

Fueling Sport

[How much carbohydrate do I need before exercise?](#)

Consuming 30 g of carbohydrate 5 to 10 minutes before exercise may improve performance.

What to eat before exercise depends on how long you plan to exercise and what you had to eat before exercise. For low-intensity exercise, such as walking for 60 minutes, you don't need to eat in advance of the activity. If you are going to exercise for more than 1 hour at moderate intensity, eat about a half of a gram of carbohydrate per pound of body weight 1 hour before exercise. Choose foods low in fiber that are easy to digest.

Pre-Exercise Food Choices

Before exercise, choose easy-to-digest foods that are low in fiber. Liquids are digested more rapidly than solid foods, so if you have less than 30 minutes to eat before exercise, consider drinking liquids.

- Granola or cereal bar
- Low-fat fruited yogurt
- Oatmeal, cream of wheat, or grits
- Mini bagel
- Banana or orange sections
- Toast

[Should I eat during exercise?](#)

Yes, if exercise is of moderate to high intensity and lasts for more than 1 hour. The recommendation is to eat 30 to 60 g of carbohydrate per hour.

The body can only metabolize about 1 g of carbohydrate per minute, hence the recommendation to consume 30 to 60 g of carbohydrate per hour when exercise lasts longer than 1 hour. Endurance training (triathlon, marathon, distance cycling, etc) often involves long workouts, so having easy-to-eat sources of carbohydrate available during training can help performance. Sports drinks can provide needed carbohydrate and fluid for long training sessions.

Food and Fluid Choices during Exercise

- Sports drinks
- Diluted fruit juice
- Carbohydrate gels
- Water
- Energy bars
- Gummy candies or jelly beans
- Banana
- Plain mini bagel

Choosing a Sport Drink

- For lower-intensity exercise of long duration in hot, humid conditions, consider drinking a 2% to 4% carbohydrate sports drink (5-9 g carbohydrate per 8 oz or 240 mL)
- For higher-intensity exercise, consider sports drinks with 6% to 8% carbohydrate (14-18 g carbohydrate per 8 oz or 240 mL)
 - 100 to 200 mg of sodium per 8 oz or 240 mL (most drinks contain 110 mg of sodium per 8 oz)
 - 30 to 60 mg of potassium per 8 oz or 240 mL

[What should I eat for recovery after exercise?](#)

If you exercise for more than 90 minutes and plan to train hard again the same day or the next day, recover with a carbohydrate and protein snack to restore muscle glycogen and provide protein to repair muscle damage and stimulate muscle protein synthesis.

Eat about a half-gram of carbohydrate per pound of body weight and 10 to 25 g of protein within the first hour postexercise for recovery. Eat the same amount of carbohydrate during the second hour of recovery, especially if you are training hard every day or have a second exercise session planned for the same day. High glycemic index carbohydrates can help restore muscle glycogen more rapidly than low glycemic index carbs.

Low and High Glycemic Index Carbohydrates

Low Glycemic Index

Milk
Yogurt
Lentils
Pasta

Nuts
Apples
Oranges
Soy beans

High Glycemic Index

Sports drinks
Soft drinks
Bread

Potatoes

Most ready-to-eat breakfast cereals

Pretzels

[How do I choose energy bars or gels?](#)

Look for gels that contain about 25 g of carbohydrate per package. Choose energy bars with 100 to 250 calories per bar, 10 g of protein, and carbohydrate from whole grain sources with no more than 20 g of sugar. Look at the product label to make sure the bars contain heart-healthy fats but no *trans* fats. Gels and bars are concentrated, so drink plenty of water with them.

There is nothing magical about gels or bars. They are often used for convenience but are not better than food. "Energy" is another word for calories, so be aware that many energy bars are high in calories and can sabotage the calorie-burning effect of your workout. Limit bars and gel use for when you can't eat real food or for long training sessions when you need portable food.

[Do I need a protein shake?](#)

You need high-quality protein after a strength-training session to build muscle, and the protein can come from food, beverages, or a protein shake.

Protein shakes can be helpful if you are trying to gain weight. To get high-quality protein after a workout, choose 20 to 25 g of protein in foods or beverages.

High-Quality Protein Foods

Lean meats:

Pork

Chicken

Turkey

Lamb

Dairy products:

Eggs

Cottage cheese

Cheese

Yogurt

Soy milk

Whey protein

Soy protein

[What is the best protein supplement?](#)

Milk protein contains both whey and casein, which are good proteins for muscle. Soy protein may not promote muscle growth as rapidly as whey protein, but soy is still a good protein choice.

Although supplements can be useful for some athletes, you can also get the protein you need from foods. Eating small portions (10-20 g) of high-quality protein throughout the day can help promote muscle protein synthesis when combined with a progressive resistance exercise program. High-quality proteins provide all of the essential amino acids; these include egg, dairy, meat, fish, poultry, and soy. Nuts, seeds, and legumes are good sources of protein but lack one or more essential amino acids.

[Will high-fat foods affect my performance?](#)

High-fat foods (such as fried foods, regular burgers, hot dogs, french fries, doughnuts, pastries, full-fat cheese, pizza, cream sauces) eaten before exercise (within 2-3 hours) can divert blood flow to the gut and away from the muscles, so they are not recommended as a pre-exercise food.

While you may want to avoid high-fat foods before exercise, fat is an important nutrient in an active person's diet. Choose heart-healthy fats such as olive, sunflower, soybean, or canola oil and eat foods with heart-healthy fats such as avocado, nuts, olives, and *trans* fat-free spreads.

Fats to Avoid

Trans fats should be avoided. Many food companies have removed *trans* fats from the composition of their products. Products that may still contain *trans* fats include the following:

Stick margarine	Sausage
Frozen, breaded foods such as french fries, onion rings, and chicken nuggets	Butter
Cookies	Cheese
Pastries	Full-fat milk
Pies	Cream
Cakes	Cream cheese
Shortening	Coconut
Snack crackers	Highly marbled cuts of meat (prime rib, steak, roasts)
Chips	Ground chuck
Saturated fats, often found in the following foods, should be limited to 10% of calories:	Ice cream
Bacon	Ribs (beef and pork)
	Fast-food burgers and fries