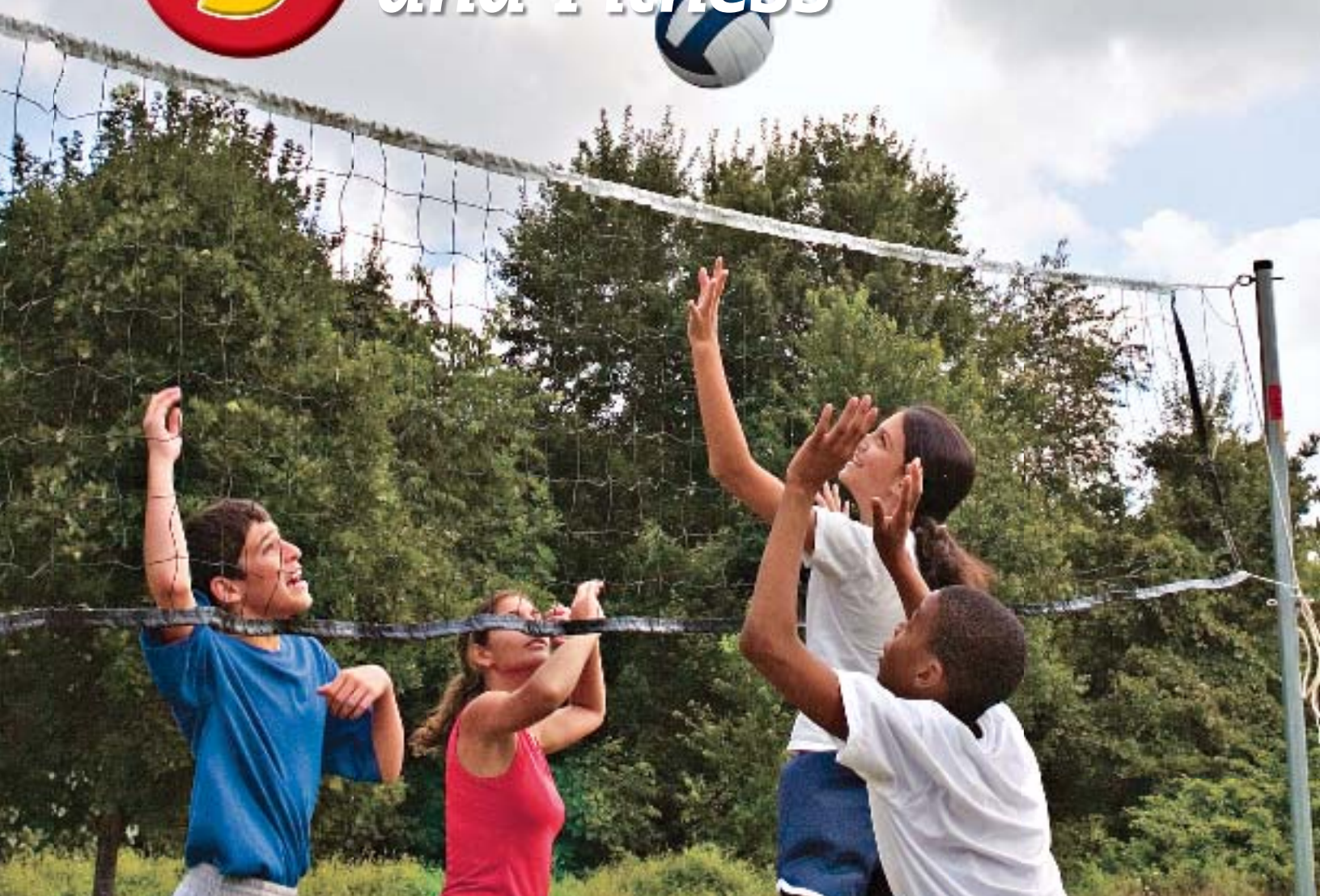




Physical Activity and Fitness



Chapter Preview

Lesson 1 Becoming Physically Fit.....60	Lesson 6 Preventing Physical Activity Injuries.....91
Lesson 2 Exploring Skeletal and Muscular Systems.....66	Building Health Skills96
Lesson 3 Exploring the Circulatory System.....71	TIME health news98
Lesson 4 Creating Your Fitness Plan.....77	Chapter Reading Review99
Lesson 5 Weight Training and Sports.....84	Chapter Assessment100

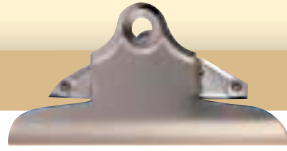
▲ Working with the Photo

Being physically active improves your overall health. **How might the activity pictured here help these teens improve their health?**

Start-Up Activities

Before You Read

What do you do to stay physically active?
Take the short health inventory below. Keep a record of your answers.



HEALTH INVENTORY

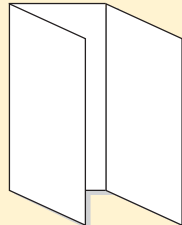
- I do 60 minutes of physical activity daily.
(a) always (b) sometimes (c) never
- My daily physical activity includes an energetic 30-minute workout.
(a) always (b) sometimes (c) never
- I wear the necessary safety gear when working out.
(a) always (b) sometimes (c) never

FOLDABLES® Study Organizer

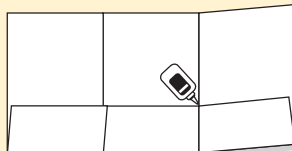
As You Read

Make this Foldable® to record the information presented in Lesson 1 about the elements of fitness.

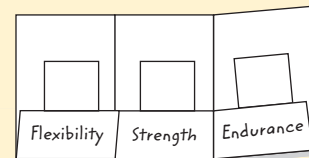
- 1** Begin with a plain sheet of 11" × 17" paper. Fold it into thirds along the short axis.



- 2** Open and fold the bottom edge up to form a pocket. Glue the edges.



- 3** Label each pocket as shown. Place an index card or quarter sheet of notebook paper into each pocket.



Write down key points on each of these elements of fitness on index cards or sheets of notebook paper cut into quarter sections. Store the cards in the appropriate pocket of your Foldable.

Go Online

Visit glencoe.com and use the eFlashcards to preview Chapter 3 vocabulary terms.

Lesson 1

Becoming Physically Fit

Guide to Reading

Building Vocabulary

As you read this lesson, write down each new highlighted term and its definition.

- physical activity (p. 60)
- fitness (p. 60)
- exercise (p. 60)
- endurance (p. 62)
- muscle endurance (p. 62)
- cardiovascular endurance (p. 62)
- strength (p. 62)
- flexibility (p. 63)
- body composition (p. 63)
- aerobic exercise (p. 64)
- anaerobic exercise (p. 64)

Focusing on the Main Ideas

In this lesson, you will be able to

- **discuss** the benefits of physical activity.
- **explain** how to increase your strength, endurance, and flexibility.
- **apply** advocacy skills to tell others about the benefits of fitness.
- **recognize** the influence of body composition on fitness.
- **measure** your fitness using fitness tests.

Reading Strategy

Skimming Look over the lesson headings. Write a sentence or two describing what you think the lesson will contain.

FOLDABLES Study Organizer Use the Foldable® on p. 59 as you read this lesson.

Quick Write

List at least three physical activities you took part in this week. Which do you think does the most good for your health and why?

Physical Activity and Your Health

Your body is constantly on the move! You use it to climb stairs, carry books, and pedal your bike. These movements add up to lots of physical activity. **Physical activity** is *any movement that makes your body use extra energy*.

Being physically fit is a great strategy for improving and maintaining personal health through all stages of life. It's also a positive health behavior that can prevent many health problems. **Fitness** means *being able to handle physical work and play each day without getting overly tired*. If you exercise regularly, you will have lots of energy. **Exercise** is *planned physical activity done regularly to build or maintain one's fitness*. You can handle more activity in your day and not feel tired. Regular exercise also helps you develop skills to play sports.

Reading Check

Define What is physical activity?



Benefits of Physical Activity

Physical activity can benefit your health in many ways, as **Figure 3.1** shows. For example, being active helps build and maintain your bones and muscles. It helps you manage your weight. It increases your strength and flexibility. It keeps your blood pressure at healthy levels and makes your heart and lungs work better. All these benefits help you enjoy life more fully. You have more energy. You move more freely and are more athletic. You also sleep better and are in less danger of developing certain diseases now and throughout all stages of life.

Have you ever noticed it just *feels good* to work out? You usually feel more relaxed or upbeat after playing a sport or going for a brisk walk. That's because an active lifestyle is good for your brain as well as your body. It improves the way you think and feel.

▼ **FIGURE 3.1**

PHYSICAL ACTIVITY HAS MANY BENEFITS

When you're active, you sleep better, have more chances to make friends, and think more clearly. **How else can physical activity benefit your health?**





DEVELOPING Good Character

Your Responsibility to Yourself

When you do what is best for your wellness, you are taking responsibility for your personal health behaviors. This shows that you are mature. Others will trust you to make the right choices to care for yourself. Set up an exercise plan and stick to it. This is one way you can show others you are working toward becoming a responsible adult. **Name three actions you could take to set up a fitness plan for yourself.**



Academic Vocabulary

element (EL uh ment) (noun) one of the parts of which something is made up, the state or place natural or suited to a person or thing. *One of the basic elements of geometry is a line.*

You have more self-confidence. You're also more mentally alert because more oxygen is going to your brain. Physical activity can help cut down on stress and give you a more easygoing attitude.

Being physically active can also give your social health a boost. When you sign up for sports teams at school or head outdoors to exercise, you're likely to meet more people. In a diverse society, physical activity can bring people together who share interests and goals. This leads to new friendships and helps you learn to work well with others. Getting along with others makes your school and community safer.



Reading Check

Recall Give one example of how physical activity benefits each side of your health triangle.

Elements of Physical Fitness

There are five **elements** of physical fitness: muscle endurance, cardiovascular endurance, strength, flexibility, and body composition. Learning about these elements will help you assess and improve your own fitness level.

Endurance

Endurance (en·DUR·uhn·ce) is *the ability to perform difficult physical activity without getting overly tired.* **Muscle endurance** is *the ability of a muscle to repeatedly use force over a period of time.* If you can run several miles and if your legs don't feel tired, your legs have muscle endurance. You can build your endurance if you spend more time doing a chosen exercise or physical activity.

Cardiovascular (kar-dee-oh·VASS·kyoo·luhr) **endurance** is *the measure of how well your heart and lungs work during moderate-to-vigorous physical activity or exercise.* If you are breathing so hard you can't speak in sentences, your activity is vigorous. If you can carry on a conversation, your activity level is light to moderate. Cardiovascular endurance is also a measure of how quickly your heartbeat and breathing return to normal after you stop exercising.

Strength

Strength is *the ability of your muscles to use force.* The amount of work your muscles can do is a measure of strength. By building muscle strength, you can improve your skills for sports and other activities. You also shape and tone your body. Lifting weights is one of the many ways to build and maintain muscle strength.



Flexibility

The ability to move joints fully and easily through a full range of motion is known as **flexibility**. You can increase your flexibility with regular, gentle stretches. When you become more flexible, you will be more agile, or able to change direction easily. You will also be less likely to get hurt as you exercise or play. **Figure 3.2** shows some ways to build not only flexibility, but also endurance and strength.

Body Composition

The last element of fitness is body composition. **Body composition** is the proportions of fat, bone, muscle, and fluid that make up body weight. A healthy body generally has more bone, muscle, and fluid than fat. Your body composition is the result of your eating habits, your level of physical activity, and genetics—the genes you inherited from your parents.

