

Muscular System

Muscles can be characterized by their location, control action (voluntary or involuntary), and cell appearance (striated or nonstriated). There are three types of muscles: skeletal, smooth, and cardiac.

Skeletal Muscle

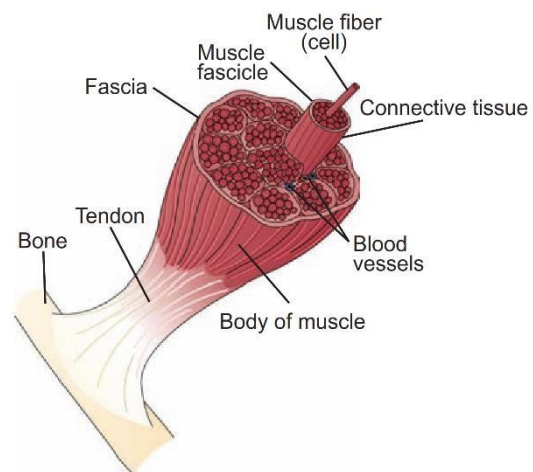
Of the three types, skeletal muscle is the largest group, comprising more than 600 separate muscles. These muscles are made up of fibers enclosed in a fibrous sheath of **fascia** [the Latin word for band] attached to bones by **tendons** [from the Latin verb *tendo* (stretch)] made up of connective tissue. **Ligaments** [from the Latin noun *ligamen* (string)] connect bones to bones and offer support to muscles.

Smooth Muscle

Smooth muscle, which acts involuntarily, is located in the blood vessels, respiratory passageways, digestive tract, and walls of hollow internal organs. The functions of smooth muscle are to control and move substances through passageways with wavelike motions and to regulate the diameter of the openings of vessels and hollow organs.

Cardiac Muscle

Cardiac muscle, also known as the heart or myocardial muscle, forms the wall of the heart. It acts involuntarily and has a



lightly striated appearance. The contraction and relaxation of the cardiac muscle is responsible for the heart's pumping action.

Disorders and Treatments

Muscular dystrophy [muscular (common English word); dys- (difficult); -trophy (from the Greek word trophé meaning "nourishment")] causes weakness without affecting the nervous system.

Myasthenia gravis [my/o (muscle); asthenia (from the Greek word astheneia meaning "weakness")] is an immunologic disorder characterized by fluctuating weakness, especially of the facial and external eye muscles.

Fibromyalgia [fibr/o (fiber); my/o (muscle); -algia (pain)] is a disorder characterized by widespread aching and stiffness of muscles and soft tissues, fatigue, tenderness, and sleep disorders. The cause of fibromyalgia is unknown, and it may coexist with other chronic diseases.

Cumulative Trauma and Sports Injuries

Carpal tunnel syndrome [carpal (a wrist bone); tunnel (common English word); syndrome (a Greek word meaning "running together")]: Due to pressure on the median nerve as it passes through the carpal (wrist) bone causes numbness and weakness in the areas of the hand supplied by the nerve.

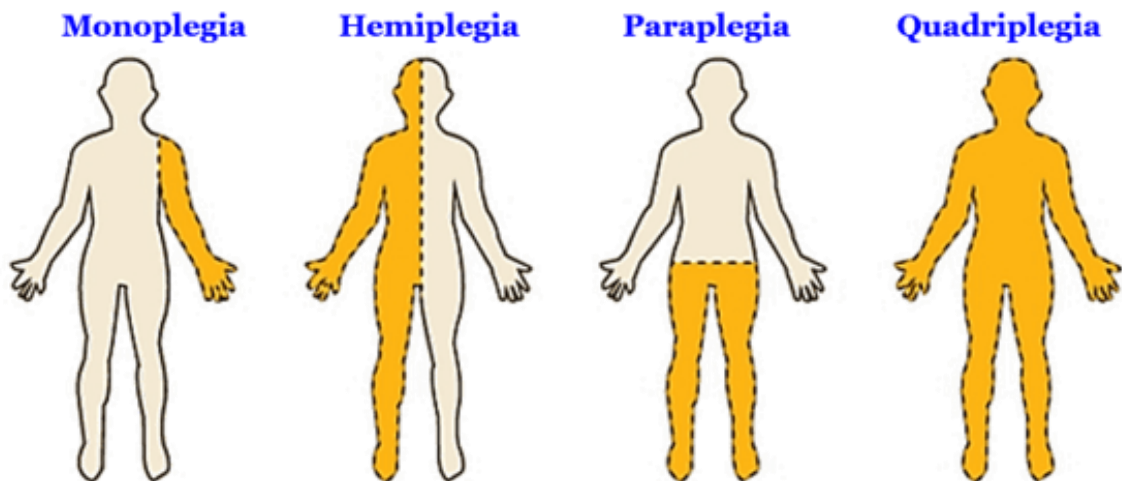
Rotator cuff injury, which affects the shoulder, occurs to people who perform repeated activities such as swimming or throwing. The rotator cuff is formed by four muscles that may become inflamed and swollen when overused.

Epicondylitis [epi- (around); condyl (rounded end surface of a bone); -itis (inflammation)], also commonly called tennis elbow, is an inflammation of the

medial and lateral epicondyles, bony projections of the distal portion of the humerus.

Plantar fasciitis [plantar (sole of the foot); fasci- (from fascia, Latin for band); itis (inflammation)] is an inflammation of the plantar fascia (connective tissue in the arch of the foot) that can cause intense pain when walking or running. It may be caused by long periods of weight bearing, sudden changes in activity, or obesity.

Paralysis



Paralysis is the loss of sensation and voluntary muscle movement caused by injury or disease. The following terms name kinds of paralysis:

- **Hemiparesis** [hemi- (half); -paresis (paralysis)]: slight paralysis of one side of the body.
- **Myoparesis** [my/o (muscle); -paresis (paralysis)]: weakness or partial paralysis of a muscle.
- **Paraplegia** [para- (not normal); -plegia (paralysis)]: paralysis of both legs and the lower part of the body.
- **Quadriplegia** [quadri (four); -plegia (paralysis)]: paralysis of all four extremities.

- **Hemiplegia** [hemi- (half); -plegia (paralysis)]: total paralysis of one side of the body.