HYDRATION, SODIUM INTAKE, AND CALORIES

Practicing your hydration and fuelling strategies will allow your system to find out what combination of fuel, sodium and water your body will tolerate as well as what amounts you require for optimum performance. You can be as fit as you've ever been going into a race, but if you don't control your fluid and fuel intake the whole day will unravel. Three areas that will determine your success or failure in a race include hydration, sodium replacement and fuelling. This is assuming that your nutrition in general is very good. I'll include what I do in a race in the summary of this document.

Hydration

As your body loses water through respiration, sweat and elimination it must be replaced or your system will draw water from your blood to ensure that it has adequate reserves to keep your system functioning and, quite importantly, to keep it cool.

Everyone sweats at different rates. You can roughly find out how much you sweat (and about how much you need to replace on an ongoing basis) by doing the following test:

- go to the washroom prior to the process;
- before getting dressed weigh yourself to determine your starting weight;
- measure, in liters, all the liquid you'll be consuming during the workout;
- don't forget to add up the weight of all the food you eat too. This will generally be fairly simple as we usually eat energy bars/gels and the like which have a set weight associated with them;
- add the weight of all the food and fluid you consume to your pre-workout body weight. 1 L of fluid weighs 1 kg (1000 grams) or (2.2 lbs);
- after the workout take off all your sweaty clothes, towel off and then weigh yourself;
- take your pre workout body weight and add the total weight of everything you ate and drank. Then subtract your post workout body weight.

The resulting value is the total weight of fluids you've lost during the workout. Assuming you didn't rush off to the washroom for a bowel movement, then this would be the amount of sweat and moisture in respired air you lost. If, for example you've lost 6 pounds over a 3 hour workout (say a base cycle on the windtrainer), that would be 2.7 kg (6(lbs) / 2.2kg = 2.7 kg or L) of fluid per 3 hours, or almost 1 liter of water an hour.

You can repeat the process for the other sports and in different environmental conditions (hot, cold, dry, humid) and see if the values match up or differ. Please get use to consuming this amount of fluid whenever possible during your workouts. You'll be able to get away with skimping on the fluid intake on a shorter workout, but attempting a fluid conservation strategy during longer training sessions and races will catch up to you very quickly and result in a poor performance. So if you train your body to take in the fluids it will need over a certain period of time, then you won't have as much trouble being able to keep your required intake settled in your stomach come the day of your big event.

Some thoughts on the importance of keeping properly hydrated.

When your fluid levels decline and you feel thirsty you're already dehydrated. Your body tries very hard to maintain its preferred internal temperature. When you work out you generate heat, this heat has to be dissipated so your body sweats to take the heat energy out of the body. The process of evaporation of the sweat cools your body. But when you don't drink enough your body doesn't have the fluids required to sweat properly so you begin to overheat. This isn't good so your body panics and draws water from all areas of the body. Temperature regulation is critical. Well your blood itself contributes water in order to allow your system to maintain hydration. As soon as your blood starts losing water it starts to thicken up. The more your blood thickens up the harder your heart has to work to pump the blood around your body and the more you heat up. A vicious cycle. A drop in hydration of just 3% can reduce your strength and speed by approximately 8%. Over the course of a running race or a triathlon that's a lot of time. Just keep hydrated.

Once you have an idea of the volume of liquid you need to replace your losses you should consider the type of electrolyte drink you will take in your training and racing. There are a number of ways of getting your electrolytes into your system during an event. I used to drink primarily electrolyte drink in a race. I

would carry a 750 ml bottle of concentrated electrolyte drink (I mix in 7 x the amount I would normally mix in for one bottle). I fill this with water to make the concentrated solution. During the race I pour 1/7th of this solution (about 110 ml) into my front jet stream bottle and then fill that with water to make my electrolyte drink. This way I don't have to rely on the people on the course to mix my drink concentration properly as all I need is water. It doesn't matter what drink they serve on the course either as I'll be using my own drink that I've trained with and gotten use to. Recently though I just drink water and then get my electrolytes through capsules (see below). That way all I need is water during the race and take my capsules regularly.

