



Grains of truth about NUTRITION FOR ATHLETES

Athletes are known to eat large amounts of the foods they like, especially grain products such as pasta, bread, bagels, pizza, pretzels, cereals, crackers and tortillas. These foods are high in complex carbohydrates, the body's best source of energy.

Carbohydrates are the most essential nutrient in an athlete's diet because they are the only fuel that can sustain intense exercise for extended durations. Low carbohydrate intake can hurt performance; high carbohydrate intake improves it.

Whether a person runs marathons or simply takes daily walks to keep in shape, eating a diet high in carbohydrates will help improve personal bests. Sports nutritionists recommend athletes eat as much as 60 to 75 percent of their total calories in the form of carbohydrates.

Carbohydrates	Proteins	Fats
55 – 65%	12 – 15%	20 – 25%

Definition

Simple carbohydrates are found in fruits, most vegetables, milk, table sugar, brown sugar, corn syrup, molasses and honey. They digest faster than complex carbohydrates, proteins or fats and provide short bursts of energy.

Complex carbohydrates are found in starchy foods such as pasta, bagels, bread, rice, legumes, other grain products and some vegetables. Complex carbohydrates are digested at a slower rate, giving the time-released form of energy athletes need. However, enriched and fortified grain products and potatoes digest more rapidly than whole grains.

Carbohydrates are stored in your muscles as glycogen, the most efficient and readily available energy for exercise. Athletes "hit the wall" when glycogen is depleted. A conditioned athlete who eats a high carbohydrate diet can store enough glycogen to last 1 ½ to 2 hours of prolonged exercise.

Training diets

The 2005 U.S. Dietary Guidelines recommend eating a variety of foods from all five food groups for both athletes and "couch potatoes". The grain group—bread, cereal, rice and pasta—should be consumed in the largest quantities, five to ten ounces a day (depending on age, gender and activity level) with at least half the recommended servings coming from whole grains.

RECOMMENDED DAILY INTAKE

Food Group	Basic Diet 2,000 calorie	Training Diet
Grains	6 ounces	9 – 11 ounces
Vegetables	2.5 cups	2.5 cups or more
Fruits	2 cups	2 cups or more
Milk	3 cups	3 cups
Meat and Beans	5.5 ounces	5.5 ounces
Oils	5 teaspoons	7 – 9 teaspoons

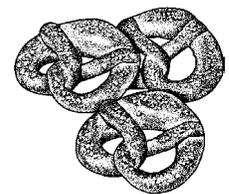
NUTRITIOUS HIGH-CARBOHYDRATE FOODS

COMPLEX

- Breads
- Bagels
- Pasta
- Tortillas
- Hard/soft pretzels
- Cereals
- Graham/baked crackers
- Legumes
- Potatoes
- Rice
- Corn
- Fig bar cookies

SIMPLE

- Fruits
- Most vegetables
- Skim and 1% milk
- Fat-free frozen yogurt
- Fat-free yogurt shakes
- Angel food cake



Pre-competition meals

All individuals differ in the way they digest foods because of variations in age, metabolism, training status and gender. Some athletes should never eat a

candy bar right before an athletic event, while others thrive on them. The closer to event time, the fewer calories one should consume. Carbohydrates are always a better choice than fats or proteins because they empty from the stomach faster. Experiment during training, not during competitive matches.

Eating and drinking during competition

Considerable research is being conducted in the area of eating and drinking during competition. The most recent research shows that carbohydrate drinks may help spare glycogen for both short and long term events. Carbohydrates from easy-to-eat food or beverages with 6 to 9 percent carbohydrate content are recommended because they empty the fastest from the stomach.

Post exercise carbohydrate reloading

Depending on the type of prolonged exercise, glycogen stores in the muscles can be depleted after 1 ½ to 2 hours. High-carbohydrate foods eaten within 30 minutes after exercising along with 7-10 grams of protein is the most effective way to replenish this reserve and stimulate muscle repair and growth most rapidly. Grain products are an excellent choice.

- ◆ Have a bagel w/cream cheese spread.
- ◆ Roll a flour tortilla with some sliced meat.
- ◆ Have some pasta w/chunks of meat or cheese.
- ◆ Eat some crackers w/sliced cheese.
- ◆ Have some bread with some peanut butter.

The most effective post-exercise recovery takes place within six hours. High carbohydrate sport drinks, fruit juices and milk provide carbohydrates in addition to rehydrating the body tissues. Experts recommend that athletes consume carbohydrates and liquids in the following amounts before, during and after endurance sports (Berning 2010):

BEFORE EXERCISE:

3-4 hours before – 200 to 300g

DURING EXERCISE LONGER THAN ONE HOUR:

30 to 60g per hour

AFTER EXERCISE:

within 30 minutes -- 1-1.5g CHO/kg (68-102g CHO for a 150 pound person)

after 2 hours – 1-1.5g CHO/kg

Carbohydrates in Grain Products

Food	Serving Size	CHO, g
Plain bagel	3 ½ - 4 " diameter	57
Pita bread, white	6 1/2 " diameter	33
Pita bread, whole wheat	6 1/2 " diameter	35
Enriched white bread	1 slice	13
Whole wheat crackers	6 (1 oz)	20
Spaghetti	1 cup cooked	43
Flour Tortilla	6" diameter	15

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Water consumption

While carbohydrate beverages play a definite role in prolonged exercise, cold water is still an option for the typical, short-duration event. Cold water clears the stomach quickly and is usually readily available.

Fluids should never be restricted. As little as a 2 percent weight loss due to dehydration can impair performance. Drink before, during and after exercise. The American College of Sports Medicine has issued the following guidelines to help athletes stay hydrated (ACSM 2001):

TWO TO THREE HOURS BEFORE EXERCISE:

Drink 12-20 oz of water or sports drink

ONE HOUR OR LESS BEFORE EXERCISE:

Drink 50 to 100g from beverages (6-8% CHO solution) or gels (25g CHO/4 oz)

DURING EXERCISE:

Drink 6-12 oz of sports drinks every 15-30 minutes

AFTER EXERCISE:

Drink 16-24 oz of fluid for every pound lost during exercise.

Berning, Jacqueline, "Recommendations for Athletes on Food and Fluid Consumption," JADA 110(4), April, 2010.

Wheat Foods
C O U N C I L

19201 E. Mainstreet, #103
Parker, Colorado 80134
(303) 840-8787/Fax: (303) 840-6877
E-mail: wfc@wheatfoods.org
URL: www.wheatfoods.org