

# **Lesson 5**

## **Types of Movement**

- Muscles & Body Movements**
- Types of Ordinary & Special Movements**

# Muscles and Body Movements

---

- Movement is due to a **muscle** pulling an attached **bone**
- Muscles are attached to at least two points
  - **Origin**
    - Attachment to the **immoveable / less moveable** bone
  - **Insertion**
    - Attachment to the **moveable** bone

# Five Golden Rules of Skeletal Muscle Activity

**TABLE 6.2**

## The Five Golden Rules of Skeletal Muscle Activity

1. With a few exceptions, all skeletal muscles cross at least one joint.
2. Typically, the bulk of a skeletal muscle lies proximal to the joint crossed.
3. All skeletal muscles have at least two attachments: the origin and the insertion.
4. Skeletal muscles can only pull; they never push.
5. During contraction, a skeletal muscle insertion moves toward the origin.

**Table 6.2**

# Muscles and Body Movements

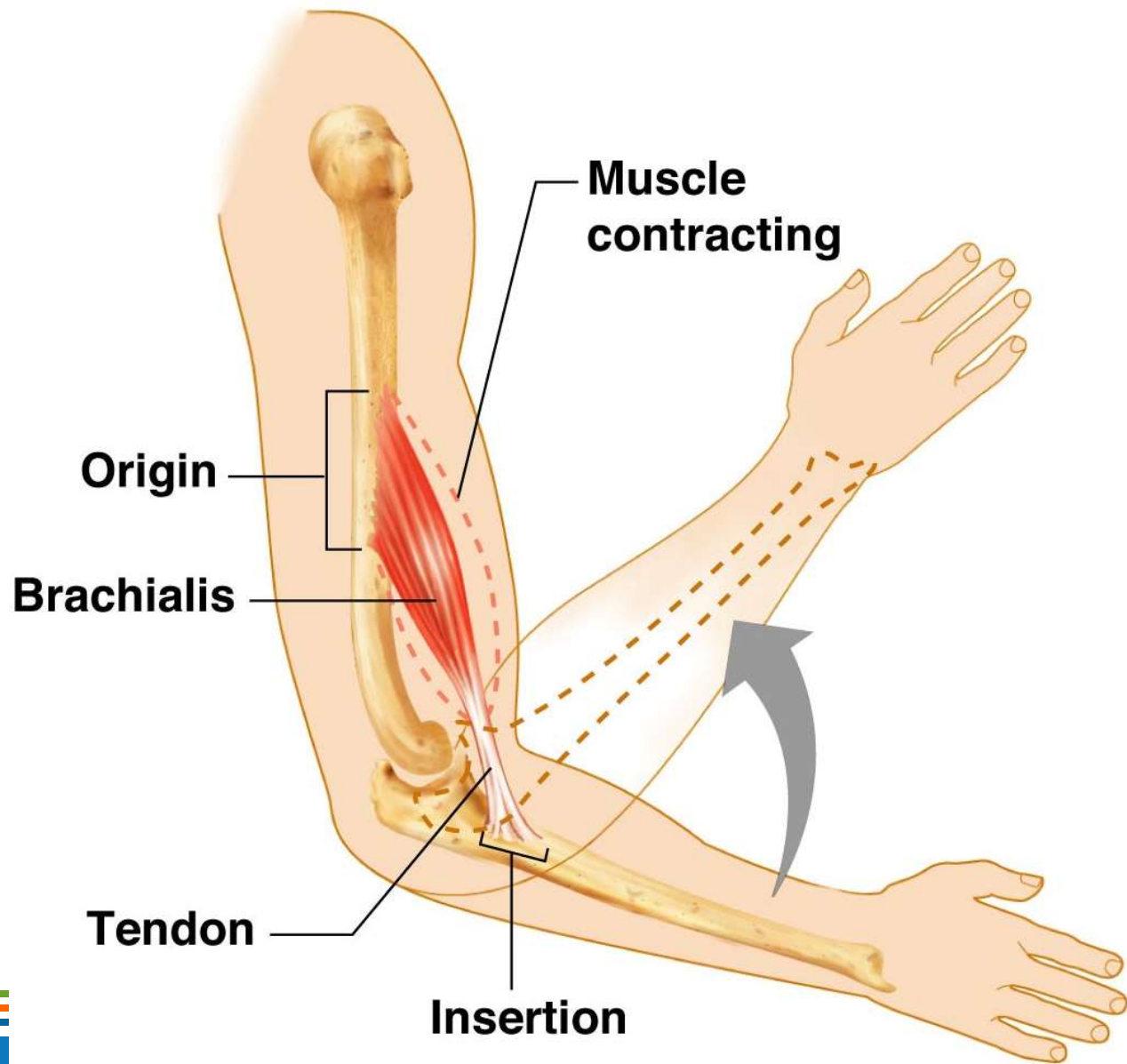


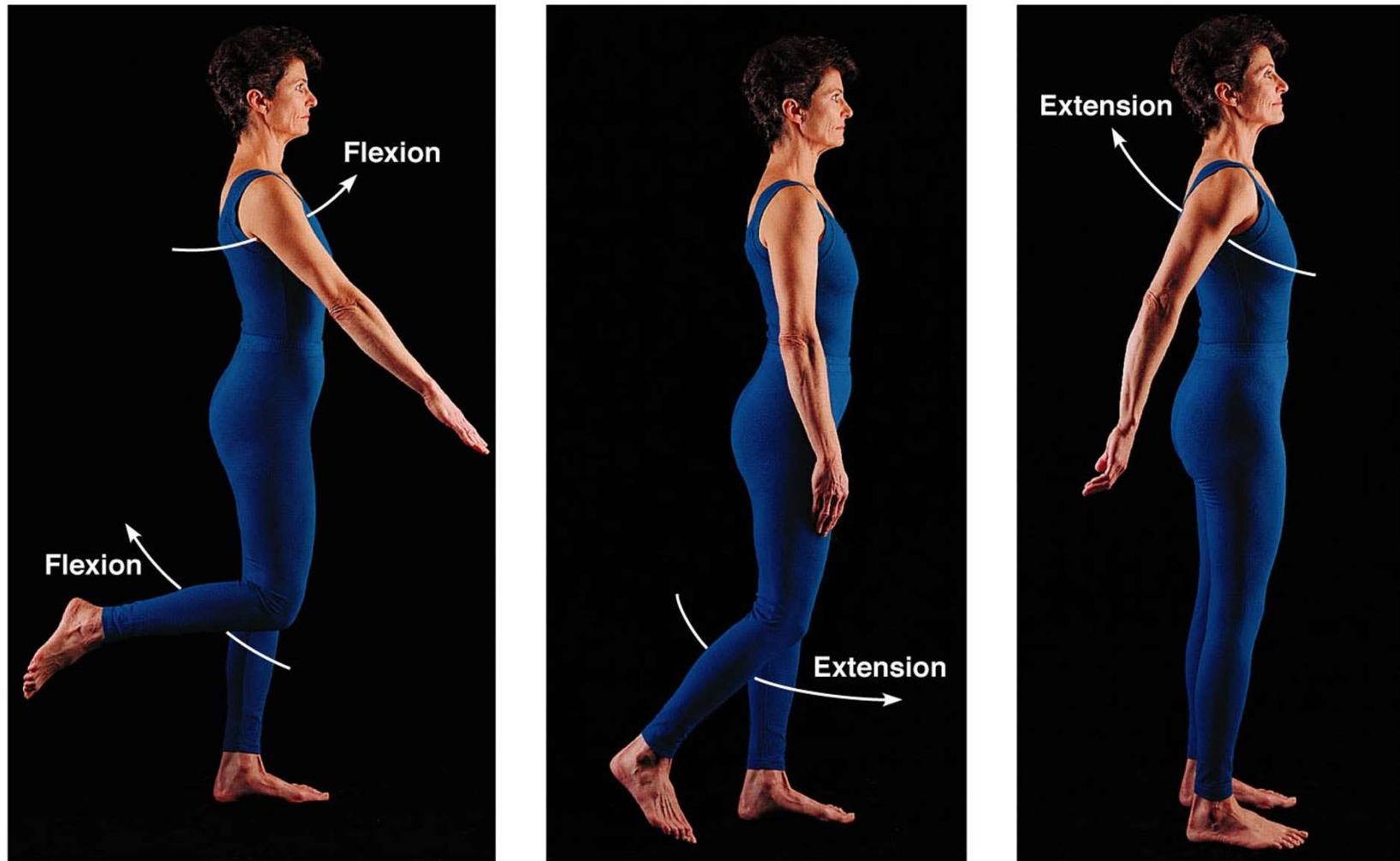
Figure 6.12

# Types of Ordinary Body Movements

---

- **Flexion**
  - **Decreases** the angle of the joint
  - Brings two bones **closer** together
  - Typical of hinge joints like **knee** and **elbow**
- **Extension**
  - Opposite of flexion
  - **Increases** angle between two bones
  - **Hyperextension**: increases angle of a joint more than 180 degrees

