Carbohydrate loading: Can your diet boost your athletic performance?

Perhaps you're training for a marathon or triathlon. Or maybe you're a long-distance swimmer or cyclist. To improve your performance, consider carbohydrate loading before your next high-intensity endurance activity.

Carbohydrates: The body's fuel

Carbohydrates are your body's primary source of energy. Carbohydrates are found in grains, vegetables and legumes (beans and peas). They're also found in sugar and sweets, including fruit and dairy products. Each gram of carbohydrate contains 4 calories.

During digestion, your body converts carbohydrates into sugar. The sugar enters your bloodstream, where it's transferred to individual cells to provide energy. Some of the extra sugar is stored in your liver and muscles as glycogen.

Your muscles normally store only small amounts of glycogen — enough to support you during activities such as recreational biking or swimming, weightlifting, and five- or 10-kilometer runs. But depending on your level of fitness, your muscles may run out of glycogen if you exercise intensely for more than 90 to 120 minutes. In turn, your stamina and performance may suffer. This can be an issue during activities such as long-distance running, swimming and cycling, soccer and triathlons.

Storing extra energy for greater endurance

Enter carbohydrate loading, a performance-enhancing strategy. Traditionally, carbohydrate loading is done in two steps the week before a high-endurance activity:

- **Step 1.** About a week before the event, reduce your carbohydrate intake to about 40 percent to 50 percent of your total calories. Increase protein and fat intake to compensate for the decrease in carbohydrates. Continue training at your normal level. This will help deplete your carbohydrate stores and make room for the loading that comes next.
- **Step 2.** Three to four days before the event, increase your carbohydrate intake to 60 percent to 70 percent of your daily calories — or about 4 to 4.5 grams of carbohydrates per pound of body weight. Cut back on foods higher in fat to compensate for the extra carbohydrate-rich foods. Also scale back your training to avoid depleting your glycogen stores. Rest completely for a day or two before the event.

Various studies suggest that simply resting and increasing carbohydrate intake two to three days before a high-endurance activity is effective, too. But there are a few caveats.

Carbohydrate loading works best when you've been on a carbohydrate-rich diet throughout your training — and it may be more effective for men, perhaps because endocrine differences between the sexes cause men to utilize carbohydrates to a greater extent during endurance exercise.

And even if you've loaded up on carbohydrates ahead of time, you still need to replenish them during the event to maintain your blood sugar levels — especially if you've been going for more than 60 minutes. Try a piece of fruit or a sports drink.

Consider possible drawbacks

Carbohydrate loading isn't right for every endurance athlete. Side effects may include:

- **Weight gain.** Expect to gain 2 to 4 pounds during the week you're carbohydrate loading. Much of this weight is extra water — but if it hampers your performance, you're probably better off skipping the extra carbs.
- **Digestive discomfort.** You may need to avoid or limit some high-fiber foods one or two days before your event. Beans, bran and broccoli can cause gassy cramps, bloating and loose stools when you're loading up on carbohydrates.
- **Blood sugar changes.** Carbohydrate loading can affect your blood sugar levels. It's a good idea to consult your doctor or a registered dietitian before you start carbohydrate loading, especially if you have diabetes.

Meet your goals

Carbohydrate loading may be an effective way to get that extra edge you need to compete. Or you may find that a hearty pasta dinner the night before your event is all you need. To discover what works and what doesn't, experiment with carbohydrate loading as part of your training. If you're uncertain about your specific carbohydrate needs, consult your doctor or a registered dietitian.