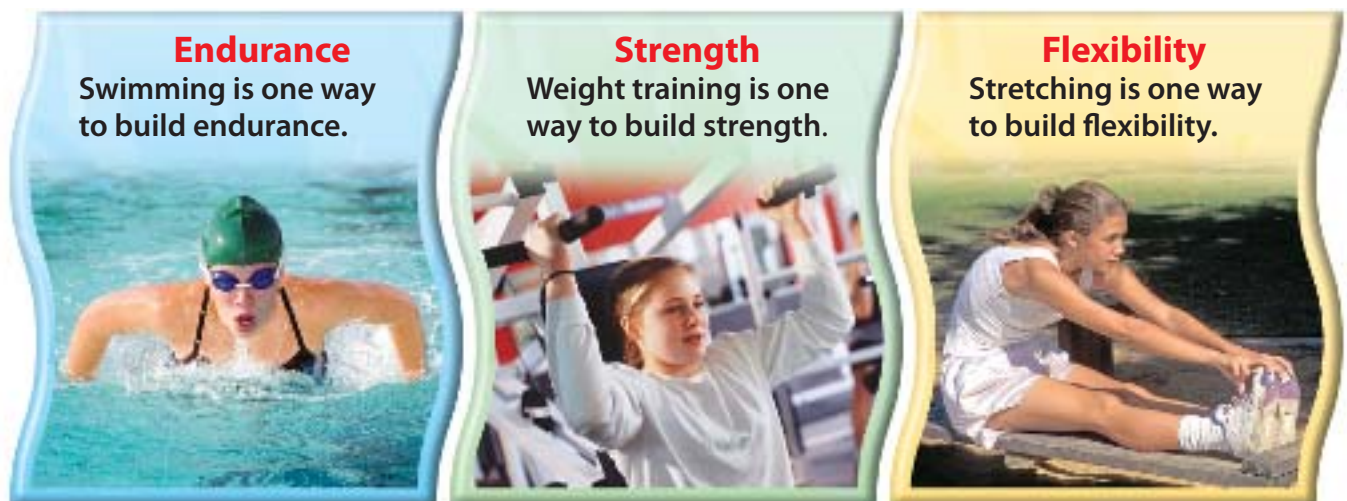
Effect of Body Composition on Fitness

You can improve your body composition by eating healthy foods and increasing your physical activity. If you exercise regularly, your body can gain muscle and lose fat. This helps you stay within a healthy weight range and helps to protect you against diseases like heart disease and cancer. Eating healthy foods and exercising also helps keep your cholesterol levels down. Cholesterol is a fatty substance in the blood that the body uses to build cells. High cholesterol levels can contribute to heart disease.

▼ FIGURE 3.2

EXERCISES FOR ENDURANCE, STRENGTH, AND FLEXIBILITY

Different exercises improve different elements of fitness. **Give examples of other exercises that can build endurance, strength, and flexibility.**





Go Online

Visit glencoe.com and complete the Interactive Study Guide for Lesson 1.

Types of Exercise

Whether they build endurance, strength, or flexibility, most physical activities and exercises can be described as aerobic or anaerobic. **Aerobic** (ah·ROH·bik) **exercise** is *rhythmic, moderate-to-vigorous activity that uses large amounts of oxygen and works the heart and lungs*. Dancing, running, swimming laps, and bicycling are examples of aerobic exercise. **Anaerobic exercise** is *intense physical activity that builds muscle but does not use large amounts of oxygen*. Lifting weights is one type of anaerobic exercise. Sprinting is another example of anaerobic exercise.



Reading Check

Compare and Contrast What is the difference between aerobic and anaerobic exercise?



Measuring Your Fitness

Here are a few examples of common fitness tests that can help you measure your fitness level. **Figure 3.3** below shows typical results for teens your age. Compare your results with those in the chart.

- **Flexibility.** The Sit and Reach can help you measure your flexibility. Sit on the floor with your legs straight. Place a ruler between your feet with your heels at the end of the ruler. Keep your knees straight and slowly reach forward with both hands. How many inches past your toes can you reach?

▼ **FIGURE 3.3**

HEALTHY FITNESS ZONES

These fitness assessments can be used to measure your fitness level. Take these fitness tests and compare your results with the typical results for your age and gender. **Are there any areas of fitness that you need to work on?**

Healthy Fitness Zones for Ages 13 and 14			
Test	Sex	Age 13	Age 14
Curl-ups (# completed)	Boys	21–40	24–45
	Girls	18–32	18–32
1-mile run (in minutes and seconds)	Boys	10:00–7:30	9:30–7:00
	Girls	11:30–9:00	11:00–8:30
Modified Pull-ups (# completed)	Boys	8–22	9–25
	Girls	4–13	4–13
Push-ups (# completed)	Boys	12–25	14–30
	Girls	7–15	7–15
Sit and Reach (inches)	Boys	8	8
	Girls	10	10

- **Strength.** To test abdominal strength, do crunches for one minute. To test upper-body strength, do as many modified pull-ups or push-ups as you can in one minute.
- **Cardiovascular endurance.** You will need a 12-inch-high block or bench for this test. Before you start, take your pulse for 1 minute to determine your heart rate. Step up on the block, then step down. Repeat this stepping motion in a regular rhythm for 3 minutes. Take your pulse again for 1 minute. The more fit you are, the less your heart rate will increase.
- **Body composition.** The main method for measuring body composition is the skinfold test. This test involves pinching a fold of skin on the back of your upper arm and on the inside of your lower leg. Ask your physical education teacher for help with the skinfold test.

Reading Check

Explain What is one common fitness test you can use to measure your upper body strength?



- ▲ Assess your fitness by seeing how long you can exercise before getting tired. Biking, for example, can measure cardiovascular endurance. **What other physical activities test cardiovascular endurance?**

Lesson 1 Review

After You Read

Review this lesson for new terms, major headings, and Reading Checks.

What I Learned

1. **Restate** Name three ways that physical activity can benefit mental/emotional health.
2. **Vocabulary** Define *strength*.
3. **List** What are the five elements of fitness?
4. **Describe** What is body composition?

Thinking Critically

5. **Infer** Why might stretching help a person perform better at a sport?

6. **Evaluate** In a brief paragraph, describe your own thoughts and feelings about the benefits of being physically fit.

Applying Health Skills

7. **Goal Setting** Complete a personal fitness evaluation using the fitness tests provided in this lesson, or other tests recommended by your teacher. Use the results of your evaluation to set fitness goals. Develop a fitness program to help you reach your goals.

Lesson 2

Exploring Skeletal and Muscular Systems

Guide to Reading

Building Vocabulary

As you read this lesson, use each new highlighted term in a sentence. Write the sentences in your notebook.

- skeletal system (p. 66)
- joints (p. 66)
- tendons (p. 66)
- ligaments (p. 66)
- cartilage (p. 66)
- muscular system (p. 67)

Focusing on the Main Ideas

In this lesson, you will be able to

- **discuss** the functions of the skeletal and muscular systems.
- **recognize** how bones and muscles work together.
- **describe** how to keep your bones and muscles healthy.

Reading Strategy

Finding the Main Idea Look at the main headings in this lesson. For each heading, write a sentence that states the main idea.

Quick Write

Why do you think healthy bones are important to good health? Explain your ideas in a few sentences.

The Skeletal System

The **skeletal system** is the framework of bones and other tissues that supports the body. This system also protects your internal organs and helps you move. The 206 bones in your body make blood cells and store calcium and other minerals.

Joints are the places where two or more bones meet. Some joints allow the bones to move. Others, such as those in the skull, never move but protect organs instead. **Figure 3.4** on the following page shows the major bones in the skeletal system. It also describes the primary types of joints.

Several types of connecting tissue allow bones and muscles to work together as they move. **Tendons** are a type of connecting tissue that joins muscles to bones and muscles to muscles. Your Achilles tendon, for example, attaches your calf muscle to your heel bone. **Ligaments** are a type of connecting tissue that holds bones to other bones at the joint. Ligaments make it possible for your knees and ankles to work. **Cartilage** is a strong, flexible tissue that allows joints to move easily, cushions bones, and supports soft tissues. The tip of your nose contains cartilage. Cartilage also pads your knee joint.

Reading Check

Define What are ligaments?

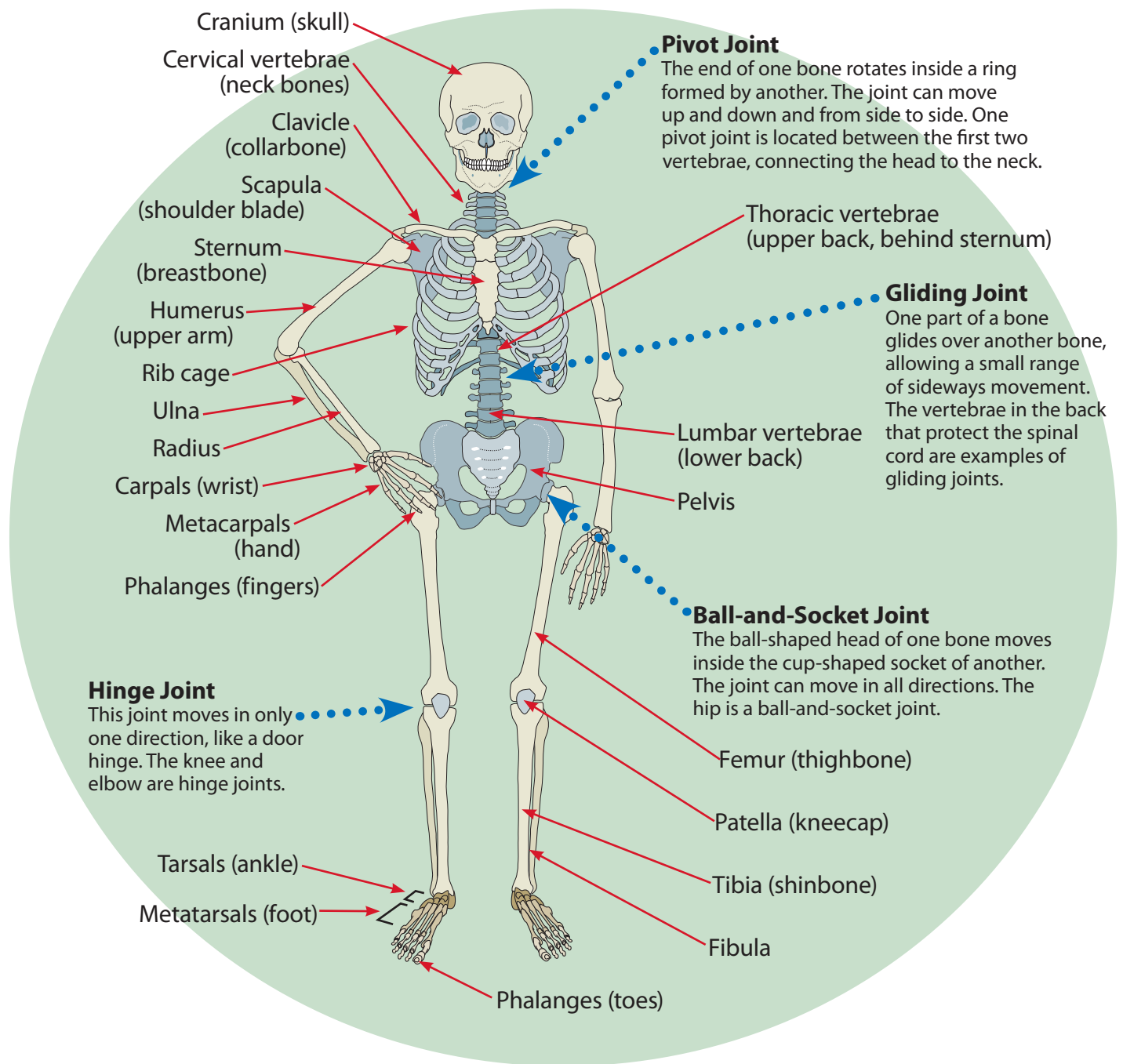


FIGURE 3.4

THE SKELETAL SYSTEM

Here are some of the major bones and joints of the skeletal system.