# Types of Ordinary Body Movements



(a) Flexion and extension of the shoulder and knee

Figure 6.13a

# Types of Ordinary Body Movements

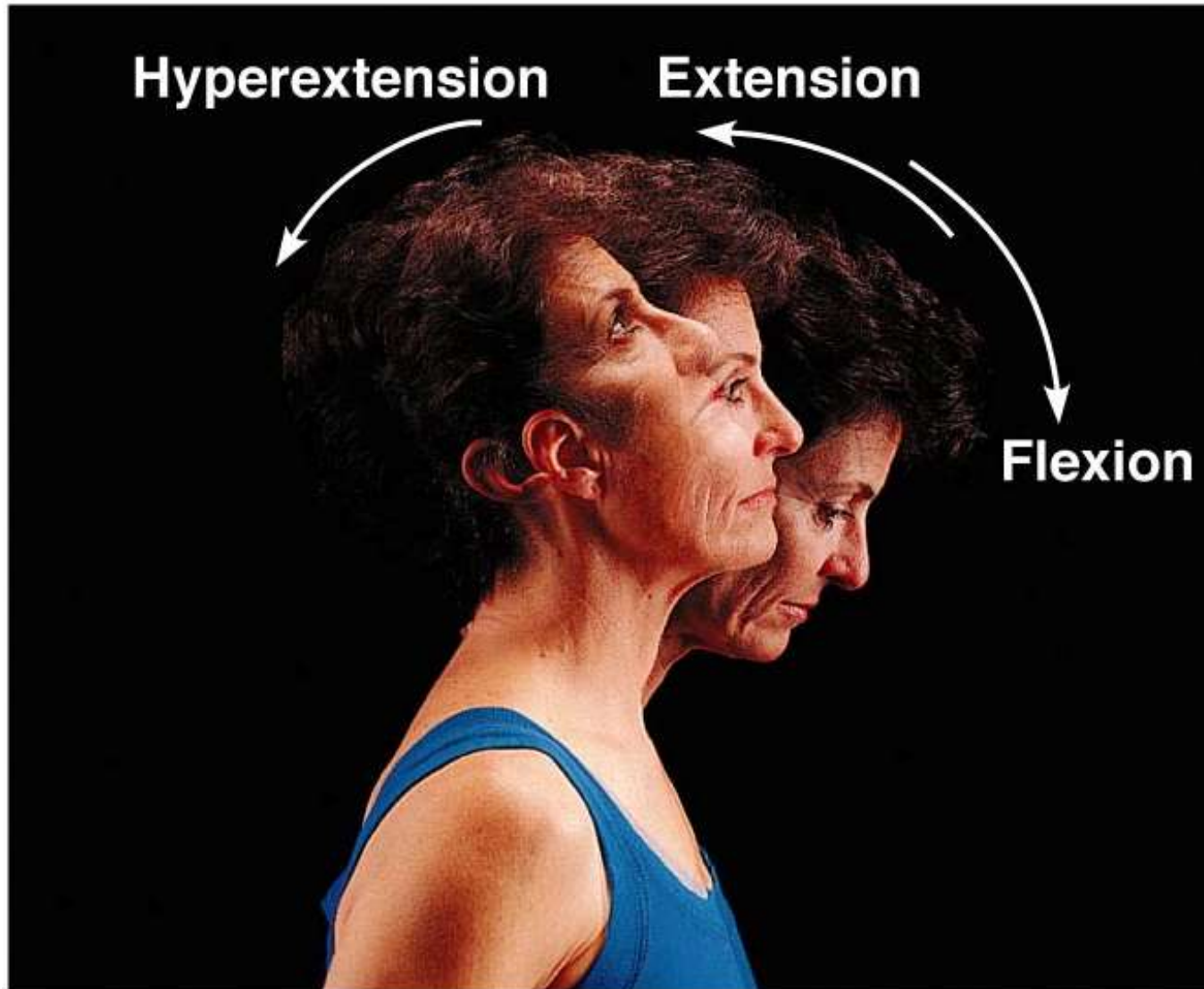
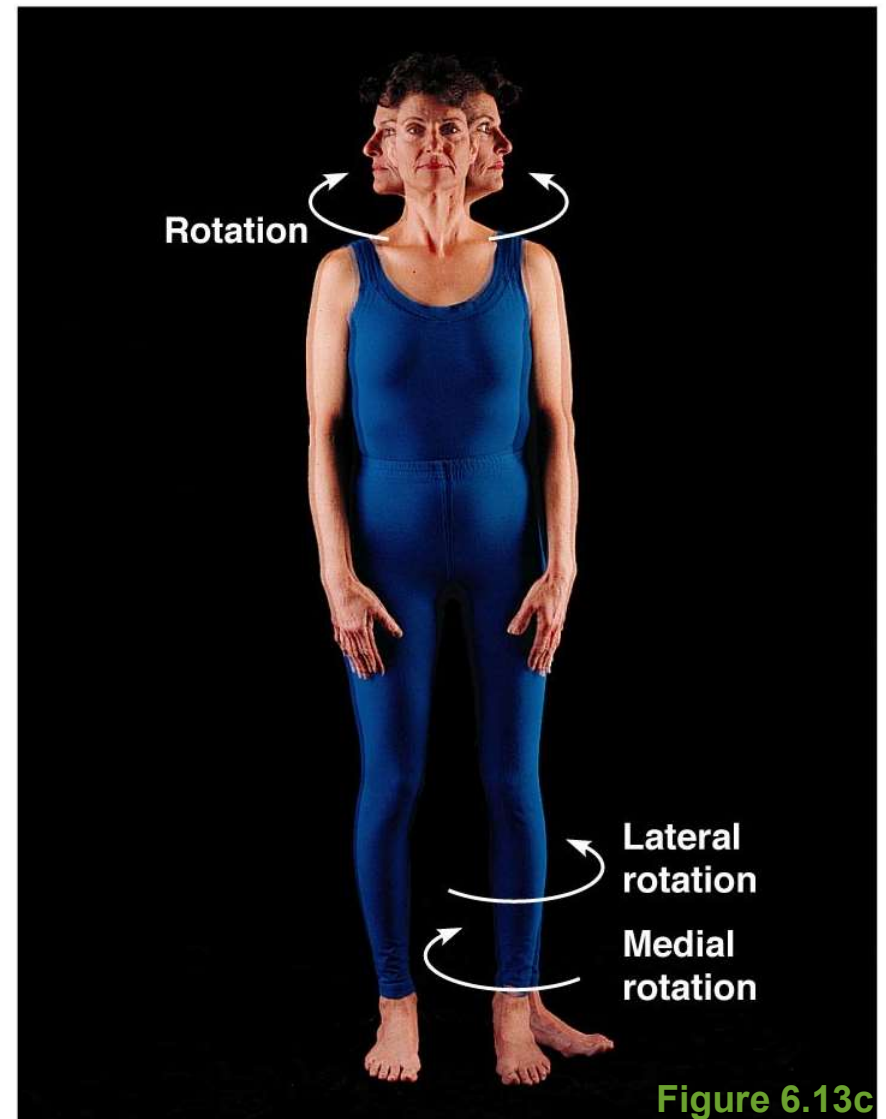


