

11

Nutrition for Exercise

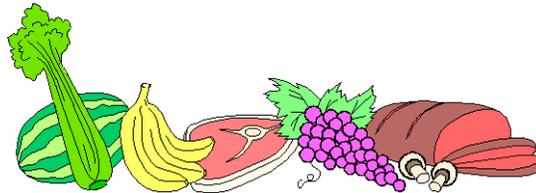


In this chapter you will learn about:

- ◆ Dietary practices for enhancing endurance and strength performance.
- ◆ Dietary measures for exercise recovery.

Your physical performance is greatly influenced by regular conditioning and by following sound dietary practices. Both prolonged aerobic exercise and multiple bouts of high intensity exercise impose significant demands on energy and fluid balance. Failure to replace energy and fluids used during exercise can significantly impair performance in later activities.

The following recommendations are for an individual who regularly participates in at least 90 minutes of aerobic exercise each day or in multiple, strenuous bouts of exercise several times a week. This information does not apply if you exercise less than one hour per day.



Carbohydrate Needs

During heavy training you must increase your kcal intake, especially from carbohydrates (CHO), to meet your energy demands. Failure to do so may result in:

- ◆ Chronic muscular fatigue.
- ◆ A feeling of staleness.
- ◆ Weight and muscle mass loss.

CHO for Endurance Training

The endurance capacity of an individual on a high-CHO diet is approximately **3 times greater** than on a high-fat diet. When CHO intake is low, several days of rigorous training will deplete muscle CHO (glycogen) stores and eventually impair performance. **CHO should supply 60 - 65% of your total daily kcal intake.** Keep a dietary log for a few days to see if your CHO intake is adequate.



Worksheet 11-1. Calculate Your Daily CHO Needs

_____ x 0.60 = _____ kcal from CHO per day.
Your EER*

_____ x 0.65 = _____ kcal from CHO per day.
Your EER*

You should eat _____ to _____ kcals from CHO daily.

* Your estimated energy requirement (EER) was calculated in [Chapter 1, Worksheet 1-2](#).
To calculate grams of CHO see [Worksheet 2-1](#).

CHO Loading

CHO Loading, or glycogen supercompensation, is a regimen that combines diet and exercise to “pack” more CHO (glycogen) into muscle. It is used by endurance athletes to optimize physical performance during prolonged endurance events. CHO loading is unnecessary for individuals who eat according to the dietary guidelines outlined in [Chapter 3](#) and whose CHO intakes are within the range calculated in [Worksheet 11-1](#).

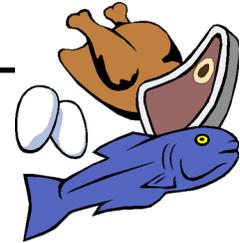


CHO for Strength Training

CHO are required for strength training because the exercises rely on muscle glycogen stores for energy. **CHO should supply 55-60% of your total daily caloric intake.** This is slightly lower than the requirements for endurance activities (see [Worksheet 11-1](#)) because the total amount of energy expended is less.

Protein Needs

Protein needs of strength athletes and endurance athletes are quite similar at **0.6 - 0.8 grams of proteins per pound of body weight**.



This corresponds roughly to 10-15% of your total daily kcals. It is highly likely that your diet provides adequate proteins since most Americans consume proteins in excess of their needs. Use [Worksheet 11-2](#) or [Worksheet 2-2 \(Chapter 2\)](#) to determine your protein needs.

Worksheet 11-2. Calculate Your Protein Needs

Body Weight = _____ lbs.

0.6 grams/lb x _____ lbs. = _____ grams proteins.
(Body weight)

0.8 grams/lb x _____ lbs. = _____ grams proteins.
(Body weight)

Your daily protein grams = _____ to _____.

The High-Protein Myth

One of the most common myths is that eating high-protein diets and protein supplements leads to bigger muscles. Clearly, this is not the case! Muscle is only 20% proteins; the rest is water, minerals, lactic acid, and urea. Moreover, excessive protein intakes, mostly from protein supplements, can cause:



Muscle is:
20% proteins,
75% water, and
5% inorganic salts, urea,
and lactate.

- ◆ Increased water needs.
- ◆ Greater demands on the liver and the kidneys.
- ◆ Imbalances in the essential amino acids.
- ◆ Diarrhea or abdominal cramps.

