

Name _____ Date _____

How Muscles Work

Read about the human muscle system, and then answer the questions that follow.

Without muscles, you wouldn't be able to move the many different parts of your body. Many long, thin cells are packed together into fibers that make up your muscles, tied together like a thick braid or rope.

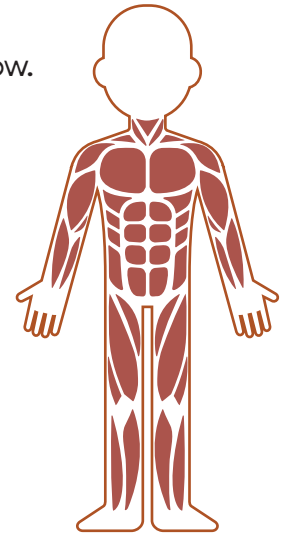
You move your muscles by contracting or relaxing them. By pulling together, they contract into a short stack. When the muscle fibers relax, they slide apart and the muscle becomes longer.

Information travels back and forth between the brain and the muscles using nerves that lay inside the muscle **fibers**. Some messages are voluntary, while others are involuntary.

If a non-disabled person wants to move their arm, they can decide to do so. The arm is full of **voluntary muscles**, which depend on a person's reaction and decision. Walking, running, and even burping can be controlled.

Some muscles, however, cannot be controlled. These are called **involuntary muscles**. You can't stop your heart no matter how hard you concentrate, nor can you stop your stomach from digesting food. Even breathing is controlled involuntarily by a large muscle called a diaphragm that rests just above your belly and under your lungs.

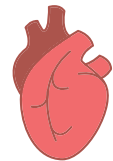
Taking care of your muscles is an important part of healthy living. Be sure to eat well, stay hydrated, and warm up before you exercise.



the human muscle system: front



muscle fibers



the heart is an involuntary muscle

Questions

1. What is the difference between a voluntary muscle and an involuntary muscle?

A voluntary muscle is one that you can control, but an involuntary muscle works without being purposefully controlled.

2. How do muscles change when you are relaxing?

The muscle fibers relax and slide apart, so the muscle becomes longer.

3. Give an example of a voluntary muscle and an involuntary muscle. **(Sample Answers)**

Voluntary: quadriceps, Involuntary: heart