What type of joint are the vertebrae?



The Muscular System

The human body has more than 600 muscles. The **muscular system** includes *tissues that move parts of the body and control the organs*. It provides the power and flexibility you need to move. The three main types of muscles are skeletal, smooth, and cardiac.

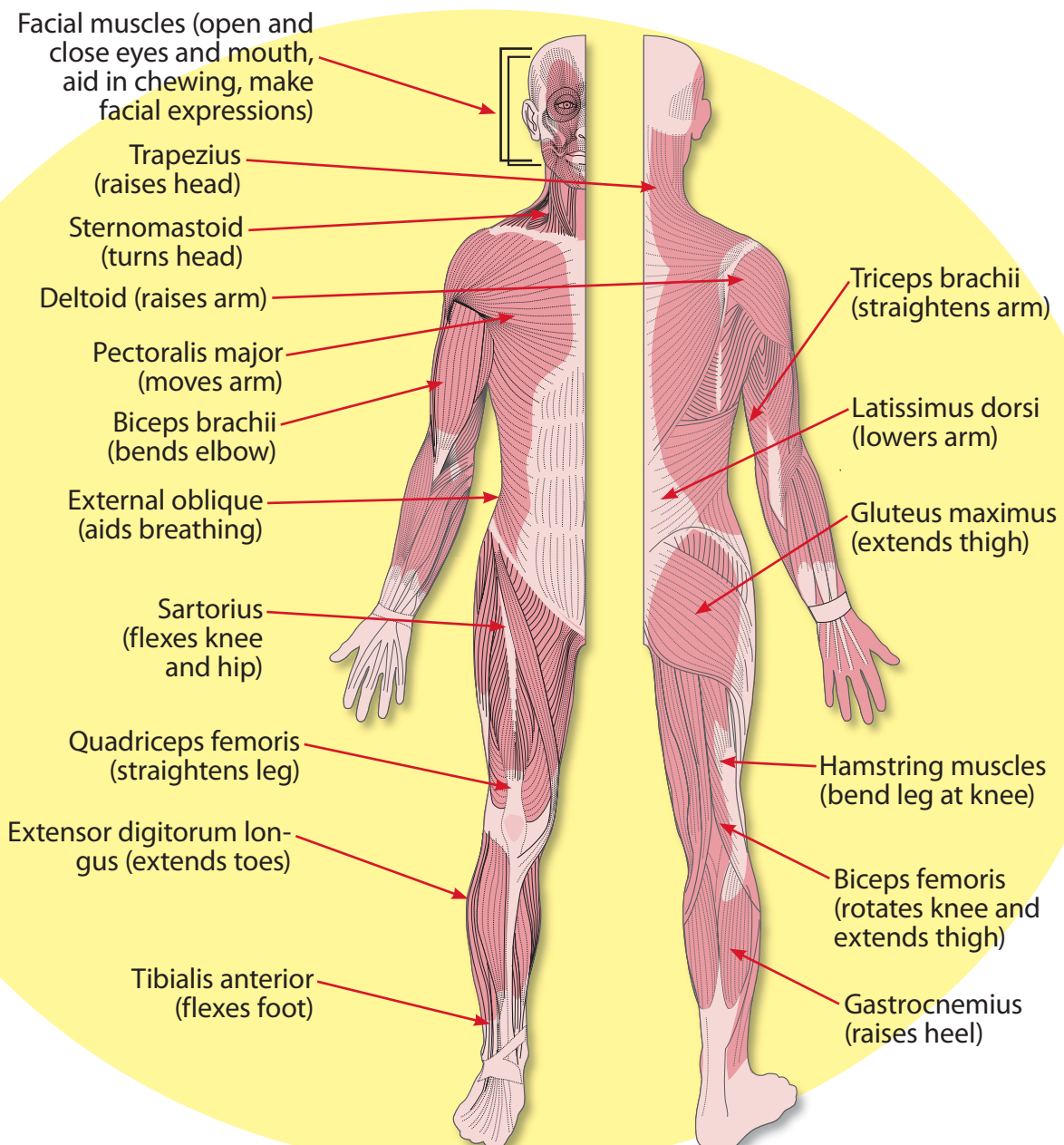


Figure 3.5 identifies skeletal muscles. These muscles are voluntary. That means you can control them. For example, imagine you want to turn your head. Your brain sends messages to muscles in your neck. In response, the neck muscles contract, or shorten. This causes your head to turn. Skeletal muscles work in pairs to move bones. As one muscle contracts, the other muscle lengthens. **Figure 3.6** shows how the muscles move when you move your arm.

FIGURE 3.5

THE MUSCULAR SYSTEM

Here are the major skeletal muscles and their functions. **What is the function of the trapezius?**





Your body's organs and blood vessels contain smooth muscles. These muscles are involuntary. That means they move without you consciously controlling their movement. The heart has its own special type of involuntary muscle called cardiac muscle.

Caring for Your Bones and Muscles

To keep your bones and muscles in good shape, stay physically active. Do flexibility exercises so you can move more easily and work out more safely. Choose physical activities that strengthen your muscles and bones. Also do activities that build cardiovascular endurance. Your heart and lungs will have more power.

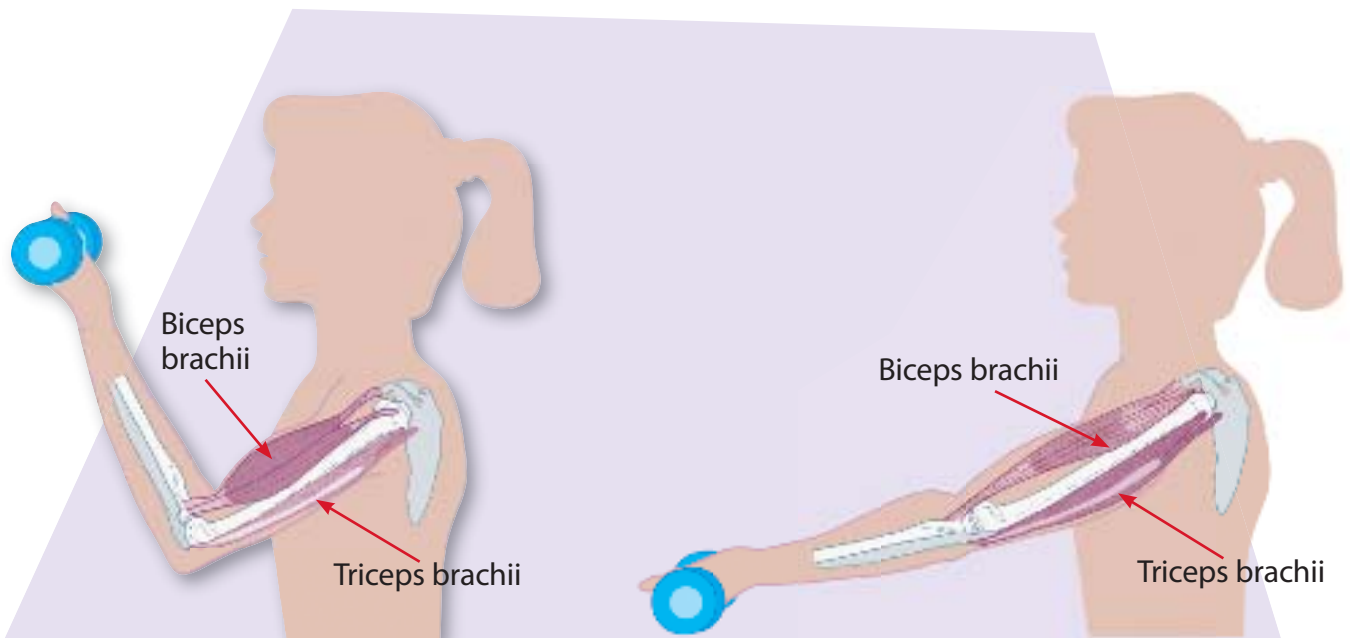
“Stand up straight!” No doubt someone has told you this at least once in your life. It's good advice. Proper posture keeps bones, joints, and muscles in the right places. Just remember, good posture is not stiff posture. Sit and stand in a correct but relaxed way. Your lower back should be slightly curved. If you use a backpack, try not to overload it. Otherwise, you could strain your back.

FIGURE 3.6

PAIRED MOVEMENT

Pairs of muscles work together to move bones. They use opposite actions.

What muscles move when you bend your arm?



A To bend the arm, muscles in the top part of the arm—especially the biceps brachii—contract, or shorten, pulling the bone of the forearm upward. At the same time, the triceps brachii—on the opposite side of the arm—must relax and extend, or lengthen.

B To straighten the arm again, the biceps brachii relax. The triceps brachii now contract, pulling the arm into a straight line.



Connect To... Science

Scoliosis

A person with scoliosis has a spine that curves sideways. No one knows what causes this curvature. Doctors usually find it in young people between the ages of 10 and 14. Your school may provide screening for scoliosis.

Use reliable sources to find out how doctors treat scoliosis. Report your findings to the class.



◀ From time to time, check to make sure you have good posture. **Why is having good posture important?**

Richard Anderson

When you lift heavy objects, keep your back straight. Bend your knees as you lift, and use your legs to do most of the work. If you get hurt, don't try to keep using the injured area. Visit a doctor or other professional health services right away.

Have you heard the saying "You are what you eat"? It's true. When you follow a healthful eating plan, your bones

and muscles get the proper nutrients. Carbohydrates provide fuel for energy. Foods high in protein can help build muscle. Foods high in vitamin D, calcium, and other minerals help your bones grow and become stronger.

Go Online

Visit glencoe.com and complete the Interactive Study Guide for Lesson 2.

Reading Check

Describe How should you lift heavy objects to protect your skeletal and muscular systems?



Lesson 2 Review

After You Read

Review this lesson for new terms, major headings, and Reading Checks.

What I Learned

1. **Explain** What are the functions of the skeletal and muscular systems?
2. **Vocabulary** Define *cartilage*.
3. **Distinguish** How do ligaments and tendons differ?
4. **Describe** How can you care for your skeletal and muscular systems?
5. **Identify** Which muscle turns your head?

Thinking Critically

6. **Analyze** Why do you think poor posture may cause backaches?
7. **Explain** Why do you think cardiac muscle is involuntary?

Applying Health Skills

8. **Practicing Healthful Behaviors** Learn some exercises to strengthen your bones. Ask a physical education teacher or other fitness expert for help. Demonstrate the exercises for your class.

Lesson 3

Exploring the Circulatory System

Guide to Reading

Building Vocabulary

Three of these terms are based on the word *circulari*, which means “to form a circle.” How do you think the idea of a circle plays a part in their meanings?

- circulatory system (p. 71)
- arteries (p. 71)
- veins (p. 71)
- capillaries (p. 71)
- pulmonary circulation (p. 72)
- systemic circulation (p. 72)
- blood pressure (p. 73)
- plasma (p. 74)

Focusing on the Main Ideas

In this lesson, you will be able to

- **identify** the functions of the circulatory system.
- **describe** how blood circulates through the body.
- **recognize** how to care for your circulatory system.

Reading Strategy

Predict Look over the headings, figures, and captions in this lesson. Write a question you think this lesson will answer. After reading, look back to see if your question was answered.

