8

Body Composition, Physical Activity, and Nutrition

In this chapter...

Lesson 8.1

Body Composition

Lesson Vocabulary

body composition, body fatness, body mass index (BMI), calipers, eating disorder, essential fat, overweight, self-esteem

←www.fitnessforlife.org/middleschool/
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Body composition is one of the five parts of health-related physical fitness. Do you know what body composition is? Do you know what a healthy body composition is and how to tell if a person has it? When you finish this lesson, you'll know the answers to these questions. You'll also know some guidelines that can help you deal positively with peer pressure in physical activity.

What Is Body Composition?

Your body is made up of many different kinds of tissues including muscles, bones, fat, and organs. Each makes up a percentage of your total tissues, and together they describe the composition of your body. Many factors contribute to body composition including heredity, age, maturation, and healthy lifestyles such as physical activity and eating habits. You have no control over some of these factors, but you do have control over others. Physical activity and nutrition— two factors that you can control—are the focus of this chapter.

Body fat is one important component of body composition. Ideally, people shouldn't have too much or too little body fat. The goal is to be in the healthy fitness zone for **body fatness.** The best methods of assessing body fatness involve X-ray machines, electronic machines, and special water measurement tanks. But those pieces of equipment are expensive and can't be used quickly, so they aren't appropriate for general school classes. Instead, skinfold measurements are a good method for estimating your body fatness. They're not quite as accurate, but they involve less equipment and are less expensive. To perform skinfold measurements, you need a pair of skinfold **calipers**—an instrument used to measure the thickness of fat folds beneath the skin. You also need a person who is trained in using the calipers, such as a trained partner or your physical education teacher.

FIT FACT

One of the most popular dolls in the United States is supposedly shaped like a young woman. But to have the doll's proportions, a real woman would have to be more than 7 feet (213 centimeters) tall and have a dangerously low level of body fat.

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How Much Body Fat Should I Have?

Everyone needs to have some body fat. The minimum amount of fat necessary for good health is called **essential fat.** Fat is stored energy, and it can be used to provide fuel for physical activity. Having this source of energy would be especially important if you had to go without food for a long period of time. Body fat also acts as a shock absorber or as body padding, helping you keep from getting bruised when you get bumped. Fat also insulates your body and is especially useful in keeping you warm in cold temperatures.

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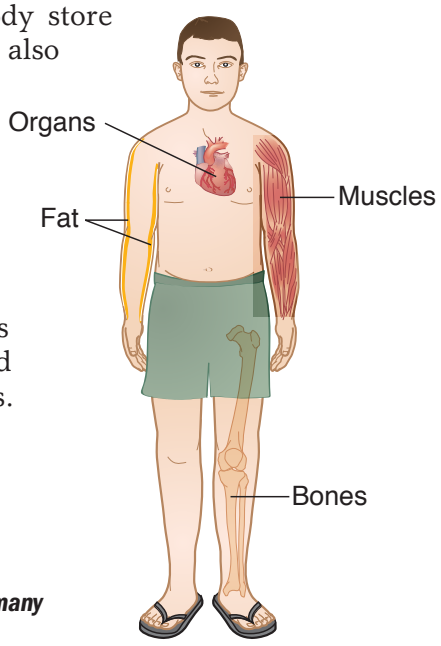
Fat helps your body store and use vitamins. It also helps your body use hormones that are important to growth and other body functions. Having too little body fat can upset the normal functions of your body and lead to health problems.



Your body is composed of many kinds of tissues.

Having too little body fat can also be a sign of an **eating disorder.** People with eating disorders typically eat too little and practice other poor nutrition habits; some exercise too much. Eating disorders can cause serious medical problems and often require the help of a professional. You can learn more about eating disorders, such as anorexia nervosa and bulimia, at the *Fitness for Life: Middle School* Web site.

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Having too much body fat can also cause problems. People who have too much fat (also called being overfat) or have a high BMI (also called being overweight) have a greater risk of having diseases such as heart disease, cancer, and high blood pressure. Another disease called diabetes exists when the body's sugar levels are too high. People with this condition may need special medication and must pay particular attention to what they eat and how they exercise. The most common form of diabetes is much more frequent among people who have too much body fat. Medical costs are higher for people with too much body fat, and fatness can reduce a person's ability to work and play easily.

