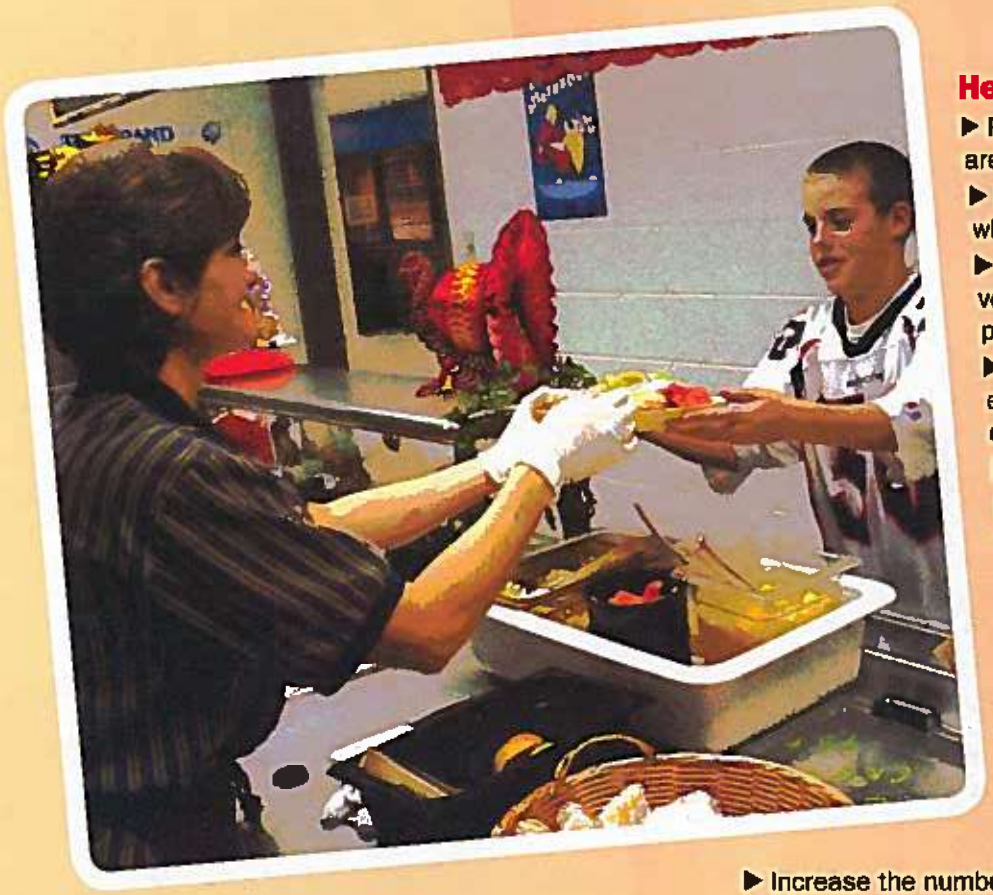
Unit V

Healthy Choices



Healthy People 2010 Goals

- Reduce the number of teens who are overweight or obese.
- Increase the number of people who are at a healthy weight.
- Increase servings of fruit, vegetables, and whole grain products in the daily diet.
- Decrease amount of fat, especially saturated fat, in the daily diet.
- Reduce daily salt intake.
- Increase the number of people who get adequate calcium in the daily diet.
- Increase the number of teens who eat healthy meals and snacks.
- Increase regular physical activity levels of teens.
- Increase the number of people who meet national dietary guidelines.
- Increase the number of teens and young adults who receive health risk information.
- Improve health literacy and increase public health information dissemination.

Unit Activities

- Your Exercise Circuit
- Muscle Fitness Exercises With Resistance Machines
- Jollyball
- Cooperative Aerobics
- Continuous Rhythmical Exercise
- Active Learning: Isometric Exercise Circuit

13

Body Composition

In this chapter...

Activity 1

YOUR EXERCISE CIRCUIT

In previous chapters you learned about various exercise circuits. These circuits were preplanned to help you learn various exercises for specific parts of health-related physical fitness. Now that you have had some experience with circuits, you can plan your own total fitness exercise circuit for building all parts of health-related physical fitness. Guidelines to consider in developing your circuit include choosing exercises for all parts of health-related fitness, not having two stations in a row that work the same muscles, and being sure that you include only safe exercises. Your teacher can provide you with a worksheet to help you in developing your own exercise circuit.

Lesson 13.1

The Facts About Body Composition

Lesson Objectives

After reading this lesson, you should be able to

1. Describe a healthy level of body fatness.
2. Explain how the level of body fatness is related to good health.
3. Explain how body fatness can be assessed.

Lesson Vocabulary

anorexia athletica (p. 224), anorexia nervosa (p. 223), basal metabolism (p. 221), body composition (p. 221), bulimia (p. 224), essential body fat (p. 223), overfat (p. 222), skinfolds (p. 224), underfat (p. 222)

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Body fatness is a part of health-related physical fitness. Body fatness refers to the percentage of your total body that is comprised of fat tissue. For good health, it is important to have optimal amounts of body fat. In this lesson you will learn what level of body fat is best for you, how your body fatness affects your health, and how to assess your body fatness.

Body Composition

Together, all the tissues that make up your body are called your **body composition.** For a typical person, 15 to 25 percent of the body composition is fat and 75 to 85 percent is lean body tissue. Lean tissue includes muscles, bones, skin, and body organs such as the heart, liver, kidneys, and lungs.

People who do regular physical activity typically have a larger percentage of lean body weight, especially from muscle and bone, and less body fat than those who do not do such activity. Having a relatively low percentage of your total body weight as fat is desirable. However, for good health, it is important that your body composition include some body fat.

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FIT FACTS

More than 60 percent of all adults are considered to be too fat or obese. Fewer children are considered to be too fat (13 percent) but this number is nearly three times as many as 20 years ago. About 11 percent of teens are considered to be too fat or obese. Type II diabetes, once thought to be an adult disease, is becoming more common among youth, partly because it is linked to overfatness and obesity (see chapter 3).

Factors Influencing Body Fatness

In chapter 1, you learned about some of the factors that influence physical fitness. Many factors also influence body fat levels.

Heredity

You inherit your body type from your parents. Some people are born with a tendency to be lean, muscular, or fat. Inherited tendencies make keeping body fat levels in the good fitness zone easy for some people but difficult for others. You need to consider heredity when you are determining your goals for body fatness.

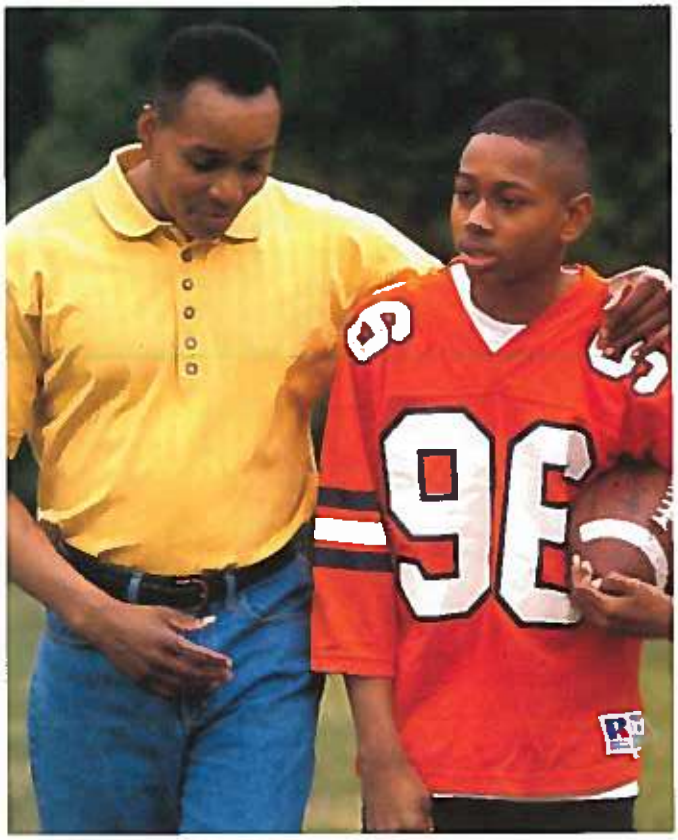
Metabolism

Your **basal metabolism** is the amount of energy your body uses just to keep you living. This energy is measured in units called calories. Your basal metabolism does not include the calories you burn in work, recreation, studying, or even sitting and watching television. Some people have a higher basal metabolism than others. This means that their bodies, at complete rest, burn more calories than the bodies of those with low metabolism. People with a high metabolism can consume more calories than others can without increasing their level of body fat.

Metabolism is affected by heredity, age, and maturation. Most young people have a high metabolism because their bodies are growing and building muscle. As you grow older, your rate of metabolism becomes slower. Then most people need to reduce the number of calories in the diet to avoid gaining fat. How might the rates of metabolism of the people in the picture on page 222 be likely to differ?

Maturation

As you grow older and the hormone levels in the body begin to change, levels of body fat also change. During the teen years, female hormones cause girls to develop



Age, heredity, and maturation affect metabolism.

higher levels of body fat than boys. Because of male hormones, teenage boys have greater muscle development than girls.

Early Fatness

Children who are too fat develop extra fat cells that make it more difficult to control fat levels later in life. Keeping body fatness within the good fitness zone during the childhood and teen years will help keep body fat levels in check throughout life.

Diet

The amount of energy in foods is measured in calories. A typical teenage male needs to consume about 2,500 to 3,000 calories a day to maintain an ideal level of body fat. A typical teenage female needs about 2,000 to 2,500 calories a day. Most males need more calories than females because they are larger and have more muscle mass.

Physical Activity

Your body burns calories for energy. The more vigorous activity you do, the more energy your body uses and the more calories you need. An inactive person uses less energy each day than an active person and therefore needs to consume fewer calories.

Body Fat: How Much Is Good?

About one half of your body fat is located deep within your body. The remaining fat is between your skin and muscles. A fit person has the right amount of body fat—neither too much nor too little.

Weight Versus Fat

The terms *underweight* and *overweight* do not provide a great deal of information about fitness or about a person's body composition. Underweight and overweight refer to how much you weigh compared to others. Muscles weigh more than fat. Thus, you can weigh more than someone else of the same size because you are more muscular and have less body fat than the other person. For example, the runners in the picture have strong muscles. They may weigh more than other people who appear to be the same size. On the other hand, you can weigh less than someone else of the same size because you have smaller bones.

The terms **overfat** and **underfat** are very useful because they describe how much of your total body weight is made up of fat. Underfat means having too little body fat; overfat means having too much body fat. Obesity is a term used to describe people who are overfat.

People who are muscular can weigh more than others of the same size because they have more muscle and less body fat.

Body Fat in Females and Males

From the late teens on, females generally have a higher percentage of body fat than do males. Teenage girls should not have less than 11 percent or more than 25 percent body fat. Over 35 percent fat is considered obese for females. Teenage boys should not have under 6 percent or over 20 percent body fat. Over 30 percent is considered obese for males.

Overfatness, Health, and Wellness

Having too much fat can be unhealthy. Scientists report that people who are overfat have a higher risk of heart disease, high blood pressure, diabetes, cancer, and other diseases. Being overfat also reduces a person's chances of successful surgery. Health costs for obese people are about $1,500 a year more than for people with healthy body fat levels. In addition, an overfat person tires more quickly and easily than a lean person. For this reason, an overfat person might be less efficient in work and recreation. Many experts believe that the reason why so many adults are too fat is that they try to achieve an unrealistic weight or fat level. For example, many people try to be as lean as a movie star or an athlete shown in a commercial. When they cannot attain or maintain exceptionally low body fat levels, they give up and become too fat. The experts suggest it is better to set less extreme goals that are achievable and that will result in maintaining a healthy body fat level throughout life.

Too Little Body Fat

Just as having too much body fat can be a health risk, having too little body fat is also a health risk. Eating disorders such as anorexia nervosa, anorexia athletica, and bulimia have many negative health consequences and can be fatal. Identifying the symptoms of eating disorders early is extremely important. Conditions associated with an excessive desire to lose fat and maintain very low body fat levels can be serious health problems.

Many experts believe that our nation's obsession with leanness as seen on TV, in the movies, and in magazines contributes to eating disorders. Six to 8 percent of girls in grades 9 to 12 are considered to be overweight, but more than one third (33 to 36 percent) of all girls in these grades think they are too fat. This statistic shows that many girls use an unrealistic standard in judging their body composition.

The minimum amount of body fatness is called **essential body fat** because if fat levels in the body drop below this amount, health problems result. The chart on this page shows several reasons why your body needs some body fat.

Being underfat can result in abnormal functioning of various body organs. In fact, exceptionally low body fat levels can result in serious health problems, particularly among teenagers. Females with especially low levels of body fat experience health problems related to the reproductive system and risk loss of bone density.

The Importance of Body Fat

- Fat is an insulator; it helps your body adapt to heat and cold.
- Fat acts as a shock absorber; it can help protect your body organs and bones from injury.
- Fat helps your body use vitamins effectively.
- Fat is stored energy that is available when your body needs it.
- Fat, in reasonable amounts, helps you look your best, thus increasing your feelings of well-being.

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Anorexia Nervosa

Anorexia nervosa is a serious eating disorder. A person who has this disorder severely restricts the amount of food he or she eats in an attempt to be exceptionally underfat. In addition, many people with anorexia do extensive physical activity to further lower their levels of body fat to extremely dangerous levels.

Anorexia is most common among teenage girls, though it is becoming increasingly common among teenage boys. People with this disorder are usually very hard workers and high achievers. They have a distorted view of their bodies and see themselves as being too fat even when they are extremely thin. A fear of maturity, and the weight gain associated with adulthood, is a characteristic of persons with this disorder. People with the disorder often try to hide their condition by wearing baggy clothing, only pretending to eat, and

exercising in private. Anorexia is a life-threatening condition, and those who have the condition need immediate professional help.

Anorexia Athletica

Anorexia athletica has many symptoms that are similar to those of anorexia nervosa. It is most common among athletes involved in sports such as gymnastics, wrestling, and cheerleading, in which a low body weight is desirable. This condition can lead to anorexia nervosa. The disorder is thought to be related to the pressure to maintain a low weight and an excessive preoccupation with dieting and exercising for weight loss.

Bulimia

Bulimia is an eating disorder in which a person does binge eating, or eats very large amounts of food within a short period of time. Bingeing is followed by purging. Techniques of purging include vomiting and the use of laxatives to rid the body of food and prevent its digestion. Bulimia can result in loss of teeth, gum diseases, severe digestive problems, and other significant health problems.

Body Fat Assessment

You might wonder how to assess body fatness and make determinations about how much you should weigh. Several methods exist to make such assessments.

Laboratory Measurements of Fatness

Until recently, underwater weighing was considered to be the best way to assess your body fat level. With this technique, you are immersed in a tank of water and then weighed. Lean people weigh more under water; they sink. People with more fat weigh less under water; they float. Measurements of your lung capacity are also taken because the amount of air in your lungs influences your weight. A formula is applied to your underwater weight and lung capacity to scientifically determine your body fat level.

Recently an X-ray technique called DEXA has been developed and is considered to be the new gold standard for measuring body fatness. DEXA and underwater weighing are the most accurate methods of measuring body fat, but these procedures require time, are expensive, and must be done by an expert.

Skinfold Measurements

Your body fat levels can also be determined by measuring the thickness of **skinfolds,** the fat under the skin.