Quick Write

Describe what kinds of physical activity might benefit your heart and blood vessels.

Your Heart and Blood Vessels

The **circulatory system** is the group of organs and tissues that act as transfer stations carrying needed materials to cells and removing their waste products. This system includes the heart, the blood vessels, and the blood itself. It is also called the cardiovascular system. *Cardio* refers to the heart, and *vascular* refers to the blood vessels. A healthy circulatory system is important to overall health.

The heart is a special muscle that serves as the center of the circulatory system. The heart pumps blood around the body through a network of blood vessels that is over 80,000 miles. The **arteries** are blood vessels that carry blood away from the heart to various parts of the body. The **veins** are blood vessels that carry blood from all parts of the body back to the heart. **Capillaries** are tiny blood vessels that carry blood to and from almost all body cells and connect arteries and veins.

Reading Check

Restate Which type of blood vessels carry blood away from the heart?



The Process of Circulation

You cannot live more than a few minutes without oxygen. **Figure 3.7** shows how your heart and lungs work together to deliver oxygen to your body's cells. **Pulmonary circulation** takes place *when blood travels from the heart, through the lungs, and back to the heart.* (The word *pulmonary* refers to the lungs.) When blood travels this path, it gets rid of carbon dioxide. It also fills up with oxygen. Then systemic circulation begins. **Systemic** (sis-TEH-mik) **circulation** takes place *when oxygen-rich blood travels to all body tissues except the lungs.* At the same time, blood also delivers other nutrients to the cells and picks up waste products.



Reading Check

Classify What are the two types of circulation?

FIGURE 3.7

PULMONARY AND SYSTEMIC CIRCULATION

In the pulmonary system, oxygen-rich blood exits the lungs, passes through the heart, and is pumped to the body tissues. In systemic circulation, this blood returns to the heart and is pumped to the lungs. **Where does the blood come from that enters the right atrium?**

G In the *lungs*, carbon dioxide is removed from the blood and is exhaled out of the body. Oxygen is inhaled and added to the blood, and blood is sent back to the heart through the pulmonary vein to the left atrium. Then the process begins again.

F The right atrium sends the blood to the *right ventricle*. This part of the heart sends the low-oxygen, high-carbon-dioxide blood to the lungs.

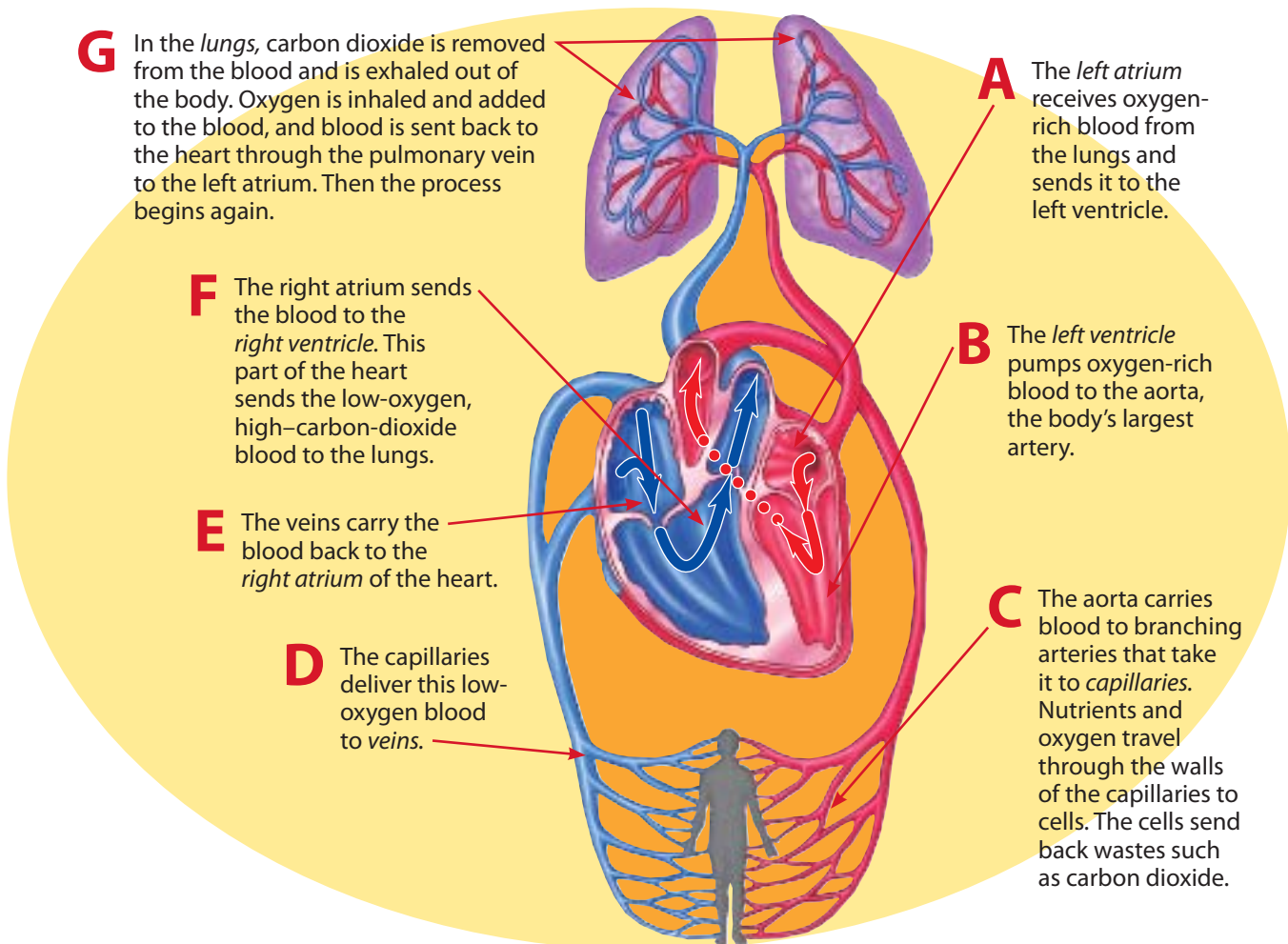
E The veins carry the blood back to the *right atrium* of the heart.

D The capillaries deliver this low-oxygen blood to *veins*.

A The *left atrium* receives oxygen-rich blood from the lungs and sends it to the left ventricle.

B The *left ventricle* pumps oxygen-rich blood to the aorta, the body's largest artery.

C The aorta carries blood to branching arteries that take it to *capillaries*. Nutrients and oxygen travel through the walls of the capillaries to cells. The cells send back wastes such as carbon dioxide.





Blood Pressure

Have you ever had your blood pressure checked by a health care professional? **Blood pressure** is the force of blood pushing against the walls of the blood vessels. A certain amount of pressure is needed to make blood circulate. A medical provider takes two readings to measure blood pressure. He or she records the readings as two numbers, such as 110/70. The first number is the pressure read when the heart contracts and pumps blood into the arteries. It is called systolic (sih-STAHL-ik) pressure. The second number is the pressure read when the heart relaxes to refill with blood. It is called diastolic (di-uh-STAHL-ik) pressure.

- ▶ This teen is getting his blood pressure checked by a health care professional. **When was the last time you had your blood pressure checked?**



- ◀ A pulse registers the contractions of the heart as it pumps blood throughout the body. To feel your pulse, place two fingers on your wrist. **Why might a health care provider need to check a person's blood pressure?**



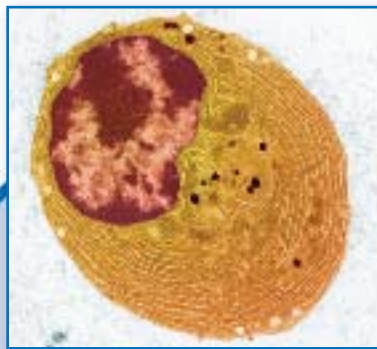
What Makes Up Your Blood?

Your blood has several parts, as shown in **Figure 3.8**. Each part carries out important functions. Blood supplies all parts of your body with materials needed to survive. It also helps fight off illness. **Plasma** (PLAZ·muh), *the yellowish, watery part of blood*, makes up over half its volume. The rest consists of red blood cells, white blood cells, and platelets.

▼ **FIGURE 3.8**

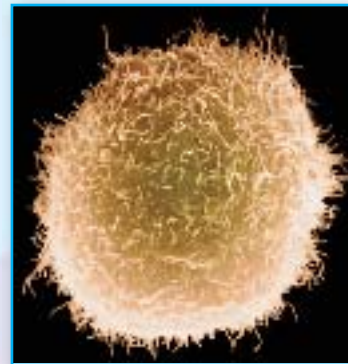
WHAT IS IN YOUR BLOOD?

Each part of the blood has a specific function. **How do platelets help when you have an injury?**



White Blood Cells

White blood cells fight infection in the body. Some white blood cells create substances that destroy foreign cells. Others find and devour disease-causing organisms.



Plasma

The three types of blood cells are suspended in plasma, a liquid that carries nutrients to cells. It also carries hormones, which are chemicals that regulate body processes. In addition, plasma transports wastes to the lungs and kidneys for removal.



Red Blood Cells

Red blood cells, which look like little disks, carry oxygen from the lungs to all parts of the body.

Platelets

Platelets are the smallest type of blood cell. Platelets help blood clot at the site of a wound.





Blood Types

Red blood cells are one of four types: A, B, AB, or O. These four blood types are determined by the presence or absence of certain substances. Your blood type remains the same throughout your life. It is a result of blood factors from both of your parents.

Do you know your blood type? This information can be important. For example, a person may need blood from a donor during surgery. Doctors cannot use just any blood. Some blood types are compatible. This means that they can be safely mixed in one person's body. Others are not compatible. If incompatible blood types mix, the red blood cells in one type clump together and block the blood vessels. This can cause a person to be sick or even die.

Figure 3.9 shows which blood types can be safely combined.

People with type O-negative blood are called universal donors because their blood is compatible with all blood types.

Most people's blood contains a substance called an Rh factor, a type of protein. People who have Rh-factor in their blood are called Rh-positive. Rh-negative people do not have this substance in their blood. They can accept blood donations only from people who are Rh-negative. People with Rh-positive blood can receive blood from either Rh-positive or Rh-negative donors.



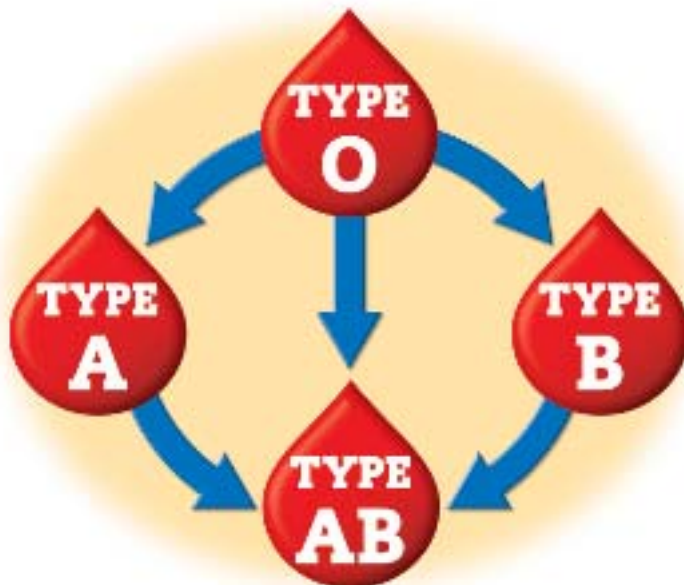
Reading Check

List What are the four blood types?