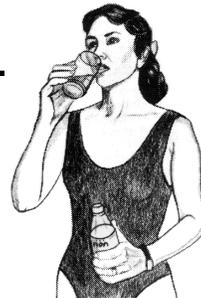
For these reasons, avoid protein powder drinks that provide excessive amounts of proteins or selected amino acids. Supplements can be very expensive, dangerous to your health, and they are quite unnecessary. Spend your money on a variety of foods for a balanced diet that will sufficiently meet your protein needs. Exercise to gain muscle!

Vitamin and Mineral Needs

Any increased vitamin and mineral needs can be met by eating according to the Food Guide Pyramid ([Chapter 3, Figure 3-1](#)). Particularly, increase the number of fruits and vegetables you eat as these foods are good sources of many vitamins and minerals, as well as antioxidants (see [Chapter 3, Table 2-2, Table 2-3, and Appendix A](#)). Antioxidant (see [Glossary](#)) nutrients may protect you from environmental stressors and may accelerate your recovery from exhaustive exercise. Fresh fruits and vegetables also provide potassium, which is lost during prolonged strenuous exercise (see [Table 2-3](#)).

Fluid Needs

Drinking fluids at regular intervals and eating foods with a high water content (i.e., fresh fruits) are important for maintaining hydration and fluid status during training. See [Chapter 2](#) for more information on fluid balance. Guidelines for drinking fluids during exercise are:



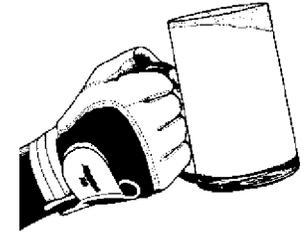
- ◆ Drink 16 oz. (2 cups) of fluid two hours before starting exercise.
- ◆ Drink 3 to 4 oz. (1/2 cup) of fluid every 15-20 minutes during exercise.
- ◆ Weigh yourself before and after exercise. Drink 16 oz. of fluid for every pound of weight lost.
- ◆ Do not rely on thirst as an indicator of fluid needs. Once you feel thirsty you are already dehydrated.
- ◆ Drink water when exercising less than 60 minutes. Drink a sports drink (5% to 8% CHO with electrolytes) when exercising longer than 60 minutes.
- ◆ Monitor your urine: urine should be a pale yellow and you should be urinating frequently.

Many beverages can replenish lost fluids, so select a beverage that tastes good, does not cause stomach discomfort, is rapidly absorbed, and contains electrolytes (see [Glossary](#)) and CHO (5% to 8%) when performing prolonged or strenuous exercise. Rehydrate with a non-caffeinated, non-carbonated, non-alcoholic beverage.



Overhydration

Although less common than dehydration, untreated overhydration can be life threatening. It is seen when plain water is used to replace fluid losses during prolonged (greater than 3 hours) strenuous exercise. Remember, both water and electrolytes are lost during sweating, so both need to be replaced in this situation.



Prevent overhydration by drinking a beverage that contains electrolytes (such as a sport drink) or by eating a light snack (e.g., oranges) with your water. Between exercise sessions, electrolytes lost through sweating can be easily replaced by eating well-balanced meals and snacks ([Chapter 3](#)).

Nutrition for Exercise Recovery

Within 30 minutes of completing an extended or intense exercise session, consume at least **50 grams of CHO** (roughly 200 kcals). Also, continue to snack on high-CHO foods for up to six hours. This will help restore your muscle glycogen (CHO stores) for the next exercise session. Some foods and servings sizes that contain roughly 50 grams of CHO are:

- ◆ Bagel with jam
- ◆ Baked potato with skin
- ◆ Cooked sweet corn, 1.5 cups
- ◆ Cornflakes, 2.5 cups
- ◆ Watermelon, 4.5 cups
- ◆ Raisins, 0.4 cup
- ◆ Shredded wheat cereal, 1.4 cups
- ◆ Baked Beans, 1 cup
- ◆ Bananas (2)
- ◆ Cooked oatmeal, 2 cups
- ◆ Cooked Rice, 1 cup
- ◆ Orange juice, 2 cups

For more information on the CHO content of foods, check food labels ([Figure 3-2](#)), check the USDA website at <http://www.usda.gov>, or ask a dietitian.