Boys typically have a lower percentage of body fat than girls do, especially in the later teen years. This is because boys have more of the male hormone that produces muscle growth. The hormone causes their bodies to have a higher percentage of muscle and a lower percentage of fat. As a result, boys and girls have different healthy fitness zone standards.

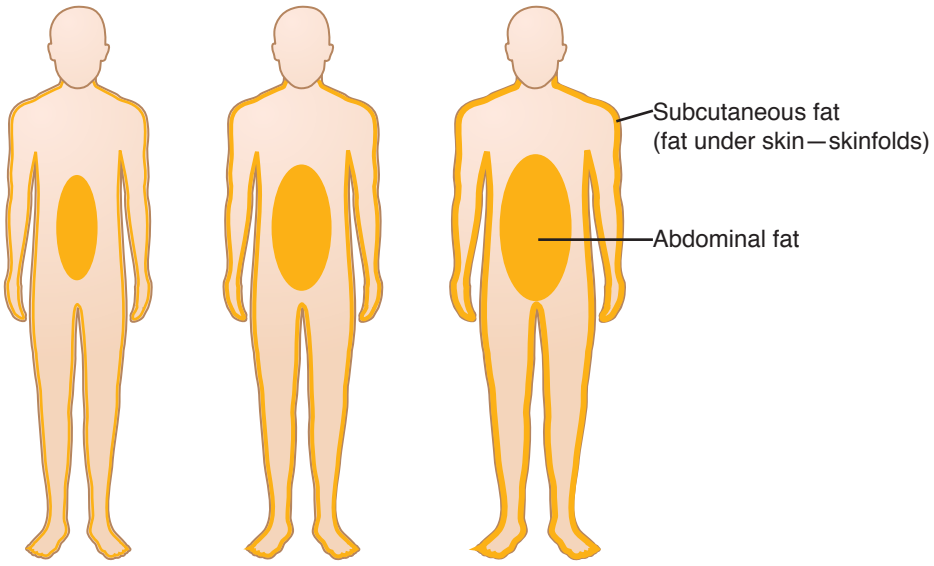
What Is the Body Mass Index?

You can also use your height and weight to calculate your **body mass index (BMI).** The BMI uses a formula to help you determine if you're overweight. The term **overweight** simply refers to having more weight than other people, which isn't the same as being high in body fat. It's possible to be high in weight without being too fat, because muscle weighs more than fat. People with a lot of muscle weigh more than people of the same size with less muscle. Nevertheless, the BMI gives you useful information related to health.

How Do I Determine My Body Fatness and BMI?

Read the "Skinfold Measurements" blue box on page 95 to learn how to measure skinfolds and how to determine your body fat levels using skinfold measurements. Tables 8.1 and 8.2 on page 98 will help you convert skinfold measurements to a percentage of body fat and help you to rate your body fat levels. Read the "Body Mass Index" blue box on page 96 to learn how to make height and weight measurements and how to determine your BMI using height and weight. Table 8.3 on page 98 will help you determine your BMI rating.

The BMI and skinfold measurement tests will help you determine if you are in the healthy fitness zone. Your test results will show if you're in a zone that helps you function effectively and avoid problems associated with having too much or too little body fat or body weight.



Body fat is stored under the skin and inside the body.

Many people feel that information about their body weight and body composition is personal. No matter what the reason, you have the right to treat your fitness testing results as private information. If people ask about your body weight, body composition, or other private information that you're not comfortable sharing, you can make a statement such as, "I don't feel comfortable sharing my personal information. Could you please respect my privacy?"

You should also help others keep their personal information private. For example, don't ask other people about their body weight or body composition. Also, if you work with a partner, keep his or her information private. In chapter 4, you learned some guidelines that you can use to build **self-esteem** (see pages 42–43). You may want to review those guidelines at this time.