▼ **FIGURE 3.9**

BLOOD TYPES AND COMPATIBILITY

Donated blood saves many lives each year. **Which blood type is compatible with all the others?**



Connect To... Science



Heart of the Matter

To get an idea of how hard your heart must work, try this experiment. You'll need a tennis ball and a watch or clock that displays seconds. Squeeze the ball 70 times over one minute's time: a little more than once per second. The pressure and strength you use to squeeze the ball are the same kind of pressure and strength your heart uses to pump blood.



Caring for Your Circulatory System

Caring for your circulatory system now will help keep it healthy for life. Start by making aerobic activity a habit. It will improve your cardiovascular endurance, which helps your circulatory system. During aerobic activity, your heart, blood vessels, and blood step up the supply of oxygen and nutrients to your body. After several weeks of this, your heart can pump more blood each minute. Your muscle cells can use more oxygen.

Moderate-to-vigorous physical activity can help cut the amount of fatty materials in your blood. Your arteries will have less fatty buildup as a result. Regular physical activity also can help you stay at a healthy weight, which means the heart doesn't have to work as hard.

Be sure to follow a balanced food plan that is low in fats. It's also smart to develop strategies for managing stress. Stress can strain your heart and blood vessels. Avoid using tobacco as well. The nicotine in tobacco narrows the blood vessels, cutting down on the oxygen supply.

Go Online

Visit glencoe.com and complete the Interactive Study Guide for Lesson 3.



Reading Check

Restate How does aerobic activity help the heart?



Lesson 3 Review



After You Read

Review this lesson for new terms, major headings, and Reading Checks.

What I Learned

1. **Identify** What is the function of the circulatory system?
2. **Vocabulary** Define *blood pressure*.
3. **Explain** Why can't certain blood types be combined?
4. **Distinguish** What is the difference between pulmonary and systemic circulation?

Thinking Critically

5. **Infer** Why do you think a blood pressure reading is part of a typical medical checkup?

6. **Apply** In what ways do you think building cardiovascular endurance now will benefit you later in life?

Applying Health Skills

7. **Communication Skills** Suppose someone in your family is at risk for cardiovascular disease. This family member doesn't participate in regular physical activity. His or her doctor recommends exercise. Write a dialogue in which you encourage this person to improve his or her fitness level. Include information about how these changes would benefit the circulatory system. Be positive.

Lesson 4

Creating Your Fitness Plan

Guide to Reading

Building Vocabulary

Make flash cards with a term on one side and its meaning on the other. Use them with a classmate to learn the terms.

- warm-up (p. 80)
- cooldown (p. 81)
- frequency (p. 81)
- intensity (p. 81)
- target heart rate (p. 82)

Focusing on the Main Ideas

In this lesson, you will be able to

- **list** factors to consider when developing a personal fitness program.
- **identify** the keys to a good workout.
- **calculate** your target heart rate range.
- **assess** your progress in meeting fitness goals.

Reading Strategy

Drawing Conclusions List some factors that you think might be important to developing a personal fitness program. After you read the lesson, look back at your list to see if these factors were covered.

Quick Write

List at least three ways you can fit more physical activity into your daily life.

Setting and Reaching Your Fitness Goals


Do you think you could use a little more physical activity in your life? Before you make changes, think about your goals. You may just want to feel better and think more clearly. Maybe you want to build your cardiovascular endurance. Perhaps you want to improve your skill in a chosen sport. Setting personal fitness goals can help you focus and stick with your plan. When you reach a goal, you'll feel great about getting there!

Where to begin? Start by asking your school's coach or physical education teacher to help you. He or she can measure your fitness level and suggest ways to improve it. Together, you can set realistic fitness goals. You should also speak with a medical professional. Let him or her know that you want to begin a fitness program. Ask whether it's safe for you to get started.

Try to work out for an hour each day. Spend about 30 minutes doing moderate activities. Take a speedy walk, mow the lawn, or play some fairly active sports. On most days, do 30 more minutes of harder activities. Choose aerobic exercises or very active sports. Include strength and flexibility exercises up to six times a week. The most important thing is for you to pick an activity you enjoy. Remember that fitness is a lifetime endeavor.



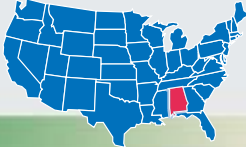
What **Teens** THINK



How can you make physical activity part of your daily routine?

One way I would make physical activity part of my daily routine would be to walk 30 minutes to an hour every afternoon to think about how my day went; mainly just to unwind.

Nicole S.
Albertville, AL




Think about your favorite physical activities. Do they require any special equipment? Exercise does not have to be expensive. Many community park districts run fitness centers. You can use their machines or take classes at a low cost. When and where will you exercise? If you would like to be in a group, you might sign up for volleyball or an aerobics class. If you would rather exercise alone, you might try jogging or bicycling. It makes sense to schedule activities you enjoy. That way, you will be more likely to actually do them.

Making Time for Fitness

List the activities you already do. Include gym classes and school sports. Also include any daily activity that gets you moving, like walking to and from


school. Now list the activities you would like to add. Decide where they might fit into your schedule. Create a weekly plan that includes all your activities. Keep a chart or calendar to remind you of your schedule. Use a log to track how often you work out, what exercises you do, and how long each session lasts.

After two weeks or so, rethink your schedule. How is it working? Is it realistic? If you find yourself skipping activities, reschedule them for a different day or time. Be willing to make changes. Remember that your goals and needs may change as your fitness abilities improve. You may want to try a different activity. If you **vary** your program, you keep yourself from getting bored. Don't forget to have fun!

Academic Vocabulary

vary (VEHR ee) (verb)
to give variety to, to be different, to show or undergo a change. *I vary the exercises I do each week.*



 **Reading Check** **List** What should be included in a fitness log?

Working Out Safely

Getting hurt can take the fun out of any activity. You'll want to take steps to protect yourself and reduce your risk of injury before you begin a workout. Wear the right clothes. For most workouts, loose-fitting clothes are probably best. Make sure that running or walking shoes support your feet and don't give you blisters. If you're outside after dark, exercise with a parent, guardian, or trusted adult. Wear light colors and reflective gear so that drivers can see you.



Health Skills Activity

Goal Setting

Planning for Fitness

Tiffany doesn't get much physical activity. She spends most of her free time playing computer games or reading. Yesterday, Tiffany told her friend Aleesha that she wouldn't be able to go to the local park for a picnic with their friends this weekend. Her parents were too busy to drive her, and she knew she would be too tired to walk or bike all the way. Tiffany wants to plan a physical-activity program so she will have more energy to do fun things. However, she doesn't know where to begin.

What Would You Do?

Help Tiffany come up with strategies for reaching a personal health goal of improving her fitness level. Use the five goal-setting steps.

- Step 1** Set a specific goal and write it down.
- Step 2** List the steps to reach your goal.
- Step 3** Get help and support from others.
- Step 4** Evaluate your progress by setting checkpoints.
- Step 5** Reward yourself after you have reached your goal.

During cold weather, dress in several thin layers of clothing. As you warm up during exercise, you can peel off layers as needed. In hot weather, wear clothing that allows air to circulate and drink plenty of water. You might also need to occasionally drink specialty sports drinks that can help replace electrolytes you lose through sweating during longer workouts in hot weather. Cut your workout time if you get too hot. Use sunscreen with a sun protection factor of at least 15, and wear a hat and sunglasses.

For many activities, playing it safe means wearing protective equipment. Another way to play it safe is to work out with a friend. If you are running or jogging, stick to a path with a soft, even surface if you can. A dirt path is better than hard concrete. It will be easier on your muscles and joints. Be careful when working out at night or in an out-of-the-way place. Never go alone. If you plan to use an exercise machine such as a stair climber or treadmill, be sure you know how to use it. Ask a trained person to help you.



Reading Check

Describe How should you dress for working out in hot weather?



Keys to a Good Workout

A workout is an exercise program that focuses on high-energy activity. It might include aerobic activities, moves to build strength or muscle endurance, or all of them combined. If your main activity is running, go biking or swimming, too. If your main activity is swimming, play volleyball or take a dance class.

Warm Up and Cool Down

Warm up your muscles before you begin a workout so they will be less likely to tear or get strained. A **warm-up** involves *gentle exercises that get heart muscles ready for moderate-to-vigorous activity*.

▼ FIGURE 3.10

WARMING UP AND COOLING DOWN

Warming up and cooling down are important parts of a safe workout.

What else can help ensure a safe workout?



Warm Up

- As you warm up, more blood flows to your muscles. They become more flexible. Your heart rate increases gradually and safely.
- Perform easy aerobic exercises.
- After you warm up, do a few easy stretches.
- Your warm-up should take about 10 minutes.

Light Stretches

- Light stretching after a warm-up helps loosen you up. Stretch only to the point where you feel a gentle pull.
- Hold the stretch for 30 seconds.
- To prevent injury, do not bounce or jerk.

Cool Down

- Cooling down brings your heart rate back down. It lowers body temperature and keeps your muscles flexible.
- Continue your workout movements, but at a slower pace.
- Cool down for about 10 minutes.
- Stretch again for 5 to 10 minutes.
- Afterward, drink plenty of water.



When your workout is finished, take time to cool down. The **cooldown** involves *gentle exercises that let the body adjust to ending a workout*. It allows your heartbeat, breathing, and blood pressure to return to normal. After the cooldown, stretch again to stay flexible. Drink water before, during, and after your workout.

Figure 3.10 shows you how to warm up and cool down.

Get Fit with F.I.T.T.

To be effective, a workout should follow the F.I.T.T. formula. F.I.T.T. stands for Frequency, Intensity, Time, and Type of activity. Keep these standards in mind as you plan your fitness program.

Frequency

Frequency refers to *the number of days you work out each week*. Frequency depends on your fitness goals. It also depends on the type of activity you plan to do, your schedule, and your current level of fitness. Are you just getting started in a fitness program? Then plan to work out three days a week. As your fitness level improves, increase the frequency of your workouts.

Intensity

Intensity refers to *how much energy you use when you work out*. How hard are you working? Begin slowly and increase the intensity a little at a time. If you work too hard too soon, you will tire quickly. You're also more likely to get injured. If you're able to talk while working out, you're probably working at the right level. If you are out of breath and can't talk, slow down.

 **Reading Check** **Define** What is *intensity*?

Time

Slowly increase how much time you spend at each workout session. If you're just starting out, aim for 20 minutes. Then gradually increase your workout time.

Keep in mind that you don't have to do your workout in one long session. If you're short on time, you can do some activity for 10 to 15 minutes at a time, two or three times throughout the day. Time spent working out adds up and still gives you beneficial results.

Type

What exercise is right for you? To answer this, think about the benefits that you want to gain. You will get the best benefits if you mix aerobic and anaerobic exercise. Spend more than half of your workout time doing aerobic activities. You could jog or bike. Finish up with anaerobic activities and stretching. The type of activities you choose should match your goals, schedule, and interests.



Connect To... Language Arts

Reading for Inspiration

Check out a library book about a sports or fitness figure, such as Tiger Woods. Find out how the person became interested in his or her chosen activity.

How has this activity made his or her life better? What has he or she gained from it? Write a paragraph on your findings.



