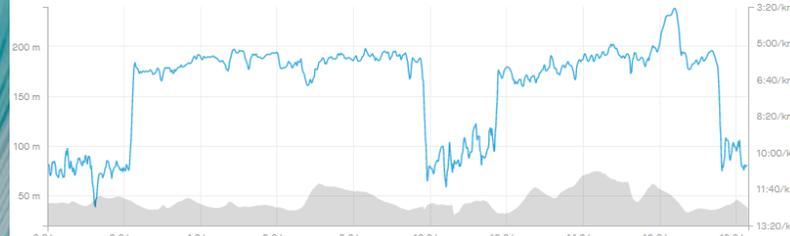
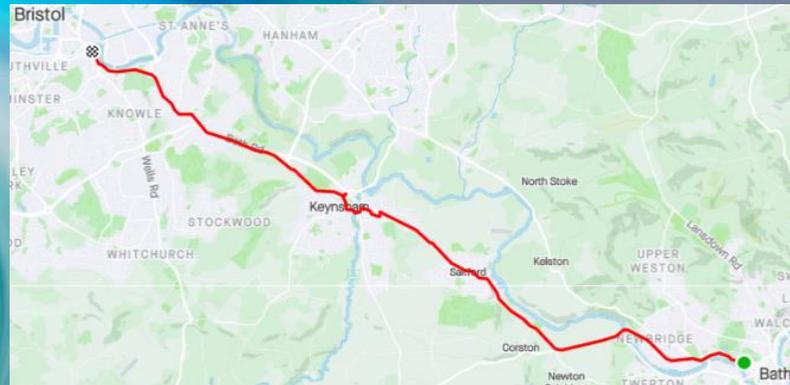
Blood glucose management: 70% within range (3-7mmol/L) for the whole day. Again, only 2U of basal injected to cover dawn rise and not so much of a drop on starting to run - even though the pace was much higher. I put in 4U 'Humulin S' on re-feeding with 650g meat, which brought me down below 3, but then popped back to 7

Pace: although average was only 7min/km, I went the fastest in all 5 days: running at 5:45 for a lot of it, and clocked my highest avg speed in the final km. I believe at near-maximal power output my body was still able to utilise some muscle glycogen while I moved in for the kill! So the scores on the doors for taking on a double-Olympic gold winner in the sprint to the finish line in Bristol: I claim victory in that family race, but I have to declare an unfair advantage: my keto adaptation had been going on for more than a year longer that James's!

Fuel stores: it makes sense to burn a store of fat (rather than continue to accumulate more fat) by entering ketosis. We do this every time we go to sleep. But unfortunately, for most of us, we get up early having eaten quite late the night before and have cereals, driving insulin very high, kicking us out of ketosis, and moving us into fat storage mode, where we remain for most of the day with 6-8 snacks and meals a day. It really makes sense to skip a meal every day, never snack, and keep insulin lower for longer. The body can be thought of as a dual-fuel car with a petrol tanker's worth of fat on board versus a 10 times smaller car fuel tank worth of carbohydrate fuel.

Sponsorship: are you able to sponsor us? All we ask is that you pass on this blog to at least 5 other people who you think might benefit, be they diabetic, pre-diabetic, with high blood pressure, or a history of heart disease or obesity. Thank you for following us and we will be publishing our results in the press, academia, and Youtube etc. shortly. Hope you have learned a thing or two, we have learned stacks and feel this new evidence and data will help to turn around the current paradigm for fuelling the human body: not so much in elite sport, but for the average diabetic or pre-diabetic population member or anyone going out for a run or ride. All the best, Jon

Day 5: Wed 23 Sept, 18km Bath to Bristol



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