You can take other steps to keep information confidential. One of the best ways is to share it only with people you trust, and only after asking them to keep the information private. Over time, you can build caring relationships with others, and this will reduce your need to worry about privacy. Sometimes, feeling comfortable in sharing information relieves the pressure of trying to keep things private.

Skinfold Measurements

You can use skinfold measurements to estimate body fat percentage. 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 performing the skinfold measurements on your partner, use the instructions that follow.

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 half millimeter (mm), if possible.
4. Make three measurements each for the triceps and the calf skinfolds. Use the middle of the 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. Add your triceps skinfold score and your calf skinfold score. Use table 8.1 to estimate your body fat percentage. For example, if you're a male and your skinfold sum is 27.5 mm, your body fat percentage is approximately 22 percent. Then look at table 8.2 to determine your rating for body fatness.

Use calipers to measure a triceps skinfold.

Adapted, by permission, from C. Corbin and R. Lindsey, 2005, *Fitness for life,* 5th ed. (Champaign, IL: Human Kinetics), 81.

Body Mass Index

As you measure your body mass index, use the worksheet supplied by your teacher to record your results and answer the questions about your BMI.

1. Measure your height in inches without shoes.
2. Measure your weight without shoes. If you're wearing street clothes (as opposed to lightweight gym clothing), subtract 2 pounds from your weight.
3. Use the body mass index chart to determine your BMI. You can also calculate your BMI using either of the following formulas:

   BMI = weight in kilograms/(height in meters)^2

   BMI = weight in pounds/(height in inches)^2 $\times$ 703
4. Consult table 8.3 to find your BMI rating. Record the results on your worksheet.

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Height and weight measurements are used to determine BMI.

Height

	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
4' 6"	17	18	19	20	22	23	24	25	27	28	29	30	31	32	34	35	36	37	39	40	41	42	43	45	46	47	48	49	51	52	53	54	56
4' 7"	16	17	19	20	21	22	23	24	26	27	28	29	30	31	32	34	35	36	37	38	39	40	41	43	45	46	47	48	49	50	51	52	54
4' 8"	16	17	18	19	20	21	22	24	25	26	27	28	29	30	31	32	34	35	36	37	38	39	40	42	43	44	45	46	47	48	49	50	52
4' 9"	15	16	17	18	19	21	22	23	24	25	26	27	28	29	30	31	32	34	35	36	37	38	39	40	42	42	43	44	45	47	48	49	50
4' 10"	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
4' 11"	14	15	16	17	18	20	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	45	46	46
5' 0"	14	15	16	17	18	19	19	21	22	23	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
5' 1"	13	14	15	16	17	18	19	20	21	22	23	24	25	26	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	43
5' 2"	13	14	15	16	17	17	18	19	20	21	22	23	24	25	26	27	27	28	29	30	31	32	33	34	35	36	37	37	38	39	40	41	42
5' 3"	12	13	14	15	16	17	18	19	19	21	21	22	23	24	25	26	27	27	28	29	30	31	32	33	34	35	35	36	37	38	39	40	41
5' 4"	12	13	14	15	15	16	17	18	19	20	20	21	22	23	24	25	26	27	27	28	29	30	31	32	33	33	34	35	36	37	38	39	39
5' 5"	12	12	13	14	15	16	17	18	18	20	20	21	22	22	23	24	25	26	27	27	28	29	30	31	32	32	33	34	35	36	37	37	38
5' 6"	11	12	13	14	15	15	16	17	18	19	19	20	21	22	23	23	24	25	26	27	27	28	29	30	31	31	32	33	34	35	36	36	37
5' 7"	11	12	13	13	14	15	16	17	17	19	19	20	20	21	22	23	23	24	25	26	27	27	28	29	30	31	31	32	33	34	34	35	36
5' 8"	11	11	12	13	14	14	15	16	17	18	18	19	20	21	21	22	23	24	24	25	26	27	27	28	29	30	30	31	32	33	33	34	35
5' 9"	10	11	12	13	13	14	15	16	16	18	18	18	19	20	21	21	22	23	24	24	25	26	27	27	28	29	30	30	31	32	32	33	34
5' 10"	10	11	11	12	13	14	14	15	16	17	17	18	19	19	20	21	22	22	23	24	24	25	26	27	27	28	29	29	30	31	32	32	33
5' 11"	10	11	11	12	13	13	14	15	15	17	17	17	18	19	20	20	21	22	22	23	24	24	25	26	26	27	28	29	29	30	31	31	32
6' 0"	9	10	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21	22	22	23	24	24	25	26	26	27	28	28	29	30	31	31
6' 1"	9	10	11	11	12	13	13	14	15	16	16	16	17	18	18	19	20	20	21	22	22	23	24	24	25	26	26	27	28	28	29	30	30
6' 2"	9	10	10	11	12	12	13	14	14	15	15	16	17	17	18	19	19	20	21	21	22	22	23	24	24	25	26	26	27	28	28	29	30
6' 3"	9	9	10	11	11	12	13	13	14	15	15	15	16	17	17	18	19	19	20	21	21	22	22	23	24	24	25	26	26	27	27	28	29
6' 4"	8	9	10	10	11	12	12	13	13	14	15	15	16	16	17	18	18	19	20	20	21	21	22	23	23	24	24	25	26	26	27	27	28