FITNESS Technology

Dual-energy X-ray absorptiometry (DEXA) is a high-tech type of X-ray machine. It takes a three-dimensional picture of the entire body that allows an attached computer to accurately determine the total amount of fat in the body. It is now considered to be the best method of determining body fatness. Studies show that skinfold measures, when done properly, can be quite accurate in predicting body fatness as determined by DEXA.

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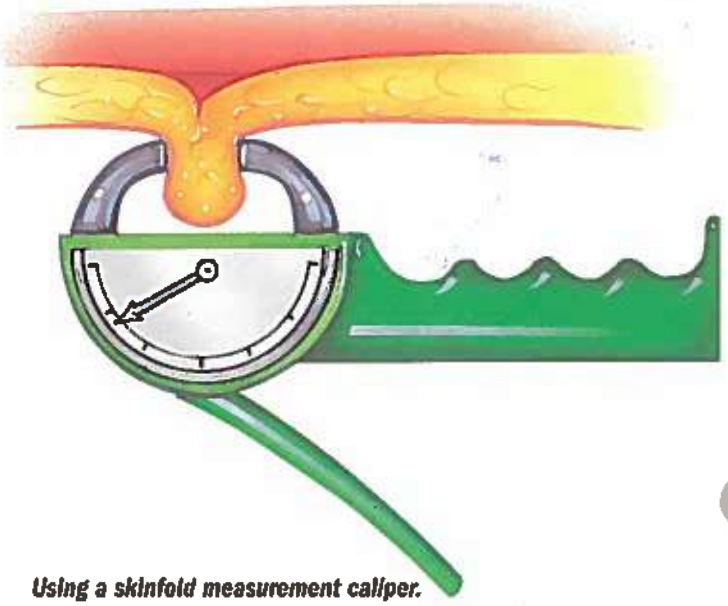


Using a skinfold measurement caliper.

Look at the picture illustrating the measurement of a skinfold. A special instrument called a caliper is used to measure skinfold thickness. You will learn to do skinfold measurements in the self-assessment in this chapter.

Body Measurements

You can also use body measurements to estimate your percentage of body fat. One procedure uses weight and waist measurements for males and height and hip measurements for females. This method is less accurate than skinfold measures.

Body Mass Index

You learned about the body mass index in chapter 5. This index is a better indicator of fat than height and weight alone, but it does not give as accurate an assessment of body fatness as DEXA, underwater weighing, or skinfold measurements. Both this procedure and the height–weight charts described in the following section can provide inaccurate measurements for people who have a lot of muscle (athletes, for example). This is because muscle weighs a lot more than fat and a very muscular person could be high in weight but not

too fat. This is one reason why skinfolds or laboratory techniques are considered to be better measures for very active people.

Height–Weight Charts

A common method of assessing body weight is through the use of height–weight tables. The tables, shown in the self-assessment on page 228, list normal weight ranges for people according to age, height, and sex. Note that this procedure does not assess body fatness. As noted, measures that use weight and height only can mistakenly classify a thin, muscular person as overweight. Height–weight techniques may also mistakenly classify an overfat person who has little muscle as within a normal weight range. These tables are convenient but should not be the only source of information about body composition. You will use height–weight charts in the self-assessment in this chapter.

Waist-to-Hip Ratio

Evidence indicates that people with a very large waist compared to hip size tend to have more fat inside the body and may be at risk for health problems. This is because excessive body fat in the abdominal area is associated with high blood fat levels. You can measure the circumference of your hips and waist and calculate a ratio. It is a useful health risk indicator that can be used throughout life. You will learn more about waist-to-hip ratio in chapter 14.

Other Measurements

Computers and other machines have been developed to test body fat levels. Many are expensive and require trained people to do the assessment. Others are unreliable. Many fitness and health clubs, as well as some schools, use some of these techniques. One technique, bioelectrical impedance analysis, can be accurate when done properly. However, unless you can use the same machine from measurement to measurement, errors may occur. Advantages of skinfolds and the other methods listed are that they are relatively easy to do, they do not require expensive machines, and you can do them yourself. Research has shown that inexpensive plastic calipers such as those shown in the photos on page 226 are quite accurate if used properly by a person who is trained in using them and who practices measurement technique.

Ideal Body Weight

What is my ideal body weight? Even after learning about the different forms of body composition assessment, this is the question many people ask. Experts agree that there is no such thing as an ideal body weight for all people that can be provided in a chart or a table. The self-assessments you do in this book provide you with several ways to get an idea of your body composition. The best advice is to have a long-term goal of achieving the healthy zone for body fatness (see table 13.1 on page 227).

If you are in the marginal or too much fat zone, then you should develop a plan that will gradually move you from the zone you are in to the next zone. Trying to achieve the healthy zone when you are too far from it is an unrealistic goal. If you are already in the healthy zone for body fat, a good goal is to stay there.

If you are in the healthy zone and want to be leaner to enhance your performance in a sport, you may want to achieve the high performance zone. It should be emphasized that being in the high performance zone is not necessary for good health and may not be a realistic goal for all people. Trying to be leaner than the high performance zone is not a desirable goal.

If you are in the too little fat zone, it is desirable to increase your weight by gaining body fat. Those with eating disorders often try to reduce body fat even when they already have too little for good health.

If you achieve and maintain the healthy zone for body fat, you will probably also have a desirable waist-to-hip ratio, a healthy BMI, and be in the normal weight range for your age and sex. However, as noted earlier in this chapter, it is possible to have a healthy body fat level and be above BMI and normal weight standards because people with a lot of muscle may weigh more than other people but not be overfat.

Once you have achieved a body fat level that puts you in the healthy zone, you can weigh yourself. Maintaining this weight while maintaining a fat level in the healthy zone is a desirable lifetime goal. Learning to eat well and perform regular physical activity is essential in achieving this goal.

Lesson Review

1. What is a good level of body fat?
2. How is a person's body fatness related to good health?
3. What are three methods of assessing body fat? Explain the accuracy of each method.

Self-Assessment

Skinfold Measurements and Height–Weight Charts

One way to estimate your body fat percentage is to use skinfold measures. You can assess your body weight using height–weight charts. When you do this assessment, keep in mind these points:

- Your fitness scores are your personal information and should be kept confidential.
- Be sensitive to the feelings of others when body fat measurements are being taken. Taking the measurements privately may be appropriate.
- You can use your results to help build a fitness profile.

Triceps skinfold measurement.

Calf skinfold measurement.

Skinfold Measurements

You can use skinfold measurements to estimate body fat percentage and target weight. For teenagers, upper arm (triceps) and calf measurements provide a good estimate of body fat percentage. Work with a partner to take each other's measurements. When you are performing the skinfold measurements on your partner use the instructions that follow. Write your results on your record sheet.

- **Triceps skinfold:** Pick up a skinfold on the middle of the back of the right arm, halfway between the elbow and the shoulder. The arm should hang loose and relaxed at the side.

- **Calf skinfold:** The person being tested stands and places the right foot on a chair. Pick up a skinfold on the inside of the right calf halfway between the shin and the back of the calf, where the calf is largest.

1. Use your left thumb and index finger to pick up the skinfold. Do not pinch or squeeze the skinfold.
2. Hold the skinfold with your left hand while you pick up and use the caliper with the right hand to get a reading.
3. Place the caliper over the skinfold about one-half inch below your finger and thumb. Hold the caliper on the skinfold for 3 seconds, and then note the measurement. Read the caliper measurement to the nearest one-half millimeter (mm), if possible.
4. Make three measurements each for the triceps and the calf skinfolds. Use the middle of the

Skinfold Measurements (continued)

Table 13.1

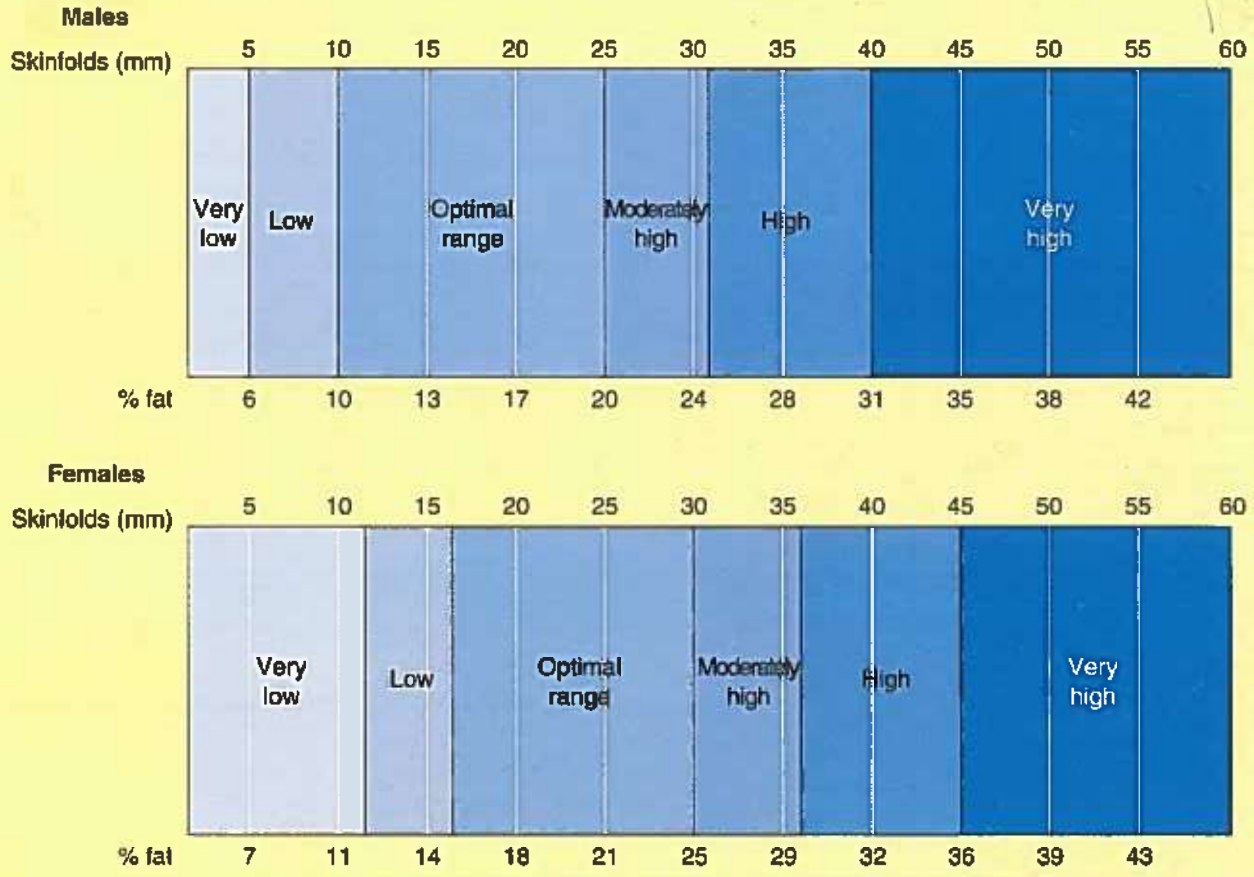
Rating Chart: Body Fatness

FATNESS RATING	% FAT	
	Males	Females
Too little fat	<6	<12
High performance	6-9.9	12-14.9
Healthy	10-19.9	15-24.9
Marginal	20-24.9	25-29.9
Too much fat	25+	30+

three measures as the score. For example, an 8, 9, and 10 give a score of 9. If your three measurements differ by more than 2 mm, take a second, or even third set of measurements.

Now you can determine your body fatness and fatness ratings.

1. Once you have had your skinfold measurements taken add the triceps and calf scores. Use the figure below to estimate your body fat percentage. Use a ruler to connect your sum of skinfolds with the percent fat figure. For example, if you are a male and your skinfold sum is 27 mm, your body fat percentage is approximately 22 percent. Then look at the rating chart at the left to determine your rating for body fatness.
2. Once you have determined your percent body fat using skinfold measures, you can determine your target weight. Target weight is an estimate of a weight that would put you in the healthy zone for body fatness and is based on your current weight and your current sum of skinfolds. To do this you will need to use the Target Body Weight worksheet provided by your teacher. The worksheet contains tables (one for males and one for females). Using the appropriate table, find the row showing your current body weight and the column with your current sum of skinfolds. Your target weight is located in the box where the two columns intersect. If your sum of skinfolds is less than 27 mm for females and 22 mm for males, you are already at or below your target weight. People should determine their own targets based on the factors that influence body fatness discussed earlier in this chapter.



Skinfold measurements and body fat percentages (sum of triceps plus calf skinfolds).

"Triceps Plus Calf Skinfolds: Males" and "Triceps Plus Calf Skinfolds: Female" reprinted by permission of Dr. Tim G. Lohman, Department of Exercise and Sport Sciences, University of Arizona.

Height–Weight Charts

You can also use height–weight charts to estimate your appropriate weight range.

1. Remove your shoes.
2. Take your own height and weight measures or ask a partner to help you.
3. Use table 13.2 to determine the normal weight range for a person of your sex, age, and height.
4. Record your height, weight, and normal weight range on the record sheet. Compare your target weight from skinfolds and your normal weight range. Then answer the questions on your record sheet.

Table 13.2

Normal Weight Ranges

MALES					FEMALES				
HEIGHT		AGE			HEIGHT		AGE		
ft	in.	13-14	15-16	17-20	ft	in.	13-14	15-16	17-20
4	6	69-72			4	6	73-76		
4	7	73-76			4	7	76-79		
4	8	78-81			4	8	79-82		
4	9	82-85	82-85		4	9	86-89	91-94	
4	10	87-90	87-90		4	10	91-94	98-101	99-102
4	11	88-91	88-91		4	11	96-99	102-105	104-107
5	0	89-92	97-100	101-104	5	0	104-107	106-109	109-112
5	1	97-100	101-104	106-109	5	1	105-108	109-112	113-116
5	2	100-103	106-109	114-117	5	2	106-109	112-115	116-119
5	3	106-109	111-114	121-124	5	3	110-113	115-118	120-123
5	4	113-116	115-118	124-127	5	4	115-118	120-123	125-128
5	5	116-119	120-123	129-132	5	5	119-122	124-127	129-132
5	6	120-123	126-129	134-137	5	6	126-129	128-131	134-137
5	7	126-129	132-135	137-140	5	7	127-130	131-134	137-140
5	8	130-133	135-138	140-143	5	8	128-131	135-138	143-146
5	9	135-138	139-142	147-150	5	9	129-132	137-140	148-151
5	10	141-144	142-145	149-152	5	10	130-133	139-142	153-156
5	11	146-149	149-152	152-155	5	11		142-145	158-161
6	0	151-154	152-155	156-159	6	0		146-149	163-166
6	1		158-161	162-165					
6	2		160-163	167-170					
6	3			177-180					
and over									

Lesson 13.2

Controlling Body Fatness

Lesson Objectives

After reading this lesson, you should be able to

1. Explain how to use the FIT formula for fat control.
2. Explain how physical activity helps a person maintain a healthy body fat level.

