Joints

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Joints

- Joint is a junction between two or more bone or cartilage
- It is a devise that permits movements

Classification of Joints

A. Structural Classification

1. Fibrous joints

- Sutures -e.g (intranasal suture, interparietal suture)
- Syndesmosis- bone are connected by interosseous ligaments e.g (inferior tibiofibular joint)
- Gomphosis- e.g (root of the teeth in bony sockets)

2. Cartilaginous joints

- Primary cartilaginous joints or synchondrosis- e.g (Joint between epiphysis and diaphysis, costochondral joints)
- Secondary cartilaginous joints or symphysis- e.g (symphysis pubic , intervertebral joints)

3.Synovial Joints

- Ball ad socket joints
- Saddle joints
- Condylar joints
- Ellipsoid joints
- Hinge joints
- Pivot joints
- Plane joints

B. Functional Classification

- Synarthrosis (immovable) like fibrous joints

e.g Suture of skull

- Amphiarthrosis (slightly movable)like cartilaginous joints

e.g intervertebral disc

- Diarthrosis (freely movable) like synovial joints

C. Regional Classification

1. Skull type-immovable
2. Vertebral type-slightly immovable
3. Limb type- freely movable

D. According to number of articulating bone

1. Simple joint-When two bone articulate. e.g (interphalangeal joint)
2. Compound joint-When more then two bone articulate within one capsule. e.g (elbow joint, wrist joint)
3. Complex joint-When joint cavity is divided by two articular disc e.g (temporomandibular joint, sternoclavicular joints)

