Chapter 4

The Muscular System

20 medical terms

Ambulate
Atrophy
Bradykinesia
Dysphagia
Dystrophy
Electromyogram
Hemiplegia
Hypertrophy
Kinesiology
Leiomyoma
Myalgia
Myasthenia
Myoma
Myorrhexis
Paraplegia
Quadriplegia
Sarcolemma
Tendinitis
Tendinoplasty
Tetnus

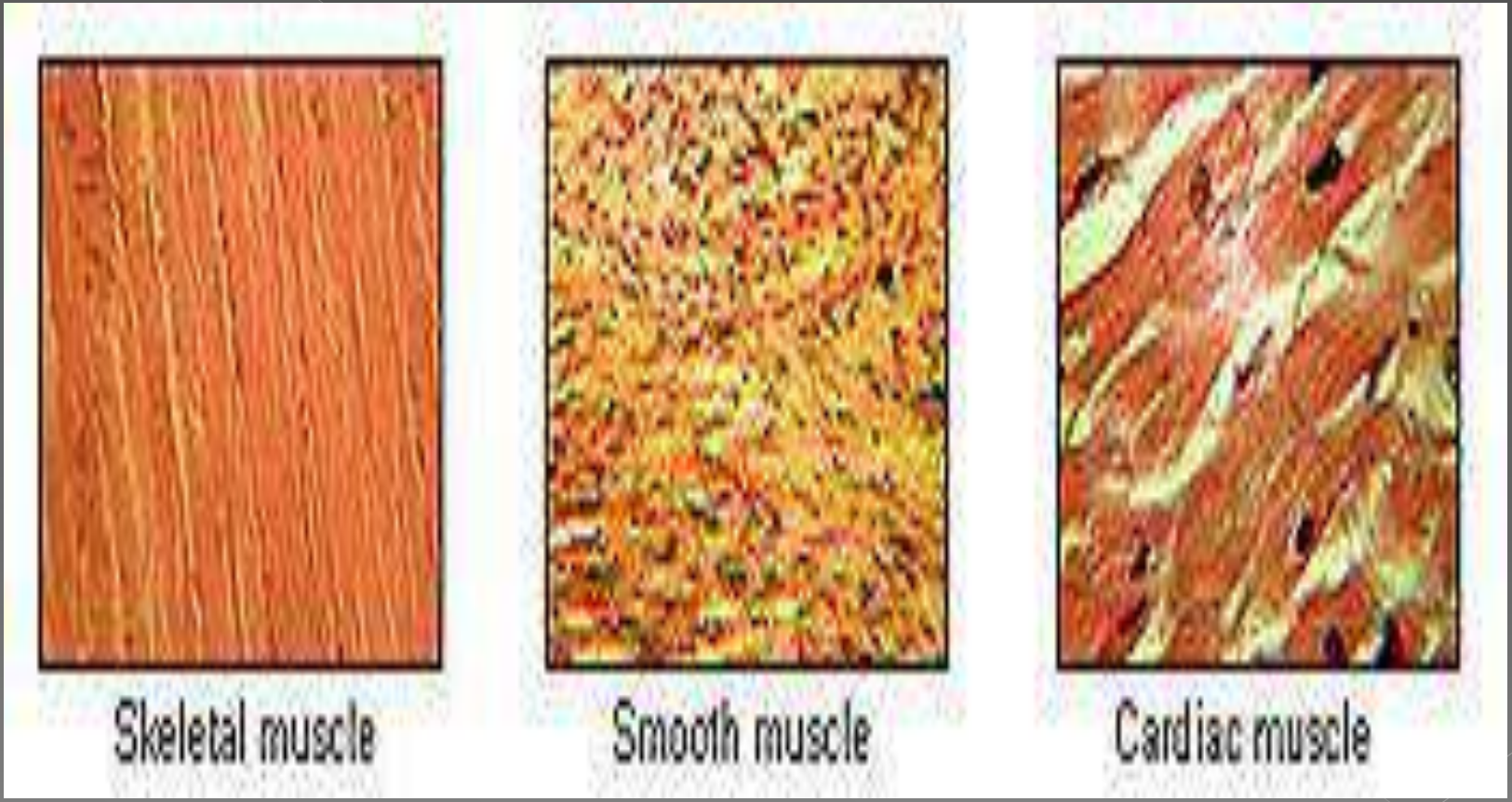