Weight

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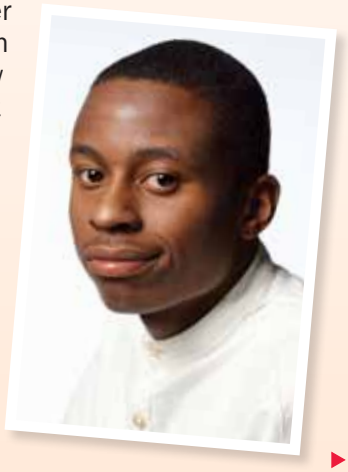
Moving Together: Peer Pressure

Do you ever feel pressured to do things that you don't feel comfortable doing? Is it hard sometimes to do activities that you like when others call them dumb? It can be hard to make friends with someone if other people think that person is weird.



Mel was on the community soccer team. He enjoyed being on the team and liked to play soccer. Mel knew that the physical activity that he got when he played soccer was good for him, and he knew that his parents expected him to be at practice when he told them he would. Sometimes Mel's friends who didn't play on the soccer team tried to talk him out of going to practice. His friends didn't eat lunch and saved their lunch money to play games at a video arcade after school. They spent a lot of time hanging out without really doing much. They put a lot of pressure on Mel to skip practice and be with them. One of the teens in the group told Mel that he needed to decide whether he wanted to be friends with him or with the kids on the soccer team. Mel had a problem because he wanted to play on the soccer team but he also wanted to be with his friends.

Discussion Questions

1. What can Mel do to solve his problem?
2. Are there people Mel can talk to who can help him?
3. Are there ways that Mel can be on the soccer team and have friends who aren't on the team?
4. Should Mel give in to the pressure of his peers? How can he deal with this pressure?

Guidelines for Making Choices With Friends

- *Identify the problem and identify possible solutions.* Before making a decision and taking a course of action, clarify the exact nature of the problem. Then make a list of possible solutions. Talking to a parent or teacher may help you identify problems and possible solutions associated with making choices with friends.
- *Determine the good things about different choices.* If you have several choices and they seem to conflict, make a list of the good things that will happen if you make each choice. This will help you see the benefits of making one choice or another.
- *Determine the negative things about different choices.* Just as there are good things that will happen if you make different choices, there may be some negative things as well. Listing the negatives can help you make a good choice.
- *Discuss possible solutions with people you trust.* Discussing your choices with a parent, a teacher, or another older person can help you see good things and bad things about each choice that you might not have seen on your own.
- *Talk to your friends about your goals and theirs.* When making choices that involve friends, it's important to know what their goals are. You can share your goals (as well as the good and bad things about different choices) to see if your goals are similar to your friends' goals.
- *Choose friends whose goals are similar to yours.* If you choose friends who have similar positive goals, they can help support your choices (and you can support theirs).
- *Use "I statements" to express yourself.* It helps to use "I statements" that express your feelings and let others know you care about their feelings. For example, Mel might say, "I'm mixed up because I really enjoy hanging with you guys, but soccer is really important to me." Or he could say, "I hear you saying you want me to hang with you guys all the time and give up soccer, but I really want to do both. Maybe I can do stuff with you on Saturdays, and I can hit soccer practice during the week."

