

Suggested Sources of Carbohydrates for Athletes

Before Exercise

The pre-exercise or pre-training meal serves two purposes:

- It keeps the athlete from feeling hungry before and during exercise, and
- It maintains optimal levels of energy for the exercising muscles

Athletes who train early in the morning can benefit from a carbohydrate dense meal the night prior in addition to 15-30 g of CHO before their training. This will help maintain blood glucose and muscle glycogen levels. Blood glucose, the sugar found in blood, is the energy delivered to the working muscles and organs, along with muscle glycogen, that allows your body to complete activity.

Carbohydrate intake before and after exercise can help to restore sub-optimal glycogen stores, which is critical for prolonged periods of exercise. While allowing for personal preferences and physiological factors, the pre-event meal should be high in carbohydrates, non-greasy, and readily digestible. Fatty foods should be limited as they delay the emptying time of the stomach and take longer to digest.

- Adding small amounts of protein can aid in regulating energy levels by slowing down carbohydrate absorption, delivering carbohydrates to the working muscles at a more consistent rate over time.
- Pay attention to salty cravings. If competing in hot/humid climates, make sure to replace electrolyte losses with salty snack foods, such as pretzels or sports drinks with added sodium.

Right Before Exercise

1 Hour or Less	Serving Size	Grams of Carbohydrates
Dried Mango	3 oz	28 g
Raisins	small box (2.5 oz)	34 g
Banana	7 oz	31 g
Granola bar	2 bar pack	29 g
Pretzels	20 pieces	22 g
Fig bar (2)	1 oz	20 g
Applesauce	4 oz	14 g

1 Hour or Less	Serving Size	Grams of Carbohydrates
Sports drink	8 oz	14 g
Toast	1 slice	14 g
Crackers	5 crackers	10 g

Pre-Exercise Meal Options

2-3 Hours before	Serving size	Grams of carbohydrates
Cereal (whole grain)/low-fat milk (1%)	cereal: 1 cup milk: 1/2 cup	cereal: 47 g milk: 8 g
Bagel (whole grain) with peanut butter	1 bagel 2 tbsp peanut butter	bagel: 47 g peanut butter: 8 g
Fruit smoothie	12 fl oz	47 g
Food bar (oatmeal raisin walnut)	1 bar	43 g
Oatmeal (instant)/low-fat milk (1%)	oatmeal: 1 cup milk: 1/2 cup	oatmeal: 26 g milk: 8 g
Flavored Greek yogurt (nonfat)	1 cup	27 g
Pancakes/waffles (from mix)	2 pancakes (5" diameter)	20 g
Fresh fruit (chopped apple)	1 cup	19 g

4 or more Hours before	Serving size	Grams of carbohydrates
Spaghetti with meat sauce	2-3 cups	75-100 g
Pasta/Chicken/Vegetables	pasta: 1 cup chicken: 4 oz vegetables: 1 cup	pasta: 60 g chicken: 0 g vegetables: 6 g
Grilled chicken/rice (white)/fruit (grapes)	chicken: 3 oz rice: 6 oz fruit: 1 cup	chicken: 0 g rice: 44.4 g fruit: 25 g

4 or more Hours before	Serving size	Grams of carbohydrates
Snack bar (oatmeal raisin walnut)/sports drink	1 bar drink: 8 oz	bar: 43 g drink: 14 g
High protein milk shake	12 fl oz	40 g
Turkey sandwich (w/ 3 slices deli meat, 2 slices whole wheat bread, low-fat mayo)/baby carrots	turkey: 1 slice mayo: 1 tbsp bread: 2 slices 7 carrots	turkey: 0 g mayo: 0 g bread: 12 g carrots: 3 g
Tuna sandwich (2 slices whole wheat bread)/nonfat mayo	tuna: 2 oz drained bread: 2 slices mayo: 1 tbsp	tuna: 0 g bread: 24 g mayo: 0 g
Trail mix with nuts/raisins	1/3 cup	20 g

During Practice / Exercise

Consuming carbohydrates during exercise lasting longer than 60 minutes ensures that the muscles receive adequate amounts of energy, especially during the later stages of the competition or workout. This has also been found to improve performance. The form of carbohydrates consumed does matter. Some athletes prefer to use a sports drink, whereas others prefer to eat solid or gel forms of carbohydrates. Use the following guidelines when consuming sports drinks with carbohydrates.