Figure 6.13b

**(b) Flexion, extension, and hyperextension**

# Types of Ordinary Body Movements

- **Rotation**
  - Movement of a bone around its **longitudinal axis**
  - Common in **ball-and-socket joints**
  - Example: moving the **atlas** around the **dens of axis** (shake your head “no”)



(c) Rotation



# Types of Ordinary Body Movements

- **Abduction**
  - Movement of a limb **away from** the midline
- **Adduction**
  - Opposite of abduction
  - Movement of a limb **toward** the midline

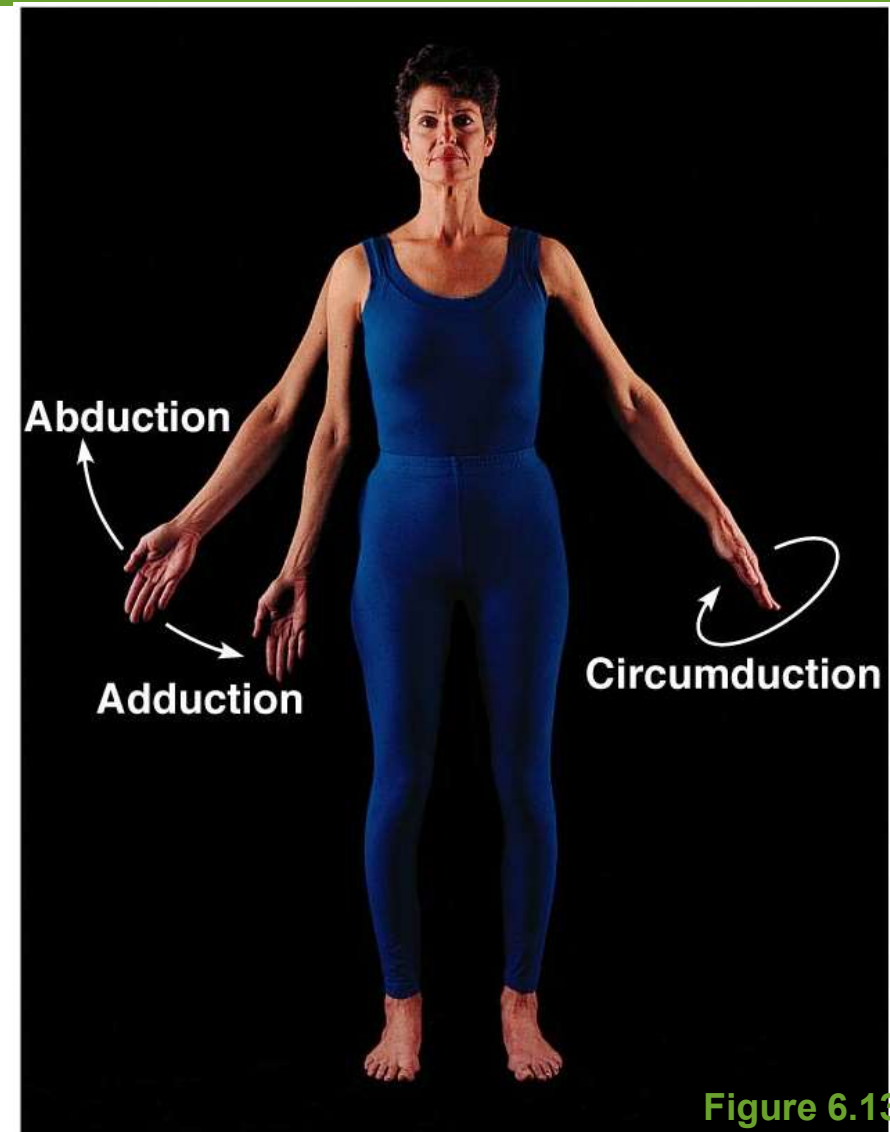


Figure 6.13d

(d) Abduction, adduction, and circumduction

# Types of Ordinary Body Movements

- **Circumduction**
  - **Combination of flexion, extension, abduction, and adduction**
  - **Common in ball-and-socket joints**