▼ FIGURE 3.11

CALCULATE YOUR TARGET HEART RATE RANGE

If you know your target heart rate range, you can adjust your workout for the best results. **Why is it important to know your target heart rate range?**

Step 1
Subtract your age from 220. The resulting number is your maximum heart rate—an estimate of how fast your heart is capable of beating.

$$\begin{array}{r} 220 \\ - 12 \\ \hline 208 \end{array}$$

Step 2
Multiply your maximum heart rate by 0.6 to find the low end of your target heart rate range. When you first begin an exercise plan, you should aim for this heart rate.

$$\begin{array}{r} 208 \\ \times 0.6 \\ \hline 124.8 \end{array}$$

Step 3
Multiply your maximum heart rate by 0.8 to find the high end of your target heart rate range. As you become more fit, you can work up to this level. Do not exceed this heart rate while exercising.

$$\begin{array}{r} 208 \\ \times 0.8 \\ \hline 166.4 \end{array}$$

Checking Your Heart Rate

You can monitor the intensity of your workout by checking your heart rate before, during, and after your workout. Before you begin your workout, take your resting heart rate. This is the number of times your heart beats per minute when you are relaxing. To check your heart rate, take your pulse for 10 seconds. Multiply this number by 6 to get your pulse rate for one minute. (To take your pulse, place the first two fingers of one hand on the inside of the other wrist. You can also place them on either side of your neck. Don't use your thumb, which has its own pulse.)

After you have worked out for a while, take your target heart rate. Your **target heart rate** is the number of heartbeats per minute that you should aim for during moderate-to-vigorous aerobic activity to help your circulatory system the most. **Figure 3.11** above explains how to calculate the range of your target heart rate. After you complete your workout, take your recovery heart rate. This measures how quickly your heart rate returns to normal right after you stop exercising. The higher your fitness level, the faster your heart rate drops.



Visit glencoe.com and complete the Interactive Study Guide for Lesson 4.



Reading Check

Explain How is a pulse taken?

Tracking Your Progress

Are you happy with your fitness program? Is it giving you the results you want? After you've followed your weekly schedule for a while, check your fitness log. Compare early entries with later ones. Consider what you've done so far and what you still want to accomplish. Do you need to make some adjustments? Are you getting closer to your goal?

If you've been following your program for six to eight weeks, you should see some results. Your cardiovascular endurance may have increased, and you may feel stronger and more flexible. If you feel you haven't made much progress, think about why. Have you been keeping to your schedule? Did you set your goal too high? Maybe you need more time than you thought. If you're not sure what to do next, talk to your school's coach or physical education teacher.



▲ Amy keeps a fitness log. She walks for 20 minutes in the park, three times a week. **What physical activities would you record in your fitness log?**

Reading Check

Describe What things will checking your fitness log tell you?

Lesson 4 Review

After You Read

Review this lesson for new terms, major headings, and Reading Checks.

What I Learned

1. **Vocabulary** Define *warm-up* and *cool down*.
2. **Describe** Why is it a good idea to see a health care provider before beginning a fitness program?
3. **Restate** How should you dress for working out in cold weather?
4. **Explain** Name and briefly describe each element of the F.I.T.T. formula.
5. **Identify** What are the keys to a good workout?

Thinking Critically

6. **Apply** Keiko is 12 years old and has begun an aerobics class. She wants to find out what her target heart rate range should be. What would you tell her to do?
7. **Justify** Why is it important to be flexible when planning a workout schedule?

Applying Health Skills

8. **Analyzing Influences** What is your favorite physical activity and why? Did friends or family spark your interest in this activity? Was it something you saw on television or in a magazine? Did social customs play a part? Explain your answer.

Lesson 5

Weight Training and Sports

Guide to Reading

Building Vocabulary

As you read this lesson, write down each new highlighted term and its definition.

- dehydration (p. 88)
- anabolic steroids (p. 88)
- conditioning (p. 90)
- overworking (p. 90)

Focusing on the Main Ideas

In this lesson, you will be able to

- **recognize** the benefits of weight training.
- **discuss** the advantages of individual and team sports.
- **describe** various kinds of protective gear for sports.
- **identify** eating habits that can improve athletic performance.
- **recognize** why it is harmful to take drugs or supplements to improve sports performance.
- **practice** mental conditioning for sports.

Reading Strategy

Predicting Look over the headings in this lesson. Then write a question that you think the lesson will answer. After reading, check to see if your question was answered.

Quick Write

Have you ever felt sore the day after you tried a new physical activity? Explain in a few sentences why you think this happened.

Weight Training Basics

Weight training is a form of resistance training, which means that muscles must resist a force, such as gravity. Weight training does more than make you stronger. It also tones muscles, strengthens bones, and helps you manage your weight.

Learn how to use weights correctly. If you are just getting started, get help from a coach or physical education teacher. He or she can help design a program that fits your needs. Light weights or resistance bands, which look like large rubber bands, work best for beginners. Most people should wait until they are at least 15 years old or until their bodies are mature before trying to lift heavy weights.



- This teen includes weight training as part of a fitness program. **What other types of activities should go into an overall fitness plan?**



If you want to succeed at fitness, start by setting a goal. Training for a particular sport might be different from training for overall fitness. You might want to concentrate part of your fitness training on lifting weights. If you do, be sure to lift the proper amount of weight. Try several different weights. A weight that tires your muscles after 10 to 12 repeated moves is about right. You only need to do one set to the point of muscle fatigue in order to benefit. When lifting that amount of weight becomes easy, you can move on to heavier weights. Always rest at least one full day between training days.

You might have heard that females who train with weights will develop large muscles. This is not true. Sports such as gymnastics and ice skating take a lot of strength. Lifting weights can help females build the strength to participate in sports and other physical activities they enjoy.

Sports for Fun and Wellness

Sports offer a great way to get fit. Some people are serious about sports and work hard to develop their skills. Others participate just for fun. Either way, participating in a sport is a positive health behavior that can help you increase your level of fitness. Muscular strength and endurance, flexibility, and body composition may also improve. Being fit can help you prevent health problems.

You'll get the most out of a sport that you enjoy. Take a moment to think about what sports you like the most. Do you like the excitement of competition? Do you like the challenge of mastering a skill? Even if you are not confident in your abilities, remember that practice will help you improve your skills and achieve consistency in sports or other physical activities.



Go Online

Topic: Fitness That Fits

Visit glencoe.com for Student Web Activities where you will learn how to choose a physical activity that's right for you.

Activity: Using the information provided at the link above, create a list and brief descriptions of six fitness activities that teens might enjoy.

- ◀ Ask yourself what you want to get out of playing a sport before you sign up for it. **What might be some reasons to sign up for swimming or track?**



DEVELOPING

Good Character

Playing by the Rules

You can demonstrate good character by playing fair and showing good sportsmanship when playing a sport. Follow the rules, take turns, and share the credit when your team wins. Show that you are a good loser too by congratulating the other team if they win. When people play fair and show good sportsmanship, everyone can enjoy the game.

Think of three ways to show good sportsmanship when you are watching a game.



What Sports Type Are You?

There are plenty of individual sports to enjoy. For example you can swim, run, bike, hike, ski, surf, golf, play tennis, and horseback ride. You can do these sorts of activities by yourself or with others, whether or not you are part of a team. If you play individual sports, you can probably set your own schedule and pace. Unless you compete, you don't have to be compared to anyone else.

Volleyball, soccer, baseball, basketball, and field hockey are just a few popular team sports. Team sports are usually organized and have set rules. When playing a team sport, remember that not everyone on the team has the same level of skill. Show respect for individual differences. Encourage those with diverse backgrounds and abilities to join your team. Be sensitive to the feelings of others and don't criticize or put others down. Play fair, show good sportsmanship, and encourage each other. This will help you and your teammates have fun and get along better.



Reading Check

Compare and Contrast How do individual sports differ from team sports?

Gearing Up for Sports

Protective gear is personal equipment you wear so you don't get injured. The type of protective gear you wear depends on the sport you play. Some sports, such as track, require special shoes to give you traction and support. Other sports, especially contact sports, require a helmet and elbow, knee, and shin protection. Males who play contact sports also need to wear an athletic cup to protect the groin area.

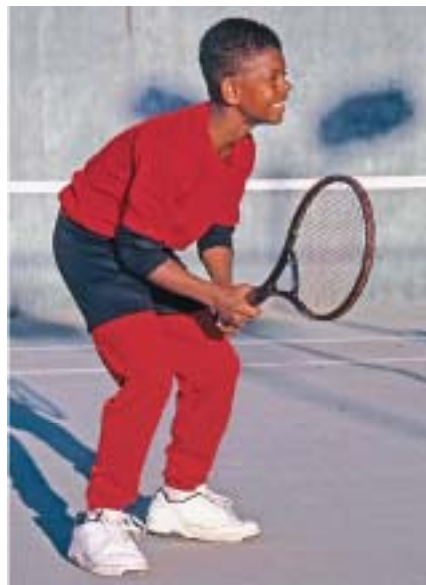
Figure 3.12 shows some important kinds of protective gear.



Reading Check

List Name two pieces of equipment needed by teens who participate in contact sports.

- ▶ Both team sports and individual sports have benefits. **What are some benefits of each?**





David Young-Wolff/PhotoEdit; (2nd fmT) Tony Freeman/PhotoEdit

▼ **FIGURE 3.12**

PROTECTIVE EQUIPMENT FOR SPORTS

There are different pieces of protective gear for different sports. **Which sports might require the use of some of the equipment pictured here?**



Mouth guards. These soft plastic shields protect your mouth, teeth, and tongue. Wear one for any sport where your mouth could be hit. Examples include baseball, football, and hockey. If you wear a retainer, take it out before you play.



Face and throat protection. A face mask with a throat guard protects the face and throat from being hit by a ball or puck.



Helmets. Always choose a helmet made for the sport you're playing. It should fit snugly but comfortably on your head. Be sure it doesn't tilt backward or forward. Never wear a cap under a helmet.



Chest Protectors. A padded chest protector keeps the torso from being injured in sports such as baseball.



Pads. Pads are used to protect bones and joints from fractures and bruises.



Elbow, knee, wrist, and shin guards. Elbow and wrist guards can prevent arm and wrist fractures. Knee and shin guards can protect these areas during falls.

Eating Right for Sports

Your body burns a lot of energy when you play sports. You want to eat foods that provide the best fuel for your body. This may mean changing what and when you eat.

What You Eat

To get enough fuel for energy, eat a variety of foods each day. Follow guidelines for eating food from the major food groups. This will provide you with the nutrients and energy you need. If you play high-energy sports for long periods of time, you may need to eat more food. You will learn more about nutrition in Chapter 4.



Richard Anderson

The harder you play, the more you sweat! If you don't replace the water you lose dehydration occurs. **Dehydration** is *the excessive loss of water from the body*. It can cause muscle cramps and heatstroke. It can harm body systems. Drink water before, during, and after you play a sport. Don't wait until you're thirsty.

When You Eat

You know you have to eat right to enjoy physical activities. Did you know that *when* you eat is as important as *what* you eat? Here are some Do's and Don'ts to remember.

- Don't eat a heavy meal right before physical activity. Instead, eat a light snack one or two hours before. An apple, banana, glass of fruit juice, or a bagel are all good snack choices.
- Do drink enough fluids before you play. In general, drink about two cups (16 ounces) of water about two hours before. Then drink another two cups about 15 minutes before.
- Do drink water during the activity. Water helps control your body temperature and cools your muscles.
- Do drink water and other fluids after you play. Keep track of your weight before and after the event. For every pound lost, drink 2 cups of water.
- Don't forget to refuel. After the activity, eat a hearty, balanced meal.

▲ Athletes need plenty of water before, during, and after an event. **Why do athletes need to make sure they drink enough fluids?**

Reading Check

Identify How much water should you drink after you play a sport?



Avoiding Dangerous Substances

Athletes may be tempted to try substances to boost performance. Many of these substances are illegal and dangerous. Some harmful effects appear right away. Others show up later in life. Using these substances is a risk factor for many health problems.

Anabolic steroids (a-nuh·BAH·lik STAIR·oydz) are *substances that cause muscle tissue to develop at an abnormally high rate*. Steroids do have approved medical uses. Using steroids to improve athletic performance, however, is illegal.