- Consume 6 to 12 ounces of a sports drink with 6-8% carbohydrate concentration every 15-30 minutes during exercise (see Table 4). One gulp is about 2 ounces.
- Water is needed to aid in absorption of the carbohydrate. Drinks with a concentration greater than 10 percent are often associated with abdominal cramps, nausea, and diarrhea.
- For high intensity activities, sports drinks and gels containing multiple forms of sugar can increase absorption and delivery of carbohydrates.

Note: Sports drinks should not be confused with “energy” drinks. “Energy” drinks typically contain one or more stimulants and their carbohydrate concentration is usually greater than 10%.

** Sports drinks are beverages that contain electrolytes and carbohydrates, not caffeine and other stimulants.*

Easy to Pack Options for Travel / Game Days

Food	Serving Size	Fat	CHO	Protein
Baby carrots	7 carrots	0 g	3 g	0 g
Peanut butter pretzels	8 pieces	7 g	15 g	5 g
Celery	1 large stalk	0 g	2 g	0 g
Cherry tomatoes	1/2 cup	0 g	7 g	1 g
Chocolate milk (lowfat)	1 cup	2 g	26 g	8 g
String cheese	2 sticks	12 g	2 g	16 g
Dried mango	1 package	0 g	56 g	4 g
Sports drink	8 oz	0 g	14 g	0 g
Snack bar (oatmeal raisin walnut)	1 bar	5 g	43 g	10 g
Fresh fruit	1 piece or 1 cup	<1 g	19 g	.3 g
Ginger snaps	1 oz	3 g	22 g	2 g
Hummus	1/4 cup	5 g	13 g	3 g
High protein milk shake	1 bottle (12 fl oz)	4.5 g	40 g	20 g
Nuts (mixed)	1/4 cup	15 g	7 g	5 g
Peanut butter	2 tbsp	16 g	7 g	5 g
Pita bread (whole wheat large pita)	1 pita	2 g	35 g	6 g
Turkey sandwich (3 slices deli meat, mustard, 2 slices whole wheat bread), baby carrots	turkey: 1 slice mustard: 1 tbsp bread: 1 slice 7 carrots	1 g per slice 0 g 5 g 0 g	0 g 0 g per slice 24 g 3 g	5 g per slice 0 g 2 g <1 g

Food	Serving Size	Fat	CHO	Protein
Vanilla wafers	4 wafers	10 g	19 g	<1 g
Whole grain bagel	1 bagel (4 oz)	1.5 g	47 g	11 g
Whole grain cereal	1 cup	1 g	47 g	7 g
Whole grain crackers	5 crackers	15 g	11 g	1 g
Greek yogurt tubes	4 tubes	4 g	24 g	20 g

After Exercise

POST-EXERCISE RECOVERY TIPS

1. Choose higher-carbohydrate foods such as bagels, pasta, fruits, yogurts, cereal with low-fat milk, peanut butter, sports drinks, granola bars, french toast, sub sandwiches, baked potatoes with chili, smoothie made with fruit, fruit juice, yogurt, and frozen yogurt.
2. Include protein to aid in muscle recovery and promote muscle growth
3. If you can't consume solid foods as soon as possible after exercise, try 2-4 cups of a sports drink, then consume solid food within four hours post-exercise.

RECOVERY SNACK IDEAS

1. Cereal with milk
2. Fruit and nonfat yogurt
3. Pita and hummus
4. Trail mix
5. Chocolate milk (lowfat)
6. Banana with peanut butter