

NUTRITION

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EATING FOR THE TAPER

The big race is a week or two away and you have plotted and planned and run the training miles. Now only two things left to do: taper and fuel. Correct tapering and fueling requires tremendous mental discipline and control. Most athletes try to cram in a little more exercise – “I need to stay loose...a few miles (ten?) won't hurt” – while over-eating calories but under-eating carbohydrates – “I've been waiting to eat that Alfredo pasta, and ice cream”. Ideally you will be completely rested and only gain two – four pounds during the taper – and that will be mostly, or all, water weight that can be used for hydration during your event. Negotiating your nutrition the final two weeks before a big ultra can seem confusing, bringing up questions and raising doubts just when you need to be calm and confident. Should you increase the calorie amount? Should you change the ratio of carbohydrates, fats and protein? What foods should you eat? When should you eat those foods? And what happens when you're traveling or changing time zones, or even changing cultures and therefore food choices (sea slugs, bird's nest soup, snake on a skewer anyone)? Managing these issues does not require a graduate degree in nutrition, nor does it take much more than a little planning. It will be easier when you understand the rationale behind fueling/loading for a lengthy running event.

*French fries would
be a poor choice.*

NUTRITION GOALS

The primary nutrition goal for your ultramarathon is to ensure that you have stored the maximum supply of energy possible in your body, mostly in your muscle cells. Increasing carbohydrate stores in your muscles and maintaining your muscle mass (and strength) can be accomplished by the timing of your foods in the last few days before competition. Continuing your regular protein intake and decreasing your fat intake can help with this. In addition, you will want to increase your water storage to ward off dehydration. Staying lean and continuing your fat-burning metabolism will insure that you do not tap into your precious carbohydrate stores before the race. Fiber, especially during the first part of your taper, will help keep you regular and prevent you from feeling sluggish. Increasing antioxidants to decrease oxidative stress caused by free radicals during exercise may be helpful. And of course, avoiding stomach distress is instrumental to a good ultra. Try and experiment with your diet the day before long training runs so you know what works best for your particular stomach and nutrition needs. If it doesn't work when you're cooking in your own kitchen and sleeping in your own bed, it won't work on the road!

JUST AFTER YOUR LAST REALLY LONG RUN

One of the most important meals you will eat is the meal following your last long, hard workout. Don't miss this opportunity. Recovery after this run is key to your race, as your pre-race muscle glycogen level is the most important factor for performance and this particular refueling opportunity determines how much glycogen will be in your muscle cells at the start line. Within 30 minutes of your run, consume a 200-400 calorie snack followed by a full meal within two hours. Eating lower glycemic index foods (think whole, nutrient-dense, close-to-the-source) will burn fat longer and bring in many trace vitamins, minerals and phytonutrients. Better yet, eat a full nutritious meal consisting of complex carbohydrates and some protein (a ratio of three or four parts carbs to one part protein) right after your run. Before your shower! Trained muscles can “super compensate” by storing even more glycogen than untrained muscles. Training teaches muscles to use a higher percentage of fat, versus carbohydrate, as fuel while exercising and this nutrient manipulation can spare the smaller supply of carbs we store while using the larger supply of fat that even the leanest runner has. This means you'll have the ability to run longer before fatigue sets in or before you need additional carbohydrate calories for fuel.

TWO WEEKS BEFORE

You will want to continue your regular diet during this time, taking in the same calorie level, or slightly less, right up to your last run a few days before the ultra. Familiar foods are best. Again, you want to be very nutrient-dense in your food choices as this is your time for a full recovery from heavy training. Empty calories (foods with calories but little nutrition such as potato chips, most cookies and candy, fried foods) will just make you feel sluggish without adding to your fitness. Mental stress takes its toll too, so be sure to include a variety of fruits and vegetables for their antioxidant and vitamin protection. (Don't get a cold this week...) Ample carbohydrates are necessary, with protein for muscle rebuilding too. Studies show that muscle tissue absorbs amino acids (from protein) from the bloodstream for resynthesis and rebuilding better with a steady influx of carbohydrates. Because you will be tapering your exercise during this period, you will be eating slightly fewer total calories – not so many gels and sports drinks due to the shorter mileage. Plus, you will be lowering the amount of fat in your diet. Read on.