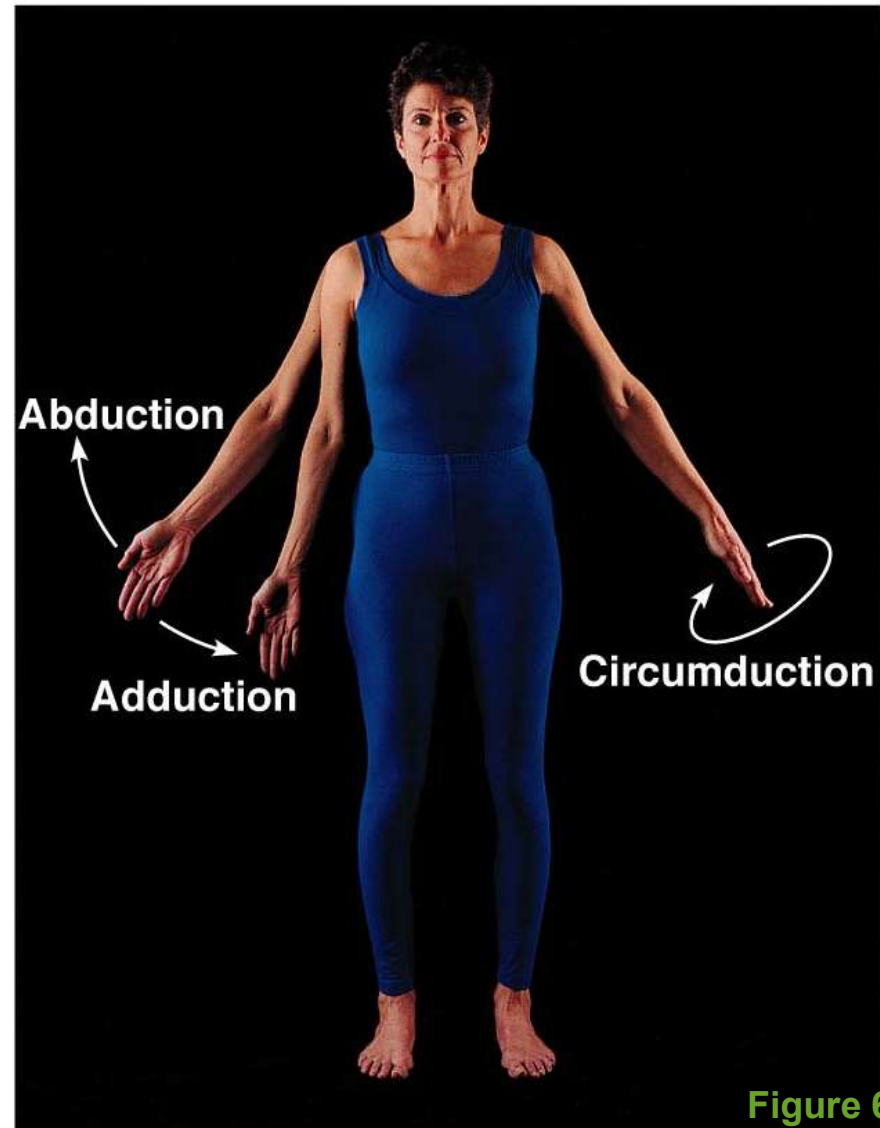
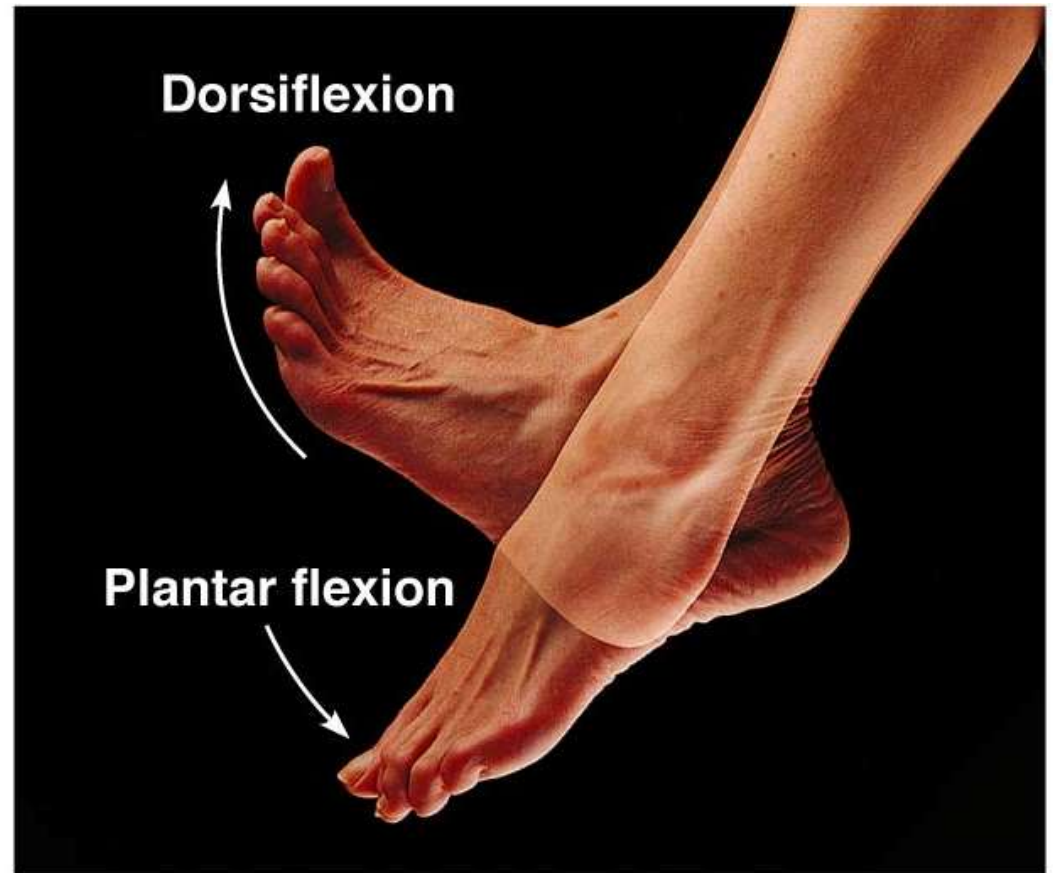