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Good friends have similar positive goals and support each other.

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Table 8.1

Converting Skinfold Measurements to Percentage of Body Fat

MALES		FEMALES	
Sum	%	Sum	%
12	10	19.5	17
13.5	11	21	18
15	12	23	19
16.5	13	24.5	20
18	14	26	21
19	16	27.5	22
20.5	17	29.5	23
22	18	31	24
23	19	32.5	25
24.5	19	34.5	26
26	20	36	27
27	21	37.5	28
28.5	22	39.5	29
30	23	41	30
31	24	42.5	31
32.5	25	44	32

Data generated from Fitnessgram software.

Take It Home

Give Me a Commercial Break

"Get fit in 5 minutes a day!" "Lose 10 pounds in a week!" We're constantly bombarded with commercials that make false claims. Movie stars try to get you to buy products that they might not even use. Some of the people who appear in commercials might not look the same way in real life. Computers are often used to change the way people look and to make them appear thinner than they really are. Unrealistic pictures of men with huge muscles and women who are exceptionally thin are common. You might not realize it, but these commercials can affect how we feel about ourselves.

Have you ever really checked out the commercials you see on TV or hear on the radio? How about the advertisements you see in magazines or on billboards? What messages are they trying to send? Analyzing commercials and advertisements can help you become an informed consumer about physical activity and nutrition.

Becoming an informed consumer takes practice. Use the worksheet supplied by your teacher to analyze three commercials that you see during your favorite TV program. What strategies do the commercials use to sell their products? What other messages do they send?

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Table 8.2

Body Fat Ratings

Age	Needs improvement	Healthy fitness zone	Very lean*
MALES			
All ages	More than 25%	25–10%	9.9% or less
FEMALES			
All ages	More than 32%	32–17%	16.9% or less

*Scores in the very lean category may not be best for good health.

Data generated from Fitnessgram software.

Table 8.3

Body Mass Index (BMI) Ratings

Age	Needs improvement	Healthy fitness zone	Very lean*
MALES			
10	21.1 or more	21–15.3	15.2 or less
11	21.1 or more	21–15.8	15.7 or less
12	22.1 or more	22–16	15.9 or less
13	23.1 or more	23–16.6	16.5 or less
14	24.6 or more	24.5–17.5	17.4 or less
15+	25.1 or more	25–18.1	18.0 or less
FEMALES			
10	23.6 or more	23.5–16.6	16.5 or less
11	24.1 or more	24–16.9	16.8 or less
12	24.6 or more	24.5–16.9	16.8 or less
13	24.6 or more	24.5–17.5	17.4 or less
14	25.1 or more	25–17.5	17.4 or less
15+	25.1 or more	25–17.5	17.4 or less

*Scores in the very lean category may not be best for good health.

Data generated from Fitnessgram software.

Lesson Review

- What is body composition?
- How do you know whether a person has a healthy body composition?
- What is BMI?
- Describe some guidelines for making choices with friends.

Lesson 8.2

Energy Balance: Physical Activity and Nutrition

Lesson Vocabulary

basal metabolism, calories, carbohydrates, discretionary foods, efficiency, energy balance, energy expenditure, energy intake, fats, minerals, MyPyramid, nutrients, protein, vitamins

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Energy balance is important to having a healthy body composition. Do you know what energy balance means? Do you know how to eat well for maintaining energy balance and for good health? How does physical activity affect energy balance? When you finish this lesson, you'll know the answers to these questions. You'll also know the importance of efficiency to your performance in physical activity.

