Muscular
System

01 Definition of the muscular system

The muscular system is an organ system consisting of skeletal, smooth and cardiac muscles it permits movement of the body maintains posture and circulates blood throughout the body

What are the functions of the muscular system?

1-Movement of body parts and organ contents

2-maintain position and prevent movement

3-different activities – talking – facial expression – etc.

4-Regulate various body functions like eating, breathing, etc.

5- generating heat

What is the anatomy of muscles?

- Your muscles are made of thousands of small fibers woven together. These fibers stretching and pressing together is what moves your organs or body.

Your muscles weave together like a quilt that covers your body. They run in all directions and work together to move you.

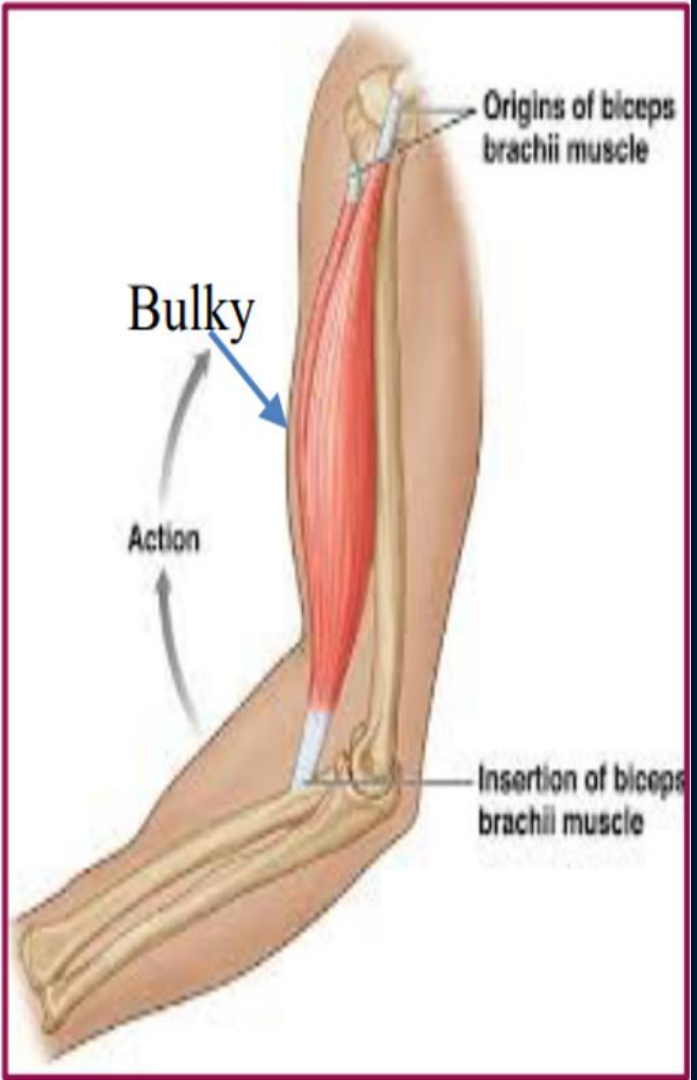
Voluntary movements & Involuntary movements

Voluntary movements:

are actions you control. You choose to perform an action and your muscles move your body to make it happen. You use your **nervous system** to control these movements.

Involuntary movements:

happen automatically without you thinking about them. The muscles in and around your organs move involuntarily to keep your body working properly.



Structure of muscle fibers

Origin of the muscle: fixed end of the muscle.

Bulky part of the muscle: Soft, thick, and middle part of the muscle.

Insertion of the muscle:

movable end of the muscle.

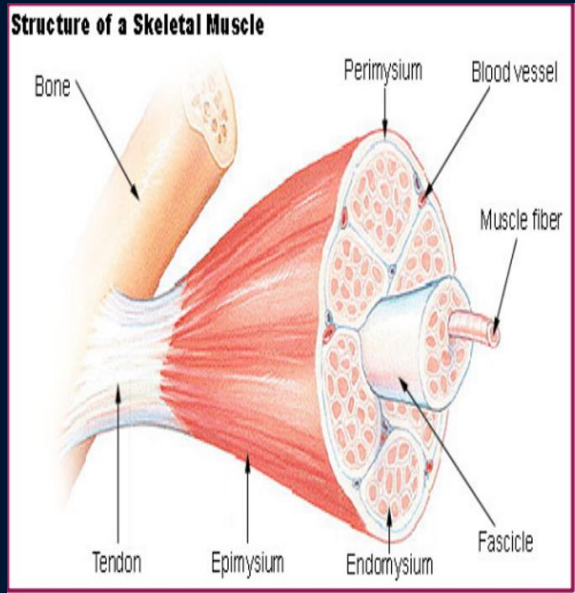
Structure of muscle fibers

• Endomysium: around single muscle fiber.
Prefix: Endo = inside.
Root: mys = muscle.
Suffix: um = tissue.