Lesson Vocabulary

calorie (p. 229)

www.fitnessforlife.org/student/13/5

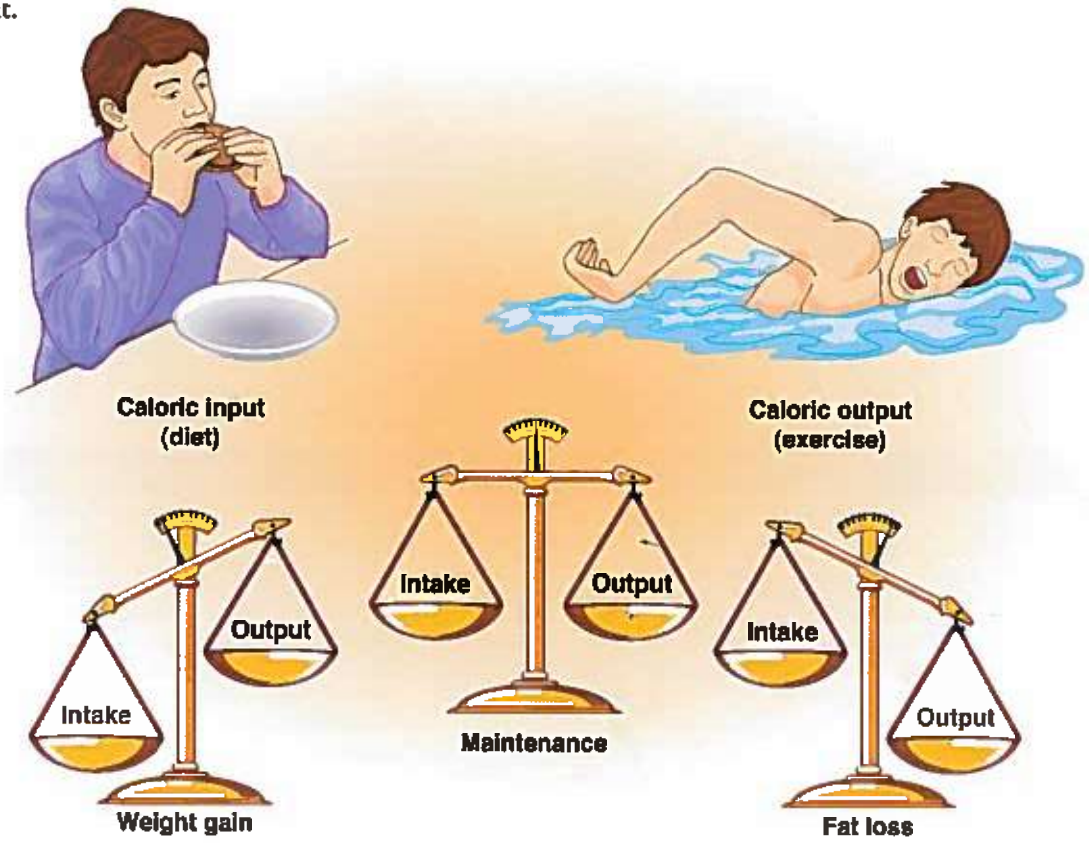
A major health goal is to help Americans achieve and maintain acceptable body fat levels throughout life. In this lesson, you will learn the FIT formula for fat control and appropriate activities for gaining weight and losing body fat.

Balancing Calories

Balancing **calorie** intake and expenditure affects body fat levels. The foods you eat contain calories that your body uses for energy. Fat is stored energy (stored calories). If you take in (eat) more calories than you expend (in exercise), you will gain weight (store calories as fat). If you expend more calories than you take in, you will lose weight. If you balance the calories consumed and expended, you maintain your current weight.

FIT FACTS

One pound of fat contains 3,500 calories. Therefore, you can lose a pound of fat by eating 3,500 calories less than you normally eat in a given time or by burning 3,500 calories more than normal in physical activity. Eating foods that provide more calories than your body uses will cause you to gain weight. Therefore, you can gain a pound of fat by eating 3,500 calories more than you usually eat within a given time or expending 3,500 calories fewer in physical activity within a given time.



Balancing caloric input and output.

The FIT Formula

As noted in the previous section, both diet and physical activity play an important role in maintaining a healthy body fat level. Because both diet and physical activity are important for fat control, each has a target zone, shown in table 13.3.

Gaining Weight

Combining proper physical activity and diet is the best weight gain method. Strength and muscular endurance exercises can help you gain weight. Resistance exercises that help build muscle are especially effective because they build muscle and muscle weighs more than fat.

Remember that physical activity burns calories. Therefore, when you are active, you need to increase your intake of calories in order to gain weight. You will learn in chapter 14 that you do not need to eat special diets or take protein supplements to gain weight; you need only eat a well-balanced diet that contains an increased number of calories.

Physical Activity and Calories

Every physical activity burns calories. You might wonder how many calories are burned by different activities. Table 13.4 shows the approximate number of calories burned each hour during vigorous recreational activities. Find the weight value nearest your own weight. Add 5 percent to the number of calories for each 10 pounds you weigh above the listed weight value. Or, subtract 5 percent from the number of calories for each 10 pounds you weigh below the listed weight value. Use this table to determine which physical activities are best for burning calories. Then see which activities appeal to you.

Physical Activity and Fat Loss

A combination of physical activity and eating fewer calories is the best way to lose fat. Research shows that a person who reduces calorie intake without increasing activity will lose both fat and muscle tissue, while a person who increases physical activity and reduces calorie consumption loses mostly body fat. Notice that physical activities from all levels of the Physical Activity Pyramid, except the top level indicating inactivity, are appropriate for helping to control body fatness.

Lifestyle Activities

Lifestyle physical activities are especially effective in long-term fat control. Studies indicate that lifestyle

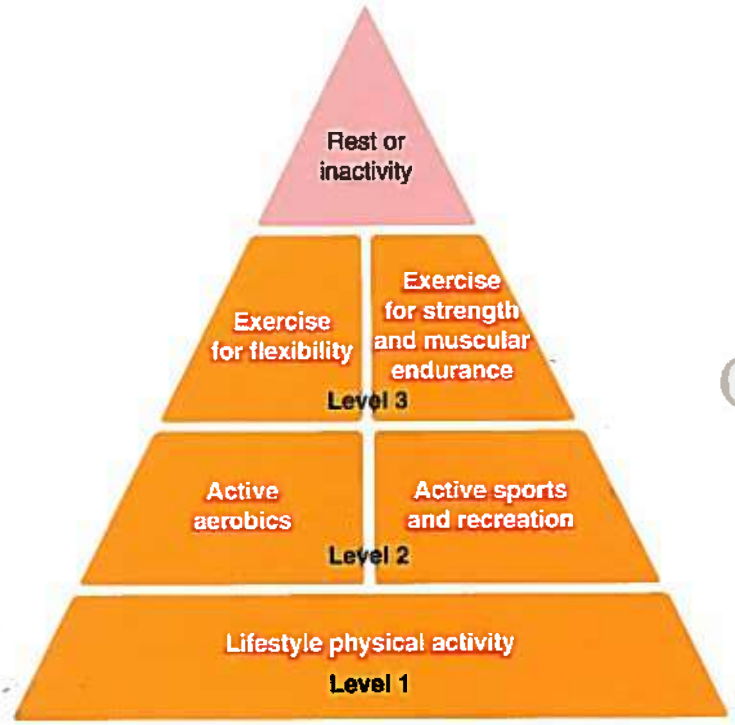


Table 13.3

Target Zones for Fat Control

	Diet	Physical activity
Frequency	• Eat 3 regular meals or 4-5 small meals daily. Regular, controlled eating is best for losing fat. Skipping meals and snacking is usually not effective.	• Participate in physical activity daily. Regular physical activity is best for losing fat. Short or irregular physical activity does little for controlling body fat.
Intensity	• To lose 1 pound of fat, you must eat 3,500 fewer calories than normal. • To gain a pound of fat, you must eat 3,500 more calories than normal. • To maintain your weight, you must keep the number of calories you eat the same.	• To lose 1 pound of fat, you must use 3,500 more calories than normal. • To gain a pound of fat, you must use 3,500 fewer calories than normal. • To maintain your weight, you must keep your level of physical activity the same.
Time	Neither diet nor physical activity results in quick fat loss. Medical experts recommend that a person lose no more than 2 pounds of weight each week without medical supervision. Both diet and physical activity can be used to safely lose 1 or 2 pounds each week.	

Table 13.4

Energy Expenditure

Activity	CALORIES USED (CAL/HR)				
	100 lb	120 lb	150 lb	180 lb	200 lb
Backpacking/Hiking	307	348	410	472	513
Badminton	255	289	340	391	425
Baseball	210	238	280	322	350
Basketball (half-court)	225	240	300	345	375
Bicycling (normal speed)	157	178	210	242	263
Bowling	155	176	208	240	261
Canoeing (4 mph)	276	344	414	504	558
Circuit training	247	280	330	380	413
Dance, ballet/modern	240	300	360	432	480
Dance, aerobic	300	360	450	540	600
Dance, social	174	222	264	318	348
Fitness calisthenics	232	263	310	357	388
Football	225	255	300	345	375
Golf (walking)	187	212	250	288	313
Gymnastics	232	263	310	357	388
Horseback riding	180	204	240	276	300
Interval training	487	552	650	748	833
Jogging (5 1/2 mph)	487	552	650	748	833
Judo/Karate	232	263	310	357	388
Racquetball/Handball	450	510	600	690	750
Rope jumping (continuous)	525	595	700	805	875
Running (10 mph)	625	765	900	1035	1125
Skating, ice/roller	262	297	350	403	438
Skiing, cross-country	525	595	700	805	875
Skiing, downhill	450	510	600	690	750
Soccer	405	459	540	575	621
Softball (fastpitch)	210	238	280	322	350
Swimming (slow laps)	240	272	320	368	400
Swimming (fast laps)	420	530	630	768	846
Tennis	315	357	420	483	525
Volleyball	262	297	350	403	483
Walking	204	258	318	372	426
Weight training	352	399	470	541	558

activities are just as effective as organized sports and games for losing fat, and more effective for permanent fat loss.

Aerobic Activities

Aerobic activities are effective for fat loss. You can do them for relatively long periods, burning many calories.

Active Sports and Active Recreation

Active sports and recreation that are equal in intensity to aerobic activities such as jogging are effective in fat loss because they can be done for long periods of time. Vigorous sports and recreational activities also burn calories but are often so intense that they cannot be performed for long periods of time.

Strength, Muscular Endurance, and Flexibility Exercises

Remember that muscle fitness exercises can help you gain weight by building muscle tissue. However, these exercises, combined with the proper diet, also can contribute to fat loss because they do burn calories. Flexibility exercises do not expend as many calories as the other four types of activities in the Physical Activity Pyramid; however, they do expend calories above resting. Any calories expended above normal can help in controlling body fatness.

www.fitnessforlife.org/student/13/6

Calculating Your Daily Calorie Expenditure

If you keep a record of all of the activities you perform in a day, you can determine the total calories you expended. You can use special forms (available from your teacher) to make record keeping easier. After keeping a record of the activities you do for a full day, you can use the formula at the Web site to help you calculate your daily calorie expenditure. Later you can compare your daily expenditure to your daily calorie intake (see chapter 14). To maintain weight, you must expend as much energy as you take in. To lose weight, you must expend more energy than you take in. To gain weight, you muse take in more calories than you expend.

Proper nutrition and calorie intake are important to lose body fat.

FIT FACTS

If you maintain your normal intake of calories and increase your activity by playing one half hour of tennis daily, you will lose 16 pounds in a year. If you briskly walk 15 minutes a day instead of watching TV, you will lose 5 to 6 pounds in a year.

www.fitnessforlife.org/student/13/7

Table 13.5

Myths and Facts About Fat Loss

Myths	Facts
Exercise cannot be effective for fat loss because it takes many hours of exercise to lose even 1 pound of fat.	You can lose body fat over time with regular physical activity if your calorie intake remains the same. Fat lost through physical activity tends to stay off longer than fat lost through dieting alone.
Exercise does not help fat loss because it increases your appetite and encourages you to overeat.	If you are mildly active instead of inactive, your appetite should not increase. Even moderate to vigorous activity will not cause your appetite to increase so much that you overeat. People who overeat usually do so for reasons other than appetite.
Most overfat people have glandular problems.	Most overfat people eat too much, do too little physical activity, or both.
You can spot reduce by exercising a specific body part to lose fat in a particular area.	Any exercise that burns calories will cause the body's general fat deposits to decrease. One exercise does not cause one area of fat to decrease more than another.

Taking Charge: Improving Physical Self-Perceptions

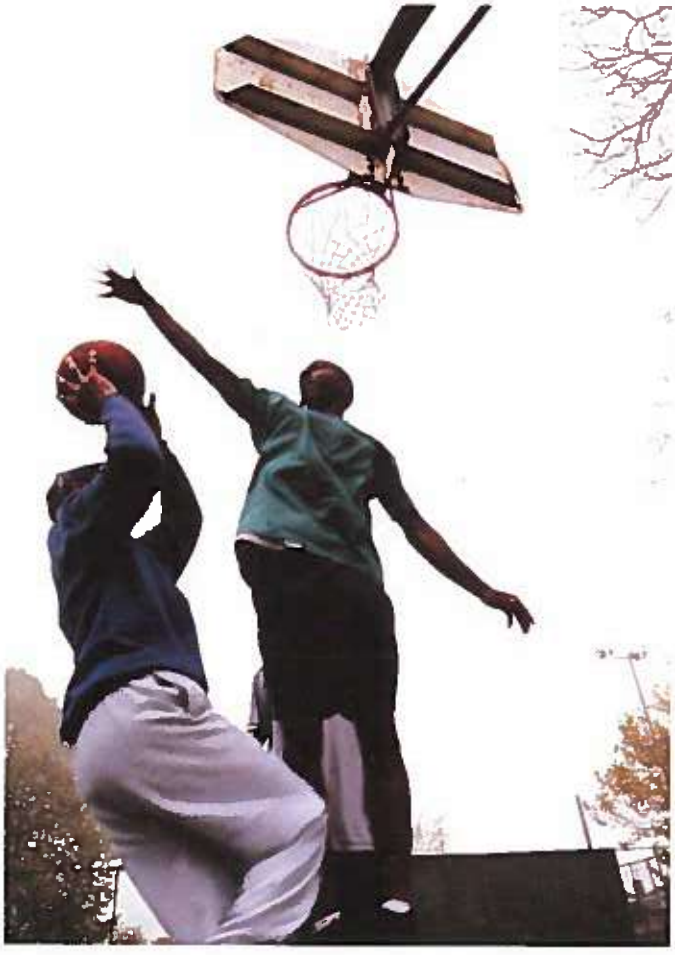
All people have a mental picture of themselves. If you think you do well in a certain activity, you will probably take part in that activity. If you feel embarrassed about your appearance or ability level while doing an activity, you probably will avoid that activity.

Michael was not sure that he wanted to go back to school after the summer break. It seemed as if all of his friends had grown several inches taller in the last few months, and he had stayed the same height. Michael felt embarrassed and a little jealous, even though none of his friends seemed to notice. His height certainly did not alter his ability to play tennis. In fact, friends still called him "King of the Court" because he usually won the match whenever he played.

Raul was one of the shortest in his class, but height did not stop him from being involved in activities. He realized he had never been a great basketball player, but he still liked to play with his friends from school. He discovered that height had nothing to do with his ability to go hiking, and it did not prevent him from being a good wrestler.

For Discussion

Michael's self-perception about his appearance has changed from positive to negative. What can he do to change his negative perception? How does Raul keep a positive self-perception? What else can a person do to develop a positive self-perception? Fill out the questionnaire provided by your teacher to find out about your own self-perception. Consider the guidelines on page 234.



