

SportsNutrition

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The Athlete's Kitchen

*Does carbo-loading mean stuffing myself with pasta?
Should I avoid protein the day before the marathon?
Will carbo-loading make me fat...?*

If you are an endurance athlete who is fearful of "hitting the wall," listen up: proper fueling before your triathlon, century bike ride or other competitive event that lasts longer than 90 minutes can make the difference between agony and ecstasy! If you plan to compete for longer than 90 minutes, you want to maximize the amount of glycogen stored in your muscles because poorly fueled muscles are associated with needless fatigue. The more glycogen, the more endurance (potentially). While the typical athlete has about 80 to 120 mmol glycogen/kg muscle, a carbo-loaded athlete can have about 200 mmol. This is enough to improve endurance by about 2-3%, to say nothing of make the event more enjoyable.

While carbo-loading sounds simple (just stuff yourself with pasta, right?), the truth is many endurance athletes make food mistakes that hurt their performance. The last thing you want after having trained for months is to ruin your event with poor nutrition. Carbo-load correctly!

Training Tactics: The biggest change in your schedule during the week before your event should be in your training, not in your food. Don't be tempted to do any last-minute long sessions! You need to taper your training so that your muscles have adequate time to become fully fueled (and healed). Allow at least two easy or rest days pre-event.

Fueling Tactics: You need not eat hundreds more calories this week. You simply need to exercise less. This way, the 600 to 1,000 calories you generally expend during training can be used to fuel your muscles. All during this week, you should maintain your tried-and-true high-carbohydrate training diet. Drastic changes can easily lead to upset stomachs, diarrhea, or constipation. For example, carbo-loading on an unusually high amount of fruits and juices might cause diarrhea. Too many white flour, low fiber bagels, breads, and pasta might clog your system. As Marathon King Bill Rodgers once said "More marathons are won or lost in the porta-toilets than they are at the marathon..." Fuel wisely, not like a chow hound.

Be sure that you *carbo-load*, not *fat-load*. Some athletes eat gobs of butter on a dinner roll, big dollops of sour cream on a potato, and enough dressing to drown a salad. These fatty foods fill both the stomach and fat cells but leave muscles poorly fueled. The better bet is to trade the fats for extra carbohydrates. That is: instead of devouring one roll with butter for 200 calories, have two plain rolls for 200 calories. Enjoy pasta with tomato sauce rather than oil or cheese toppings. Choose low-fat frozen yogurt, not gourmet ice cream.

Carbo-Loading: Tips for Endurance Athletes

Meal Timing: NYC Marathon Queen Grete Waitz once said she never ate a very big meal the night before a marathon, as it usually would give her trouble the next day. She preferred to eat a bigger lunch. You, too, might find that pattern works well for your intestinal tract. That is, instead of relying upon a huge pasta dinner the night before the event, you might want to enjoy a substantial carb-fest at breakfast or lunch. This earlier meal allows plenty of time for the food to move through your system. You can also carbo-load two days before if you will be too nervous to eat much the day before the event. (The glycogen stays in your muscles until you exercise.) Then graze on crackers, chicken noodle soup, and other easily tolerated foods the day before your competition.

You'll be better off eating a little bit too much than too little the day before the event, but don't overstuff yourself. Learning the right balance takes practice. Hence, each long training session leading up to the endurance event offers the opportunity to learn which food—and how much—to eat. I repeat: *During training, be sure to practice your pre-event carbo-loading meal so you'll have no surprises on the day of the event!*

Weight gain: Athletes who have properly carbo-loaded should gain about one to three pounds. But don't panic! This weight gain is good; it reflects water weight and indicates you have done a good job. For every ounce of carb stored in your body, you store almost three ounces water.

Fluids: Be sure to drink extra water, juices, and even soda pop, if desired. Abstain from too much wine, beer, and alcoholic beverages; they are not only poor sources of carbs, but can also hinder performance. Drink enough alcohol-free beverages to produce a significant volume of urine every two to four hours. The urine should be pale yellow, like lemonade. Don't bother to *overhydrate*; your body is like a sponge and can absorb just so much fluid.

Protein: Many endurance athletes eat only carbs and totally avoid protein-rich foods the days before their event. Bad idea. Your body needs protein on a daily basis. Hence, you can and should eat a small serving of low-fat proteins such as poached eggs, yogurt, turkey, or chicken as the accompaniment to one or two meals (not the main focus), or plant proteins such as beans and lentils (as tolerated).

