Athletes and Carbohydrates:
The Master Fuel

Carbohydrates are a very important part of an athlete's nutrition plan.

What Are Carbohydrates?

Carbohydrates are the gas in the athlete's tank and provide the major source of fuel for exercising muscle. Carbohydrates are important to control blood glucose level. It is especially important for athletes during exercise and to replace the glycogen in the muscles. Carbohydrates provide essential energy. If athletes do not get the needed amount of energy, lean tissue will be used to fuel the body.

Where Are Carbohydrates In Food?

Carbohydrates are in many types of food. Sources of carbohydrates include fruits, bread products, milk, and vegetables.

Carbohydrates per Serving:

Fruit	1 medium-size piece of fruit, 1/4 cup dried fruit, 4 oz fruit juice	**15 grams**
Bread	1 slice of bread, 1/2 bagel, 1/2 cup cooked pasta	**15 grams**
Dairy	1 cup milk, 1 cup yogurt	**12 grams**
Vegetables	1 cup raw, 1/2 cup cooked	**5 grams**

What Carbohydrates Are the Best?

To determine which foods high in carbohydrates should be eaten at particular times, food's glycemic index is used. Glycemic index indicates how quickly the carbohydrate will enter the bloodstream. Overall, foods with lower glycemic index can be considered "endurance" carbohydrates and those with a higher glycemic index can refuel the muscles quickly.

High	Moderate	Low
Baked Potato (85)	Sweet Potato (59)	Yogurt, low-fat (33)
White Bagel (72)	Brown Rice (55)	Banana (30)
Corn Flakes (92)	Raisin Bran (61)	All Bran Cereal (38)
Gatorade (85)	Powerade(65)	Skim Milk (32)

How Much Do I Need?

The amount of carbohydrates needed for exercise depends on many different factors, including type of exercise, duration, and the individual.

Most athletes need 55 percent to 65 percent of their calories to come from carbohydrates.

Before Exercise	Timing is the choice of the athletes. It is recommended that three to four hours before exercise approximately 200 to 300 grams of carbohydrates should be consumed.
During Exercise	For long events, it is recommended to consume 0.3g carbohydrates per pound body weight per hour (e.g., a 150-pound man would need around 45 grams of carbohydrates per hour). It is important to start consuming carbohydrates at the start of exercise. If carbohydrate loading did not occur before exercise, more carbohydrates may be needed. Limit high-fiber foods during an event.
After Exercise	To recover from exercise (more than one hour), carbohydrates should be consumed immediately after exercise. Within two hours of exercise approximately 0.7grams of carbohydrates per pound body weight should be consumed after exercise.

Calculating Carbohydrate Needs (for athletes):

3 to 4.5 grams of carbohydrates per pound of body weight. The higher limit is needed for ultra endurance athletes.

All About Carb Loading

Carbohydrate loading is only effective for endurance athletes engaging in exercise lasting 90 minutes or more. When tapering exercise before an event, it is important to consume the same amount of carbohydrates to increase your glycogen stores available for the exercise event. If carbo loaded properly, athletes should gain 2 to 4 pounds, which will be more readily available during exercise.

High Carbohydrate Food Suggestions

• Power Bars: 45 grams	• Raisins (1/3 cup): 40 grams
• Gels: 25 grams	• Banana (whole): 25 grams
• Apple Juice (8oz): 30 grams	• Bagel (whole) : 57 grams
• Chocolate Milk (8 oz): 25 grams	• Pita Bread: 46 grams
• Baked Potato (1 large): 50 grams	• Raisin Bran (1 cup): 45 grams
• Baked Beans (1 cup): 50 grams	• Oatmeal (instant): 30 grams
• Rice, cooked (1 cup): 45 grams	• Fruit Yogurt (1 cup): 50 grams
• Spaghetti, cooked (1 cup): 40 grams	• Frozen yogurt (1 cup): 44 grams

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