

The Muscular system




The muscular system includes all of the muscles in our bodies: **skeletal** such as the biceps muscles, **cardiac** muscles of the heart and **smooth** such as the muscles in the stomach and bladder.

The muscles are made up of fibers that are enclosed in a fibrous sheath called **fascia**, they are attached to the bones by **tendons**, the **ligaments** connect bone to bone and offer support to muscles.

There are three times as many muscles as there are bones in the human body.

Types of Muscle tissue:

Muscles can be characterized by their location, control, action and cell appearance.

	SMOOTH	CARDIAC	SKELETAL
Location	Wall of hollow organs, vessels, respiratory passageways	Wall of heart	Attached to bones
Cell characteristics	Tapered at each end, branching networks, nonstriated	Branching networks; special membranes (intercalated disks) between cells; single nucleus; lightly striated	Long and cylindrical; multinucleated; heavily striated
			
Control	Involuntary	Involuntary	Voluntary
Action	Produces peristalsis; contracts and relaxes slowly; may sustain contraction	Pumps blood out of heart; self-excitatory but influenced by nervous system and hormones	Produces movement at joints; stimulated by nervous system; contracts and relaxes rapidly

Muscle Movement:

The skeletal muscles are stimulated by the nervous system and perform in groups or antagonistic pairs to accomplish movement. Each skeletal muscle can be classified as:

Prime mover: the muscle that has the principal responsibility for a given movement, it contracts and produces movement.

Antagonist: works in opposition to produce opposite movement.

Movement	Definition	Example
abduction	Movement away from midline	Moving the arms outward from the body
adduction	Movement toward midline	Return of the lifted arms to sides
eversion	Turning outward	Turning the sole of the foot outwards
inversion	Turning inward	Turning the sole of the foot inward
extension	Opening the angle of a joint	Straightening of the knee
Flexion	Closing the angle of a joint	Bending the knee

A neurologist : is a physician who specializes in the diagnosis and treatment of both the muscular system and the nervous system.

Orthopedic physicians treat patients suffering from conditions involve joints as well as muscles.

Occupational therapist (OT) and **Physical therapist (PT)** both provide therapy to assist patients to regain functions to perform everyday activity. they restore, maintain and promote overall fitness and health.

Criteria of muscle naming

Usually the name of muscle derived from or refers to either one of these:

- 1.shapetrapezius muscle
- 2.size.....Gluteus Maximus muscle
- 3.fiber number of bellies.....Biceps, Triceps muscle
- 4.muscle attachment.....Sterno-hyoid muscle
- 5.location and Action.....Temporal, Masseter muscle

Disorders affecting the Muscular system:

Muscular dystrophy (dys= bad, difficult ; trophy= nutrition or growth) is a group of inherited muscle disorders that cause muscle weakness without affecting the nervous system.

Myasthenia gravis (MG) (my=muscle, asthen=weakness, ia=condition; gravis= serious or heavy) is an immunological disorder characterized by weakness especially of the facial and external eye muscles.

Fibromyalgia: is a chronic disorder characterized by aching(pain) and stiffness of muscles and soft tissues.

Paralysis: is the loss of sensation and voluntary muscle movement due to injury or disease. Kinds of paralysis:

Hemiparesis: slight paralysis of one side of the body (hemi=half , paresis=partial or incomplete)

Myoparesis: weakness or partial paralysis of a muscle

Paraplegia: paralysis of both legs and the lower part of the body (para= alongside , plegia= paralysis)

Quadriplegia: paralysis of all four extremities.

Hemiplegia: total paralysis of one side of the body.

Term	Meaning
My/myo	muscle
Stria (single) – striae (plural)	Line -lines
Para	Beside, beyond or near
Paresis	Partial or incomplete paralysis
Plegia	paralysis
Hemi	half
Quadri	four
Antagonist	Something opposing or resisting the action of the other
Atrophy	Wasting of the muscles
Neuro	nerve
Myodynia/myalgia	Pain in a muscle
Myositis	inflammation of a muscle
Myospasm	contraction of a muscle
Tenalgia	pain in a tendon
Tendonitis	inflammation of a tendon
Myology	study of muscles