Major Structures

- **Muscles** – my/o
- **Fascia** – fasci/o
- **Tendons** – ten/o, tend, tendin

Muscles

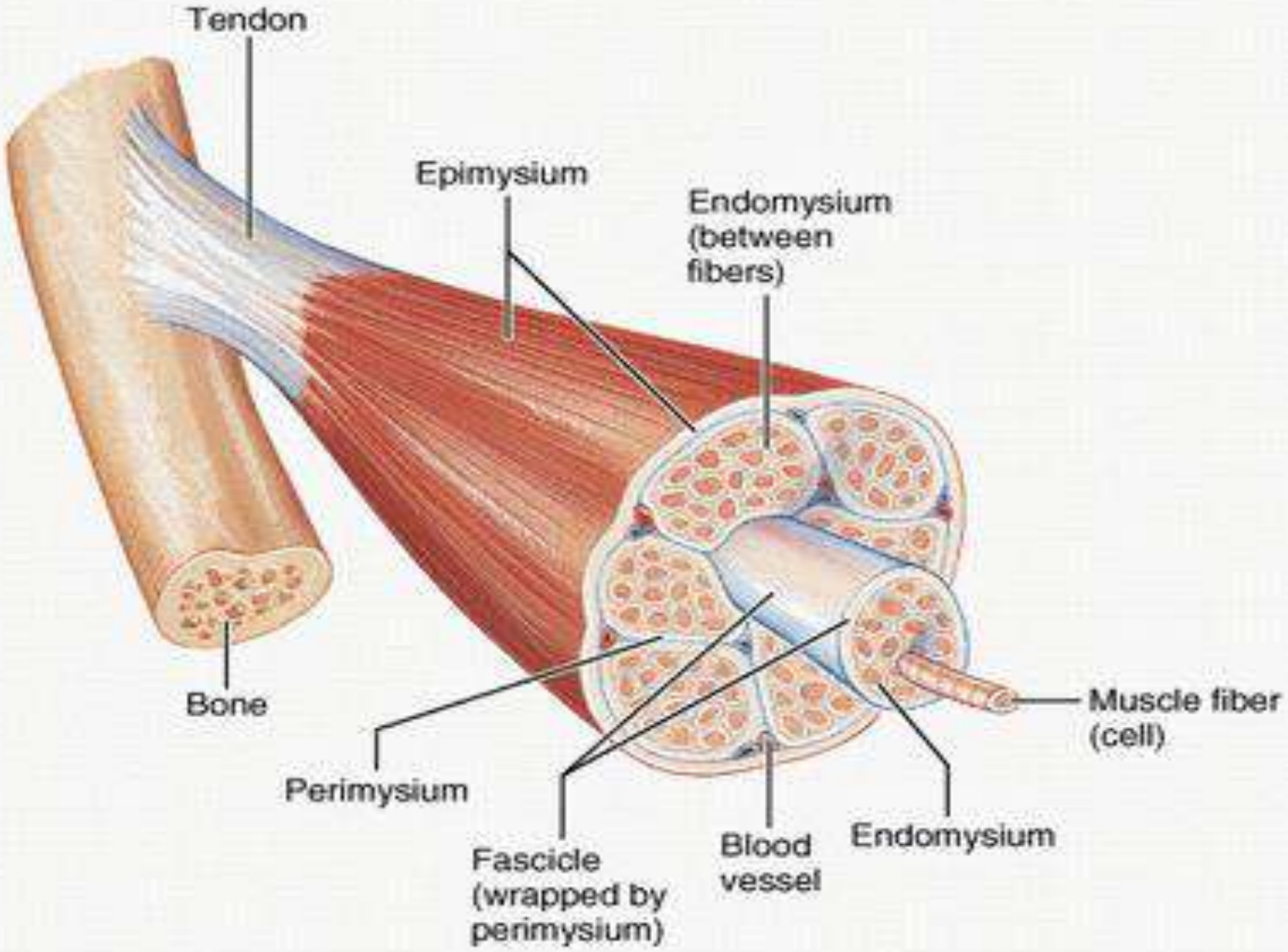
- Functions
  - Make body movement possible.
  - Hold body erect.
  - Move body fluids.
  - Produce body heat.
- Related Combining Form
  - my/o

