

Lesson 2

Your Muscular System

Guide to Reading

● Building Vocabulary

As you read this lesson, write each new highlighted term and its definition in your notebook.

- muscular system (p. 409)
- skeletal muscles (p. 410)
- smooth muscles (p. 410)
- cardiac muscles (p. 410)

● Focusing on the Main Ideas

In this lesson, you will learn to

- **explain** the functions of the muscular system.
- **identify** how muscle types differ.
- **describe** ways to keep your muscular system healthy.

● Reading Strategy

Comparing and Contrasting Explain similarities and differences among the different muscle types in the lesson.

Your Muscles

Your muscles make it possible for your body to move. They also pump blood throughout your body and move food through your digestive system. Muscles also control the movement of air in and out of your lungs.

Your **muscular system** is the group of structures that give your body parts the power to move. **Figure 16.2** on the next page shows some of the different muscles that make up the muscular system. It also tells which tasks each muscle performs.

Quick Write

Write a short journal entry about a time you had a muscle ache or pain. Tell what you did to relieve the symptoms.

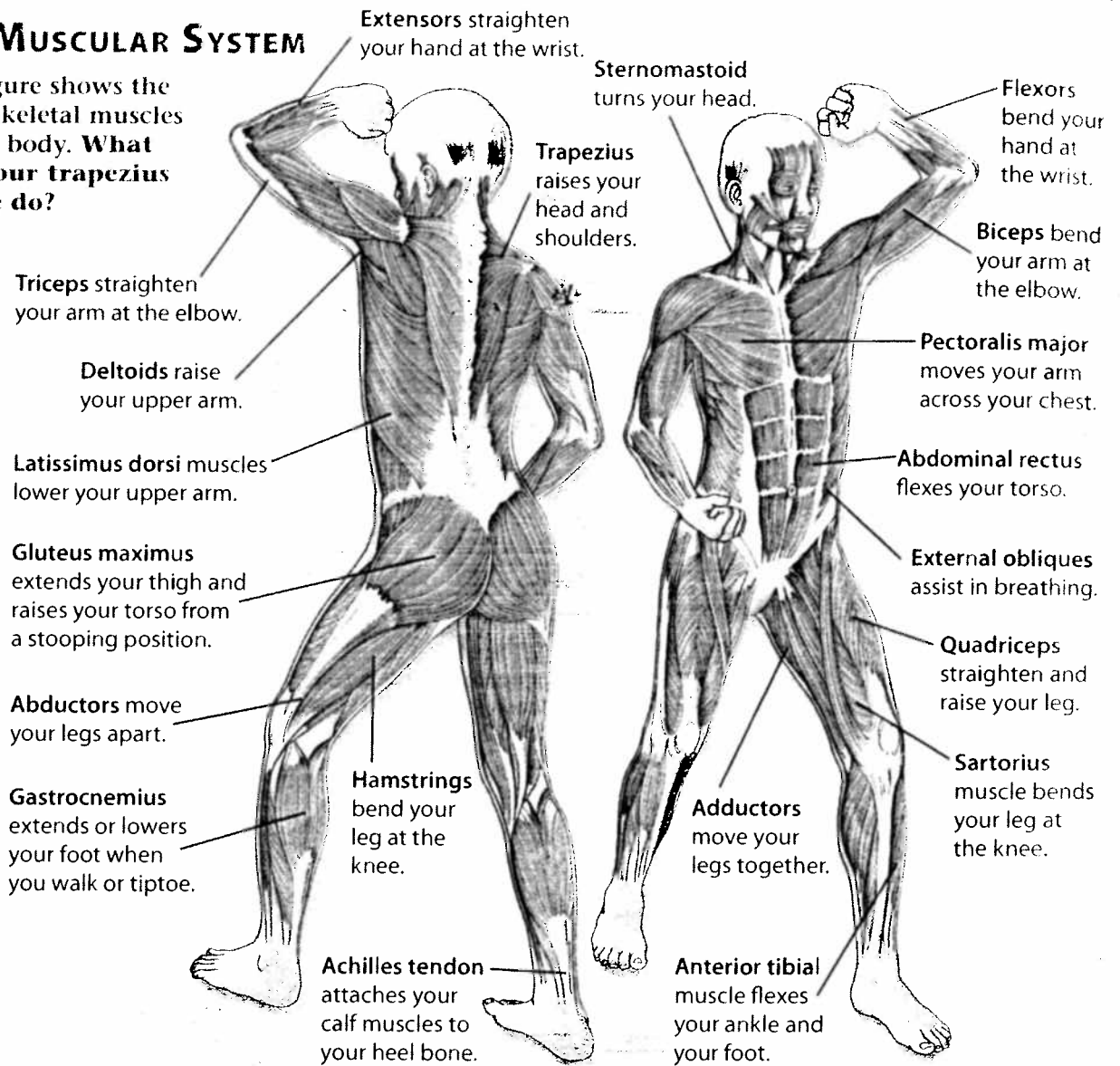


- ◀ Muscles have a number of important functions. **What is one function of the muscular system?**

▼ FIGURE 16.2

THE MUSCULAR SYSTEM

This figure shows the major skeletal muscles of your body. **What does your trapezius muscle do?**



Types of Muscles

Different muscle types carry out different tasks. *The muscles attached to bones that enable you to move are called **skeletal muscles**.* Skeletal muscles are the largest part of the body's muscular system. There are more than 600 skeletal muscles. These muscles are voluntary. You have the power to control their movement.