SYNOVIAL JOINTS

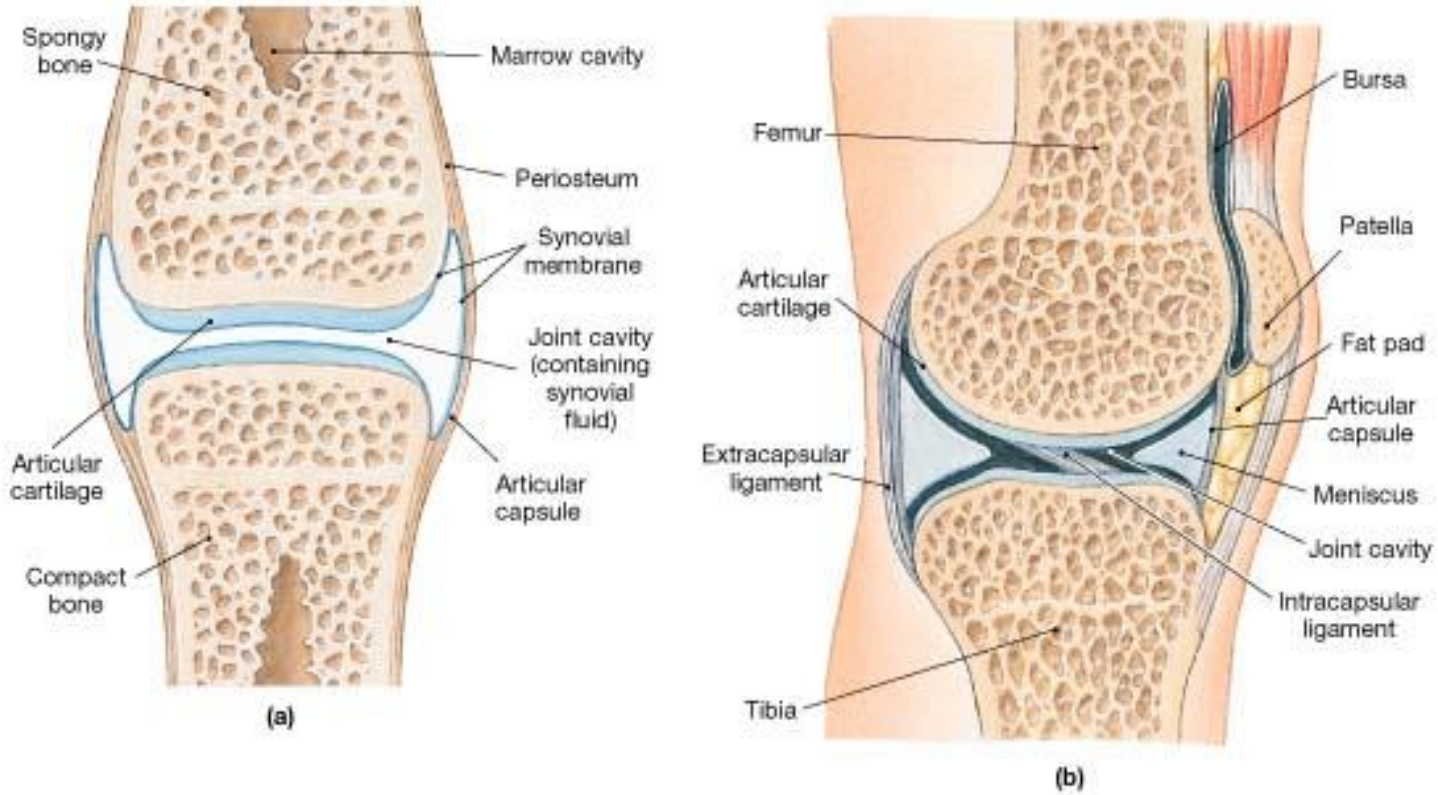
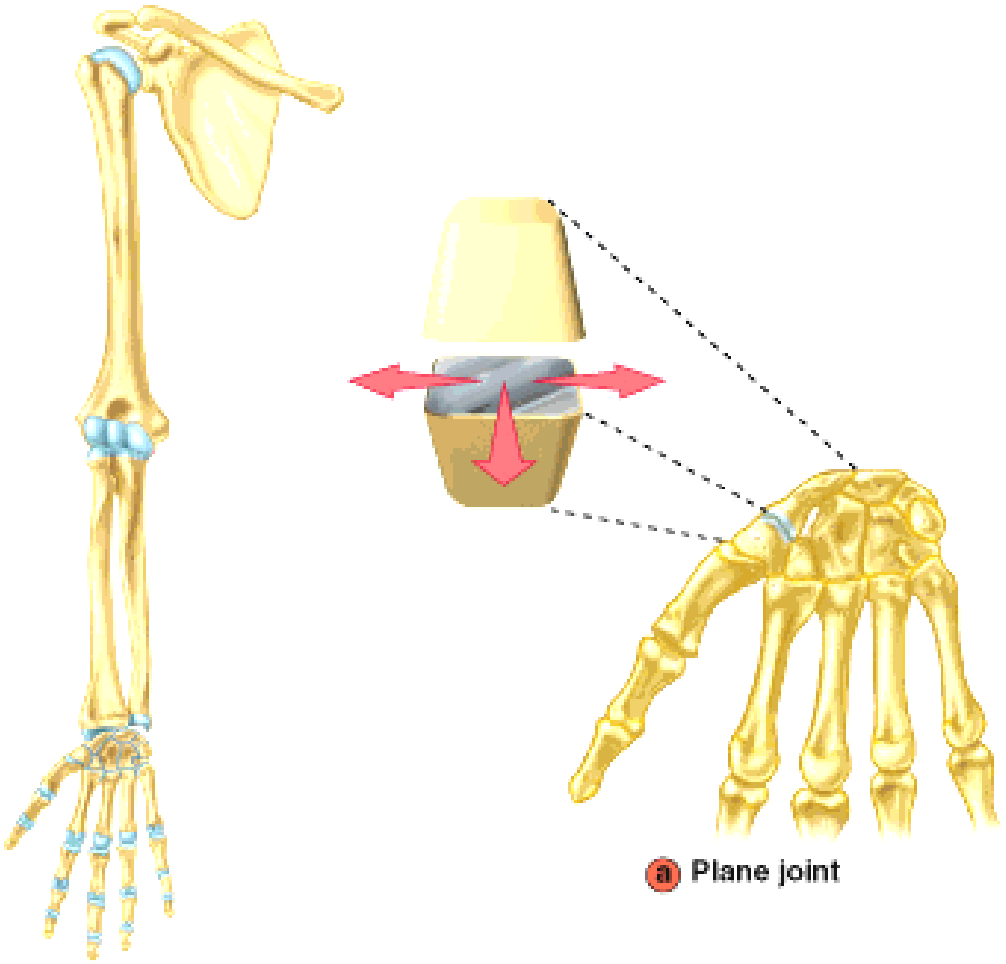


FIGURE 9-1 The Structure of a Synovial Joint. **(a)** Diagrammatic view of a simple articulation. **(b)** A simplified sectional view of the knee joint.