Types of Muscle Tissue



Skeletal Muscle

- Attach to the bones
- Make movements possible
- Are striated muscles
- voluntary muscles (conscious control)


Tendon
Epimysium
Endomysium
(between
fibers)
Bone
Muscle fiber
(cell)
Perimysium
Fascicle
(wrapped by
perimysium)
Blood
vessel
Endomysium

Smooth Muscles

- Location: walls of internal organs, blood vessels, and ducts leading from glands
- Function: move and control the flow of fluids through these structures
- Are un-striated muscles
- Involuntary Muscles (under control of the autonomic nervous system)
- Visceral muscles

Cardiac Muscles

- Location: only in the walls of the Heart
- Function: make the heart beat
- Also known as myocardial muscle or the myocardium

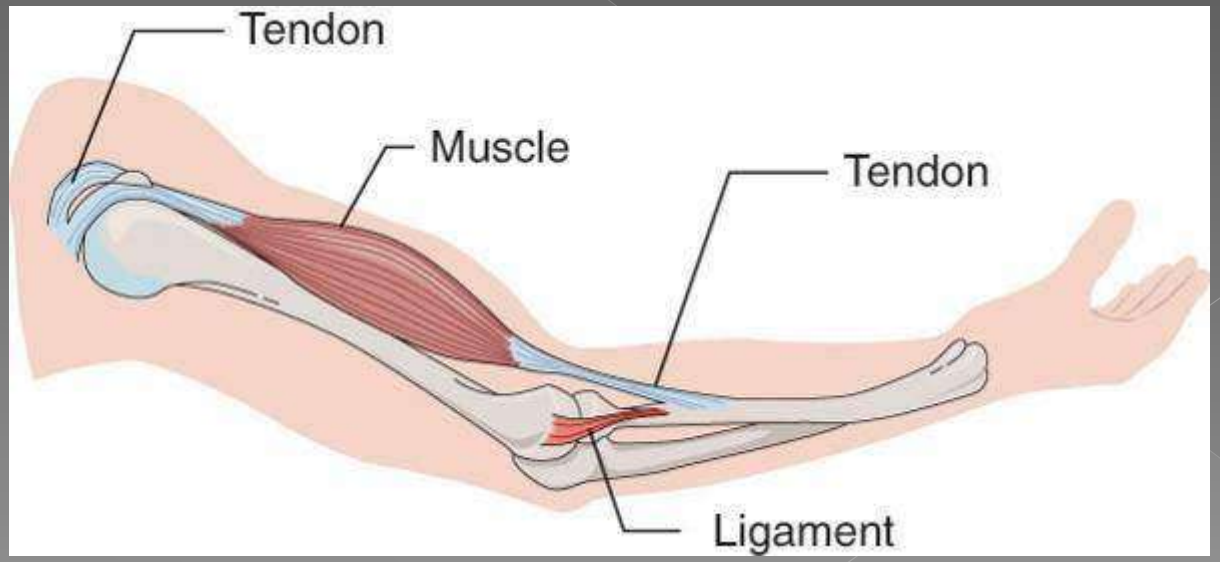
Fascia

- Primary Functions
  - Cover, support, and separate muscles.
- Related Combining Form
  - fasci/o

Tendons

- Primary Function
  - Attach muscles to bones.

- Related Combining Forms
  - ten/o, tend/o, tendin/o



Aponeurosis

- Flat fibrous sheet of connective tissue, like tendons
- Connect muscle to bones and muscle to other tissues

Range of Motion

- **Abduction** – Movement away from the midline of the body
  - Abductor muscles move a part away from the midline
- **Adduction** – movement toward the midline of the body
  - Adductor muscles move a part toward the midline

Range of Motion

- **Flexion** – means decreasing the angle between two bones or bending a limb
  - Flexor muscle bends a limb or joint
- **Extension** – means increasing the angle between two bones or straightening out a limb
  - Extensor muscle straightens a limb at a joint

Range of Motion

- **Elevation** – is the act of raising or lifting a body part
  - Levator muscle is a muscle that raises a body part
- **Depression** – is the act of lowering a body part
  - Depressor muscle a muscle that lowers a body part