Event day: Carbo-loading is just part of the fueling plan. What you eat on the day of the event is critically important and helps to spare your limited muscle glycogen stores. So fuel yourself wisely both *before and during* the event—and hopefully you will enjoy miles of smiles!

Nancy Clark, MS, RD, CSSD is Board Certified as a Specialist in Sports Dietetics. She counsels casual and competitive athletes at Healthworks, the premier fitness center in Chestnut Hill MA (617-383-6100). Her *Sports Nutrition Guidebook*, *Cyclist's Food Guide*, and *Food Guide for Marathoners* all offer additional information about how to prepare for endurance events. See www.nancyclarkrd.com and www.sportsnutritionworkshop.com for more details.

Tools for Carbo-loading

When carbo-loading, you want to consume about 3 to 5 grams carbohydrates per pound of body weight. (This comes to a diet with about 60% of calories from carbohydrates.) Divide your target grams of carbohydrates into three parts of the day (breakfast+snack; lunch+snack; dinner+ snack),and choose foods to hit our target! You can find carbohydrate info on food labels and www.fitday.com

If you weigh:	Total g carb /day	Target g carbs per five hours: (7:00 a.m.-noon; noon-5:00 pm; 5:00-10:00)
100 lbs	300 to 500 g	100 to 175 g
125 lbs	375 to 625 g	125 to 210
150 lbs	450 to 750	150 to 250
175 lbs	525 to 875	175 to 290

Sample 50 gram carbohydrate choices for the foundation of a meal or snack

Wheaties, 2 cups

Nature Valley Granola Bar, 2 packets (4 bars)

Thomas' Bagel, 1 (3.5 oz)

Banana, 2 medium

Orange juice, 16 ounces

Apple, 2 medium

Raisins, 1/2 cup

Pepperidge Farm multi-grain bread, 2.5 slices

Baked potato, 1 large (6.5 ounces)

Pasta, 1 cup cooked

Rice, 1 cup cooked

Fig Newtons, 5

Flavored Yogurt + 3 graham cracker squares

Two Sample 3,200 - 3,400 Calorie Carbo-loading Food Plans

Appropriate for a 150 pound athlete who needs about 4 grams carb/lb body weight

	<i>Approximate Calories</i>	<i>Carbs (g)</i>	
Wheaties, 2 cups	220	48	
Milk, 1% lowfat, 8 ounces	100	12	
Bagel, 1 (3.5 ounce)	300	55	
Cream cheese, lowfat, 2 Tbsp	50	2	
Orange juice, 12 ounces	160	40	Breakfast total: 830 calories, 75% carb
Whole grain bread, 2 slices	200	40	
Peanut butter, 2 tablespoons	200	8	
Jelly, 2 tablespoons	100	25	
Fruit yogurt, 8 ounces	230	35	
Potato chips, baked, 2 ounces	240	45	Lunch total: 970 calories, 65% carb
Apple, 1 large	120	30	
Graham crackers, 4 squares	120	22	Snack total: 240 calories; 90% carb
Chicken breast, 5 ounces	250	--	
Rice, 1.5 cups cooked	300	65	
Broccoli, 1 cup	50	10	
Dinner rolls, 2 whole wheat	200	40	Dinner total: 800 calories; 60% carb
Banana, 1 medium (4 ounces)	100	25	
Sherbert, 1 cup	260	45	Evening snack: 360 calories, ~100% carb
TOTAL Menu #1	3,200	547 g	~70% carb; ~4 g carb/lb for a 150 lb athlete
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Oatmeal, 1 cup dry, cooked in	300	55	
Milk. 16 ounces	200	25	
Raisins, 1/4 cup	130	30	
Brown sugar, 1.5 tablespoons	50	12	
Apple juice, 8 ounces	120	30	Breakfast: 800 calories; 75% carb
Sub sandwich roll, 6" (4 ounces)	320	60	
Lean meat (4 ounces)	200	--	
Fruit yogurt, 8 ounces	240	40	
Grape juice, 12 ounces	220	55	Lunch: 980 calories; 80% carb
Fig Newtons, 6	330	65	
Jelly beans, 15 large	150	38	Snack: 480 calories; 85% carb
Spaghetti. 2 cups cooked	400	80	
Prego spaghetti sauce, 1 cup	250	40	
Italian bread, 2 slices	150	30	
Root beer, 12 ounces	140	38	940 calories; 80% carb
Canned peaches in syrup, 1 cup	200	48	200 calories; ~100% carb
TOTAL Menu #2	3,400	646 g	~75% carb; ~4.5 g carb/lb for a 150 lb athlete