What Is Energy Balance

Energy balance means consuming only as much energy through food as your body uses each day. One way to measure energy is to count the **calories** contained in the food you eat. These calories are what your body burns when you exercise. The calorie content of the food you eat is called **energy intake** and the calories that your body burns are referred to as **energy expenditure.**

The typical teenage girl burns about 2,200 calories each day, and the typical teenage boy burns about 2,800 calories a day. This amount varies based on age, body size, heredity, and daily activity level. To have energy balance, a person must expend the same number of calories that she or he consumes each day. People who take in more calories than they expend will gain weight, and people who take in fewer calories than they expend will lose weight. Inactive teens need to consume fewer calories to maintain energy balance. Active teens involved in dance, sports, and other activities need to consume more calories each day than less active teens.

What Should I Eat?

MyPyramid is a food guide developed by the United States Department of Agriculture to help you consume the right amounts of food and the right kinds of food. As you already learned, the calories you take in should balance the calories you expend. But there are other important reasons for choosing foods. Food provides not only energy but also other important **nutrients** such as carbohydrates, protein, and fat—the three major sources of calories. Food also provides **vitamins** and **minerals** that are necessary to keep you healthy and to help your body function efficiently.

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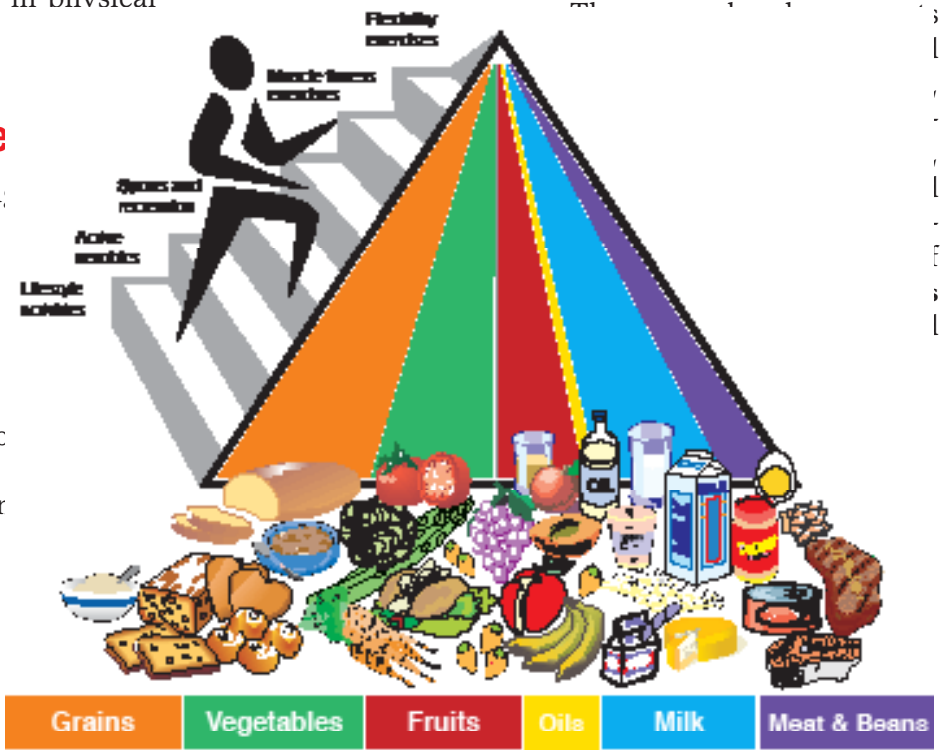
MyPyramid has colored bands that represent various types of food. The wider the color band in MyPyramid, the more servings of that type of food you should eat.



MyPyramid is a guide to healthy eating and healthy exercise.

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be a big part of your diet. Carbohydrates are forms of sugar and fiber. There are two types of carbohydrates, simple and complex. Simple carbohydrates (sugars such as those in candy and soft drinks) should be limited in your diet, but complex carbohydrates provide vitamins and energy for daily activities. Complex carbohydrates (such as those in whole grains and many fruits and vegetables) also provide fiber that aids in digestion. Each day, teens should consume several servings of whole grains, as well as three or more servings of fruit and four or more servings of vegetables.

FIT FACT

Calories in foods that are high in simple sugar (such as soda and candy) are called "empty calories" because they do little for health and wellness.

