Coach-Athlete Q&A

A look at some coach-replies to common questions by topic.

A: (A response to a question about fueling properly for an half or full Ironman, having nausea, etc..)

Thanks for contacting me... I'm happy to help. LB, I know firsthand what a real drag it is to spend all that time, money, and energy in your training and equipment only to have your fuel let you down come race day. When I return to work tomorrow I will forward you any additional information I think will help.

To start, Randy is indeed correct in his assessment of how refined sugars/low chain carbohydrates "work"; they must be mixed at extremely dilute 6-8% solutions to make the absorptive parameters (the fancy term is called osmolity/osmolarity/osmolality... I've heard it called all three) of the digestive tract. **This really limits the amount of calories available for the production of energy**. **When mixed as required, these drinks yield only 80-100 or so calories, far too few to maintain energy output. Your stomach problems occurred when you took in too much of these refined sugars (GU, coke, cookies.**.. the pretzels are OK, no problems there). Without sufficient water and electrolytes to digest the product (remember, they have to be mixed in extremely weak solutions) your stomach rebelled, it simply could not process what you were ingesting. I have no doubt that this was the cause of your throwing up.

Randy is also right on the mark in stating that you were probably over hydrated in trying to match energy (calorie) requirements with an inefficient fuel. Additionally, when you add more sugar to the mix, your fluid/electrolyte needs increase. I'm fond of saying that **using simple sugar to fuel the body is like trying to heat your home with newspapers in the fireplace. Sure, they burn hot and bright but they are extinguished much too quickly. Conversely, complex carbohydrates match body fluid osmolity even at higher concentrations (18-24%), which means that this mixture exits the GI tract at the same rate as normal body fluids (no sour stomach or indigestion like you get from simple sugars) while also providing substantially more calories available to the energy cycle. It's kind of like putting a big log on the fire, it burns longer and more consistently. Your fuel of choice should be a drink or gel whose carbohydrate source is primarily complex carbohydrates.**

The next thing to address is the proportion of the fuel. Carbohydrates are "king" when it comes to fueling the body but there is a limit as to how many the body can assimilate from your fuel. The body will always lag behind in replenishing its losses via outside sources. In other words, you will burn more calories than you can efficiently replenish via any food or sports drink, bar, or gel. Fortunately, the body has a very efficient means of taking care of its losses. Unfortunately, most athletes neutralize these means (more on that in a bit). Here's what I mean: The main problem I hear about, especially with the ultra distance athletes, stems from the belief that "since I am burning several hundred calories an hour, I must therefore eat that same amount every hour." **Physiologically the body simply isn't capable of replenishing calories from outside sources (your energy drink, bar, gel or other food) at the same rate it depletes them. You may be burning 500-600 calories or more an hour but there is no way your body can replenish that on an equal basis. The liver can return approximately 1-1.4 grams of carbohydrates per minute back in to the energy cycle. The normal upper limit for the majority of athletes is around 60-70 grams (240-280 calories) per hour. Yes, there is a deficit.** How are we to continue exercise on what seems to be an inadequate amount of carbohydrates?

The answer is from two sources. One is from protein. After about 70-90 minutes, and until you complete exercise, the body will fulfill 5-15% of its energy requirements from protein. There are two ways of satisfying this need. One is via lean muscle tissue donation**…..(NOT GOOD!)** That's right, the body, in an effort to make more glycogen for energy, will literally steal the amino acids required from lean muscle tissue. Some lean muscle tissue "cannibalization" is to be expected in endurance events but fulfilling all your protein-for-fuel energy requirements from lean muscle tissue creates a variety of problems, one of which the excess amounts of ammonia produced through the metabolic processes of this lean muscle tissue cannibalization. Science hasn't figured out exactly to what extent ammonia accumulation is responsible for fatigue but there is no question it is. **I tend to believe ammonia is the primary culprit for premature fatigue in an endurance athlete.** The way to avoid excess ammonia production and accumulation is:

1.) provide some protein in your fuel mix to spare lean muscle tissue. The choice is pretty simple. Either you provide your body the protein it needs or it steals it from your lean muscle tissue. You've worked awfully hard to gain that lean muscle tissue, you should do everything you can to keep it. Drinking a fuel that contains both complex carbohydrates and protein (in the proper ratios) will go a long way to helping preserve your hard earned lean muscle tissue and preventing excess ammonia from being produced.

2.) Use nutrients to help scavenge ammonia. A series of nutrients (those contained in the Anti- Fatigue Formula, which I developed) act as ammonia scavengers, sponges of sort that soak up excess ammonia and remove it through the urea cycle. This product is a real ally for any endurance athlete, prolonging endurance by protecting the energy cycle from the performance inhibiting effects of ammonia.