People with good physical self-perceptions are more likely to be active than those with low physical self-perceptions.

Myths About Fat Loss

Some people have incorrect ideas about physical activity and fat loss. Read table 13.5 to identify some mistaken ideas and learn some facts about losing body fat.

No matter what your body is like now, regular physical activity and proper diet will help you control body fatness. When you are fit, you look better, feel better, and have fewer health problems than people who are overfat and unfit.

FIT FACTS

Interviews with teens show that 44 percent of overweight youth were, or are, teased about their body weight. Studies show that four to five times as many teens think they are overweight than really are. Being teased or having feelings of being overweight can result in low physical self-perceptions. Teens can help other teens improve self-perceptions by being supportive rather than critical.

Lesson Review

1. How can you use the FITT formula to control your body fatness?
2. How can physical activity help you maintain a healthy body fat level?

Self-Management Skill

Improving Physical Self-Perceptions

A self-perception is an awareness you have about your own thoughts, actions, or appearance. It is how you think other people view you. Some of the many kinds of self-perceptions are academic, social, and artistic. In this book the focus is on physical self-perceptions. This refers to the way you view your physical self. Four areas of physical self-perceptions are strength, fitness, skill, and body attractiveness. People with good physical self-perceptions are happy with their current strength and fitness levels, they feel that the skills that they have are adequate to meet their needs, and they like the way they look. We know that people who have positive physical self-perceptions are more likely to be active than those who do not have such good perceptions of themselves. The following list includes some guidelines that can be used to help people improve physical self-perceptions.

▶ **Assess your current physical self-perceptions.** You may use the worksheet provided by your teacher.

▶ **Consider your self-assessment results.** Use the self-assessment to determine whether you have any areas in which your physical perceptions are especially low (strength, fitness, skill, or body attractiveness).

▶ **Perform regular physical activity to improve yourself physically or practice to improve your physical skills.**

▶ **Consider a new way of thinking about yourself.** Often people set unrealistic standards such as trying to look like someone on television or in the movies. It is important to understand that in real life these people do not look the way they look on the screen. In fact, special cameras and computers are often used to change the way they look. Also you do not know whether a movie star has eating disorders or practices healthy habits. Consider your heredity and set realistic standards for yourself.

▶ **Think positively.** Almost all people have a physical characteristic that they would like to change. Studies show that the things people don't like about themselves are rarely seen as problems by other people. You are often your own worst critic, so thinking positively can help you present yourself in a positive way.

▶ **Do not let the actions of a few insensitive people cause negative feelings about yourself.** People who are insensitive to others' feelings will always exist. These people often have low perceptions of themselves and try to build themselves up by tearing other people down. Recognize that criticism from these people is their problem, not yours.

▶ **Consider how your behavior and actions influence how other people view you.** Acting happy and friendly has as much to do with how others perceive you as your physical characteristics.

▶ **Realize that all people have some imperfections.** Try to build on your strengths and improve your areas of weakness.

▶ **Find a realistic role model and be a role model for others.** Instead of trying to be like someone who is totally unlike you, try to find someone who you admire who has characteristics you can realistically achieve. Just as you look to others for models, remember that others look to you as a model. Providing a positive model for others can help you think positively about yourself.

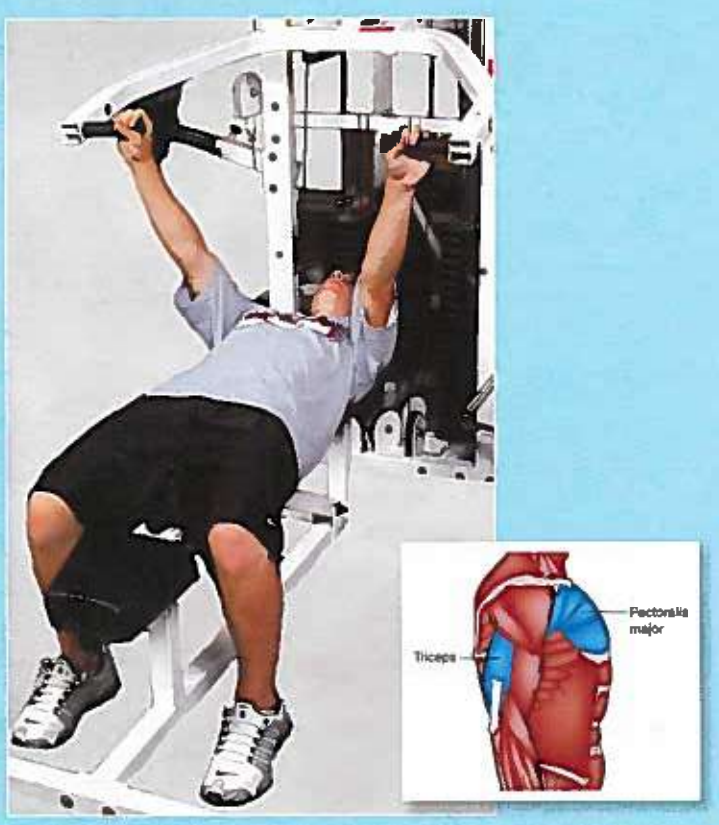
Activity 2

Muscle Fitness Exercises With Resistance Machines

Although physical activity from each of the levels of the Physical Activity Pyramid (including lifestyle activity from level 1 and active aerobics, active recreation, and active sports from level 2) is essential for improving body composition, it is also important to do exercises for muscular strength and endurance because they can significantly decrease your percentage of body fat as well as increase your lean body mass. Strength and muscular endurance exercises from level 3 of the pyramid build muscles so that you look your best.

In this activity, you will perform 10 basic exercises using resistance machines. The exercises are called the Basic 10 because they build muscle fitness in 10 of the basic, or large, muscle groups of the body. Use your 1RM values from the self-assessment in chapter 11 to determine the amount of weight or resistance you should be able to lift. If you did not have time to do the 1RM self-assessments for each exercise, complete this process before performing the exercises. Follow these instructions and guidelines to perform the exercises:

- Your teacher will demonstrate or have a class member demonstrate proper technique for each of the lifts. After the demonstration, travel from one machine to the next. Practice each exercise using *no resistance or weight.* Have a partner or partners evaluate your technique while you perform the exercise, and make changes if necessary. Exchange places with your partner(s). Continue this procedure at each machine. Use the guidelines on page 189 to help evaluate your partner.
- Next, determine 40 percent of your 1RM for each exercise. Perform 10 reps of each exercise at this resistance. Perform 1 set using proper form.
- If you have the opportunity to continue this program over several weeks, use the double progressive system to increase your overload (see page 187).
- Do exercises for the abdominal and back muscles. Some simple exercises not requiring machines are just as effective as resistance machine exercises. They are included in the Basic 10 exercises even though they do not use machines.
- When performing PRE, be sure to follow exercise etiquette. Carry a towel with you and wipe off the exercise bench after you do your exercise. Get off the machine between exercises so that another person can use it. Take your proper turn.
- You may have to wait between exercises to find an available machine. If a machine is not available, perform the curl-up or the back extension exercise on a table or bench. Once you complete these exercises, if you still have waiting time, perform a cardiovascular exercise such as bench stepping or rope jumping.



This exercise uses the pectoral and triceps muscles.

Bench Press

1. Lie on your back on the bench with your feet flat on the floor. Grasp the handles with your palms facing away from your body. Flatten your back. If possible, place your feet on the floor to help flatten your back and avoid arching it. If your feet do not reach the floor easily, you can bend your knees and place your feet on the bench to accomplish the same purpose.

Caution: Do not place your feet on the bench if it so narrow that your feet might slip off the bench or if the bench is unstable.

2. Push upward on the handles, extending your arms completely.

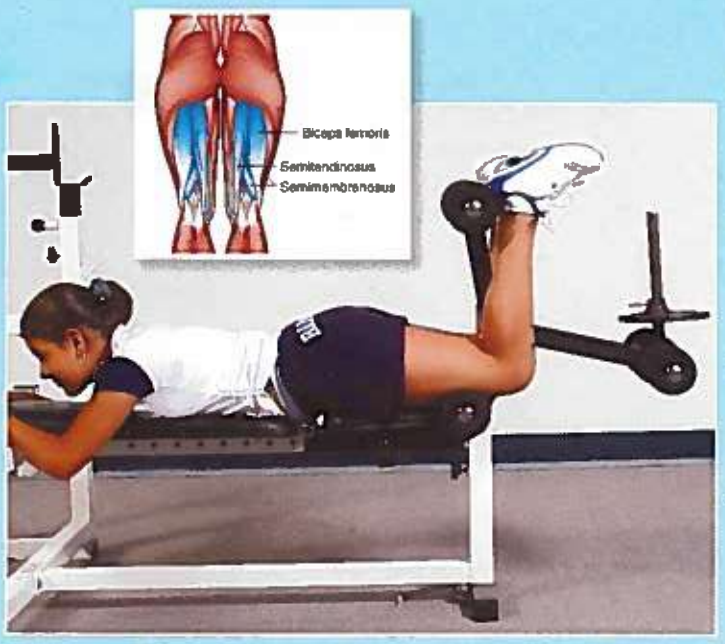
Caution: Do not lock your elbows. Do not arch your back.

3. Return to the starting position.
4. You may choose either this exercise or the seated arm press (see page 183). You may also substitute this exercise in the self-assessment if you have a bench press machine and do not have a seated press machine.

This exercise uses the muscles of the thigh (quadriceps).

Knee Extension

1. Sit on the bench. Hook one of your ankles under the pad. Grasp the handles on the bench.
2. Extend your knee. Bend the knee through its full range of motion.
3. Return to the starting position. Repeat the exercise with the other leg.
4. You may choose either this exercise or the seated leg press (see page 183).

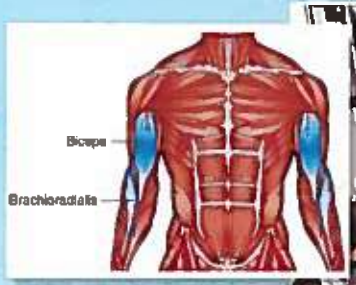


This exercise uses the hamstring muscles.

Hamstring Curl

1. Lie facedown on the bench with your kneecaps extending over the edge of the bench. Hook your heels under the cylindrical pads. Grasp the handles on the bench.
2. Bend your knees so that you lift the cylindrical pads. Bend the knees through their full range of motion. The pads will almost touch your buttocks at the top of the lift.
3. Lower to the starting position.

Caution: Do not lock the knees when putting your heels under the pads. If necessary, have a partner lift the pads so that you can avoid this.



This exercise uses the biceps and other elbow flexor muscles.

Biceps Curl

1. Stand in front of the station and grasp the handle of the low pulley, palms up. Tighten your abdominals and buttocks (gluteal muscles).
2. Pull the handle from thigh level to chest level. Bend your elbows, but keep them close to your sides.

Caution: Do not move other body parts.

3. Return to the starting position.

This exercise uses the calf muscles.

Heel Raise

1. Place a 2-inch-thick board on the floor. Stand with the balls of your feet on the board and the handles even with your shoulders.
2. Grasp the handles with your palms facing away from your body. Keep your hands and arms stationary during the lift.
3. Rise on to the balls of your feet, and then lower to the starting position.

Lat Pull-Down

1. Sit on the bench (or floor depending on the machine). Adjust the seat height so that your arms are fully extended when you grab the bar.
2. Grab the bar with your palms facing away from you. Your arms should be at least shoulder-width apart.
3. Pull the bar down to chest level.
4. Return to the starting position.

This exercise uses the muscles of the back (latissimus dorsi), shoulder (deltoids), chest (pectoralis), and arm (biceps).

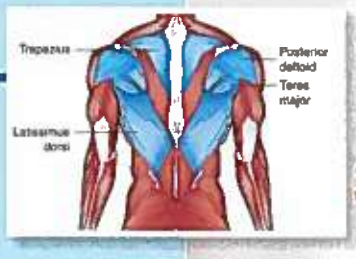
This exercise uses the muscles on the back of the arm (triceps).

Triceps Press

1. Adjust the seat height so that your hands are on the handles just above shoulder height.
2. With your thumbs toward your body, grab the handles.
3. Keeping your back straight, push forward with your arms until they are straight.
4. Return to the starting position.

Seated Row

1. Adjust the machine so that your arms are almost fully extended and parallel to the ground.
2. Grab the handles with your thumbs up.
3. Keeping your back straight, pull straight back toward your chest.
4. Return to the starting position.



This exercise uses the muscles of the back and shoulders.

This exercise uses the back muscles.

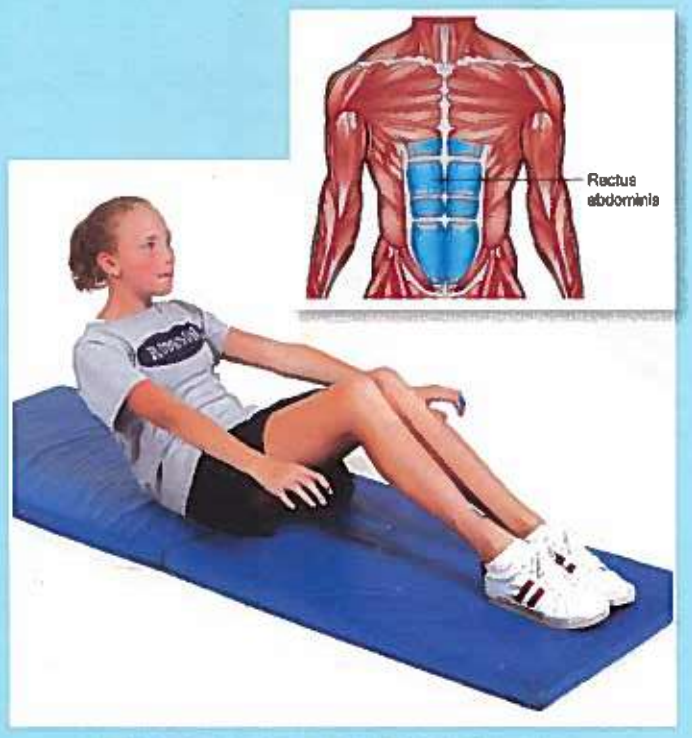
Back Extension Exercise (Trunk Lift)

1. Lie facedown on a table (or bench). Slide forward until your upper body extends over the edge at the waist. With a partner holding your legs, allow the upper body to lower.
2. From the low position, lift your upper body until it is even with the edge of the table.

Caution: Do not lift any higher.

3. Lower to the beginning position. Repeat the exercise up to 10 times.

Safety Tip: As you do these exercises, move only as far as the directions specify.



This exercises uses the abdominal muscles.

Abdominal Exercise (Curl-Up)

The curl-up, sometimes referred to as the crunch, is a good substitute for the straight-leg sit-up, bent-knee sit-up, and hands-behind-the-head sit-up.

1. Lie on your back with your knees bent and your feet close to your buttocks.
2. Hold your hands and arms straight in front of you and curl your head, shoulders, and upper back off the floor.
3. Slowly roll back to the starting position.

Caution: Do not hold your feet while doing a trunk curl.

As you improve, you might hold your arms across your chest. When you become very good, you might place your hands on your face (cheeks).

Safety Tips:

1. Perform all movements slowly.
2. Exhale on the lift; inhale on the return to the starting position. Do not hold your breath.