The blue band in MyPyramid represents milk products, and the purple band represents meat and beans. These foods are high in **protein.** Your body needs protein from these foods to build muscle and other body tissues. Milk products are also high in calcium, a mineral necessary to build strong bones. However, milk, meat, and beans are sometimes high in fat, so it's best to choose low-fat or nonfat milk products and lean cuts of meat. You need two or three servings from each of these two groups.

As noted earlier, **fats** are present in many foods. Fats that are solid at room temperature and that are typically made from animal products are called saturated fats. These products, such as butter, should be used sparingly. Fats that are not solid at room temperature, such as many oils, are more healthful, especially fish oil, canola oil, and olive oil. Oils that are converted to solid form, such as margarine, are called trans fats. Like saturated fats, they should be limited in your diet.

One type of food isn't represented in MyPyramid because foods in this group aren't necessary for good nutrition. These **discretionary foods** include mustard, ketchup, dressings, and sauces. You can use some of these foods to make healthy food taste better, but like oils, they're often high in calories, so use them in moderation.

The word "dieting" often refers to limiting the number of calories consumed, usually to lose excess body fat (which is often referred to as "losing weight"). However, teens shouldn't restrict their calorie intake too much. If you take in too few calories, you won't get enough of the basic nutrients that are needed for good health and for the cells of your body to work properly. As noted earlier in the chapter, eating too little can cause health problems and could lead to an eating disorder. Teens who are considering cutting calories should prepare a good eating plan to be sure that they still get the nutrients they need. Advice from parents and experts is recommended to help teens have a healthy diet and avoid health problems.

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After expending energy in physical activity, eating nutritious food helps restore your energy balance.

Biomechanical Principles: Efficiency

Part of learning to move skillfully is learning to move without wasted or unnecessary energy.

Efficiency is the ability to perform in the best possible way with little wasted energy. Calories from food give us the energy to do physical activity. We use the energy to contract the muscles. The muscle contractions move the body levers and cause movement. For efficiency, we try to conserve energy or use the least energy possible to accomplish the task we are performing.

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Efficiency helps a skier conserve energy in a long race.

Being efficient is important when doing a job because if you don't use a lot of energy, you can do the job for a long time without getting tired. In physical activities such as skiing in a long race, efficiency is also important. A cross-country skier who skis efficiently conserves energy and has a better chance of winning a race than a skier who is inefficient. The biomechanical principles you studied earlier in this book help you to be efficient in movement. For example, if you apply force in the right direction when walking and running, you'll be more efficient than if you apply force in other directions. If you use your body's levers properly, you move more efficiently. No matter what activity you choose, you can learn to be more efficient by applying biomechanical principles. Practice is also important to improve efficiency, because it helps you eliminate wasted movements.

Sometimes, you might want to be inefficient and use more energy rather than less energy. For example, playing in a pool and swimming in an inefficient manner will expend more calories than swimming efficiently. This inefficient activity expends many calories and helps balance the energy you consume in food.

Food provides the energy you need to be active, but if you eat too much food, the extra energy (calories) will be stored in your body as fat. When you do physical activity, you use this extra energy (extra calories). So to maintain a healthy body weight, you may not want to be quite as efficient as when you're trying to win a race. Also, you can add resistance to expend more calories. For example, when you carry a backpack, you expend more energy than when you walk without one. Carrying a backpack in a race would cause you to expend extra energy but would slow you down and make you less likely to win the race.

Applying the Principle

Describe what you can do to improve efficiency (conserve energy) when performing the following activities. Then describe which activities would be best for helping you maintain a healthy body weight by expending calories.

- Swimming
- Running
- Walking
- Resistance exercises
- Soccer
- Digging in a garden
- Watching TV

Principles in Practice

Use table 8.4 (page 102) to determine how much energy you expend in typical activities. Practice techniques that allow you to become more efficient while doing those activities. In addition, try to be aware of calories that you take in. For example, one regular 12-ounce (355-milliliter) soft drink contains approximately 150 calories of energy. Each time you drink a can of soda, perform several activities from table 8.4 to expend the energy you just consumed.

