

FUNCTIONS AND PROPERTIES OF SKELETAL MUSCLE TISSUE

1. **Movement:** Our body's skeleton gives enough rigidity to our body so that *skeletal muscles* can yank and pull on it resulting in body movements such as walking, chewing, running, lifting, and manipulating objects with our hands.
2. **Maintenance of Posture:** Without much conscious control, our muscles generate a constant contractile force that allows us to maintain an erect or seated position, also known as *posture*.
3. **Respiration:** Our muscular system automatically drives movement of air into and out of our body.
4. **Heat Generation:** Contraction of muscle tissue generates heat, which is essential for maintenance of temperature homeostasis. For instance, if our core body temperature falls we shiver to generate more heat.
5. **Communication:** Muscle tissue allows us to talk, gesture, write, and convey our emotional state by doing such things as smiling or frowning.

All muscle cells share several properties: contractility, excitability, extensibility, and elasticity.

1. **Contractility** is the ability of muscle cells to forcefully shorten. For instance, in order to *flex* (decrease the angle of a joint) your elbow, you need to *contract* (shorten) the biceps brachii and other elbow flexor muscles in the anterior arm. Notice that in order to *extend* your elbow, the posterior arm extensor muscles need to contract. *Thus, muscles can only pull, never push.*
2. **Excitability** is the ability to respond to a stimulus, which is delivered from a motor neuron.
3. **Extensibility** is the ability of a muscle to be stretched. For instance, let's reconsider our elbow flexing motion we discussed earlier. In order to be able to flex the elbow, the elbow extensor muscles must extend in order to allow flexion to occur. Lack of extensibility is known as *spasticity*.
4. **Elasticity** is the ability to recoil or bounce back to the muscle's original length after being stretched.

Skeletal muscle is also known as **voluntary muscle** because we can consciously, or voluntarily, control it in response to input by nerve cells. Skeletal muscle is also referred to as **striated** ("striped") because it has a microscopically streaked or striped appearance. Skeletal muscle and its associated connective tissue comprise about 40% of our weight. Skeletal muscle also has a unique characteristic with regard to nuclei. There are many nuclei in each skeletal muscle cell. These nuclei are generally pressed up against the cell membrane as there is very little room inside the cells given all the contractile proteins that are there.



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