Epimysium: covering the whole skeletal muscle.
Prefix: Epi = over.
Root: mys = muscle.
Suffix: um = tissue.

Perimysium: around a fascicle (bundle) of fiber.
Prefix: Peri = around.
Root: mys = muscle.
Suffix: um = tissue.

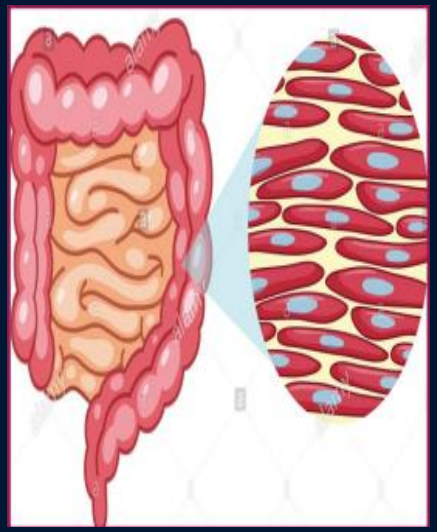
Fascia: around the Epimysium.
Fascia (Latin: "band") is a band or sheet of connective tissue



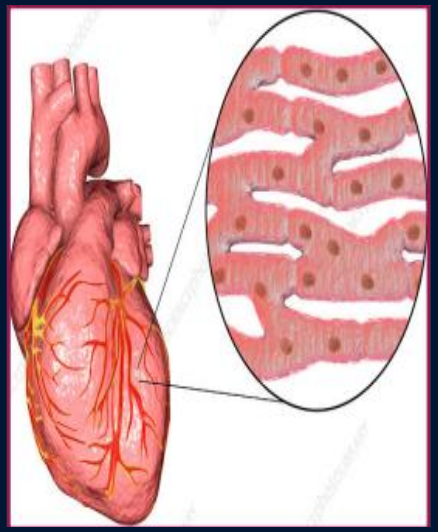
Supportive structures of the Muscular System

- Tendons
- Attach muscles to bones
- Fascia attach muscle to muscle
- Tendons and fascia work together with muscles which create the the muscular system necessary for movement.

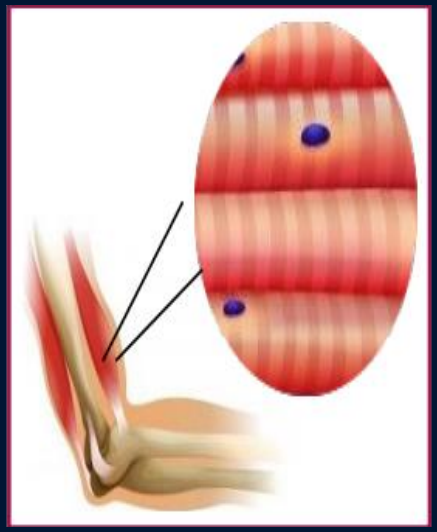
Types of the muscle



smooth muscles



Cardiac muscles



skeletal muscles

Characteristics of skeletal muscles

Attached to bones.
Makes up 40% of body weight.
Responsible for locomotion, facial expressions, posture, respiratory, and other types of body activities.
Voluntary in actions .

Composed of muscle cells (fibers), connective tissue, blood vessels, nerves.
Fibers are long, Cylindrical, and multinucleated.
Striated appearance.
Nuclei are peripherally located.

Characteristics of cardiac muscles

Found only in heart where in forms a think layer called the myocardium
Striated fibers that branch.
Each cell usually has one centrally-located nucleus.
Fibers joined by intercalated disks.
Fibers spontaneously contract.
Controlled involuntarily

Characteristics of smooth muscles

Located in the blood vessels, the respiratory tract, the iris of the eye,... etc.
Activation is involuntarily.
Cells are not striated.
Spindle-shaped, single central nucleus.

Naming of the muscles

Skeletal muscles named according to their shapes

Naming of muscles according to shape

Deltoid: muscle with a triangular shape.

Serratus: muscle with a saw-like or serrated edge.

Trapezius: muscle shaped like a trapezoid.

Rhomboid: diamond-shaped muscle.

Orbicularis: circular muscle.

Quadratus: square-shaped muscle.

Teres: round muscle.