Steroids can block teens' normal growth and development. They weaken tendons and bones, which may break more easily. Steroids can cause heart rate and blood pressure to become irregular. The risk of heart attack increases, as does the risk for brain and liver cancer. Acne is another common side effect. Steroid use can even cause changes in sexual characteristics. Females may grow facial hair. Males may develop breasts. Users may suffer from depression, irritability, anxiety, mistrust, mood swings, or sudden rage.



Health Skills Activity

Practicing Healthful Behaviors

Mental Conditioning for Sports

Have you ever heard a sports figure say he or she was “in the zone”? This means that the mind and body are working together. Being in the zone is part of being successful at many sports. You are calm yet full of energy, challenged yet confident, focused yet able to trust your body’s responses. Training your mind helps you get in the zone. It also helps you manage stress and use your abilities more effectively. Here are some tips that might help.

- Relax. Focus on enjoying the game, and don’t worry about what might go wrong.
- Picture yourself doing everything correctly and with skill.
- Set some goals that relate to your personal best. They should have nothing to do with whether you win or lose a game.
- Think positively. Telling yourself “Don’t miss that shot!” makes you freeze up. Instead, tell yourself, “I’m going to do well.”

On Your Own

Think of a skill you would like to improve. Find a quiet spot, close your eyes, and picture yourself performing that skill correctly. Repeat this several times. Then perform the skill.

Some athletes have used a number of other substances to aid performance. Creatine is a compound naturally produced in the body and used by the body for short bursts of power. However, there is no proof that taking a creatine supplement improves sports performance. Creatine products can hurt your heart, kidneys, and liver. Other side effects include diarrhea, nausea, vomiting, and cramps.

Stimulants such as caffeine can make you feel more alert. They do so by making your central nervous system work harder. Your heart rate and blood pressure go up as a result. Stimulants have side effects that may actually hurt performance. They can make you nervous and crabby. You may have trouble concentrating. Even worse, you can develop an abnormal heart rhythm or other problems. Caffeine is not only in coffee and tea but also in some kinds of soda and sports drinks. Chocolate also contains a small amount of caffeine, although not as much as caffeinated drinks.



Reading Check

Restate What are anabolic steroids?



Visit glencoe.com and complete the Interactive Study Guide for Lesson 5.



Safety in Training

Royalty-free/CORBIS

Training to get into shape for physical activity or a sport is called **conditioning**. Different activities require different types of conditioning. A speed skater, for example, needs strength, flexibility, and muscle endurance. Every conditioning program should be personalized to the individual. Age, body weight, and physical health should be factors when you begin a conditioning program. A long-distance runner needs cardiovascular endurance. An athlete also needs the right mental attitude to master his or her chosen sport. If you want to take part in a sport, have someone trained in sports suggest training exercises for the mental as well as the physical conditioning that is important for your sport.

Conditioning is good for you. However, too much of it can be harmful. **Overworking** means *condition-*

ing too hard or too often without enough rest between sessions. How do you know you are overworking? You might have an elevated resting heart rate. You might have trouble sleeping or get sick a lot. You may hurt the muscles you're trying to condition. Avoid overworking by taking a day off from conditioning every week. Switch off between heavy workouts and light ones.

- ▲ Taking time off from working out can help prevent overworking. **What are some signs of overworking?**



Reading Check

Define What is overworking?



Lesson 5 Review



After You Read

Review this lesson for new terms, major headings, and Reading Checks.

What I Learned

1. **Restate** What are the benefits of weight training?
2. **Identify** Name several advantages to playing team sports.
3. **Explain** Why should athletes eat a variety of foods each day?
4. **Vocabulary** Define *conditioning*.

Thinking Critically

5. **Infer** Why do you think you should avoid eating a heavy meal before playing sports?
6. **Predict** How might playing a sport throughout your life benefit your health?

Applying Health Skills

7. **Advocacy** Create a comic strip or write a short story that will encourage teens to eat right for sports.

Lesson 6

Preventing Physical Activity Injuries

Guide to Reading

Building Vocabulary

Use a medical dictionary or similar resource to find medical definitions of *sprain*, *tendonitis*, *dislocation*, and *fracture*. Rewrite the definitions in your own words.

- sprain (p. 92)
- tendonitis (p. 92)
- dislocation (p. 93)
- fracture (p. 93)
- stress fracture (p. 93)

Focusing on the Main Ideas

In this lesson, you will be able to

- **list** tips for preventing physical activity injuries.
- **recognize** common injuries and their symptoms.
- **explain** the P.R.I.C.E. procedure for treating injuries.
- **apply** decision-making skills to situations involving safety when participating in physical activity.

Reading Strategy

Finding the Main Idea Look at the major headings in this lesson. For each heading, write one sentence that states the main idea.

Quick Write

In a short paragraph, briefly describe how you or someone you know recently got hurt as a result of physical activity.

Tips for Injury Prevention

One way you know you've had a good workout is by what you feel. Your body feels pleasantly tired. You feel mentally energized and confident. You also know you've had a good workout because of what you *don't* feel. You don't feel hurt, dizzy, or sick to your stomach. Be smart and protect yourself when you exercise. Practice these injury-prevention strategies to maintain your personal health.

- Visit your doctor before you sign up for a sport.
- Be sure you're in good physical shape before you participate. Take some time to build endurance, strength, and flexibility.
- ▶ Be sure you read and understand the safety rules before you play or work out. **Why do you think it's important to report any injury to your coach or teacher and your parents or guardians?**





Physical Therapist



Physical therapists work with people who are suffering from injuries or disease. They teach exercises and activities to relieve pain or improve function and movement. You can prepare for a career as a physical therapist by taking basic science classes, such as biology, chemistry, and physics.



What skills does a physical therapist need? Go to Career Corner at glencoe.com to find out.

▼ Physical activity injuries are a common cause of injury during the teen years. **How can you prevent injuries related to physical activity?**



- Do not try activities that are beyond your ability. Start slow and develop your abilities at a safe pace.
- Use the proper safety and protective equipment. See Chapter 15 for more information.
- Follow all safety rules during play and workouts.
- Warm up and do some light stretches before you begin.
- Cool down and stretch again after you finish your workout.
- Report any injury to your coach or teacher and to your parents or guardians.
- After an injury, don't return to playing sports or working out until a medical provider says you are well enough.



Reading Check

Restate Name two tips for injury prevention.

Common Injuries

Sports and recreational activities are a major cause of injury to teens. They are second only to car crashes. Positive health practices such as wearing the proper safety equipment can help prevent injuries. Some injuries, such as sore muscles, are considered minor. Others, such as bone injuries, are considered major.

Minor Injuries

Sore muscles are common when you are just beginning to work out or are trying a new activity. The soreness results from tiny tears in the muscle fibers. These injuries heal quickly. You can reduce or prevent soreness if you warm up, stretch, and cool down properly. Also, if you're not used to an activity, start slowly.

A muscle cramp is a pain caused by sudden tightening of the muscle. Muscles become cramped when they are overworked or dehydrated. Massaging and stretching the muscle can ease cramps. So can drinking water or specialty sports drinks.

Some injuries happen due to overwork. They include strains, sprains, and tendonitis. A strain is damage to a tendon or muscle from overstretching. A **sprain** is an injury to the ligament connecting bones at a joint. Sprains occur when a ligament is torn or stretched too far. Both strains and sprains can result in pain and swelling. Severe sprains need medical care. **Tendonitis** is painful inflammation and swelling of a tendon caused by overuse. Treatment often involves rest, medicine to reduce inflammation, and physical therapy. Proper warm-ups and stretches can reduce the risk of strains, sprains, and tendonitis.



Health Skills Activity

Decision Making

Taking Safety Seriously

Brian wants to get into bike racing. His parents bought him a bike for his birthday. They also bought a helmet, kneepads, and gloves. Brian read the instruction booklet for his bike. The booklet says that he should wear the safety equipment every time he rides. That's not what his friend Kevin says, though. Kevin says that Brian doesn't need to wear all that stuff if he's not actually racing. Brian wants to be safe, but he's wondering if Kevin is right. Brian must decide whether or not to follow the booklet's advice about wearing safety gear while bike racing.

What Would You Do?

Apply the six steps of the decision-making process to Brian's situation.

1. State the situation.
2. List the options.
3. Weigh the possible outcomes.
4. Consider your values.
5. Make a decision, and act.
6. Evaluate the decision.

Explain to the class how you arrived at your decision.

Major Injuries

A major injury is one that requires professional health services. A major injury often causes great pain. It may also cause numbness or make you feel dizzy.

A **dislocation** is a major injury that happens when a bone is forced from its normal position within a joint. Sometimes you may hear a popping noise at the same time. A doctor must push the bone back into position. The joint cannot be moved again until the tissues heal. A cast or sling over the joint holds it safely in place.

A **fracture** is a break in a bone. Sometimes you hear a crackling noise as the bone breaks. Fractures are often painful and may cause swelling. The bone has to be set by a doctor and may require a cast. The cast holds the bone in place until it heals. A **stress fracture** is a small fracture caused by repeated strain on a bone. For example, long-distance running could lead to a stress fracture. These fractures may be no more than a hairline crack and are usually less severe than other fractures.



Visit glencoe.com and complete the Interactive Study Guide for Lesson 6.



Connect To... Math



Calculating SPF

How high should the SPF rating on your sunblock be? SPF is a measurement based on 15-minute increments. For example, an SPF of 8 means you can safely stay out for 8 times 15, or 120 minutes. Sunblock with a rating of *at least 15* is suggested for most outdoor activities. It will protect you for up to 225 minutes. How many hours would that be?



- ▼ When going outside always use sunscreen on unprotected skin. **What is the lowest acceptable sun protection factor (SPF)?**



A concussion is a brain injury. It often results from a blow to the head. A concussion can cause swelling of the brain and even death. The person may feel dizzy or confused. Other signs include headache, loss of memory, or unconsciousness. Wearing a helmet is the best safeguard against concussions and other head injuries. It is always important to seek out professional health services if there is any possibility of a concussion.

Other Health Problems

Overworking your body can make you feel dizzy and out of breath. Know your limits and strategies for maintaining your personal health. Take breaks, especially during hot weather. Drink plenty of water and other fluids. Your body can overheat, which may lead to heat exhaustion or heatstroke. During heat exhaustion, a person's skin becomes cold and clammy. He or she may feel dizzy or nauseated. During heatstroke, a person's body temperature suddenly increases. He or she has trouble breathing and may collapse. Heatstroke can be deadly. If you think someone has it, get medical help right away.

If a person's body gets cold enough, its core temperature can drop dangerously low. Body systems begin to shut down. This condition is called hypothermia. A person with hypothermia may become confused and clumsy. Your body shivers when it needs heat. When this happens, warm yourself up. Get indoors. Wrap yourself in a blanket, or put on warmer clothes. Have a hot drink.

Skin can develop frostbite if it's exposed to severe cold and tissues freeze. Early signs of frostbite include whitening of the skin and a lack of feeling. If you think you have frostbite, get indoors right away and warm the exposed area with warm, not hot, water. Then get medical help.

A sunburn makes the skin red and sore, and it might even blister. Stay out of the sun during midday hours, when the sun's rays are strongest. Use a sunscreen with a sun protection factor (SPF) of *at least 15*. Put it on half an hour before you go outside. Cover your skin as much as possible before going outdoors, and wear a hat. Also wear sunglasses, because the sun's rays can hurt your eyes.



Identify What are the symptoms of heat exhaustion?



