Dietitian in your kitchen

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Let's Get Cooking!

Eating for the long run…without "hitting the wall"

"Hitting the wall" and "bonking"

These terms are used to describe what happens when your muscles literally run out of fuel, or muscle glycogen. It usually occurs after 2 hours of continuous vigorous exercise or around mile 20, and has been described as the following: "It felt like an elephant had jumped out of a tree onto my shoulders and was making me carry it the rest of the way in."—Dick Beardsley, speaking of hitting "The Wall" at the second marathon of his career, the 1977 City of Lakes Marathon.

Carbohydrate – the main attraction

Your body can store about 2,000 calories worth of carbohydrate as glycogen in your muscles and liver, which is about enough to get you to—guess what?—mile 20. If you manage to deplete your glycogen stores, then be prepared to meet "The Wall." This is why carbohydrate intake is crucial all the time - before, during and after long exercise bouts in order to load up, preserve and replace glycogen.

Foods high in carbohydrate should provide the majority – 55 to 60% - of total calories, or 6 to 10 grams of carbohydrate per kilogram of body weight.

Carbohydrate is the primary energy source for muscle function during exercise and helps prevent protein from being used as energy, i.e., it "spares" protein.

Emphasize complex carbohydrates such as whole grains, breads, cereals, beans, pasta, potatoes and other starchy vegetables.

Simple sugars - fruits, juices, sugar, syrups, and honey - provide "quick energy." Many are too concentrated to be consumed during exercise, but can be a good way to begin replacing glycogen stores immediately after exercise.

Protein – builds a good defense

Protein is needed to repair exercise-induced muscle damage; provide a *small* amount of energy during exercise (with adequate carbohydrate intake); and support gains in lean tissue mass (not as common for endurance athletes).

Endurance athletes should eat 12-15% of total calories from protein, or about 1.2 to 1.5 grams of protein per kilogram of body weight.

The typical diets of most athletes provide more than enough protein to cover the increased amounts that they may need.

Good protein sources include lean meats, poultry and fish; nonfat or low fat dairy products; eggs, egg whites or egg substitutes; grain/legume/dairy combinations.

Fat – friend or foe

Fat provides energy, essential elements of cell membranes, and fat-soluble nutrients such as vitamins A, D and E.

Athletes should consume 20-30% of total calories as fat... too high or too low can have negative effects on blood lipid profiles, i.e., cholesterol, triglycerides, etc.

Fat mobilized from your body's fat stores is an important source of fuel during certain stages of exercise…regular training improves your body's ability to use fat as a fuel source, which is one way to help keep that glycogen level up!

Fluids and electrolytes – stay hydrated for peak performance

Dehydration occurs when fluid losses exceed fluid intake. It causes chills, dizziness, and disorientation; and also impairs carbohydrate absorption. To help prevent it, drink early and often every day... don't wait until you get thirsty.

But don't drink too much…hyponatremia (low sodium in blood) occurs when an athlete loses a lot of sodium through sweat but consumes a lot of plain water.

During exercise, water is all you need for events lasting less than 1 hour. But beverages containing carbohydrate and sodium are recommended during exercise lasting longer than 1 hour. This is where sports drinks come in handy, many of which contain 7% carbohydrate – the optimal concentration.

Whatever you're drinking, here are some guidelines for staying adequately hydrated during long events – training or racing:

2 hours before event	2 cups cold fluid
15 minutes before event	2 cups cold fluid
During event, every 15-20 minutes	4-6 oz. cold fluid (1/2-3/4 cup)
After event	2 cups fluid for every pound lost

Before, during and after exercise or events – putting it all together

What and when you eat is based on previous experience, physical comfort, time frame, and emotional or mental considerations.

Experiment with new foods and/or beverages on training days only! Don't try anything new on race days!

The pre-exercise meal helps prevent hunger and maximize glycogen stores.
Generally, eat 2 to 4 hours before exercise and eat familiar, carbohydrate-rich foods that are low in fat and fiber to avoid intestinal distress. Substitute frequent snacks and fluids for full meals if that makes you more comfortable.

Examples of pre-exercise or pre-event breakfasts include:

- Bagel or English muffin topped with a little peanut butter and a sliced banana
- Raisin toast with a cooked egg or egg whites and diluted cranberry juice

- Cereal topped with sliced banana and nonfat or low fat milk
- Pancakes or waffles topped with low fat yogurt and fresh fruit

For exercise lasting longer than 1 hour, consuming 0.7 grams carbohydrate/kg body weight per hour (about 30-60 grams/hour) can extend endurance performance by preventing glycogen depletion.

- Sports drinks
- Gels and water
- Sports bars and water

Avoid fructose-only products immediately before and during exercise, as these may lead to diarrhea.

Immediately following exercise is a critical time for optimal glycogen replacement. Start consuming carbohydrate-rich beverages and/or foods within 15 minutes of completing the exercise or event, particularly if you will be engaging in an intense and/or long training session or event again within the next 24 hours.

Eat a snack and/or meal within 2 hours of completing a long bout of exercise that is high in carbohydrate, moderate protein and low fat. Examples include:

- Fruit-flavored yogurt with low fat granola and an orange
- Turkey and cheese sub sandwich with pretzels and an apple
- Cinnamon-raisin bagel with a fruit and yogurt smoothie
- Pasta with lean meat sauce and a tossed salad with vinaigrette

A balanced diet that includes carbohydrate-rich foods all the time will promote glycogen storage between workouts so you have enough energy to get through the next workout and/or event.

Combine whole grains, protein-rich foods and vegetables and/or fruit at each meal and snack to help prevent large fluctuations in blood glucose, control appetite and eat a balanced diet.

Bottom line

Staying at a healthy and competitive weight requires fuelling properly with frequent meals and snacks. The body is an amazing adapting machine, when the body is restricted in calorie intake the body must find an alternative source of energy or calories to keep the body and brain working. To do this the body begins to work in its “backup” system. In this state, the body will slow down processes that are not needed (lower the rate of calorie burn) and the muscles in the body are broken down for the fuel needed. This is very inefficient and only meant to be a back up! Over time the body in starvation mode will create less muscle, lower metabolic rate and a higher percent body fat. The athlete has less energy and does not see gains in performance.

If you are unsure if you are getting the right number of calories contact Laura Poland RDN, LD at laurapolandrd@gmail.com or 614-270-3987 for referrals for individual counseling services.

References

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