13 Chapter Review

Project

Keep a record of your calorie intake and your physical activity for one week. How might you adjust your calorie intake and your amount of physical activity to better maintain or improve your levels of body fat? What short-term goals might you have for calories eaten each day and calories expended each day for the one-week period? Make a written plan for the following week incorporating changes that might help you reach or maintain ideal levels of body fat. Use the worksheets provided by your teacher.

Reviewing Concepts and Vocabulary

Number your paper from 1 to 6. Next to each number, write the word (or words) that correctly completes the sentence.

1. An eating disorder characterized by bingeing and purging is called _____.
2. The minimum amount of body fat needed for good health is _____.
3. Your _____ is the amount of energy your body uses at complete rest.
4. A term used to describe a person who is very overfat is _____.
5. People with _____ see themselves as too fat even when they are extremely thin.
6. A technique for assessing body fat levels that involves being weighed under water is called _____.

Number your paper from 7 to 12. Next to each number, choose the letter of the best answer.

Column I	Column II
7. overfat	**a.** fat under the skin
8. skinfolds	**b.** too much body fat
9. anorexia athletica	**c.** all the tissues that make up your body
10. underfat	**d.** eating disorder most common among athletes
11. caliper	**e.** used for skinfold measurements
12. body composition	**f.** too little body fat

Number your paper from 13 to 15. On your paper, write a short answer for each statement or question.

13. Explain why maintaining essential body fat levels is important for good health.
14. Describe one myth about fat loss and explain how it is incorrect or misleading.
15. Why is a combination of diet and physical activity best for maintaining ideal levels of body fat?

Thinking Critically

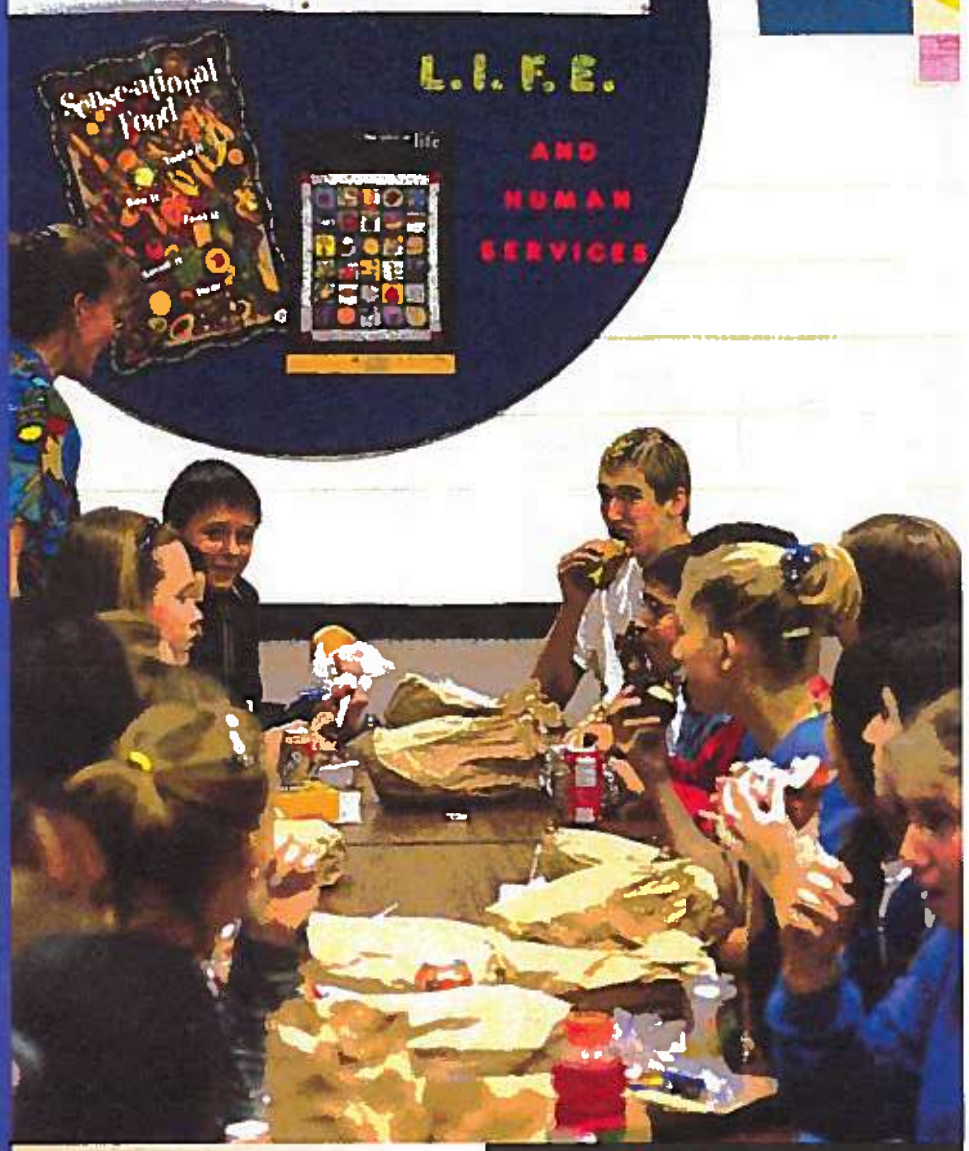
Write a paragraph to answer the following question.

Each year people spend billions of dollars on weight loss or muscle building products that do not work. Look in the newspaper or a popular magazine. Find an advertisement for a weight loss product. Read the ad and make a list of its claims. Place a checkmark by those that are consistent with the information in this chapter. Place an X by those that appear to be false. Write a paragraph evaluating the advertisement.

14

Choosing Nutritious Food

Team Nutrition School



In this chapter...

Activity 1

JOLLYBALL

In planning your lifetime physical activity program, you might want to include some sports but feel that you lack the necessary skills. Many people avoid participation in sports for the same reason. However, some sports can be modified to make them more fun for everyone regardless of skill level. For example, jollyball is the name given to several modifications of volleyball that may make the sport more fun for everyone.

Lesson 14.1

A Healthy Diet

Lesson Objectives

After reading this lesson, you should be able to

1. Describe the three types of nutrients that provide energy and the amounts of each necessary for good health.
2. Explain why vitamins and minerals are necessary to good health.
3. Explain the Food Guide Pyramid and describe how it can help you plan for healthy eating.

Lesson Vocabulary

AI (p. 244), amino acids (p. 244), complete proteins (p. 244), DRI (p. 244), incomplete proteins (p. 244), micronutrients (p. 244), RDA (p. 244), saturated fats (p. 244), transfatty acids (p. 244), UL (p. 244), unsaturated fats (p. 244)

www.fitnessforlife.org/student/14/1

What kinds of foods are important for your health? How much food do you need to eat? In this lesson, you will learn about healthful foods. You also will learn how to select foods for a balanced diet.

Nutrients Your Body Needs

Scientists have identified 45 to 50 different nutrients—food substances required for the growth and maintenance of your cells. These nutrients have been divided into six groups—carbohydrates, proteins, fats, vitamins, minerals, and water. Each of these six types of nutrients will be discussed in this chapter.

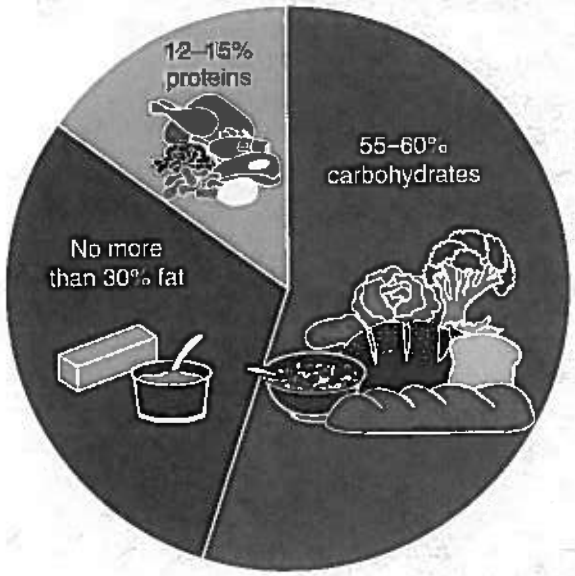
www.fitnessforlife.org/student/14/2

Nutrients That Provide Energy

Three types of nutrients supply the energy the body needs to perform its daily tasks: carbohydrates, proteins, and fats. The United State Department of Agriculture (USDA) recommends that most of the calories in your diet come from carbohydrates. Fewer of the calories in your diet typically come from fat and protein. The recommended percentages of calories from the three nutrients are shown in the figure.

FIT FACTS

Fats contain more calories per unit of weight than proteins or carbohydrates. One gram of fat contains 9 calories. One gram of carbohydrate or protein contains 4 calories.



Percentage of calories recommended by the USDA for carbohydrates, proteins, and fats.

Carbohydrates

Carbohydrates provide you with your main source of energy. The two kinds of carbohydrates are simple and complex. Most of our carbohydrate calories should be complex. Complex carbohydrates are sugars found in foods such as whole-grain breads, vegetables, and grain. Complex carbohydrates are called nutritionally dense because they contain large amounts of nutrients for the number of calories they provide. The majority of the carbohydrates in your diet should be complex in nature. Simple carbohydrates should account for 15 percent or less of the total calories in your diet. Some simple carbohydrates are better than others. For example fruit juices are simple carbohydrates that are high in simple carbohydrates but also contain vitamins. Others, such as candy, pastries, and soft drinks are considered to be empty calories because they contain many calories but contain few vitamins or minerals.

Fiber is a type of complex carbohydrate that your body cannot digest. Fiber supplies no energy. Fiber sources include the leaves, stems, roots, and seed coverings of fruits, vegetables, and grains. Examples of foods high in fiber are whole-grain breads and cereals, the skin

of fresh fruits, raw vegetables, nuts, and seeds. Fiber helps you avoid intestinal problems and might reduce your chances of developing some forms of cancer.

Proteins

Proteins are the group of nutrients that builds, repairs, and maintains body cells. They are called the building blocks of your body. Animal products, such as milk, eggs, meat, and fish, contain proteins. Some plants, such as beans and grains, also contain proteins. Proteins provide energy but do not provide as many calories for energy (12 to 15 percent) as carbohydrates or fats. If more protein is consumed than needed to build body tissues, the calories will be used to produce energy for daily activities or stored as body fat.

During digestion, your body breaks down proteins into simpler substances called **amino acids,** which your small intestine can absorb. Your body can manufacture 11 of the 20 existing amino acids. You need to get the other nine amino acids—known as the essential amino acids—from food.

Foods with all nine essential amino acids are said to contain **complete proteins.** They come from animal sources, such as meat, milk products, and fish. Foods that contain some, but not all, essential amino acids are said to contain **incomplete proteins.** Beans, nuts, rice, and certain other plants contain incomplete proteins. A daily diet that includes foods with both complete and incomplete proteins usually provides ample essential amino acids. People who do not eat meat need to eat a variety of incomplete proteins that together provide all the essential amino acids.

Fats

Fats are in animal products and in some plant products, such as nuts and vegetable oils. Fats are necessary for the growth and repair of cells. Fats dissolve certain vitamins and carry them to body cells. In addition, they enhance the flavor and texture of foods.

Fats are classified as saturated or unsaturated. In general, **saturated fats** are solid at room temperature, and **unsaturated fats** are liquid at room temperature. Saturated fats come mostly from animal products such as lard, butter, milk, and meat fats. Unsaturated fats come mostly from plants such as sunflowers, corn, soybeans, olives, almonds, and peanuts. Also, fish produce unsaturated fats in their cells.

According to the USDA, less than 30 percent of the total calories you consume should be from fat. It is recommended that no more than 10 percent of your total calories come from saturated fat or **transfatty acids.** Transfatty acids are made from unsaturated fats such as vegetable oils using a process that makes them solid at room temperature. Solid margarine is an example of a transfatty acid. Transfatty acids have been found to be similar to saturated fats in their effect on the body. For years food labels have informed you of how much saturated fat is in food, but only recently have labels included information on transfatty acids (transfats).

Cholesterol is a waxy, fatlike substance found in the saturated fats of animal cells, including those of humans. You consume cholesterol in foods high in saturated fat such as meat. Because you are an animal, you produce your own cholesterol. People who consume high amounts of saturated fat and transfatty acids produce more cholesterol than those who limit the amounts of these fats in the diet. High levels of cholesterol in your blood can contribute to atherosclerosis and other heart diseases. Medical experts recommend eating foods low in cholesterol, low in saturated fat, and low in transfatty acids.

FIT FACTS

The Food and Nutrition Board of the Institute of Medicine is another group that makes recommendations for healthy food choices. This group makes recommendations similar to those of the USDA but allows a wider range of percentages for carbohydrates (45 to 65 percent), proteins (10 to 35 percent), and fats (20 to 35 percent).

Nutrients That Do Not Provide Energy

Minerals, vitamins, and water have no calories and provide no energy, but they all play a vital role in staying fit and healthy. Minerals and vitamins are sometimes called **micronutrients** because the body needs them in relatively small amounts compared to carbohydrates, proteins, and fats.

www.fitnessforlife.org/student/14/3

The Food and Nutrition Board of the Institute of Medicine provides standards for the amounts of micronutrients called Dietary Reference Intakes **(DRI).** The three types of DRIs are used to help you know how much of each vitamin and mineral you should consume. The first is called the Recommended Dietary Allowance **(RDA).** RDA refers to the minimum amount of a nutrient necessary to meet the health needs of most people. The second, Adequate Intake **(AI),** is used when there is not sufficient evidence to establish an RDA. Tolerable Upper Limit **(UL)** describes the maximum amount of a vitamin or mineral that can be

consumed without posing a health risk. For more information concerning all of the DRIs consult the Web site on the previous page.

Minerals

Minerals are essential nutrients that help regulate the activities of cells. Minerals come from elements in the earth's crust. They are present in all plants and animals. You need 25 different minerals in varying amounts. Table 14.1 shows some major functions of the most important minerals as well as some food sources for them.

If you eat a balanced diet, you will most likely be getting the proper amounts of minerals. Nutrition experts still recommend that the best way to get adequate minerals and vitamins is with a balanced diet. Recently the American Medical Association recommended that most Americans take a vitamin and mineral supplement because many do not eat regular meals and for this reason do not get the vitamins and minerals they need. If you take a vitamin and mineral supplement, it should contain only the RDA or AI value for each mineral and vitamin. Supplements should not provide more than the UL for any vitamin or mineral. An excessive amount could lead to health problems. For example, too much calcium can interfere with other medications you may take. Too much magnesium can deplete the body of calcium and phosphorus. Too much zinc can deplete the body of copper.

Some minerals are especially important for young people. Calcium is one of them. Eating calcium-rich foods is important for health. An important function of calcium is building and maintaining bones, and the body needs calcium to build bones during the teen years. At about age 20, your bones become less efficient in getting calcium out of the food you eat and your bones begin to lose calcium. Because of a change in hormones when women reach about age 55, they have much more bone loss than men. A large percentage of older women develop osteoporosis, a condition in which the bones become porous and break easily. Men can have this disease, but they get it less often and much later in life. Getting enough calcium and doing weight-bearing exercises (such as walking and jogging) and resistance exercises all of your life help reduce the risk of osteoporosis.