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Table 8.4

Energy (Calories per Hour) Expended in Various Activities*

Light activity	Calories	Moderate activity	Calories	Vigorous activity	Calories
Lying down	78	Bowling	176	Biking (10 mph or 16 km/h)	311
Sitting	85	Sweeping	198	Playing basketball	360
Reading	90	Horseback riding	204	Aerobic dance	438
Playing cards	105	Biking (7 mph or 11.2 km/h)	210	Soccer	459
Typing	110	Golf	212	Racquetball	510
Playing computer games	120	Raking leaves	230	Swimming fast	530
Washing dishes	135	Walking (3.5 mph or 5.6 km/h)	240	Running (10 mph or 16 km/h)	595

*Calories are for a 120-pound (54-kilogram) person. Amounts are less for lighter people and more for heavier people.

How Active Should I Be to Balance Energy?

Your body expends calories when you're not active, even if you're just sitting, lying, or sleeping. This is because your heart and other body organs require energy to do their work. The amount of energy necessary just to keep your body going is called your **basal metabolism.**

Metabolism refers to the process of converting food to energy. *Basal* means "basic." As shown in table 8.4, you also use energy in light activities such as brushing your teeth, reading a book, sitting and standing, and participating in sports and games.

Moderate activities such as those in level 1 of the Physical Activity Pyramid expend more calories than light activities. Vigorous activities at levels 2 and 3 of the Physical Activity Pyramid expend even more calories. Labels from the Physical Activity Pyramid are included by the stairway in MyPyramid to show you that both activity and good nutrition are important to energy balance.

As shown in table 8.4, very active people expend a lot of calories. For example, a volleyball player burns calories not only during a game, but also during practices and training while preparing for a game. Progressive resistance exercises that are done to build muscle expend calories, but they also contribute to the calories that a person expends at rest. This is because resistance exercises build muscles, and muscles burn more calories than other tissues such as fat, even when the body is resting.

Because vigorous exercise expends more calories in a short period of time, teens sometimes think this is the best type of activity for weight control. To be sure, vigorous activity can be an important part of an overall activity plan, but moderate activity can be a great way to expend calories because it can be done for long periods of time without stopping. Some people—especially those who don't play sports—find it easier to do moderate activity rather than vigorous activity on a regular basis. You can try out some tools that can help you maintain your energy balance at the *Fitness for Life: Middle School* Web site.

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Just as you should have a good plan if you want to reduce your calorie intake, you should also have a good plan if you want to do additional activity to expend more energy. You'll learn more about how to develop a plan in the next chapter.

Lesson Review

- What is energy balance?
- How should you eat to be healthy and maintain energy balance?
- How is efficiency important to performance in physical activity?
- How is physical activity important to energy balance?

8

Chapter Review

Number your paper from 1 to 5. Read each question. After the number for the question, write a word or a phrase that best answers the question. The page number where you can find the answer is listed after the question.

1. What two words are used to describe the types of tissues that make up the body? (page 93)
2. What word describes a condition that exists when your body weight is higher than it should be for good health? (page 94)
3. What three letters are used as an abbreviation for one of the measurements of body composition contained in Fitnessgram? (page 94)
4. What term describes ketchup, mustard, and other foods not represented in the main categories of MyPyramid? (page 100)
5. What term describes the amount of energy used by the body when it's inactive? (page 102)

Number your paper from 6 to 10. Next to each number, write the letter of the best answer.

6. bulimia	**a.** a unit of energy contained in food
7. calorie	**b.** a tool used to measure skinfold thickness
8. calipers	**c.** a nutrient found in fruits and vegetables
9. carbohydrate	**d.** a type of eating disorder
10. protein	**e.** a nutrient found in meat and beans

Number your paper from 11 to 15. Follow the directions to answer each question or statement.

11. Give reasons why it's important to have some body fat.
12. Give examples of guidelines for dealing with peer pressure in positive ways.
13. Draw a picture of MyPyramid, and give examples of the foods represented in the pyramid.
14. Explain what is meant by energy balance and why it's important to body composition.
15. Discuss efficiency and give examples of how it's important in physical activity and daily life.

Ask the Authors

Is it possible to be physically fit and still be fat?

Get the answer and ask your own questions at the *Fitness for Life: Middle School* Web site.

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