Figure 6.13d

(d) Abduction, adduction, and circumduction

# Special Movements

- **Dorsiflexion**
  - Lifting the **foot** so that the superior surface approaches the **shin**
- **Plantar flexion**
  - Depressing the **foot** (pointing the **toes**)



(e) Dorsiflexion and plantar flexion

Figure 6.13e

# Special Movements

- **Inversion**
  - Turn **sole** of foot **medially**
- **Eversion**
  - Turn **sole** of foot **laterally**



(f) Inversion and eversion

Figure 6.13f

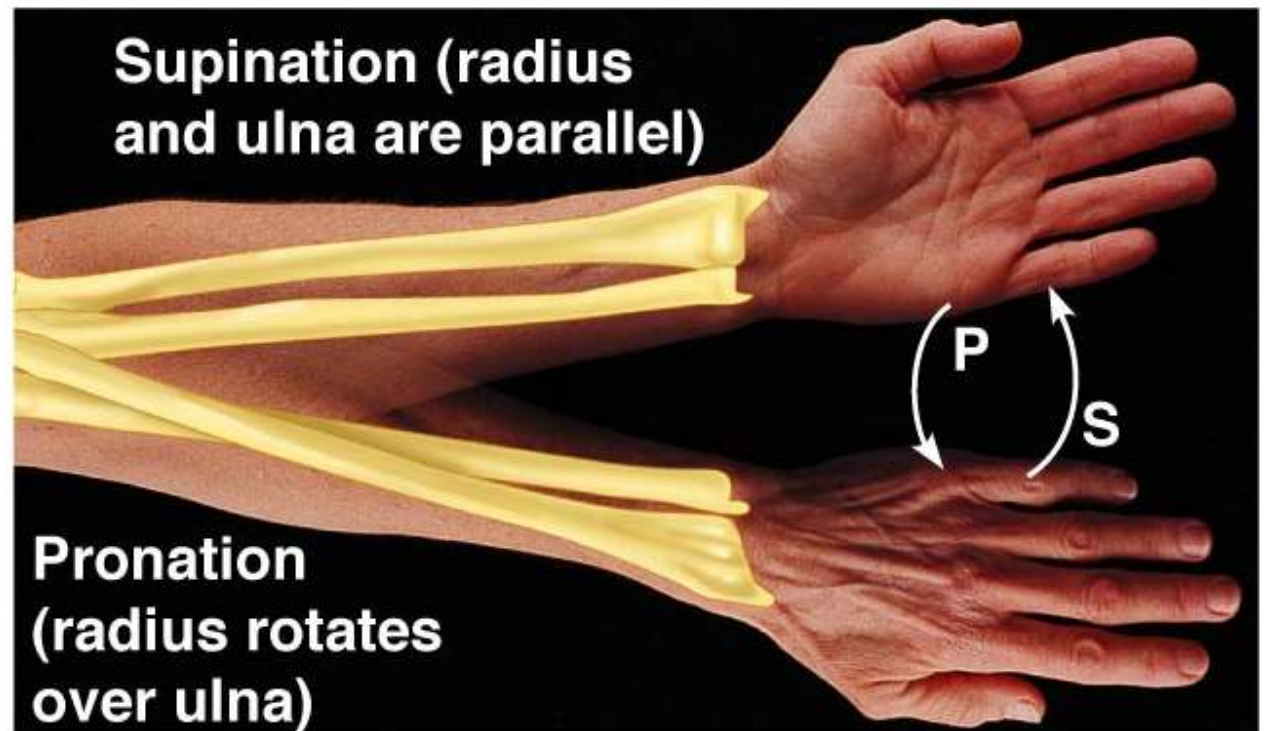
# Special Movements

- **Supination**

- **Forearm** rotates **laterally** so **palm faces anteriorly**

