

Commentary

Unraveling the Intricacies of Muscles: Anatomy, Function, and Maintenance

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Description

Muscles are the workhorses of the human body, responsible for generating movement, maintaining posture, and supporting vital functions such as circulation and respiration. Comprising over 600 muscles, each with its unique structure and function, the muscular system is a marvel of biological engineering. In this article, we'll explore the anatomy, function, types of muscles, common muscle-related issues, and strategies for maintaining muscle health. Muscles are composed of bundles of muscle fibers, each containing myofibrils made up of contractile proteins called actin and myosin. These fibers are organized into parallel bundles, surrounded by connective tissue layers that provide support and structure. Muscles attach to bones *via* tendons, enabling them to exert force and produce movement around joints. The primary function of muscles is to generate force and produce movement through the contraction and relaxation of muscle fibers. Muscles work in coordination with the nervous system, receiving signals from the brain and spinal cord to initiate and control movement. Beyond voluntary movements, such as walking and lifting, muscles also play a crucial role in involuntary processes like digestion and heartbeat. Attached to bones *via* tendons, skeletal muscles are responsible for voluntary movements and are under conscious control. They exhibit striations under a microscope due to the arrangement of their contractile proteins. Found in the walls of internal organs, blood vessels, and other structures, smooth muscles are responsible for involuntary movements such as peristalsis and regulating blood flow. They lack striations and are controlled by the autonomic nervous system. Found exclusively in the heart, cardiac muscles are responsible for pumping blood throughout the body. They exhibit striations like skeletal muscles but are involuntary, regulated by the cardiac conduction system. Overstretching or tearing of muscle fibers, often resulting from sudden movements or overexertion. Injuries to ligaments, which connect bones

to each other and stabilize joints. Painful involuntary contractions of muscles, typically caused by dehydration, electrolyte imbalances, or muscle fatigue. Generalized muscle pain, often associated with overuse, tension, or infection. Genetic disorders characterized by progressive muscle weakness and degeneration. Engaging in both aerobic and resistance training exercises to strengthen muscles, improve endurance, and maintain flexibility. Allowing muscles time to rest and recover between workouts to prevent overuse injuries and promote tissue repair. Staying hydrated to support muscle function, prevent cramps, and facilitate nutrient delivery to muscle cells. Muscles are remarkable structures that enable movement, support, and vital bodily functions. Understanding their anatomy, function, types, and common issues is essential for maintaining muscle health and overall well-being. By incorporating proper exercise, nutrition, rest, and hydration into our lifestyle, we can ensure that our muscles remain strong, resilient, and capable of supporting us throughout life's endeavours. Muscles work in coordination with the nervous system, receiving signals from the brain and spinal cord to initiate and control movement. Beyond voluntary movements, such as walking and lifting, muscles also play a crucial role in involuntary processes like digestion and heartbeat. Attached to bones *via* tendons, skeletal muscles are responsible for voluntary movements and are under conscious control. They exhibit striations under a microscope due to the arrangement of their contractile proteins. Found in the walls of internal organs, blood vessels, and other structures, smooth muscles are responsible for involuntary movements such as peristalsis and regulating blood flow.

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Conflict of Interest

None.