Range of Motion

- **Rotation** – is a circular movement around an axis
  - Rotator muscle – turns a body part on its axis
  - Rotator Cuff muscles that holds the head of the humerus securely in place as it rotates within the shoulder joint

- **Circumduction** – is the circular movement of a limb at the far end

Range of Motion

- **Supination** – is the act of rotating the arm or the leg so that the palm of the hand and sole of the feet is turned forward or upward

- **Pronation** – is the act of rotating the arm or leg so that the palm of the hand or sole of the foot is turned downward or backward

Range of Motion

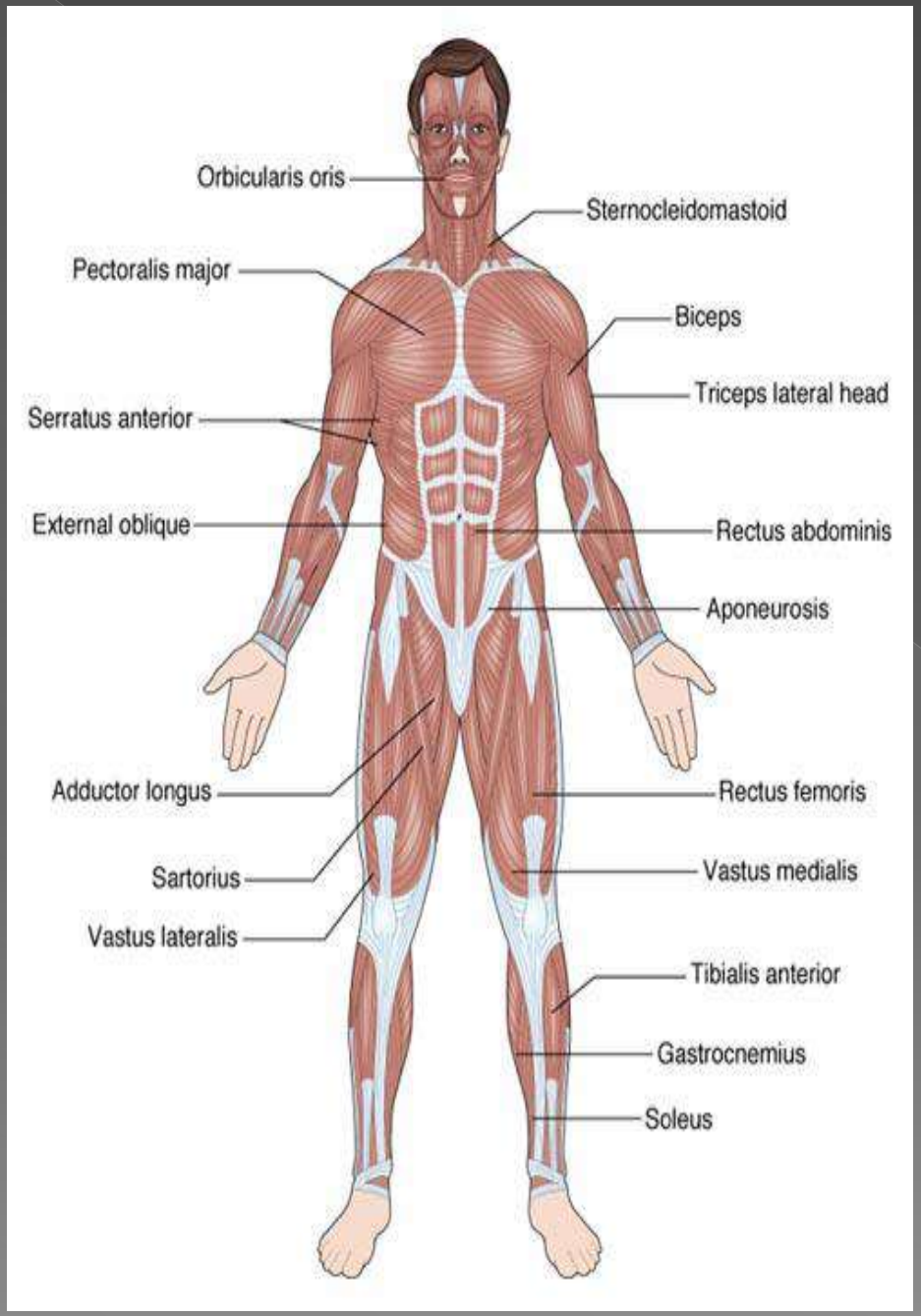
- **Dorsiflexion** – bends the foot upward at the ankle
  - Brings your toes towards your shin
- **Plantar Flexion** – bends the foot downward at the ankle
  - Pointing your toes