- **Pronation**

- **Forearm** rotates **medially** so **palm faces posteriorly**

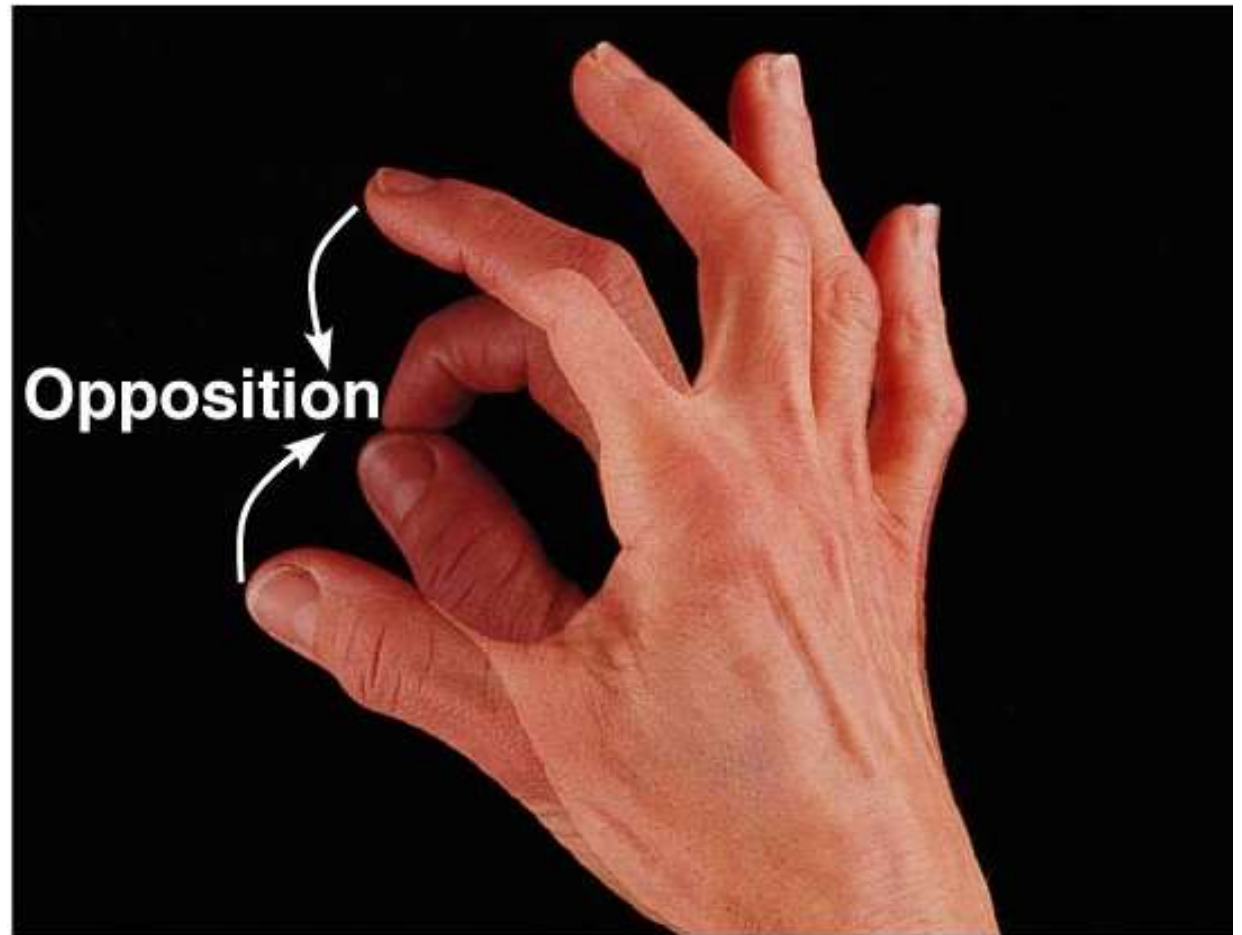


(g) Supination (S) and pronation (P)

Figure 6.13g

# Special Movements

- **Opposition**
  - Move **thumb** to touch the tips of **other fingers** on the same hand



**(h) Opposition**

Figure 6.13h



flexion of leg



extension of leg



adduction of thigh

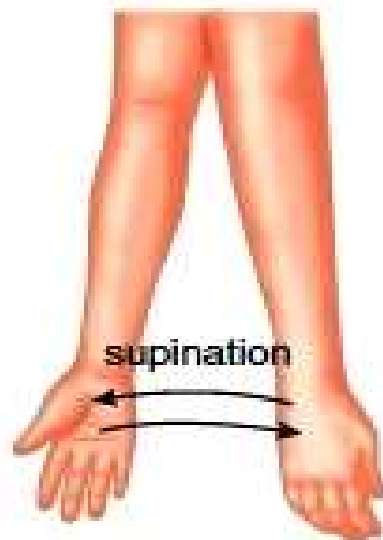


abduction of thigh

a. Angular movements



rotation of arm



pronation of hand



inversion



eversion

b. Circular movements

c. Special movements