Iron is a mineral needed for proper formation and functioning of your red blood cells. The red blood cells carry oxygen to your muscles and other body tissues. Iron deficiencies are especially common among girls and women. When you have insufficient iron in your body, you have iron deficiency anemia. This condition causes you to feel tired all the time.

The best sources of iron are meat (especially red meat), poultry, and fish. Iron from these foods is more easily absorbed than iron from other foods. An adequate amount of vitamin C also helps your body absorb iron. Eating a variety of foods that contain iron is the best way to get an adequate amount.

Sodium is a mineral that helps your body cells function properly. Sodium is present in many foods. It is especially high in certain foods, such as snack foods, processed foods, fast foods, and cured meats such as ham. For many people, sodium in the diet comes primarily from table salt (sodium chloride).

Most people eat more sodium than they need. It is wise to limit the amount of sodium in your diet. People with high blood pressure, or hypertension, need to be especially careful to limit sodium. It can cause their bodies to retain water, helping keep their blood pressure high.

Vitamins

Vitamins are needed for growth and repair of body cells. Vitamin C and the B vitamins are water soluble,

Table 14.1

Functions and Sources of Minerals

Mineral	Function in the body	Food sources
Calcium	Builds and maintains teeth and bones; helps blood clot; helps nerves and muscles function	Cheese; milk; dark green vegetables; sardines; legumes
Phosphorus	Builds and maintains teeth and bones; helps release energy from nutrients	Meat; poultry; fish; eggs; legumes; milk products
Magnesium	Aids breakdown of glucose and proteins; regulates body fluids	Green vegetables; grains; nuts; beans; yeast
Sodium	Regulates internal water balance; helps nerves function	Most foods; table salt
Potassium	Regulates fluid balance in cells; helps nerves function	Oranges; bananas; meats; bran; potatoes; dried beans
Iron	Helps transfer oxygen in red blood cells and in other cells	Liver; red meats; dark green vegetables; shellfish; whole-grain cereals
Zinc	Aids in transport of carbon dioxide; aids in healing wounds	Meats; shellfish; whole grains; milk; legumes

so they dissolve in blood and are carried to cells throughout your body. Your body cannot store excess B and C vitamins. You need to eat foods containing these vitamins every day. Vitamins A, D, E, and K dissolve in fat. Excess amounts of these vitamins are stored in fat cells in your liver and other body parts. Table 14.2 gives you more information about specific vitamins.

Folacin, or folic acid, is one vitamin that is especially important to girls and young women. Research has shown that children born to women low in folacin are at risk of birth defects.

Water

Dietitians usually say that water is the single most important nutrient. It carries the other nutrients to your cells, carries away waste, and helps regulate body temperature. Most foods contain water. In fact, your own body weight is 50 to 60 percent water.

FIT FACTS

The term *nutritionist* is frequently used for an expert on nutrition. In fact, a dietitian is more likely to be a true expert than those who call themselves nutritionist. In many states anyone can use the title nutritionist. The term *dietitian* is reserved for those with a degree in nutrition and who are registered (registered dietitian).

Your body loses two to three quarts of water a day through breathing, perspiring, and eliminating waste from the bowels and bladder. In very hot weather, or when you exercise vigorously, you lose even more water than usual. Then you need to drink plenty of extra fluids. The best beverages for this purpose are water, fruit juice, and milk. Soft drinks that contain caffeine are not as effective as water. Also, sports drinks sold commercially usually contain sodium and other ingredients that you do not need unless you exercise for several hours in high temperatures.

Planning a Balanced Diet

As you have learned, you need to eat foods containing all six nutrients in order to get a healthy, balanced diet. In addition, other guidelines have been developed to help you choose healthy foods.

Health Goals in America

America has national goals, called Healthy People 2010 goals, to promote health and prevent disease. These goals are the Healthy People 2010 goals related to nutrition:

- Reduce dietary fat, especially saturated fat.
- Increase complex carbohydrates in the diet.
- Increase the amount of calcium in the diet.
- Decrease the amount of salt and sodium in the diet.
- Reduce the incidence of iron deficiency.

Table 14.2

Functions and Sources of Vitamins

Vitamin	Function in the body	Food sources
B_1 (thiamin)	Helps release energy from carbohydrates	Pork; organ meats; legumes; greens
B_2 (riboflavin)	Helps break down carbohydrates and proteins	Meat; milk products; eggs; green and yellow vegetables
B_6 (pyridoxine)	Helps break down protein and glucose	Yeast; nuts; beans; liver; fish; rice
B_{12} (cobalamin)	Aids nucleic acid and amino acid formation	Meat; milk products; eggs; fish
Folacin	Helps build DNA and proteins	Yeast; wheat germ; liver; greens
Pantothenic acid	Involved in reactions with carbohydrates and proteins	Most unprocessed foods
Niacin	Helps release energy from carbohydrates and proteins	Milk; meats; whole-grain or enriched cereals; legumes
Biotin	Aids formation of amino, nucleic, and fatty acids and glycogen	Eggs; liver; yeast
C (ascorbic acid)	Aids formation of hormones, bone tissue, and collagen	Fruits; tomatoes; potatoes; green, leafy vegetables
A (retinol)	Helps produce normal mucus; part of chemical necessary for vision	Butter; margarine; liver; eggs; green or yellow vegetables
D	Aids absorption of calcium and phosphorous	Liver; fortified milk; fatty fish
E (tocopherol)	Prevents damage to cell membranes and vitamin A	Vegetable oils
K	Aids blood clotting	Leafy vegetables

The Food Guide Pyramid

The Food Guide Pyramid, shown here, provides an outline of what you need to eat each day. The pyramid is based on the dietary guidelines, and it can help you choose foods for a healthy diet. The pyramid calls for eating a variety of foods that provide the nutrients you need and contain the proper amount of calories to help you maintain a healthy weight.

The Food Guide Pyramid emphasizes eating foods from the five major food groups shown in the lower sections of the pyramid. Each food group provides some, but not all, of the nutrients you need. For good health, you need to eat the recommended number of servings of foods from each group.

It is especially important to eat more servings from the lowest level of the pyramid. These foods are from the bread, cereal, rice, and pasta group. These foods contain many essential nutrients and are low in fat. The next greatest number of servings should come from the vegetable group and the fruit group. The foods in these groups are especially rich in vital nutrients. Some evidence indicates that eating fruits and vegetables, particularly those that are dark green, dark yellow, and orange, can significantly reduce the risk of cancer. Choose fewer servings from the meat, poultry, fish, dry beans, eggs, and nuts group, as well as the milk, yogurt, and cheese group. Eating the recommended number of servings from these groups is important to good health and fitness because these foods are high in protein. These foods also tend to be high in fat, so be careful to choose lean meats and low-fat dairy products.

The foods at the top of the pyramid contain large amounts of fats and sugars and a large number of calories. They usually contain few, if any, other nutrients such as vitamins and minerals. For this reason, limiting these foods in your diet is wise. Among these foods are cookies, cakes, soft drinks, jellies, butter, margarine, mayonnaise, and salad dressings.

Alternative forms of the Food Guide Pyramid exist to offer recommendations for people with special eating needs. For example, the American Heart Association has a special pyramid for those with heart disease, or who wish to lower heart disease risk. Special pyramids for ethnic foods exist also. Use the Internet address at the Web icon below to find links to alternatives to the USDA Pyramid. These pyramids provide alternative food choices for healthy eating. Only those that are based on sound nutrition guidelines such as those presented in this chapter should be considered as a basis for your food choices.

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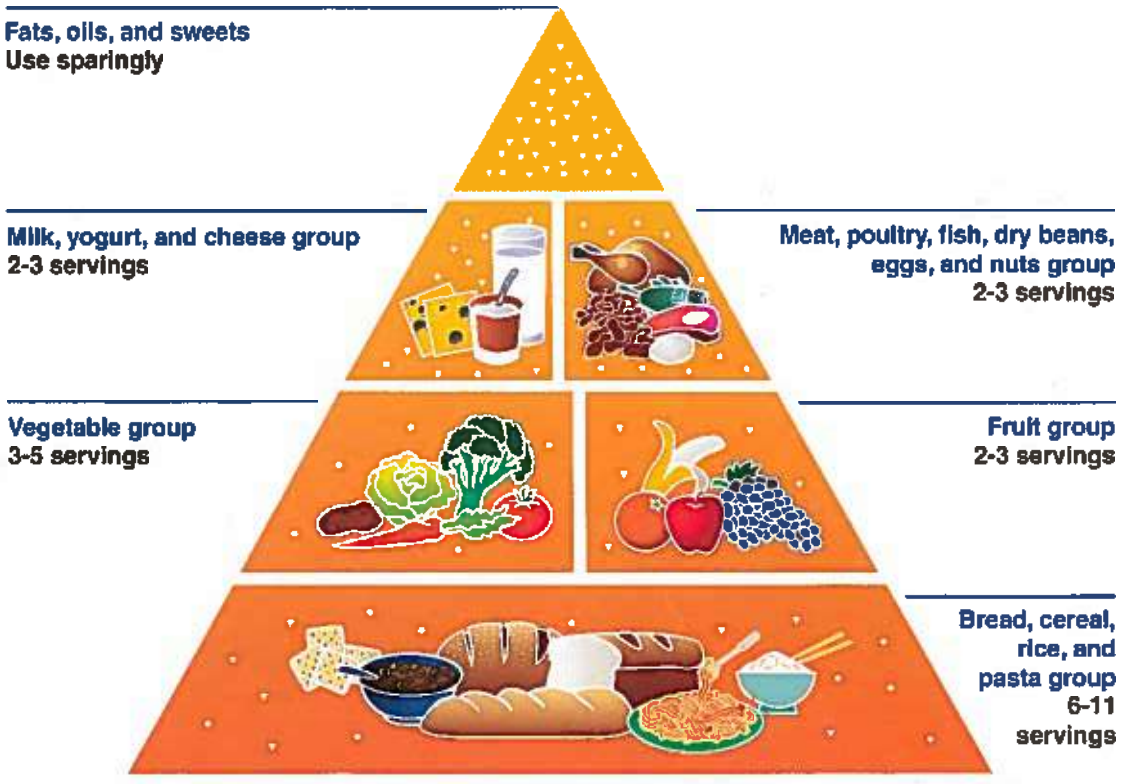
Hidden Fats and Sugars

Using fats, oils, and sweets sparingly, as recommended in the pyramid, is not always easy to do. Fats, oils, and



The Food Guide Pyramid.

Table 14.3

Recommended Number and Size of Servings

FOOD GROUP	CALORIE RANGE			SERVING SIZE
	1,600	2,200	2,800	
Bread/cereal/ rice/pasta	6 servings	9 servings	11 servings	1 slice bread; 1/2 cup cooked cereal, rice, or pasta; 1 cup cold cereal; 1/4 cup wheat germ; 1 6-inch tortilla
Vegetables	3 servings	4 servings	5 servings	1 medium potato; 1/2 cup cooked vegetables
Fruit	2 servings	3 servings	4 servings	1 orange; 3/4 cup fruit juice; 1 cup cooked fruit
Milk/yogurt/ cheese	2-3 servings	2-3 servings	2-3 servings	1 cup milk or yogurt; 1/2 cup cottage cheese; 1-1/2 oz cheese
Meat/poultry/ fish/dry beans/ eggs/nuts	2 servings	2-3 servings	3 servings	1 serving = 2-3 oz of any cooked meat, poultry, or fish; Equivalent = either 1/2 cup of cooked dried beans, 2 tablespoons peanut butter, or 1 whole egg; Quantity and type of fat vary in each protein source

sweets are often hidden in foods. For example, a potato is a nutritious, low-fat food. However, French fried potatoes are cooked in oil, so they are high in fat content. Think about other kinds of foods sold in fast food restaurants. In fact, most of these fast foods are high in fat.

Also, many sauces and toppings that people add to food are high in fats, oils, and sugar. Such sauces include ketchup and mayonnaise. Many salads made of healthy vegetables are topped with dressings that are high in fats, oils, and sugars. You need to keep in mind the ingredients in a food as well as the method used to cook the food in order to limit the fats, oils, and sugars in your diet.

Recommended Servings

How much do you need to eat? It depends on your caloric needs. The total calories you need each day is listed next.

- 1,600 calories: primarily sedentary women
- 2,200 calories: most children, teenage girls, active women, and sedentary men
- 2,800 calories: usually teenage boys, active men, and very active women

Most experts agree that one of the main reasons why so many Americans are overfat is because of an increase in food portion size. The size of portions served in restaurants, especially fast food restaurants, has increased in the past 20 years. Some of the current portions are two or three times as large as portions served in the past. What you are served may really be several servings, not just one. Table 14.3 lists the recommended servings from each food group for each of the groups listed in the Food Guide Pyramid.

FIT FACTS

One reason for the increase in portion sizes in recent years is the marketing of larger sized meals sometimes referred to as super size. For example, the original size of most French fries had 450 calories. The size of a large order currently promoted by many fast food places has over 600 calories. Another example is buffets that offer all you can eat for a specific price. People often take large portions because they want to get their money's worth.

Balancing Calories

You learned in chapter 12 that many factors, including metabolism, heredity, maturation, and physical activity, influence body fatness. These factors also influence the number of calories you need to eat. You need to balance the number of calories you consume with the number of calories you expend in order to maintain a healthy weight. Your body burns calories for energy. The more vigorous activity you do, the more energy your body uses and the more calories you need.

Lesson Review

1. How much dietary carbohydrate, protein, and fat are desirable for good health?
2. Why are vitamins and minerals necessary for good health?
3. What is the Food Guide Pyramid? How can it help you plan for healthy eating?

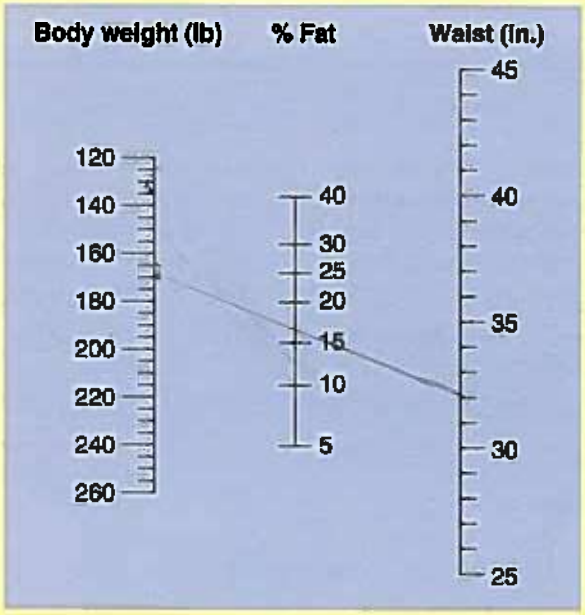
Self-Assessment

Body Measurements

In earlier chapters you learned how to assess all of the parts of health-related physical fitness because good levels of health-related fitness are related to good health and wellness. The two assessments that you will do in this chapter do not measure physical fitness, but the factors that you will assess are very much related to health and wellness.

You will use a tape measure to do both assessments. As you do the assessments, follow these guidelines:

- Use a non-elastic tape to make the measures.
- Pull the tape snugly against your skin but not so tight as to cause an indentation in your skin.
- Be sure that the tape is horizontal when measures are made. If the tape sags, measurements will be larger than they should be.