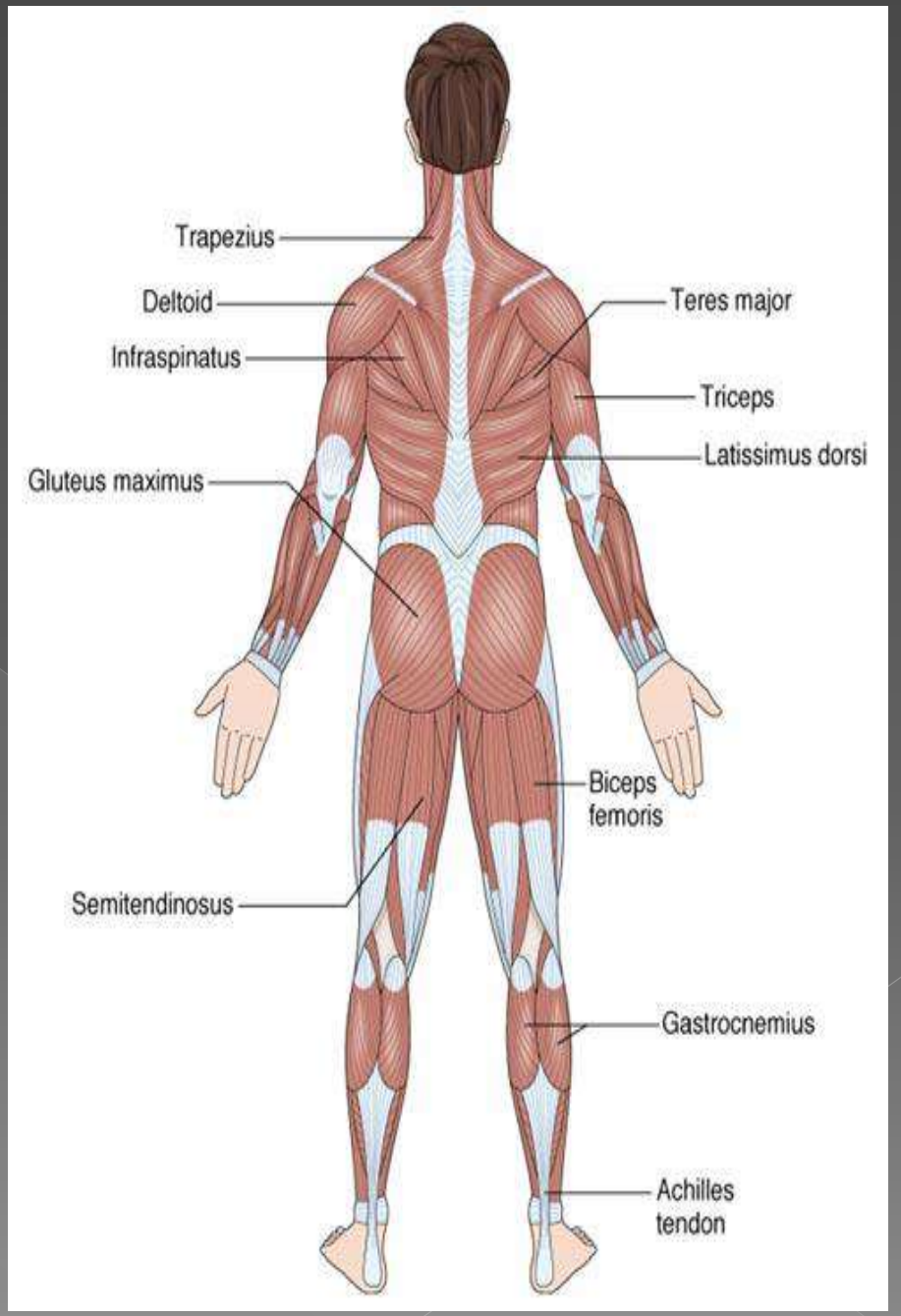
Key Word Parts - review

- bi – two
- -cele – hernia, tumor, swelling
- -desis – surgical fixation (of bone or joint)
- -ia – disease condition of
- -ic – pertaining to; relating to
- Kinesi – motion, movement
- -lysis – breakdown, loosening, destruction

