



Eating For Endurance

Eating right can make all the difference in your sports performance. It is important to eat right when training, not just on race day. Making sure you take in the proper nutrients when training for an event (marathon, triathlon, etc.) can ensure that your muscles are properly recovered and ready to go for the next training session and that you have enough energy to get through your workouts every day. What you eat and when you eat it are a crucial part of any endurance training program.

Carbohydrates

Why Carbs?

- Primary source of energy in the body.
- Liver and muscle glycogen are vital to physical activity – it is the stored form of carbohydrate that fuels your muscles during a workout.
- Needed before, during exercise greater than 1 hour, and after exercise to replenish glycogen stores.

Glycogen Depletion

- Inadequate total calorie intake
- Low carbohydrate intake
- Inadequate repletion
- Infrequent rest days

Signs & Symptoms

- Performance decline
- Low energy levels
- Sudden weight loss
- Sugar cravings
- Poor concentration
- Irritability & mood swings

Prior to Exercise

- Eat a high-carbohydrate diet
 - 8 grams of carbs/kg or 70% of total daily calories
 - Train the muscles to store as much glycogen as possible
 - Take rest days
- Limit sugary foods (unless consumed immediately prior to exercise)
- Limit fat, protein, fiber and sodium
- Consume familiar, well-tolerated foods



- 3-4 hours prior to a long workout:
 - 75-200 grams or 300-800 calories, primarily from carbs.
 - 300 calorie meal: 1 large apple, 4 Saltine crackers, and 1 ½ tbs peanut butter
 - 500 calorie meal: 1 wheat bagel, 2 tbs. jelly, and 1 ½ cup low-fat milk
 - 750 calorie meal: 1 large baked potato, 2 tsp margarine, 1 cup steamed broccoli, 1 cup mixed carrots and green peas, 5 vanilla wafers, 1 ½ cups apple or pineapple juice.
- 1 hour prior to a long workout:
 - 15-50 grams or 60-200 calories from carbs
 - Focus on starchy foods 1 hr prior to exercise
 - Ex. Bread or ½ bagel with jelly, hot or cold cereal with banana slices, graham or animal crackers
- 5 minutes prior to exercise
 - Crackers, graham crackers, or any simple carb

During Exercise

Goal: To replace fluid losses and maintain blood glucose levels

- Required only after 1 hour continuous or intermittent, high intensity exercise
 - 30-60 grams of carbs per hour, or 120-240 calories of carbohydrate per hour
 - Avoid protein, fat and fiber
- 30-60 grams carbohydrate
 - 20-40 ounces sports drink
 - 150 calories (for 24 ounces), 90mg sodium, 25mg potassium, 13g sugar, 13g carbs
 - ½ - 1 sports bar (Cliff chocolate chip peanut crunch)
 - For 1 bar: 260 calories, 6g fat, 200mg sodium, 260mg potassium, 42g carbs, 21g sugar, 11g protein
 - Gu Shot blocks
 - 3 pieces (black cherry): 100 calories, 70mg sodium, 20mg potassium, 24g carbs, 12g sugar
 - Gu Shot Rocs
 - 10 pieces (peanut butter): 270 calories, 4.5g fat, 340mg sodium, 85mg potassium, 38g carbs, 27g sugar, 20g protein
 - ¼ cup dried fruit (plain raisins)
 - 130 calories, 10mg sodium, 31g carbs, 29g sugar, 1g protein
 - Energy gels (Hammer gel, vanilla)
 - 1 pouch: 90 calories, 25mg sodium, 23g carbs, 2g sugar
 - pretzels (16 nibblers)
 - 120 calories, 200mg sodium, 25g carbs, less than 1g sugar, 3g protein



After Exercise

Goal: To provide adequate fluids, electrolytes, energy and carbs to replace muscle glycogen and ensure rapid recovery. Small amount of protein needed to help ensure muscle synthesis.

- Aim to eat carbohydrates and protein in a 3-grams-to-1 ratio within 1 hour after long and intense workouts (eating within 15-30 minutes after exercise is ideal).
- Consume foods high in simple carbohydrates (~50 -75 grams) and lean proteins (~15 - 30 grams).
- Limit foods high in fat.
- Examples:
 - 1 sports bar (Cliff) rich in carbohydrates and protein
 - carbs: 42g and protein: 11g
 - 1 small bagel (3" diameter) topped with yogurt
 - carbs: 55g and protein: 13g
 - 1 cup low protein yogurt with banana
 - carbs: 77g and protein: 9g
 - Fig bar or graham crackers or animal crackers with 1 cup skim milk
 - (2 sheets graham crackers) carbs: 35g and protein: 9g
 - Trail mix: ½ cup whole grain cereal (Cheerios), 1/3 cup dried fruit (cranberries, sweetened), almonds (1/4 cup unsalted almonds)
 - carbs: 50g and protein: 9g
 - Turkey sandwich (2 ounces turkey, mustard and 2 pieces whole wheat bread)
 - carbs: 28g and protein: 14g
 - Smoothie: 1 cup milk and 1 cup unsweetened frozen fruit (blueberries & strawberries), and 1tbs honey
 - carbs: 51g and protein: 11g

Hydration

- Before Exercise:
 - 2-3 hours before: 16+ oz water, sports drink or juice.
 - 10-20 minutes before: 8 ounces cool water.
 - Do not hyperhydrate
- During Exercise:
 - 4 to 6 oz of water every 15-20 (Don't wait)
 - After 1 hour of exercise: 4-8 oz sports drink every 15 minutes.



- After Exercise:
 - 20 –24 oz water, sports drink or juice for every pound of body weight lost during exercise

Dehydration Prevention Tips

- Do not rely on thirst
- Monitor body weight
- Monitor urine color, frequency & quantity
- Experiment with cold fluids
- Drink sports drinks in activities lasting longer than 60 minutes
- Practice drinking
- Wear lightweight clothing
- Do not over drink

Sports Drink Guidelines

- Ingredients
 - All simple sugars
- Intended For
 - Exercise sessions > 60 minutes
 - Immediately after exercise
 - On hot, humid days
 - Multiple event tournaments
- Per 8 Ounce Portion
 - 6-8% carbs (14-19 grams), 100+ mg sodium, 30+ mg potassium, no carbonation, no caffeine
- Best Bets
 - Gatorade & Powerade
 - Accelerade (only for refueling)

Some of these ideas adopted from:
Nancy Clark's Sports Nutrition Guidebook – 3rd Edition