GENERAL NUTRITION AND INSULIN

Stable blood sugar directs calories to muscles instead of fat cells. Eating three to four small meals and two healthy snacks a day result in lower blood sugar rise with each meal. This

does not mean increasing the total amount of calories for a day, only the timing of the calorie ingestion. Eat half your lunch sandwich mid-morning. Eat another low-sugar snack mid-afternoon and make your dinner smaller portions. Insulin is secreted into the bloodstream in response to ingested sugar. The higher the concentration of sugar, the more insulin secreted, with the exception that the more trained the athlete is, the more finely-tuned and accurate the insulin response will be. The job of insulin is to avoid wasting energy by carrying sugar molecules into fat cells for storage for future energy needs. This is fine but it makes more sense for an ultrarunner's extra energy to be stored in his or her muscle cells to the maximum extent possible. To minimize the insulin response, include some fiber, unsaturated fat and a moderate amount of protein with each snack or meal. Emphasize whole grains such as whole wheat bread, whole wheat pasta, brown rice, couscous and other grains up to a few days before the race when your carbohydrate sources will switch to simple, more processed carbs. Fiber will also keep you from becoming constipated as you go through this transition. Include low fat proteins such as white, skinless chicken, fish, legumes and lean meats. Fresh fruits and lightly steamed vegetables will help with the micronutrients (those vitamins, minerals and phytochemicals mentioned above.)

CARBOHYDRATE LOADING AFTER YOUR LAST RUN

The purpose of carbohydrate loading is to rest the muscles by cutting back on exercise and to supersaturate them with glycogen in anticipation

of competition. This will not help you run faster, but longer before tiring. Muscle glycogen stores in the body only consist of about 800 to 2000 calories of energy; definitely not enough for an ultramarathon distance. However, as much as carbo loading can increase endurance, not all aspects are beneficial. The effectiveness of the carbo loading regimen is somewhat dependent on the carbo depletion or exercise intensity that must be done prior to "loading". Total depletion can result in reducing recovery during the all-important taper phase. In addition, a "loaded" muscle will burn glycogen at a higher rate and reabsorb glycogen from the bloodstream (from calories consumed during the race) at a lower rate than normal. As long as you know whether you are "loaded" when you start, and therefore need to eat fewer calories per hour for the first one or two hours of the ultra, you will be fine. But if you did not carbo load, then you will need to consume carbohydrate calories earlier in the race. Just be sure to eat that carbo loading meal within 30 minutes of your last hard run. Don't miss this opportunity.

Again, loading improves endurance, not speed. It involves increasing a 50- to 60-percent carbohydrate diet to a 70-percent one. You will still need to maintain your 15-20 percent protein intake to maintain your muscle mass, so guess what you have to give up? Yes, that's right, fat. This makes french fries a poor choice. Be careful not to fat load. Eat foods that are familiar and wholesome. An orange versus orange juice versus an orange popsicle. Brown rice versus white rice versus refined rice cakes. Fiber-rich carbohydrates will keep your system regular. Drink extra fluids to hydrate your body while

limiting dehydrating fluids such as alcohol and excess caffeine. Remember, extra carbohydrates need extra water. For every molecule of glycogen stored, three molecules of water are needed. Extra water is good for hydration, but has a sluggish-feeling effect on muscles, so be ready for a slightly heavy-leg feeling. This will go away soon after you start running. Another option is to finish carbo loading two days before competition, then rest and graze on more liquid meals until the race. Glycogen stays stored in your muscles until you start exercising.