Key Word Parts – review

- My/o --muscle
- -plegia -- paralysis
- -rrhexis -- rupture
- tax /o – coordination, order
- Ten/o; tend/o; tendin/o -- tendon
- ton / o – tension, tone, stretching
- tri- -- three


Orbicularis oris
Sternocleidomastoid
Pectoralis major
Biceps
Triceps lateral head
Serratus anterior
External oblique
Rectus abdominis
Aponeurosis
Adductor longus
Rectus femoris
Sartorius
Vastus medialis
Vastus lateralis
Tibialis anterior
Gastrocnemius
Soleus


Trapezius
Deltoid
Teres major
Infraspinatus
Triceps
Latissimus dorsi
Gluteus maximus
Biceps femoris
Semitendinosus
Gastrocnemius
Achilles tendon

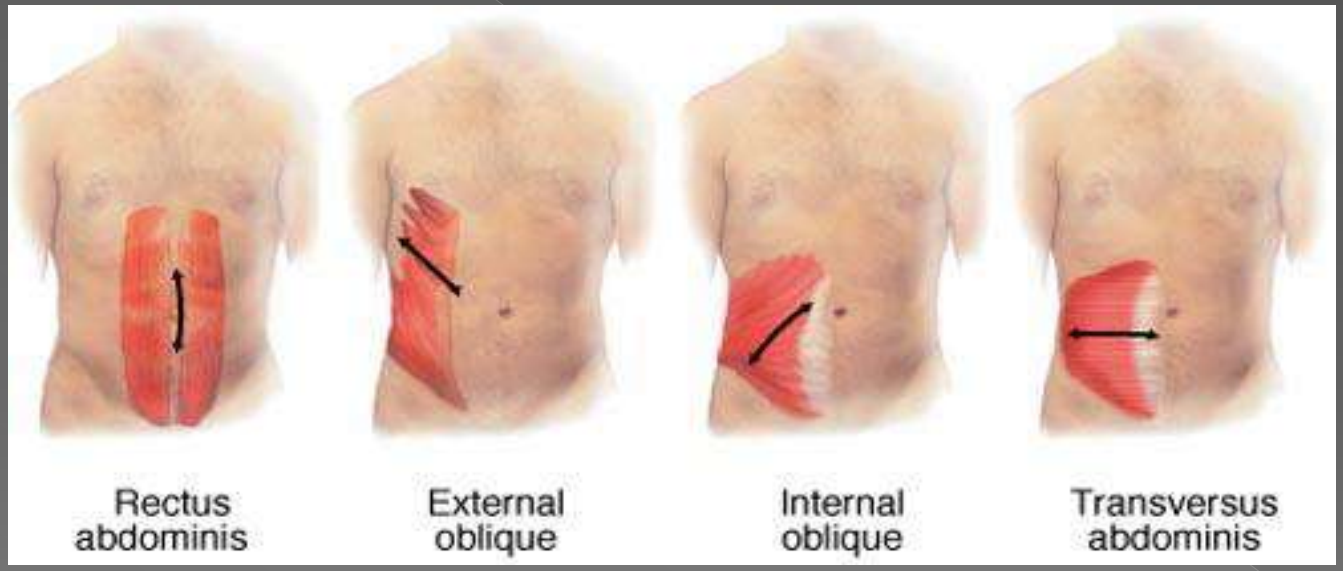
How Muscles are Named

7 ways…

- **Origin and insertion**
  - Sternocleidomastoid
- **Action**
  - Flexor carpi muscles (wrist)
- **Location**
  - Pectoralis major