Richard Anderson

The P.R.I.C.E. Procedure

Sometimes, even when you're careful, you get hurt anyway. A tough game or workout can leave you with scrapes and bruises. It can also leave you with aching muscles. When a muscle is stiff or feels painful, remember the word **P.R.I.C.E.** The letters stand for **p**rotect, **r**est, **i**ce, **c**ompress, and **e**levate. The sooner the treatment is applied, the better. You should:

- **P**rotect the injured part from further injury by keeping it still. Moving it may make the pain worse.
- **R**est the injured part.
- **I**ce the part using an ice pack.
- **C**ompress, or put pressure on, the part using a stretchy bandage. This will keep the injury from swelling. It will also help keep that part of your body motionless. Just be careful not to wrap the bandage too tightly, which can cut off blood flow.
- **E**levate the injured part above the level of the heart.

Remember to report any injury right away to a coach or teacher and your parents or guardians. They can decide if the injury needs the attention of professional health services.



▲ The P.R.I.C.E. procedure works for minor injuries resulting from physical activity. **What does P.R.I.C.E. stand for?**



Lesson 6 Review

After You Read

Review this lesson for new terms, major headings, and Reading Checks.

What I Learned

1. **Vocabulary** Define *sprain*.
2. **Identify** What is frostbite? How is it treated?
3. **Explain** How can the P.R.I.C.E. procedure be used to treat minor injuries?
4. **Describe** What happens to your body during heatstroke?

Thinking Critically

5. **Infer** How would being in a cast for several weeks affect the muscles of a broken leg?
6. **Explain** Why is being in good physical condition before playing a sport an effective injury-prevention strategy?

Applying Health Skills

7. **Accessing Information** Use reliable print or online resources to find a news article about an athletic injury. Write a short summary of the article. Suggest ways the injury might have been prevented.

Building Health Skills

Accessing Information
Practicing Healthful Behaviors
Stress Management
Analyzing Influences
Communication Skills
Refusal Skills
Conflict Resolution

Decision Making

Goal Setting
Advocacy

What Steps Can You Take to Make Healthy Decisions?

The decision-making process can help you make healthy and responsible choices. The six steps of the decision-making process are as follows:

- 1 State the situation.
- 2 List the options.
- 3 Weigh the possible outcomes.
- 4 Consider your values.
- 5 Make a decision and act.
- 6 Evaluate the decision.

Which Sports to Choose?

Follow the Model, Practice, and Apply steps to help you master this important health skill.

1 Model

Read how Jared uses the decision-making process to improve his physical fitness.

Jared wants to increase his cardiovascular endurance. He uses the decision-making steps to help him decide which activity to choose.

Step 1 State the situation. "I want to increase my cardiovascular endurance this summer."

Step 2 List the options. "I could swim laps, or play tennis."

Step 3 Weigh the possible outcomes. "Tennis is fun, but I need a partner to play. With swimming, I can set my own schedule."

Step 4 Consider values. "Swimming would be both comfortable and convenient."

Step 5 Make a decision and act. "I'll sign up for swimming."

Step 6 Evaluate the decision. "I can tell that my cardiovascular endurance is increasing."



2 Practice

Read the passage and then practice decision making by answering the questions that follow.

Matt wants to increase his level of physical activity. He thinks about joining a softball team, jogging, or taking archery lessons. However, he also has homework and school activities to fit into his schedule.

1. What decision does Matt have to make?
2. What are Matt's options?
3. What outcomes could he expect from each of the sports he's considering? Which will maintain his endurance? Which would involve the company of friends?
4. What values might Matt need to consider?
5. Which sport would you advise him to choose?
6. Write a few sentences evaluating the decision you made for Matt.



3 Apply

Apply what you have learned about decision making by completing the activity below.

Think about how you might improve your own fitness level. Then write a one-page contract for yourself. At the top of your contract write a paragraph that explains 1) the element of fitness you want to improve and 2) how this decision will increase your health. Next, show how you would use the decision-making steps to make a change in your fitness.

Self-Check

- Does my paragraph explain an element of fitness and why I chose it?
- Did I use the six steps of the decision-making process to make a decision about how to improve my fitness level?

Whether they're headed to a local health club or another fitness center, growing numbers of teens are saying...

"Meet Me at the GYM!"

Victor Scotti wasn't feeling quite as fit as he wanted to be. So, like more and more fitness-conscious teens, he started going to a gym. Scotti showed up five times a week for circuit-training, which included a cardio workout, push-ups, crunches, and weight training. Now, Scotti says, "I've definitely gotten faster and a lot more limber."

Teens on the Move

Scotti is just one of a rapidly growing group of teens who regularly hit health clubs and gyms. There they lift weights, run on treadmills, and take spinning classes.

It was once thought that weight training could stunt growth by harming young developing bones. However, the American Academy of Pediatrics has determined that workouts, performed correctly, can benefit young people. So, with the number of overweight kids at an all-time high and teens wanting to train for organized team sports, health clubs are becoming popular places for young people to get active.

Be Your Best

There are many reasons why more and more teens are headed to a gym after school. Workouts serve as a way to reduce stress, and they are an option for students who are less interested in school team sports. In addition, growing



numbers of teens also use the clubs to improve their strength and agility on the basketball, tennis, and volleyball courts.

Mike DeMaria is director of a sports-performance academy in Mandeville, Louisiana. He oversees daily training for some 200 young people, including six girls' volleyball teams. Other teens organize routines on their own, sometimes even hiring a personal trainer. DeMaria says of the students, "They're very aware now that if they want to be the best they can be at their chosen sport, they have to be strong."

Some teens are discovering that working out can be an easy and enjoyable way to spend time with a parent. Rebecca Sernick asked her dad to teach her how to work out to help fight the weight gain that was affecting her performance on the softball team. Thanks to her dad's guidance, Rebecca lost 40 pounds and met her fitness goals. However, neither Rebecca nor her dad has any plan to stop their weekly workouts. It's just too much fun!



Visit glencoe.com to download quizzes and eFlashcards for Chapter 3.

FOLDABLES® Study Organizer

Foldables® and Other Study Aids Take out the Foldable® that you created for Lesson 1 and any graphic organizers that you created for Lessons 1–6. Find a partner and quiz each other using these study aids.

Lesson 1 Becoming Physically Fit

Main Idea Being physically fit will help you maintain good health for life.

- Physical activity will help you manage your weight, strengthen your heart and lungs, reduce stress, and help you meet new people.
- There are five elements of physical fitness: muscle endurance, cardiovascular endurance, strength, flexibility, and body composition.
- Aerobic exercise uses large amounts of oxygen and works the heart and lungs. Anaerobic exercise builds muscle but does not use large amounts of oxygen.

Lesson 2 Exploring Skeletal and Muscular Systems

Main Idea The skeletal and muscular systems work together to help your body move.

- There are three types of muscles: skeletal, smooth, and cardiac.
- Tendons, ligaments, and cartilage are connecting tissues that allow bones and muscles to work together as they move.
- Staying physically active can help keep your bones and muscles in good shape.

Lesson 3 Exploring the Circulatory System

Main Idea The circulatory system delivers nutrients to cells and carries away waste products.

- The heart pumps blood throughout the body.
- Blood travels through a network of blood vessels, including arteries, veins, and capillaries.

Lesson 4 Creating Your Fitness Plan

Main Idea A fitness plan will help you make physical activity part of your daily routine.

- F.I.T.T. stands for Frequency, Intensity, Time, and Type of activity.
- To monitor the intensity of your workout, check your resting heart rate, target heart rate, and recovery heart rate.

Lesson 5 Weight Training and Sports

Main Idea Weight training and playing sports will improve your physical fitness.

- Weight training improves strength and muscle tone, and helps manage weight.
- Avoid using dangerous substances, such as steroids, that can damage your health.

Lesson 6 Preventing Physical Activity Injuries

Main Idea Practicing injury-prevention strategies can help you avoid injuries during sports or other activities.

- Always wear appropriate protective gear for your sport or activity.
- The P.R.I.C.E. procedure can be used to treat minor injuries. P.R.I.C.E. stands for protect, rest, ice, compress, and elevate.

After You Read

HEALTH INVENTORY

Now that you have read the chapter, look back at your answers to the Health Inventory on the chapter opener. Is there anything that you should do differently?

Review Vocabulary and Main Ideas

On a sheet of paper, write the numbers 1–7. After each number, write the term from the list that best completes each statement.

- cardiovascular
- muscular system
- endurance
- anaerobic exercise
- flexibility
- ligament
- aerobic exercise
- cartilage

Lesson 1 Becoming Physically Fit

1. The rhythmic, moderate-to-vigorous activity that uses large amounts of oxygen and works the heart and lungs is known as _____.
2. Weight training is a type of _____.
3. The measure of how effectively your heart and lungs work during moderate-to-vigorous physical activity or exercise is called _____.
4. _____ is your ability to move joints fully and easily through a full range of motion.

Lesson 2 Exploring Skeletal and Muscular Systems

5. A _____ holds one bone to another at the joint.

6. _____ allows joints to move easily and cushions bones.
7. Tissues that move parts of the body and operate internal organs make up the _____.

On a sheet of paper, write the numbers 8–14. Write **True** or **False** for each statement below. If the statement is false, change the underlined word or phrase to make it true.

Lesson 3 Exploring the Circulatory System

8. Veins carry blood away from the heart.
9. Pulmonary circulation carries blood to the lungs.

Lesson 4 Creating Your Fitness Plan

10. As your fitness level improves, you should not change your goals.
11. Stretching should be done before a cardiovascular warm-up.

Lesson 5 Weight Training and Sports

12. Be sure to eat a large meal one or two hours before physical activity.
13. Anabolic steroids cannot be legally prescribed by a doctor to improve athletic performance.

Lesson 6 Preventing Physical Activity Injuries

14. Muscle cramps can be relieved by massaging the muscle.



Applying Technology

Thinking Critically

Using complete sentences, answer the following questions on a sheet of paper.

- 15. Suggest** A friend wants to join a sports team but is worried that she might get hurt. What advice would you give your friend to help her protect herself from injury?
- 16. Apply** What would you tell someone who said that he doesn't participate in regular physical activity because he doesn't like team sports?

Write About It

- 17. Descriptive Writing** Create a fitness plan that shows how you can be physically active for one hour, 5–6 days each week. Use a variety of activities in your plan and include both aerobic and anaerobic exercise. Remember, you can break your hour into 10–15 minute segments if you need to.
- 18. Personal Writing** Write a journal entry about a fitness goal you would like to reach. What are some realistic steps that you could take to reach this goal?

Fabulously Fit

Use PowerPoint® to create a *Jeopardy* game to review vocabulary and identify forms of exercise. Follow the steps below to complete your project.

- Open a new project with categories for the following areas: *Elements of Physical Fitness*, *Types of Exercise*, *Skeletal System*, *Muscular System*, *Circulatory System*, and *Physical Fitness Plan*.
- List and define six vocabulary words or key terms per category.
- Type definitions into a text box on each slide with a category title and point value. Include an answer key in the *notes* section of each slide.
- Edit for clarity and punctuation.
- Have a classmate evaluate your project for completeness and accuracy.
- Save your work.

Standardized Test Practice

Math

Answer the questions below.

- 1.** Anita is starting an exercise program. She needs to figure out the low end of her target heart rate.

$$T = 0.6(220 - a)$$

In the equation above, T represents the low end of the target heart rate range, and a represents Anita's age. Anita is twelve years old.

What is the heart rate Anita should aim for when starting her exercise program?

- 2.** Anita's older sister Madeline has a target heart rate of 122 beats per minute. Her resting heart rate is 50 percent lower than her target heart rate. What is Madeline's resting heart rate?
- A.** 59
B. 60
C. 61
D. 62