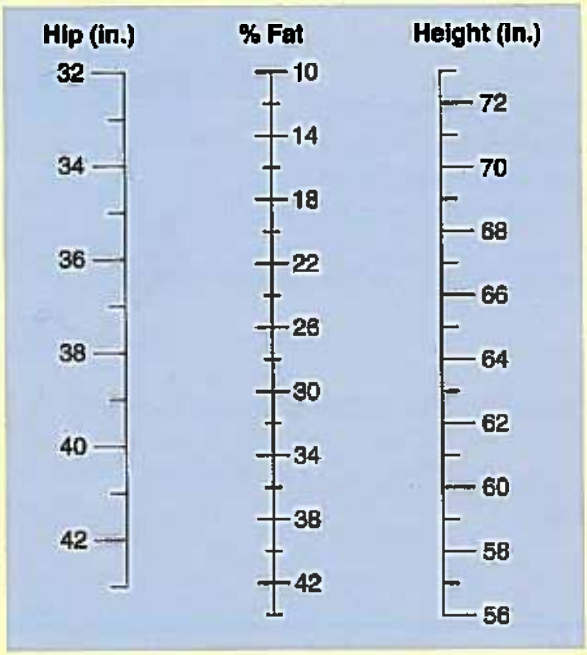
Body measurement for males.

PART 1: Estimating Body Fat From Body Weight and Body Girths

You already know that having too much body fat can cause health problems. You can use body measurements to estimate your percentage of body fat. Males use weight and waist measurements, and females use height and hip measurements. Work with a partner to take the measurements.

Males: Waist and Weight

1. Measure your waist even with your navel.
2. Weigh yourself while fully clothed, but without shoes. Find your weight to the nearest pound.
3. Use the body measurement figure to estimate your percentage of body fat. To do so, place a ruler so that it cuts across the left vertical line at the mark for your weight and across the right vertical line at the mark for your waist measurement. Your estimated percentage of body fat is the number where the ruler intersects the center vertical line. Write this information on your record sheet.
4. Find your rating in the rating chart for body fatness on page 227. Record your rating.



Body measurement for females.

Females: Hip and Height

1. With clothes on, measure your hips at the widest point. Measure to the nearest half inch.
2. Remove your shoes and measure your height to the nearest half inch.
3. Use the body measurement figure to estimate your percentage of body fat. To do so, place a ruler so that it cuts across the left vertical line at the mark for your hip measurement and across the right vertical line at the mark for your height. Your estimated percentage of body fat is the number where the ruler intersects the center line. Record this information.
4. Find your rating in the rating chart for body fatness on page 227. Record your rating.

PART 2: Waist-to-Hip Ratio

Scientists now know that people who have more weight in the middle of the body have a higher risk of disease than people who have more weight in the lower body (legs and hips). Those who have too much weight in their mid-section are said to have an apple body type, while those who have more weight in their hips are said to have a pear body type. Overfat people who have a pear body type have less risk for disease than overfat people with an apple body type. In general, women are more likely to be a pear type, and men are more likely to be an apple type. This fact may in part explain why women have less risk of heart disease than men. The waist-to-hip ratio is a simple method of assessing the risk associated with your body type.

1. Measure your hips at the largest point (largest circumference of the buttocks). Make sure that measurements are made while standing with your feet together. Record your measurement.
2. Measure your waist at the smallest circumference (called the natural waist). If there is no natural waist, measure at the level of the umbilicus. Measure at the end of a normal inspiration (just after a normal breath). Do not suck in to make your waist smaller. Record your measurement.
3. Calculate your waist-to-hip ratio using the formula on your record sheet.
4. Find your ratio in table 14.4. Record your rating.

Table 14.4

Rating Chart: Waist-to-Hip Ratio

	Males	Females
Good health zone	<.90	<.80
Borderline risk	.91-1.0	.80-.85
Higher risk	>1.0	>.85

Lesson 14.2

Making Food Choices

Lesson Objectives

After reading this lesson, you should be able to

1. Explain how to use the FIT formula to meet your nutritional needs.
2. Explain how reading food labels can help you make healthy food choices.
3. Recognize some common myths about nutrition and explain why they are not factual.

Lesson Vocabulary

food label (p. 251), food supplement (p. 254), junk food (p. 251)

www.fitnessforlife.org/student/14/5

You have learned how to use the Food Guide Pyramid to choose foods for a nutritious diet. You also learned how following the dietary guidelines can help you attain and maintain good health. In this lesson, you will learn more about choosing healthy foods for a balanced diet.

The FIT Formula and Nutrition

Table 14.5 shows how you can use the FIT formula as a guideline for nutritional fitness. Note that the FIT formula recommends that you use the Food Guide Pyramid to help you choose foods.

Keep in mind that to have a healthy diet, you need to eat foods with the proper amounts of all the nutrients. Remember that a steady diet of **junk food,** fad diets, fast foods, and incorrect use of vitamin and mineral supplements can all be harmful to your health. Also remember that eating properly and doing regular physical activity are important for maintaining a proper level of body fatness. Be aware of the signs of eating disorders that you learned in chapter 13.

Table 14.5

Fitness Target Zones and Nutrition

Frequency	Eat three meals a day. An occasional snack is fine.
Intensity	The number of calories you consume each day should fall within the range recommended for your sex and age group unless you are extremely sedentary or very active.
Time	Eat meals at regular intervals, such as morning, noon, and evening.

Consume the recommended number of servings from the food groups shown in the Food Guide Pyramid.

FIT FACTS

The National Dietary Guidelines suggest that we should follow the ABCs for Good Health: A = aim for fitness, B = build a healthy base, and C = choose sensibly. To Aim for fitness, aim for a healthy weight and be active each day; to Build a healthy base, choose foods from the base of the pyramid; and to Choose sensibly, choose many servings of fruits and vegetables daily.

When selecting foods, you need to determine your own nutritional requirements. As you learned, a person's nutrient needs vary according to age, sex, height, and weight. Young people who are going through puberty and those who are still growing have special nutritional needs. They need to eat foods high in potassium, calcium, and iron. These minerals aid in the development of bones and blood. By eating the correct number of servings from each of the food groups, you probably are consuming a diet that will meet your nutritional needs.

Food Choices

Many teenagers do not plan meals, shop for groceries, or cook for a family. However, maybe you do help with these activities. Most likely, you do sometimes purchase snacks for yourself. How do you know whether the food you are purchasing is nutritious? Reading food labels can help you determine how nutritious a food is. In fact, according to law, manufacturers must now use a standard format for food labels.

Food Labels

You probably have noticed that most foods have a nutrition label and an ingredient list. Look at the **food label** shown on the next page. First, notice the number of servings in the container. Four servings are listed on the label for the food. Next, notice the calories per serving. For the food with this label each serving contains 90 calories. The total calorie content of the food package is 360 (90 × 4 = 360). Some people think that the calories listed (90) is the amount in the total package.

Reading food labels will help you select healthy foods.

This is not true. Keep in mind that if you double the serving size listed, you need to double the nutrient and caloric values. On the other hand, if you eat only half the serving size, you need to cut the nutrient and caloric values in half. This information can help you keep track of how many calories and nutrients you consume.

FIT FACTS

Most soft drinks contain approximately 150 calories for each 12-ounce can. Many teens drink several cans a day. Three cans a day equals 450 calories. A 60-ounce drink, such as those sold at many fast food and convenience stores, has 900 calories. Studies show that excessive consumption of soft drinks may be one of the reasons for the high incidence of overweight in our society. Water quenches your thirst and has zero calories. If all other aspects of your diets stayed the same, adding one soft drink a day would result in 15 pounds of fat gain in a year.

Nutrition Facts

Serving Size 1/2 cup (114g)
Servings Per Container 4

Amount Per Serving	
Calories 90	Calories from Fat 30
	% Daily Value*
Total Fat 3g	**5%**
Saturated Fat 0g	**0%**
Cholesterol 0mg	**0%**
Sodium 300mg	**13%**
Total Carbohydrate 13g	**4%**
Dietary Fiber 3g	**12%**
Sugars 3g	
Protein 3g	
Vitamin A 80% •	Vitamin C 60%
Calcium 4% •	Iron 4%

*Percent Daily Values are based on a 2000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories	2000	2500
Total Fat	Less than	65g	80g
Sat. Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2400mg	2400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

More nutrients may be listed on some labels.

Food label.

You can see that information about a variety of nutrients is provided on the label. Find the information about carbohydrates. You learned in the last lesson that carbohydrates are important sources of energy. However, remember that you should eat simple sugars sparingly. Fruits, vegetables, whole-grain foods, beans, and peas are all good sources of fiber.

Notice that this label gives information about vitamins and minerals. Other food labels may even list additional information about nutrients.

Now find information on the label about fat, saturated fat, cholesterol, and sodium. What suggestions about these substances are made in the dietary guidelines on pages 244 to 245?

FITNESS Technology

The development of the Internet has made it possible to easily find sources that allow you to determine the contents of various foods. It is now easy to determine the amount of each nutrient in food. To do this, you should keep a daily log of everything you eat. Write down the name of the food and the size of the serving. Then log on to the Web site listed below. You can use the information at this Web site to determine the contents of the foods you eat. Ask your teacher about a log sheet that you can use to keep track of the foods that you eat each day. You can also use a computer program called Nutrigram to calculate the content of the foods you eat. Ask your teacher whether Nutrigram is available in your school.

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Look at the column on the food label that lists percent daily values. This information tells you what percent of your daily requirements for a nutrient are met by this food. For fat, saturated fat, cholesterol, and sodium, choose foods with a low percent daily value. For total carbohydrate, dietary fiber, vitamins, and minerals, your goal is to reach 100 percent of your daily value.

Claims on Food Labels

You might have noticed terms such as those shown in table 14.6 on many food containers. These terms relate to fat in food and can be displayed on food containers only if the food meets legal standards set by the government. The terms were developed to prevent false advertising. Even with the standardized terms shown in the table, you can still be fooled concerning advertisements relating to fat in foods. Some foods such as milk and packaged meats advertise that they are 2 percent fat or 98 percent fat free. This is true if measured by weight of the product, but not true when measured by the total number of calories in the product. For example, 2 percent of the weight of a glass of 2-percent milk is fat, but over 30 percent of the calories in a glass of 2-percent milk is fat.

You can calculate the true percentage of fat calories in food. Simply divide the calories per serving into the calories from fat. For the food label shown on page 252, the calories per serving is 90 and the calories of fat per serving is 30, so the percentage of calories in this food is 33 percent (30 ÷ 90 = 0.33).

You also might see health claims such as "good for heart health" on some food labels. Manufacturers must comply with government regulations regarding such labeling. For example, if a product advertises that its fat content is good for the heart, the product must be low in fat, saturated fat, and cholesterol. Fruits, vegetables, and grain products that make such claims must not only be low in fat, saturated fat, and cholesterol, but also contain at least the minimum amount of fiber for each serving. Foods that display health claims related to blood pressure must be low in sodium. Some food labels now contain information about transfatty acids.

Table 14.6

Key Words on Food Labels and What They Mean

Key words	What they mean
Fat free	Less than 0.5 gram of fat
Low fat	3 or less grams of fat per serving
Lean	Less than 10 grams of fat, 4 grams of saturated fat, and 95 milligrams of cholesterol
Light (lite)	1/3 fewer calories or no more than 1/2 the fat of the higher-calorie, higher-fat version; or no more than 1/2 the sodium of the higher-sodium version
Cholesterol free	Less than 2 milligrams of cholesterol and 2 or less grams of saturated fat per serving

When you eat properly, you are more likely to be fit, look better, feel better, and have fewer health problems than people who are overfat and unfit.

Common Food Myths

You may have heard a number of incorrect or misleading statements about nutrition. Some common nutrition myths are listed here.

- **Myth:** Skipping meals is a good way to lose weight.
- **Fact:** Studies show that people who skip meals typically eat more than those who eat regular meals. Skipping meals stimulates the appetite, so having fewer meals can lead to eating more food at each meal, while

Most people can do moderate activity after a meal if they wait about 30 minutes to an hour. However, if you have problems doing activity after eating, you may need to modify what you eat.

having more meals usually means having less food at each meal. Skipping breakfast or lunch is common but is ineffective in weight loss and results in lower work and school performance.

▶ **Myth:** A **food supplement** is tested for safety and to insure that it meets claims advertised by the seller.

▶ **Fact:** Since 1994 food supplements have been unregulated. This means that they are not tested by the government either for safety or to insure that they meet the claims made for them. Beware of food supplements that make claims that are too good to be true.

▶ **Myth:** High protein diets are best for losing weight and maintaining good health.

▶ **Fact:** A review of a large number of studies shows that a balanced diet based on the Food Guide Pyramid and the percentages of nutrients listed in the first lesson of this chapter is most effective in fat loss and for weight maintenance. The popular high protein diets cause quick loss of body water but are only effective in fat loss if they result in consuming fewer calories. Because these diets are high in fat, experts fear that they can result in increased health problems if used for a long time.

▶ **Myth:** If you limit the amount of fat in foods, you do not need to be concerned with how many calories a food contains.

▶ **Fact:** It is the total number of calories you consume that makes a difference in weight maintenance. Fats do contain more calories per gram than carbohydrates and proteins, but many foods advertised as low in fat actually contain more calories than foods higher in fat. For good health it is wise to limit fat intake, but for weight maintenance total calorie intake is what is important.

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Because health and nutrition quackery is so commonplace, many other myths also exist. When making choices about nutrition, be sure to follow the dietary guidelines and the guidelines presented in the Food Guide Pyramid. Use information that comes from reliable sources. Some of these sources include: the Food and Drug Administration (FDA), the United States Department of Agriculture (USDA), the American Dietetic Association (ADA), the American Medical Association (AMA), the American Heart Association, and the American Cancer Society.

www.fitnessforlife.org/student/14/8

Eating Before Physical Activity

Most people can do moderate activity after a meal if they wait about 30 minutes to an hour. People who have problems doing activity after eating may have to wait longer or modify what they eat. If you plan to do vigorous physical activity or participate in a highly competitive athletic event, you may have to modify your eating patterns. Here are some guidelines for eating before physical activity:

▶ **Special diets are typically not necessary before athletic competitions.** Some athletes think they need a steak or a food supplement before they compete. Steak is high in protein and fat, both of which are digested slowly. Steak eaten within two hours of the event might interfere with a person's performance. In general, you can eat what you like as long as it does not disagree with you.

▶ **Allow extra time between eating and activity before vigorous competitive events.** Eat one to three hours before competing. Allow more time if the foods you have eaten are difficult to digest.

Taking Charge: Saying "No"

Sometimes the single act of saying "no" is the best way to avoid a situation that is potentially harmful. While it may seem easy to say this simple word, the action may actually be very difficult to carry out successfully.

Manny was invited to spend the holiday with his girlfriend's family. Plans were made to spend the afternoon water-skiing at a nearby lake and then have a big party. His girlfriend, Rita, warned Manny that her mother always prepared huge amounts of food for the party. It was her family's tradition to stuff themselves until they couldn't move. She told him to make sure he came with a big appetite. Unfortunately, Manny's doctor had just instructed him to restrict the amount of fats and calories he consumed.

Manny arrived at the party just as Rita's mother was setting out the food. The table was loaded with tortilla chips, guacamole, beef and bean burritos, chiles rellenos, and fresh corn, as well as cakes, pies, and cookies. Manny knew that he faced a difficult situation as Rita came forward with a plate piled with cookies. "Manny, you're just in time. The food is great!"