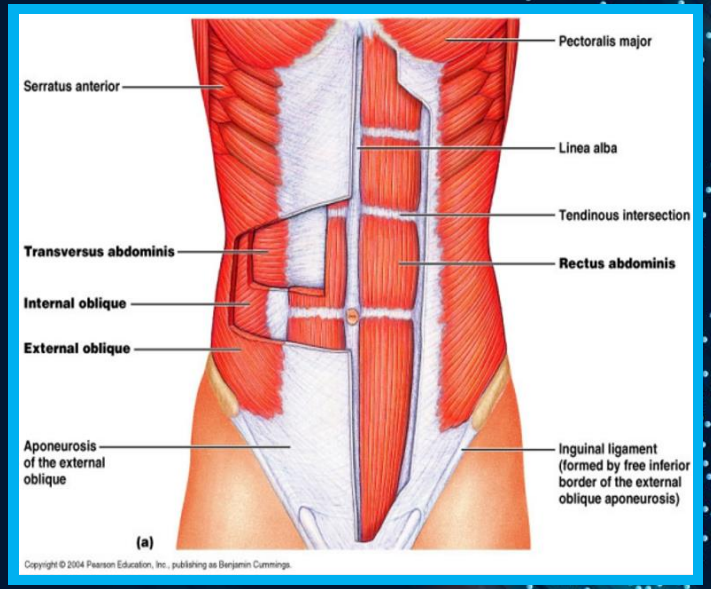
Fusiform: spindle-shaped muscle.

Skeletal muscles named according to their orientation of the fibers

Rectus muscle

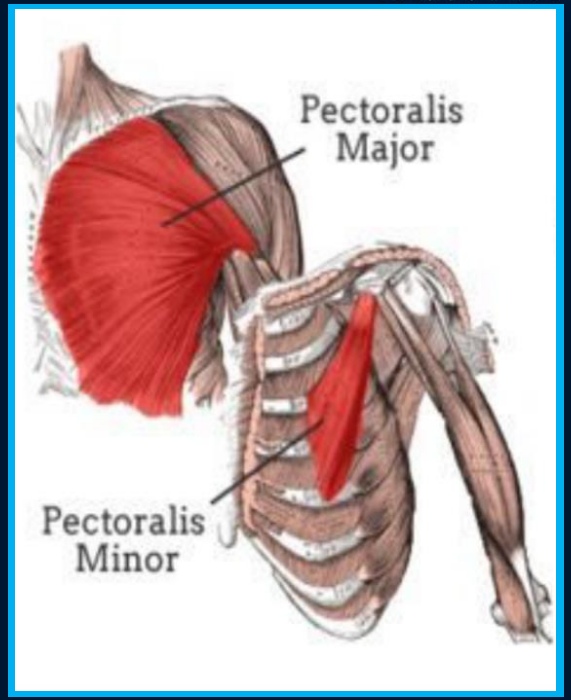
oblique muscle

transvers abdominis



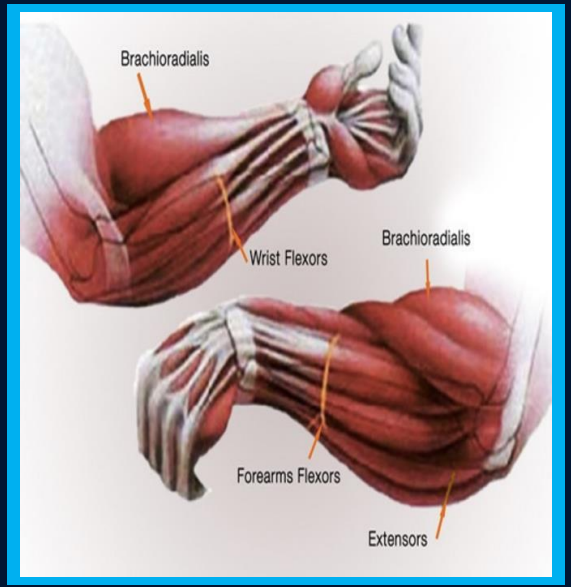
Skeletal muscles named according to their size

Pectoralis minorpectoralis.
minor = small.
Pectoralis majorpectoralis.
• major = big.



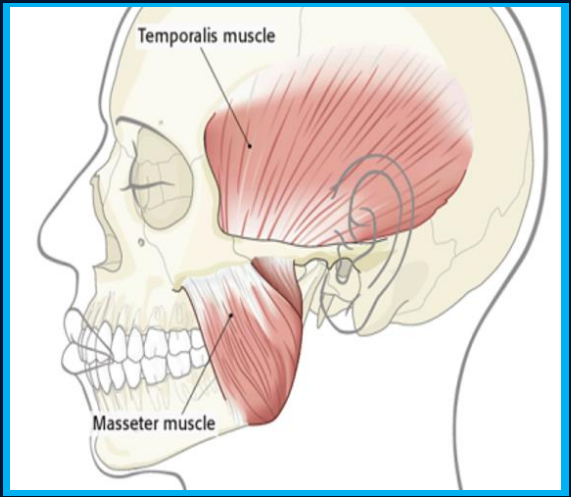
Skeletal muscles named according to their function

Forearm muscles (flexors of the hand)



Skeletal muscles named according to their location

Temporalis muscles according to the temporal bone



Various movements done by the muscles

Categories	Actions
Extensor	Increases the angle at a joint
Flexor	Decreases the angle at a joint
Abductor	Moves limb away from midline of body
Adductor	Moves limb toward midline of body
Levator	Moves insertion upward
Depressor	Moves insertion downward
Rotator	Rotates a bone along its axis
Sphincter	Constricts an opening

Thank You

Our students

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