

Anatomy and Physiology

FOR ENGLISH LANGUAGE LEARNERS

Chapter 4: The Muscular System

Muscle Organization

Skeletal muscles are comprised of bundles of fascicles. Fascicles are comprised of bundles of fibers. Fibers are comprised of bundles of myofibrils. Myofibrils are comprised of myofilaments. Finally, a single myofilament is not comprised of bundles. They are comprised of two kinds of protein molecules: actin and myosin.

Muscle Contraction

For a muscle to be able to move, the neurotransmitter acetylcholine (ACh) travels from motor neurons to muscle fibers. When ACh reaches the muscle fibers, the muscle fibers produce an electrical current. This electrical current ultimately causes actin and myosin (the myofilaments) to move. When actin and myosin move, a muscle moves.

Types of Muscle

There are three types of muscle: skeletal muscle (attached to bones), smooth muscle (on the interior of hollow organs such as the bladder and stomach) and cardiac muscle (heart). These muscles are either voluntary or involuntary. Voluntary means that they are under our conscious control. Only skeletal muscles are voluntary.

Naming Muscles

The human body has over 600 skeletal muscles. Most of these exist in pairs. The names of the muscles often indicate their location. The names of muscles and bones are often similar. Words to describe muscle location include: superior to (above), inferior to (below, but not underneath), posterior (behind), anterior (in front of), lateral to (at the side of), medial to (toward the middle).



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