DAY-BEFORE NUTRITION

The goal here is to top off your glycogen reserves and be sure you are fully hydrated. Be sure to stick with familiar foods and eat them in normal-size amounts. Graze or eat frequently throughout the day, so you don't feel as if you have to stuff yourself at the evening meal. Drink plenty of fluids throughout the day (expect to urinate frequently). Most ultrarunners experience some stomach distress at some time in an ultra run. The act of running itself is causative due to the high impact running places on the GI tract. Multiply that by ten-30 hours and you can understand the problem. Differences in digestion time, stress levels, hormones, preexisting conditions (lactose intolerance, irritable bowel syndrome and the amount of bacteria in the gut) can all add to stomach ailments. Avoid high-fiber foods such as raw fruits and vegetables with thick skins, bran cereals, nuts and seeds today. They can cause cramping during your run. "White" carbohydrates will be digested more quickly and be through your gut before the start of the race, averting stomach distress IF you are hydrated. Dehydration at this stage can be constipating. Avoid cruciferous vegetables containing raffinose (broccoli, cabbage, radishes) and other gas-causing foods like beans if you suffer from bowel problems. Lactose-free products, or avoiding dairy (milk, cheese and ice cream) may help with queasy stomachs. Avoid sugar substitutes like sorbitol, xylitol and mannitol (in gums, candies and other foods), which may cause diarrhea, and avoid alcohol altogether. Sugar alcohol can not be used in the muscle; it must be broken down in the liver and converted before being available to the muscles for energy and this takes time and more energy. Fructose, in abundance, can be another problem so avoid foods or gels that list this as the first ingredient if you are sensitive.

THE LAST SUPPER

Your last meal should be high in carbohydrates and contain modest amounts of protein and fat without much, if any, fiber. Try to eat two hours before bedtime and choose foods you feel comfortable with or that you believe enhance

TRAINING MEAL PLAN VS. CARBOHYDRATE LOADING PLAN

TRAINING MEAL PLAN

Breakfast

2 cups raisin bran
1 cup skim milk
1 banana

Lunch

Roast beef sandwich with cheese and mayonnaise
2 cups lentil soup
1 apple
16 oz water

Afternoon snack

½ cup trail mix

Dinner

Stir-fry with 5 oz chicken, 1 cup broccoli,
½ cup brown rice
3 cups tossed salad with 2 T ranch dressing
1 cup skim milk
2 oatmeal cookies

Total calories = 3,000

Total carbohydrate = 407 grams

Total fat = 100 grams

Total fiber = 50 grams

CARBOHYDRATE LOADING PLAN

Breakfast

2 cups Cheerios
1 cup skim milk
12 oz orange juice

Lunch

Roast beef sandwich, no cheese or mayonnaise
1 cup tomato soup
1 cup applesauce
10 crackers
16 oz water

Afternoon snack

6 oz fruit-flavored yogurt
1 banana

Dinner

2 cups spaghetti with ¼ cup marinara sauce
3 oz ground turkey
2 slices French bread with 1 T butter
½ cup green beans
1 cup skim milk
1 cup chocolate pudding

Total calories = 2,700

Total carbohydrate = 462 grams

Total fat = 54 grams

Total fiber = 27 grams

your performance. Pasta, low-fat pizza, baked potato, or fish or poultry with a little vegetables and rice all make good choices if you have tried them in practice. If you are afraid of residue in your gut, move your last meal to lunchtime and eat or drink a light bedtime snack to squeeze in a few more calories and help you sleep better. Choose what works best for you. Sports drinks, bars, bagels, pretzels, cereal, rice foods or liquid meal supplements can all be good choices.

BREAKFAST OR SLEEP OR BOTH?