How Muscles are Named

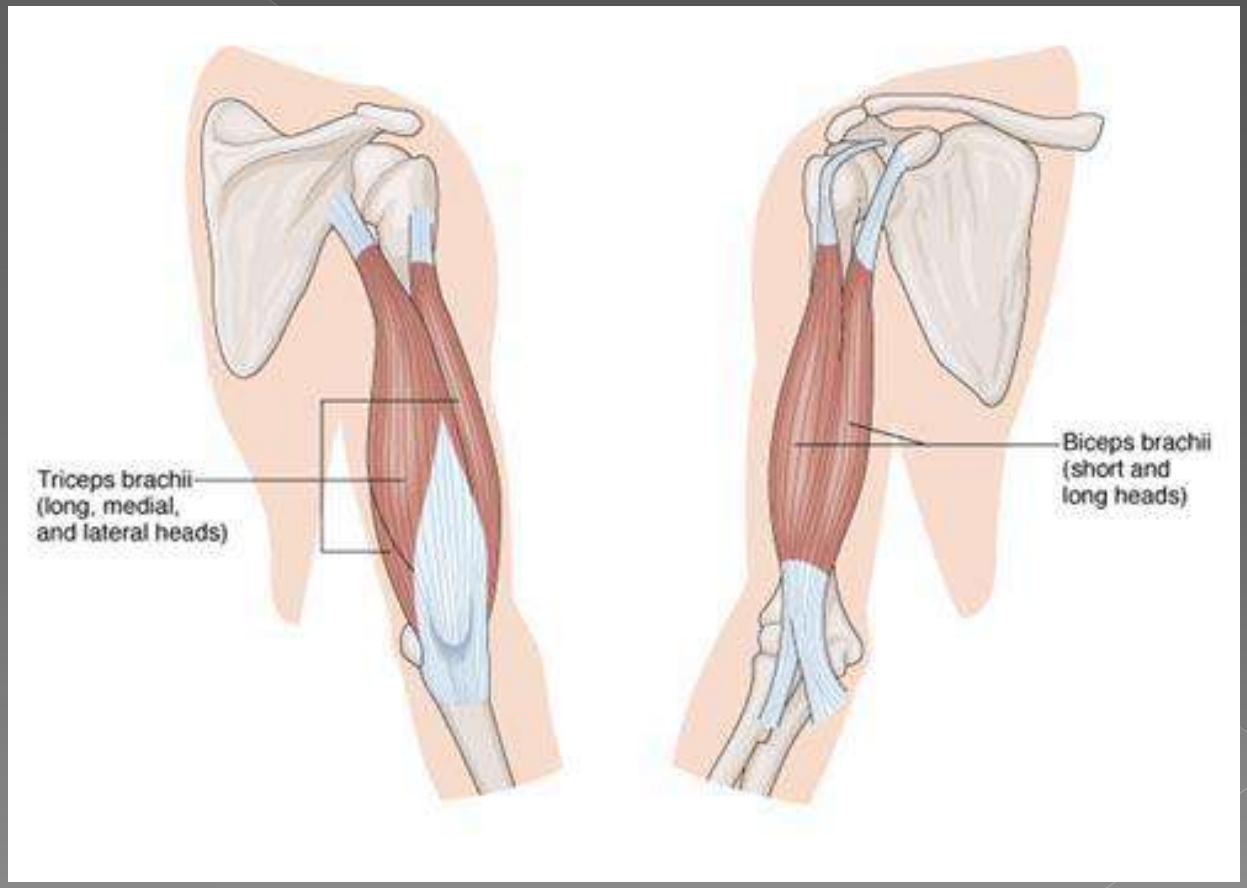
- **Fiber direction**



  - **Sphincter** – ringlike muscle that tightly constricts the opening of a passageway

How Muscles are Named

- **Number of divisions**



How Muscles are Named

- **SIZE**
  - Named because they are broad, narrow, large, or small
  - Ex. Gluteus maximus

How Muscles are Named

- **Shape**
  - Named because they are shaped like a familiar object.
    - Ex. Deltoid Muscle shaped like an inverted triangle or Greek letter delta

Medical Specialties Related to the Muscular System

- **Orthopedic surgeon** – treats injuries & disorders involving bones, joints, muscles, tendons
- **Rheumatologist** – treats disorders involving inflammation of connective tissue, incl muscles
- **Neurologist** – treats causes of paralysis & similar muscle disorders involving loss of function
- **Specialist in Sports Medicine** – treats sports related injuries of bones, joints, muscles