One thing to keep in mind when you're using gels and bars and other energy sources as well as your electrolyte drink. If you mix your drink according to the package directions then your drink will likely be about 7-8% carbohydrates. If all you're taking in is the drink then your stomach will have little trouble processing that source of energy. However, if you're out for a longer training event or in a race then you should be eating gels and/or bars and the concentration of carbohydrates that builds up in your stomach will be too concentrated and your stomach shuts down. You then get bloated as your stomach fails to empty it's contents into your intestines. You therefore cease to get any fluid, energy or electrolytes into your system and you get dehydrated, run out of energy and start to cramp. To avert this from happening you need to at a minimum dilute your energy/electrolyte drink to 1/3 to ½ the recommended strength. For example, my drink package instructions are to mix 9 tablespoons of powder for a big water bottle. I only mix in 3 tablespoons. This tends to be less of an issue of you go with JUST water and electrolyte capsules and fuel with carbo pro (see below)

Sodium

Hyponatremia, low concentration of sodium, is a serious situation which can not only ruin a good training or race day, but also kill you. Before you start pumping all kinds of sodium into your system though you should check with your doctor about your ability to safely consume sodium and to work out in the heat. I have more information on this if you're interested, but basically sweat contains between 2.25 and 3.4 grams of salt per litre. On a hot day you can easily lose 1 litre of sweat per hour. I drank about 10 litres (22 pounds) of liquid in the 2001 Hawaii Ironman, but still lost 7 pounds during the race (that's about 3+ litres of liquid that I wasn't able to replace). However, if you consume lots of liquid to ward off dehydration, then you make your sodium concentrations lower (Hyponatremia results). To offset this condition you should consume sodium. Sodium sources are electrolyte drinks, salty foods and salt tablets.

Salt tablets (Succeed Caplets, Thermolytes (this is what I use), Endurolytes, lava salts, thermotabs, etc) are a good way to boost your sodium levels as they are easy to take and the sodium levels are easy to calculate. Electrolyte drinks aren't adequate to replenish sodium levels. If they were they would taste so salty that you wouldn't be able to drink them. Chances are you aren't going to be able to take as much sodium in as you lose, and that's ok. If you were to take in the 2.25-3.4 grams of salt you lose per litre of sweat then you may very well get sick from too much sodium in your system.

If you use electrolyte drinks and gels in a race then for every hour you will get about 200 mg of sodium from sports drink, and about 100 mg of sodium from gels. You would then need up to 850 mg of sodium from salt tablets (I set my watch to beep every 20 minutes and take a sodium pill every time my watch goes off),. So that's just over 1 gram (1000mg) of sodium per hour being replaced. You can also ensure that your sodium levels are topped up before the race or your training even starts by ensuring that you take in adequate levels of sodium in the days leading up to you goal event. This is especially important in hot environments. Simply take a sodium pill a couple of times a day each day of the week leading up to your goal race.

Other electrolytes you should be replacing include potassium, calcium and magnesium. Potassium is also included in some sodium pills. Ensuring you are getting good nutrition all the time though is the best way to naturally and safely ensure your electrolyte levels are adequate for your training and racing preparation needs.

What I use in a race now is Thermolyte Capsules which have a variety of electrolytes in them as well as some other products in them to help you out.

Energy
Although adequate water/fluid intake is critical to your success in the race, you'll need to maintain your intake of fuel in order to have enough energy to complete your event. Food is usually a bit more specific for each individual and fortunately a bit easier to carry during your race than adequate amounts of fluid. Although you'll likely be given gels and other fuel sources during your race you should always be prepared to have your own supply with you.

