Muscle Attachments

- Muscles attach to bones by the fusion of their fibrous connective tissue to the periosteum of the bone.
- Attachment may be **direct** or **indirect**:
  - **Direct attachment**: connective tissue of muscle does not extend beyond the end of the muscle but fuses directly with the periosteum.
  - **Indirect attachment**: connective tissue of the muscle extends beyond the end of the muscle as a rope-like tendon or sheet-like aponeurosis.
Muscle Attachments

- The immovable end of a muscle is called the **origin**
- The moveable end of the muscle, where the action occurs, is called the **insertion**
- Muscles may have several “heads” of origin and may be named as biceps, triceps or quadriceps.

Naming of skeletal muscles – the more than 600 muscles of the body are named according to the following scheme:

- **Shape**
  - e.g. rhomboid(eus) (like a rhomboid); deltoid(eus) (like a Deltoid or triangle); trapezius (trapezoid)

- **Location**
  - e.g. pectoralis; intercostal; femoris; brachii

- **Attachment**
  - e.g. zygomaticus; temporalis; Sternocleidomastoid(eus)

- **Number of Heads of Origin**
  - e.g. biceps; triceps; quadriceps

- **Size**
  - e.g. maximus/minimus; major/minor; longus/brevis

- **Direction of Fibers**
  - e.g. rectus; transversus; obliquus

- **Relative position**
  - e.g. lateral; medial; abdominal; internal

- **Function or action**
  - e.g. adductor; flexor; levator; pronator; extensor
Movements at Articulations

- Flexion/Extension (hyperextension)
  - Flexion reduces the angle between articulating bones
  - Extension increases the angle
  - Hyperextension increases angle beyond anatomical position

- Abduction/Adduction
  - Abduction is movement away from the longitudinal axis of the body in the frontal plane
  - Adduction is returning limb to anatomical position

- Dorsiflexion/Plantar flexion
  - These are “foot” words

- Supination/Pronation
  - Supination turns the palm into the anatomical position (radius and ulna parallel)
  - Pronation turns the palm backward (radius crosses over ulna)

- Inversion/Eversion
  - Inversion is a twisting the foot turning sole inward
  - Eversion turns the foot outward

- Protraction/Retraction
  - Protraction entails moving a body part anteriorly in the horizontal plane (sticking out your tongue)
  - Retraction entails the reverse (pulling your tongue back)

- Rotation is turning a part on its long axis

- Circumduction is motion where terminus describes the circumference of a circle