Manny replied, "Everything looks good, but I have to watch my diet."

Rita offered him a cookie, knowing they were Manny's favorite. "But you've got to try my mother's cookies. Everyone says they're the best. You'll hurt my mother's feelings if you don't eat one."

For Discussion

In what way does the party put Manny in a difficult situation? How can Manny say "no" to Rita without embarrassing her or hurting her feelings? What can he do so that his refusal won't hurt Rita's mother? What could he have done before actually going to the party to prepare for this situation? In what other situations would saying "no" be the best response? Fill out the questionnaire provided by your teacher to find out whether you are more likely to say "no" and mean it or give in under pressure. Consider the guidelines on page 256.

▶ **Before competition, reduce the size of your meal.** Small meals are easier to digest than large ones. If you get very nervous or often have an upset stomach before competition, try a liquid meal of about 900 calories in 16 ounces of liquid. In general, liquid meals are not recommended.

▶ **Drink fluids before, during, and after activity.** Whether you are competing or not, it is important to drink water. Added salt or sugar are not typically needed, except for especially long events or events in high heat and humidity. Using drinks with too much sugar can actually detract from performance.

Lesson Review

1. How can the FIT formula help you determine how often to eat?
2. What are three examples of information you can find on a food label?
3. What are two common food myths? How are they incorrect or misleading?

Self-Management Skill

Saying "No"

Most of us try to eat well, do regular physical activity, and practice healthy lifestyles. Sometimes the situation we are in or the people we are around make it difficult to keep doing healthy behaviors. We are tempted to do things that we would not normally do. You can take steps to make it easier to say "no" when you are in situations that encourage you to do behaviors you know are not best for you. The following guidelines are designed to help you say "no" to eating food that you do not want or need. You may be able to use these strategies to help you say "no" in other situations related to health behaviors.

▶ **Say "no" to food offered on special occasions.** Eat a light meal before a holiday event so that you are not hungry. Practice ways to refuse food so that you do not hurt the feelings of the host or hostess. Avoid standing near food. When you feel the need to eat, talk to someone or find something else to do.

▶ **Say "no" to extra food when eating out.** Plan in advance what you will eat. Resist ordering foods that are advertised or that others eat. Choose small servings—avoid big orders such as large burgers and large fries. Say "no" to special deals that include foods you do not want—order single items you want instead. Say "no" to extra sauces, toppings, and condiments such as mayonnaise.

▶ **Shop with a strategy.** Preparing a list ahead of time and sticking with it helps you say "no" to foods high in empty calories. Use food labels and avoid those foods high in calories per serving. Look for better choices. Eat before you shop so that you are not hungry.

▶ **Consume healthy snacks.** Eating snacks of vegetables and fruits can help you say "no" to snacks that are high in empty calories such as potato chips, cookies, and candy. Avoid sugared soft drinks. Carry a water bottle. Drink water rather than high-calorie drinks such as soft drinks or sport drinks when you are thirsty.

▶ **Eat healthy foods at school.** Prepare your own lunch or snacks for school to help you say "no" to food in snack machines. If you have free time, find a way to be active to avoid thinking about eating things you do not really want or need. If you eat school food, ask for small servings to avoid eating too much. If you have free time with friends, ask them not to bring high-calorie foods.

▶ **Say "no" to large servings and seconds.** Reject large or second servings. Tell family members and friends not to offer seconds. Limit servings of desserts.

▶ **Eat slowly and avoid eating while studying or watching television.** Some experts recommend that you limit your eating to the kitchen or dining room to help you say "no" to unwanted food.

Activity 2

Cooperative Aerobics

Record Your Results on the Record Sheet

Previously you learned about aerobic dance and step aerobics. Both are good forms of active aerobics and are good for expending calories. In this activity you will work with others to develop an aerobic exercise routine. You will also learn about calories expended by performing this activity.

- **Step 1.** Your class will be divided into several groups of 3 to 4 people. Each person in the group will make up an arm and leg pattern to teach to the other group members. Listen to the music your instructor plays as you invent your combinations. Arrange the patterns created by each group member into a routine for the group. Look at the arm movements and leg movements that are listed. You can use these movements in any combination to create a dance step. On the other hand, you may prefer to use your imagination and make up your own movements.
- **Step 2.** Perform the routine created by your group to music. Determine the total number of minutes in the routine. Multiply the number of minutes in the routine by the number of calories (per minute) expended in the routine. Use table 14.7 to determine calories per minute.
- **Step 3.** One chocolate-covered peanut candy contains 9 calories. How many minutes of cooperative aerobics would you have to perform to expend the calories in one chocolate-covered peanut candy? How many minutes would of cooperative aerobics would you have to perform to expend the calories in one serving (20 in a serving)? Record your results on the worksheet supplied by your teacher.

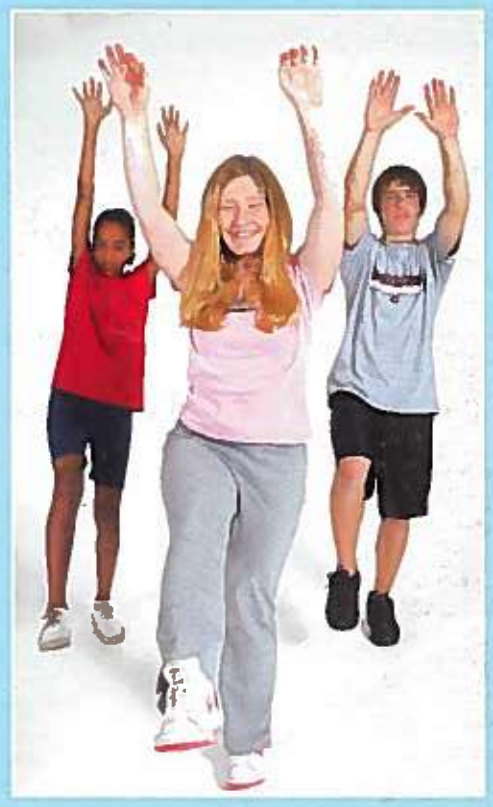


Table 14.7

Calories Expended Per Minute During an Aerobic Routine

Your weight (lbs)	90	100	110	120	130	140	150	160	170	180	190+
Calories/min	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5

Leg Movements to Choose From

Note that R stands for right, and L stands for left.

1. Step-Heel
   - Step R, touch L heel to floor.
   - Repeat with L step and R heel.
2. Step, Close-Step, Heel
   - Step R, slide L foot to R.
   - Step R, point L heel forward.
3. Step, Close-Step, Kick
   - Follow directions for step, close-step, heel, except kick instead of pointing heel forward.
4. Step-Close
   - Step R, slide L foot to R.
   - Repeat with step L, close R.
5. Stair-Step
   - Walk forward—R, L.
   - Walk backward—R, L.
6. Step-Kick
   - Step R, kick L.
   - Step L, kick R.
7. Step Knee-Lift
   - Step R, lift L knee.
   - Step L, lift R knee.
8. Grapevine
   - Step R.
   - Cross L behind R, and step.
   - Step R.
   - Cross L in front of R, and step.
9. Box Step
   - Step forward R.
   - Cross L over R, and step.
   - Step back R.
   - Step back L.
10. Pony (similar to dance called Cha-Cha)
    - Step R, slow.
    - Step L, quick.
    - Step R, slow.
    - Repeat, starting L.
11. Rocker
    - Step R, point L heel forward, lean back.
    - Step L, point R heel backward, lean forward.
12. Hustle Forward and Backward
    - Step forward, R, L, R.
    - Hop R, lift L knee.
    - Step backward, L, R, L.
    - Hop L, lift R knee.
13. Elbow to Knee
    - Step R, lift L knee to R elbow.
    - Step L, lift R knee to L elbow.
14. Charleston
    - Point L toe forward, step back L, toe then heel.
    - Point R toe back, step forward R, toe then heel.
    - Repeat.
15. Mambo
    - Step forward R, back L.
    - Step R, L, R, in place.

Arm Movements to Choose From

1. Arm Press
   - Push arms down and up from chest to waist.
2. Biceps Curl
   - Move as though weightlifting.
3. Triceps (French) Curl
   - Move arms overhead as in weightlifting.
4. Front Scissors
   - Swing arms across each other in front of chest then out to sides.
5. Back Scissors
   - Scissor arms behind back.
6. Double-Arm Swing
   - Swing arms together across front of chest.
7. Arm Circles
   - Alternate circling R arm clockwise and L arm counterclockwise.
8. Chicken Wings
   - Bend elbows and flap them up and down at your sides.
9. Windshield Wipers
   - Bend elbows and move hands in front of face like windshield wipers.
10. Rowing
    - Move arms as though rowing a boat.
11. Cheerleader
    - Pump arms up and down alternately overhead.
12. Hustle Arms
    - Swing both arms backward, then forward, with a clap on the hop.
13. Elbow-to-Knee Arms
    - Twist and touch R elbow to L knee.
    - Twist and touch L elbow to R knee.
14. Drive a Big Truck
    - Move both arms as if turning a very large steering wheel.
15. Picking Cherries
    - Reach up with both arms as if to get a cherry and put it in your pocket.

14 Chapter Review

Project

Because people eat out often, it is important to make good food choices when you do. Make the assumption that you are going on a one-day trip. Your only food choices are fast foods. List what you would typically order for breakfast, lunch, and dinner for the day of your trip. Write down the name and amount of each food on your list. Use the Web site shown below to look up the calories in each food on your list. On a separate sheet of paper, list more healthy choices you could have made from the fast food menu. Calculate the calories in your healthy choice list. Make a comparison of the calories in each diet.

Reviewing Concepts and Vocabulary

Number your paper from 1 to 6. Next to each number, write the word (or words) that correctly completes the sentence.

1. Your body breaks down proteins into simpler substances called _____.
2. Your body can use _____ for energy with little or no change during digestion.
3. You need to limit your intake of _____, a fatlike substance found in animal cells.
4. _____ contain more nutrients than do simple carbohydrates.
5. _____ are food substances required for the growth and maintenance of your cells.
6. A food that is _____ contains a large amount of nutrients for the number of calories it provides.

Number your paper from 7 to 11. Next to each number, choose the letter of the best answer.

Column I	Column II
7. carbohydrate	a. contains some, not all, essential amino acids
8. proteins	b. cannot be digested by the body
9. fiber	c. provides you with energy
10. complete protein	d. contains all nine essential amino acids
11. incomplete protein	e. building blocks of your body

Number your paper from 12 to 15. On your paper, write a short answer for each statement or question.

12. Describe and refute a myth some athletes have about eating before physical activity.
13. Explain how complete proteins are important for your health.
14. Explain how calcium is important for your health, and tell what you can do to help keep your bones strong.
15. Why is water considered an important nutrient, and why might a person who is exercising need extra amounts of it?

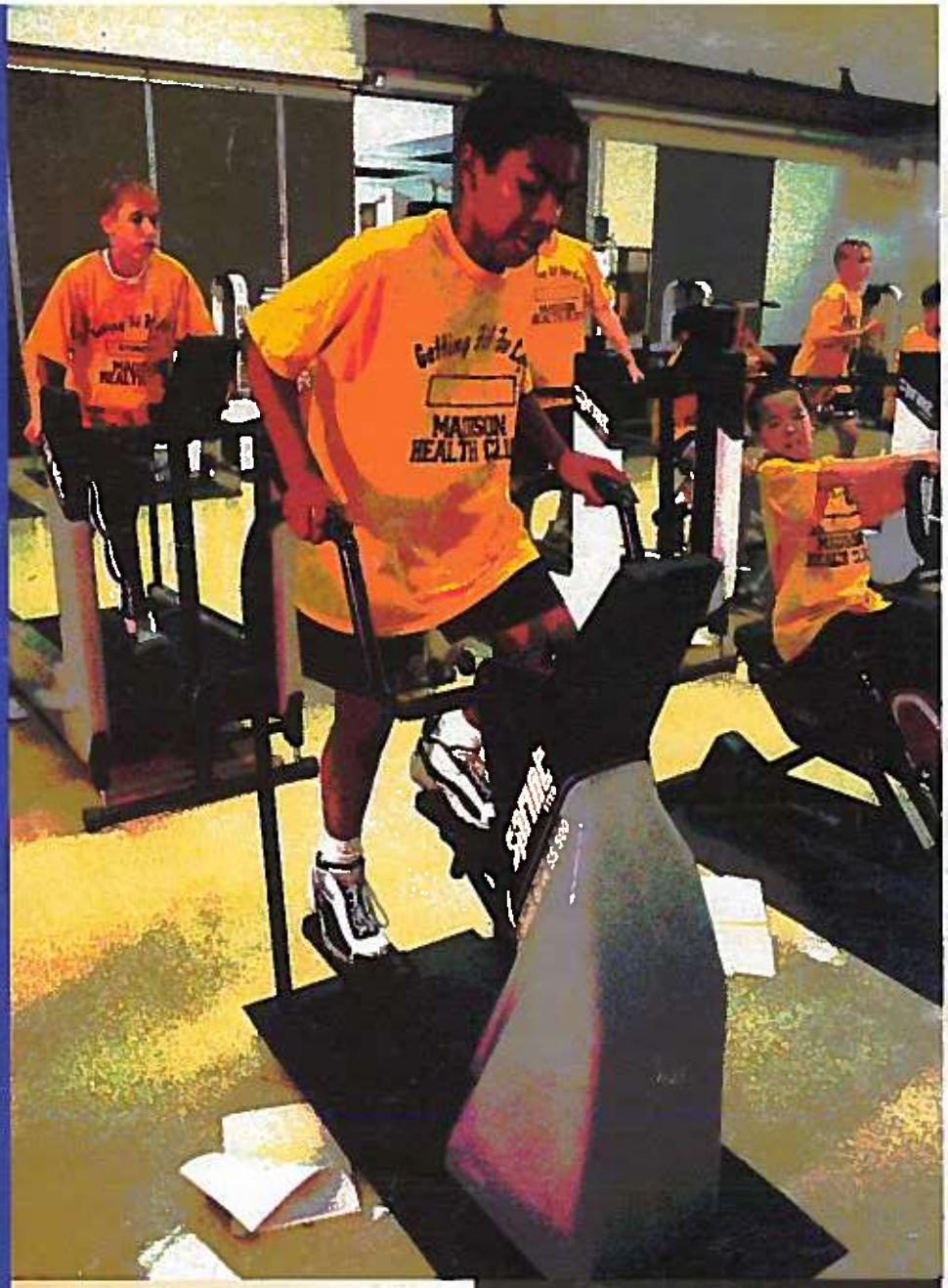
Thinking Critically

Write a paragraph to answer the following question.

Your friend asks your advice about her diet. She wonders whether the food choices she makes are important or whether she only needs to count calories. She has started to increase her physical activity and wonders how that will affect her caloric and nutritional needs. What advice would you give your friend?

15

Making Consumer Choices



In this chapter...

Activity 1

CONTINUOUS RHYTHMICAL EXERCISE

Continuous Rhythmical Exercise (CRE) was invented by Dr. Thomas Cureton at the University of Illinois. He wanted to develop an exercise program that would build many parts of health-related fitness, including cardiovascular fitness, flexibility, and muscular fitness, as well as to help control body fatness. CRE involves doing flexibility and muscle fitness exercises with continuous motion (for cardiovascular fitness) between exercises. You will try a sample program that lasts about 10 minutes. You can repeat this program or develop one of your own.