

Move Your Muscles!

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Muscles keep you on the go. Here's how they work and why you need to keep them in tip-top shape.

Picture this: You're out shooting hoops with your friends. As you take a jump shot, you suddenly feel your leg twist beneath you. *Ouch!* You might have sprained your ankle. But why did you sprain it? How can you keep from hurting it again? What is a sprain, anyway?

It all has to do with your muscles (more on that sprain later). When you walk down the street, ride your bike, or even yell hello to a friend, you are using muscles. The good news: Everyone can have stronger muscles and prevent injuries.

Muscles: A Lot of Work!

More than 630 muscles keep your body going. They make up about 40 percent of your body weight. Some muscles—like your heart—work without your having to do a thing. Those are called *involuntary muscles*. Other involuntary muscles include those that help you digest your food and go to the bathroom. Another type of muscle is *skeletal muscle*. Those are the muscles you control. They help you run, jump, and do all kinds of activities. And they can be injured if you don't take proper care of them.

Skeletal muscles are different sizes and shapes, depending on their job. Back muscles are some of the biggest and strongest muscles in your body because they hold you upright. Smaller muscles in your hands let you bend your fingers.

Skeletal muscles work in a simple way. They react when they receive electrical signals from your nerves and brain. For example, when you swing a bat to whack a baseball, a nerve signal travels from your brain to your arm muscles, making them move. Nerve signals also let your brain know whether a muscle has been hurt (if you twist your arm while swinging that bat).

What Pain Means

Taking good care of your muscles can help prevent you from sitting on the sidelines. This happened to Anita R., a 10-year-old soccer player from New York City. Anita felt pain under her right kneecap. "If I put pressure on it or went up and down the stairs a lot, it would sting and throb," Anita says. Her doctor thought that she "was kicking more [with] one leg and had more muscle in that leg than in the other." Anita had to go to physical therapy, where she did exercises to help her knee heal.

Muscles, ligaments, and tendons can tear if you push them too hard. A tough run might lead to a pain in your leg. How do you know what's happening when you feel a pain in a muscle? Here's what might be going on.

- **Aches** may be caused by tension, overuse, or muscle injury from hard exercise.
- **Sprains** and **strains** can also result from being active. A sprain is a stretched or torn ligament. Such an injury might happen if you trip or fall. One-third of all sports injuries are sprains. A strain is a torn or pulled muscle or tendon. It can happen when you pick up something heavy.
- A **repetitive stress injury (RSI)** is a damaged muscle, tendon, or ligament caused by making the same hand or wrist motion again and again. Teens who spend a lot of time playing musical instruments or video games are at risk for RSIs. Two RSIs are *tendonitis*, a swollen tendon, and *carpal tunnel syndrome*, which is caused by swelling in a tunnel-shaped area formed by bone and ligaments in the wrist.

To avoid hurting your muscles, warm them up before exercising, says David Waymann, an exercise physiologist at the University of Michigan Health System. Walk or jog in place for at least five minutes to get blood to your muscles. "Don't use stretching as a substitute for a warm-up," Waymann says. After exercising, cool down by walking slowly. Finally, stretch for a few minutes to keep joints and muscles from getting stiff.

Keeping your weight at a healthy level can keep your joints safe from extra strain, advises Dr. Letha Griffin, an orthopedist in Atlanta.

When you aren't active, muscles can get weak and shrink. Use them or lose them! Exercise regularly to strengthen muscles. Don't play when you're tired, sick, or in pain, and don't overdo it. Take care of your muscles, and they'll keep you on the go!

Fun Facts About Muscles

Where are the busiest muscles in your body? In your eyes! Scientists estimate that the eye muscles move about 100,000 times a day.

Your muscles are always partly contracted. That maintains muscle tone, keeping muscles firm and healthy. It is the only skeletal muscle activity that you cannot control.

The body's largest muscle is the gluteus maximus muscle in the buttocks.

Growing pains can cause intense muscle aches in your legs. They usually start before bedtime and sometimes continue through the night. They usually stop when kids stop growing.

Muscles On the Move

Skeletal muscles, along with bones, joints, tendons, ligaments, and cartilage, make up the musculoskeletal system. Here's what they do:

- **Joints** are flexible connections where two or more bones meet. Two examples are elbows and knees.
- Bones are held together by strong straps of tissue called **ligaments**. Think of ligaments as seat belts that keep your joints in place.
- The skeletal muscles are attached to bones by tough cords called **tendons**. Tendons and bones move along with your muscles, such as when you wave your hand or tilt your head.
- Slippery, rubbery **cartilage** makes the connections between the bones flexible. Cartilage also protects bones from wear and tear.
- Muscles contain fibers. **Slow-twitch muscle fibers** can work hard for a long time without getting tired on a long run or bike ride. **Fast-twitch fibers** help with quick movements, such as jumping to catch a ball or sprinting. Most muscles are a mixture of slow- and fast-twitch fibers.

Name: _____ Date: _____

1. According to the text, what keeps your body going?
 - A more than 630 bones
 - B more than 630 organs
 - C more than 630 vessels
 - D more than 630 muscles

2. The author divides the text into sections with subheadings. What does the author describe in the section with the subheading "Muscles: A Lot of Work!"?
 - A how to strengthen muscles and prevent injuries
 - B different kinds of muscles and how they work
 - C what makes up the musculoskeletal system
 - D the difference between aches, sprains, and strains

3. Muscles can be injured if you don't take proper care of them. What evidence from the text supports this statement?
 - A "Some muscles—like your heart—work without your having to do a thing."
 - B "The body's largest muscle is the gluteus maximus muscle in the buttocks."
 - C "To avoid hurting your muscles, warm them up before exercising."
 - D "This happened to Anita R., a 10-year-old soccer player from New York City."

4. What is an example from the text of a way that people can strengthen muscles and prevent injuries?
 - A overusing muscles during hard exercise
 - B exercising regularly to strengthen muscles
 - C making the same hand and wrist motions again and again
 - D being active by picking up heavy things

5. What is the main idea of this text?
 - A Muscles keep our body going as long as we take proper care of them.
 - B Sprains and strains keep our body moving as long as we keep getting them.
 - C Vessels keep our bodies moving as long as we keep taking care of them.
 - D Tendons keep our bodies moving as long as we keep tearing them.

6. Read these sentences from the text.

“When you aren’t active, muscles can get weak and shrink. Use them or lose them!”

What does the phrase "use them or lose them" mean in this excerpt?

- A If you weaken and shrink your muscles, you can exercise and stay active.
- B If you don't exercise your muscles and stay active, they will become too weak or too small to use.
- C If you exercise your muscles and stay active, you will lose them and not be able to find them.
- D If you don't weaken and shrink your muscles, you will lose them and not be able to find them.

7. Choose the answer that best completes the sentence.

To avoid hurting your muscles, warm them up before exercising, says David Waymann, an exercise physiologist at the University of Michigan Health System. _____, walk or jog in place for at least five minutes to get blood to your muscles.

- A Earlier
- B In contrast
- C However
- D For example

8. Give two examples of how we can take proper care of our muscles. Support your answer with evidence from the text.

9. Give two examples of the kinds of injuries you might feel if you don't take proper care of your muscles. Support your answer with evidence from the text.

10. Why might it be especially important for active people to take care of their muscles? Support your answer with evidence from the text.