Choosing between sleep and getting up early enough to digest a meal (three hours for a full meal) doesn't really sound like a choice. Most of you would choose sleep and you would probably get more benefit from the sleep. If you have been eating healthy meals and replenishing your carbohydrates after your runs on a regular basis, you should have plenty of fuel to start your race and still have an hour or so before you will need to begin refueling. That aside, there are some scientific reasons for fueling up in the morning. The primary one is to top off your store of liver glycogen before beginning your run. During sleep, it is your liver glycogen that maintains normal blood sugar levels and it is this that gets depleted, not muscle glycogen which remains undisturbed overnight or until you start exercising. It takes only a few hundred calories to accomplish repletion and

those calories should be made up of easily digested complex sugars (an example is maltodextrin in sports gels and bars) with no fiber, simple sugar or fat and very little protein. Another reason to eat one to two hours before exercise is that it increases your ability to burn fat, a distinct advantage during an ultra. And, possibly the best motivation is that pre-race nutrition significantly increases your brain function allowing for greater mental focus and less hunger. (As in "Remember to not go out too fast.") Good choices are a sports bar and water, a sports fuel drink or a product such as Ensure0, potatoes or plain bagels, bananas, rice, oatmeal, Cream of Wheat0, Cheerios0 or a low-fiber bar.

If you feel you simply cannot do this, because you must allow some time for digestion of pre-race food, there are some other options. These will work if you are a very nervous runner who prefers to not – or cannot – eat much or anything before racing, or a runner who has had repeated stomach issues when racing. These include:

- Eating a snack before going to bed the night before the ultra.
- Getting up in the middle of the night, eating a light meal (200 – 400 calories) and going back to bed. This works well for the restless runner who isn't sleeping anyway and who may benefit from food that induces sleep.
- Eating something within five or ten minutes

of the start such as a sports gel with 100 – 150 calories or a liquid carbohydrate sports drink (six percent glucose solution). There is not enough time for an insulin release and once you begin to exercise, this response is mostly shut off.

- Starting in with your race nutrition after you get into a groove of running. Just be sure and consume appropriate amounts as discussed in previous articles.

Have a plan and try to bring what you need if you're traveling so you have one less thing to think or worry about before your big race. Hopefully you have tried your pre-race plan in training races or runs and found what works for you. Trust your instinct and know that in a long ultra, your stomach will probably not be happy at some point. Either slow down, take an antacid, or just err on the side of reducing your intake for a few miles. Most stomach problems are solvable and many are preventable. Enjoy your taper week. ■

NUTRITION TIPS WHILE TRAVELING

Traveling to an ultra race can often disrupt a healthy eating routine. Whether by plane or car, take time to plan. Eat your meals and snacks three to four hours apart, at most. If that means carrying snacks with you, pack non-perishables like peanut butter and jelly sandwiches, sports bars and fruit or low-fat pretzels. And drink plenty of water or water-based beverages to stay well hydrated.

ROAD TRIP Take familiar food when you can. If you need to stop at a convenience store or fast food joint, think healthy...a sandwich place where you can choose your ingredients, lowfat milk or chocolate milk.

AIRPORT Many airports offer lower fat options these days - wrap sandwiches, packaged salads and fruit smoothies. Bananas and lowfat yogurt are available almost everywhere. You can always bring your own.

AIRPLANE Tuck nonperishable snacks into your carry-on bag. Let the snack cart roll on by. Do order from the beverage cart (non-alcoholic). Try to have one cup of fluid per hour in flight. Ask for water. Dry, re-circulating air in a pressurized airline cabin is dehydrating, which in turn promotes jet lag.

DINING OUT The best way to dine out healthfully is to ask questions: Can sauces or salad dressings be served on the side? Are baked and broiled items basted while they cook? Are vegetables cooked in butter or margarine? May I substitute a high fat, high-calorie item with something that is lower in fat and calories? Fruit or vegetables? Is the fish grilled, broiled, breaded or fried? Is it cooked with fat?

The horizons expand even further with ethnic and international selections. Here are just a few ideas: **CHINESE** egg foo yung or vegetable tofu stir fry; **FRENCH** ratatouille or vegetable quiche; **INDIAN** curried eggplant and potatoes; **ITALIAN** pasta primavera or eggplant parmesan; **GREEK** spanakopita and tzatziki; **MEXICAN** bean burrito and chiles rellenos; **MIDDLE EAST** falafel, hummus and tabouli.

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