The third, and main energy source is fats. The majority of your energy during endurance events will come from body fat stores. Even the very leanest athlete still has 60,000 - 100, 000 calories available from fatty acid stores. These are THE fuels of choice during endurance exercise. **If you want to access fatty acids more efficiently you need to avoid refined sugar, which tends to inhibits the fats-for-fuel process. In addition, you must not eat too much during endurance exercise**. If you do, you're basically sending the body the message that you don't need its help, that you're going to try and resolve everything on your own. Eating too much during endurance exercise (and that includes "playing catch up") neutralizes the body's ability to access and utilize its fat stores. It's as though the body is telling you, "hey, I had plenty of stored energy available to help keep you going but your excess calorie intake makes me think you don't need my help." Overly simplistic of course, but you get the picture.

Bottom line:

1.) You need to consume fuel that contains complex carbohydrates with little, if any simple sugars

2.) You need to introduce some protein during endurance exercise, at least part of the time, to fulfill energy requirements, and to avoid lean muscle tissue breakdown and to help prevent interruptions in energy production that are caused by excess ammonia.

3.) You need to eat to support the body and how it is physiologically set up to function. Your body does need help to keep it going but you can't over ride or overwhelm how it works. In other words, if you eat too much food not only will you suffer from stomach distress, you will neutralize the mechanisms set up in the body that will utilize fatty acid stores, which fulfill up to 65% of your energy requirements.

I think the combination of Hammer Gel and Sustained Energy will fulfill all these requirements.

The third component of fueling (water and calories are the first two) is electrolytes. When I get into work tomorrow I will forward you a copy of an article I wrote about electrolytes, which will explain what to look for in a product (hint: salt tablets won't cut it and will create more problems than they resolve), and why you can't expect to get sufficient electrolytes from a sports drink (the minimal and incomplete amounts of electrolytes in a sports drink are there solely to aid in the digestion of the product, not to resolve electrolyte requirements). The E-CAPS product Endurolytes is a very complete, well balanced, and easily assimilated electrolyte product that allows you to fulfill electrolyte requirements INDEPENDENT of your fuel mix (very important) so that no matter what your body type/weight is, no matter how far or fast you're going, and no matter what the weather is like, you can micro manage your electrolyte intake to match your needs. And to be honest, it's very easy to do, a lot easier than trying to resolve it via a sports drink.

I concur with Randy's suggestions, with a couple of additions (and I'll provide the articles to support these ideas/products).

1.) Pre-race meal should be completed three hours prior to the start of the race. The meal the night before is extremely important, THAT in essence should be the pre-race meal. Do not sacrifice sleep just to get up and eat, the morning's meal should comfortably accommodate a three-hour window between completion of the meal and the start of the race. The reason for this I will explain in an article I will forward to you. Problem is, most triathlons start so early as it is. **I still suggest not eating anything prior to the race unless you have a comfortable three-hour window**. What you can do is have 2-2.5 servings of Hammer Gel about 10 minutes prior to the start of the race. That 200+ calories, along with the 60-90 minutes of already-stored muscle glycogen, will easily get you through the swim. More details in my pre-race meal article.

2.) 1 hour prior to the race - 1 Race Caps, 2 Enduro Caps, 2 Anti-Fatigue Caps, 3 Endurolytes-- More details about these products to come.

3.) During the bike portion - If possible, follow the same product/product dosage suggested in #2 above on an hourly basis…….w/ 240calories per hour of 'Sustained Energy' in 22 to 28ounces on water.

Also, you must at least take the Endurolytes at 1-5 capsules an hour. Yes, that is a very wide range but it shows the flexibility of the product, allowing you to fine tune your electrolyte needs immediately no matter what the weather conditions are. Under most circumstances, a dose of 2 capsules an hour is quite sufficient for most women. However, if necessary, you can increase the dose up to 5-6 capsules an hour and STILL be (similar to calories lost/calories replenished) within the parameters of what the body can handle. Listen to your body and how it is responding to your effort and the effects of the weather on that effort, and dose accordingly.

4.) During the run portion - 2.5 servings of Hammer Gel per hour. Yes, you can use Sustained Energy but most people don't want to run the marathon portion carrying a water bottle. If you've been good at drinking Sustained Energy during the bike portion you will probably take care of most of your protein needs and can "get away" with not having to carry and drink more Sustained Energy during the marathon, instead relying on Hammer Gel, Endurolytes, and water (the latter from aid stations).

I realize this is a lot of information to absorb but really it's a lot, lot simpler than it sounds. My goal is to help you avoid the kinds of problems you've had to deal with. You should be concentrating on smoking your opponents and setting PR's, not worrying whether or not your fuel is going to let you down or get you sick. This is where I believe the products I represent will definitely help. They are designed specifically to fuel the body during prolonged, extreme events and time and time again they have been shown to do just that effectively, efficiently, thoroughly, and without peer.

I hope this provides some useful information for you L.B.. I will forward the articles I mentioned tomorrow. If you have any questions please feel free to contact me directly if you wish. It would be my pleasure, in conjunction with Randy and Sonni, to help any way I can.

Sincerely-

Steve