Smooth muscles are *the muscles found in organs, blood vessels, and glands.* The mouth, stomach, and lungs are all composed largely of smooth muscles. Smooth muscles are *involuntary* because they operate without your awareness. **Cardiac muscles** are *muscles found only in the walls of your heart.* They are involuntary muscles, working continuously even when you are asleep.



Reading Check

List Name the three types of muscles.

How Muscles Work

Muscle movement is triggered by messages or impulses. These impulses are sent to muscle fiber— narrow strands of tissue within the muscle. There are two basic and opposite actions that account for all muscle movement. The first is contraction, the shortening of muscle fibers. The second is extension, the lengthening of muscle fibers. **Figure 16.3** shows these actions at work in two muscles of the arm.

Problems of the Muscular System

Have your muscles ever ached after strenuous exercise or a tough competition? Sore muscles are a temporary condition. Other muscle problems, however, may have a lasting effect on your body. One such problem is muscle strain, which is caused by small tears to a muscle or tendon. Strains usually occur in large muscles that have been overworked. If you feel pain when you exercise, stop what you are doing.

A serious problem that sometimes occurs in teens is muscular dystrophy. This disorder is usually inherited and causes the skeletal muscle tissue to gradually waste away. Eventually, the person can no longer stand or walk.

Reading Check

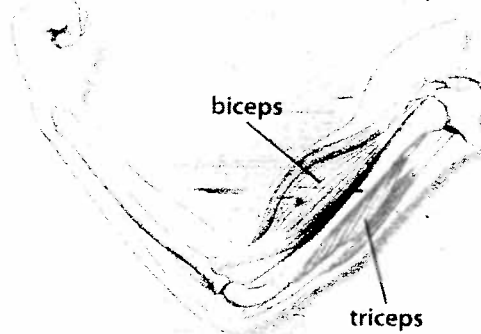
Explain What causes muscle strain?

7 FIGURE 16.3

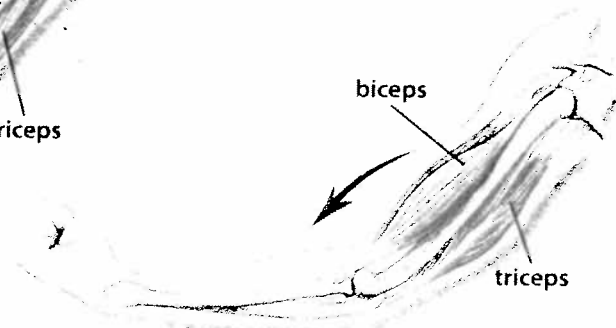
HOW MUSCLES WORK

Many of your skeletal muscles work in pairs. **When you bend your arm, which muscle contracts and which muscle extends?**


1 When you bend your arm, your biceps contract and pull on a bone of your lower arm. At the same time, the triceps extend.



2 When you straighten your arm, your triceps contract and pull on the other bone in your lower arm. At the same time, the biceps extend.



Physical Therapist

 Physical therapists help people prevent or overcome their physical injuries, using physical activity and movement. They also teach patients to use crutches, artificial limbs, and wheelchairs. Physical therapists are in demand because injured people cannot recover from their injuries on their own. If you are interested in becoming a physical therapist, you should study the bones and muscles of the human body.

What kinds of activities does a physical therapist use to help his or her patients? Go to *Career Corner* at glencoe.com to find out.

Care of the Muscular System

You may know the expression “Use it or lose it.” This saying is certainly true about muscles. Using muscles helps maintain the natural tension in the fibers. This natural tension is called *muscle tone*. The best way to keep your muscles toned is to stay active and eat well. Remember that the heart is also a muscle, and that regular exercise makes it stronger. A healthy heart pumps more blood and has more time to rest between beats.

Be sure to warm up before exercising or playing sports and to cool down afterward. This will help prevent muscle strain. Using exercise or sports equipment properly can also help prevent muscle injury.

Another way to keep your muscles healthy is to lift properly. Never bend over to lift a heavy object. This puts a lot of strain on your back muscles and can cause injury. Instead, bend your knees, keeping your back straight. Then stand up to lift the load, letting your leg muscles do the work.

Online

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

Reading Check

Recall What is the proper way to lift a heavy object?

Lesson 2 Review

After You Read

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

What I Learned

1. **Vocabulary** What are *skeletal muscles*? Name five of the major skeletal muscles in your body.
2. **Describe** What are the functions of the muscular system?
3. **List** Give two suggestions for keeping the muscular system healthy.

Thinking Critically

4. **Apply** A teen is doing bench presses in the school's weight room. During each repetition, he groans loudly. When you ask if he is in pain, he replies, “Yes—but it's *good* pain.” How might you respond?

5. **Evaluate** A teen has been asked to carry some boxes of books to a classroom. He stoops over and pulls a box upward toward his chest. Should he continue lifting this way?

Applying Health Skills

6. **Advocacy** Review the recommendations in the lesson for taking care of your muscular system. Choose one that you think many teens are likely to ignore or be unaware of. Develop a guest editorial for the school paper regarding this habit.