Like anything else please start practicing now what you plan on doing the day of the race. You're system will be much happier with you if you introduce eating throughout your training program. Try different foods/gels etc. to see what sits well in your stomach and what doesn't. Although it's expensive to train with all the drinks and gels/bars you'll use on race day, it's really a small amount compared to the total cost of actually preparing for and racing in the big event. A great time to try your chosen meal plan out is during your longer bike and/run events. Here you can get use to fuelling effectively to get you through the bike ride and also ensure that you can still run effectively afterwards.

Options for fuelling for a race include the following:
1) take a 750ml water bottle and pour 15-18 gels (or as much as you think you'll need for your race/event) into the bottle. If required, fill the bottle with water and shake to make the gels into a thin solution. This is much easier to swallow during your training/race. Take a big (almost a full gel worth) sip of this solution every 15 minutes throughout the bike. For the run you can make a similar solution and put this into a gel flask that you carry in a fuel belt.
2) you can make a similar solution with a carbohydrate powder (I use CarboPro). Pour enough powder into a bottle to give you the fuel you need for each leg of the race (cycle and run). The consistency and method of ingestion will be the same as the gels above.

I typically get about 400 calories an hour into my system. That is at the higher end of what I can probably tolerate but it works for me. Over the last 30minutes of the bike ride in an IM race I'll reduce the intake of fuel to allow my stomach to empty a bit so that I don't run into issues near the beginning of the run. If you don't back off like this you may find yourself throwing a lot of your stomach contents up in the first few miles of the run. That's not too terrible though, what is bad is the associated nausea that results from that happening and how your stomach generally reacts to all that action.

The other thing to think about is tapping into your natural fuel supplies. Most people rely too much on glycogen either from stored reserves in their muscles or liver or by taking in gels in the event. Your body has an almost unlimited supply of fat energy stored away in it though. If you can better tap into those fat reserves by cleansing your system and making that fat more readily available for metabolizing then your performances will improve (and you'll lean out faster too). I can explain the best ways to cleanse and access that fat supply, just ask.

The bottom line is you should try in training what you think you'll need to do during your racing. It's well worth the investment in time, money and energy to know that your system can handle the processing and feeling of having all these substances in your stomach as you come off the bike and head out onto the run. Precisely what you do and how you do it is going to be decided by what you can handle. When Luc Van Lierde won Ironman Hawaii (his first IM race ever) in the late 1990s he was asked what he took in that day to allow him to go so fast. "Salt, sugar, and water", was his reply. Find out what works for you.

Summary
Hydration – Dilute your chosen electrolyte drink by 1/3rd to ½ . Drink small amounts every 5 minutes to keep a constant flow of fluid into your system. An alternative is to just drink water during the race and then take in adequate amounts of…..
Electrolyte/Sodium – Use a sodium replacement pill like Thermolyte Capsules. Determine in training what maximum amount you can get away with (I take about 1000mg/hour total of salt, electrolyte and in gels). And decide on what interval you need to take your sodium supplements (I take one capsule every 20 minutes). Since most people don't take a lot of these capsules in an ongoing basis in their training it's

important to take a whole food supplement with adequate calcium, magnesium and other natural minerals/electrolytes (not to mention antioxidants) on an ongoing basis.
Fuel – Determine in training what calorie level you need to get you through your race. Take in your calories often so that you don't have too long a gap between intake sessions. I take fuel in every 10-15 minutes (a bit less than 1 gel worth or if CarboPro powder a sip equal to about just under 1 scoop a shot). Keeping the intake constant prevents your blood sugar levels from oscillating. Eat nutritionally well all the time. Fruits and Vegetables keep you working well, carbohydrates fuel your body. You need both. Basically micronutrient rich macronutrients. If you aren't able to eat the recommended amount (9 to 13+ servings) of a variety or ripe and raw fruits and vegetables then take a whole food supplement. Vitamins don't work. If you want some ideas of what I use let me know and I'll recommend the best things for you, including how to cleanse your system so you can better access your stored fat reserves.

I've really just touched on the above. If you have any specific questions please ask.

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June 2002, revised …. May 2011