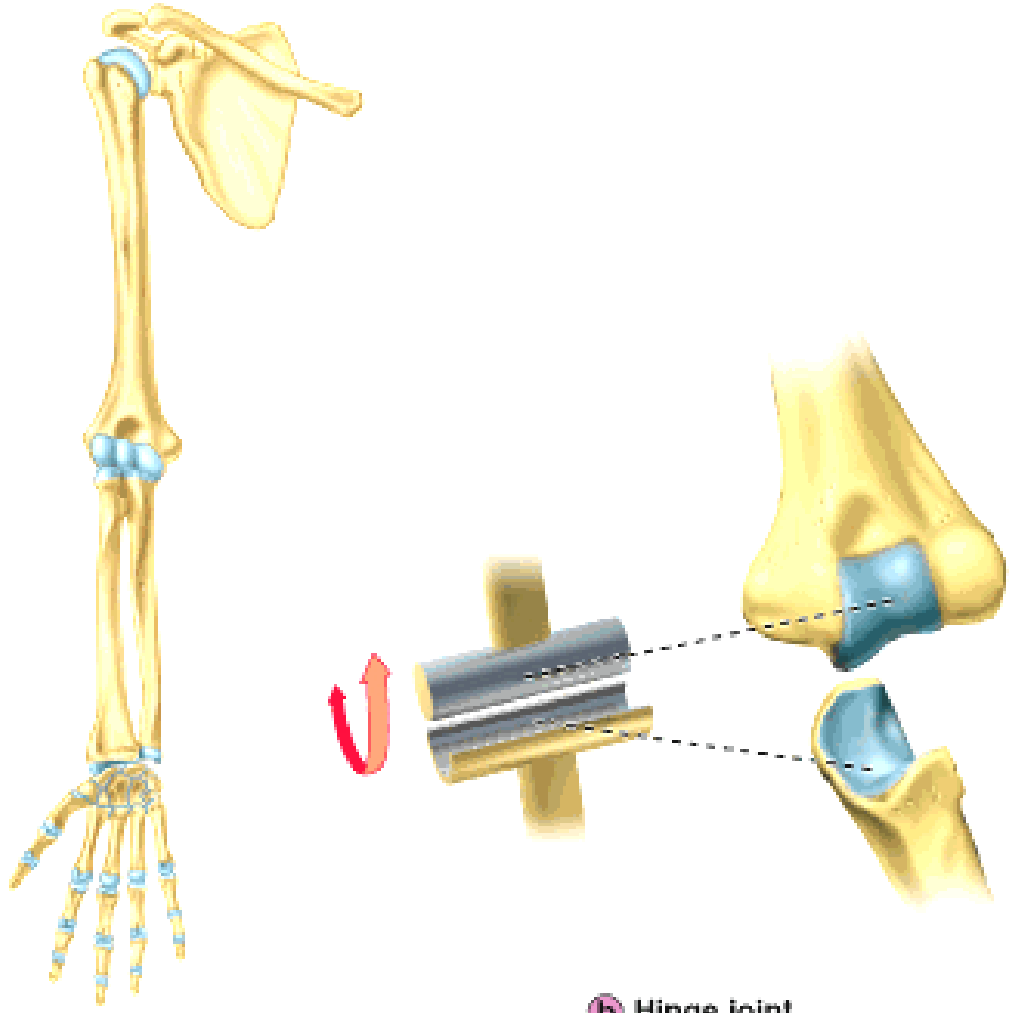
Types of Joint	Type of movement	Example
Ball and socket joints	Flexion and Extension, Abduction and Adduction, Circumduction and Rotation	Shoulder joints, Hip joints
Saddle joints	Flexion and Extension, Abduction and Adduction	Sternoclavicular joints, first carpometacarpal joints
Condylar joints	Flexion, Extension and limited rotation	Knee joints, Temporomandibular joints

Types of Joint	Type of movement	Examples
Hinge joints	Flexion and Extension	Elbow joints, Ankle joints, Interphalangeal joints
Ellipsoid joints	Flexion and Extension, Abduction and Adduction, Circumduction	Wrist joints, Metacarpophalanageal joints
Pivot joints	Rotation only	Superior and inferior radio-ulnar joints, atlanto- axial joints
Plane joints	Gliding movement	Intercarpal joints, Intertarsal joints, circothyroid joints

Inter carpal joints



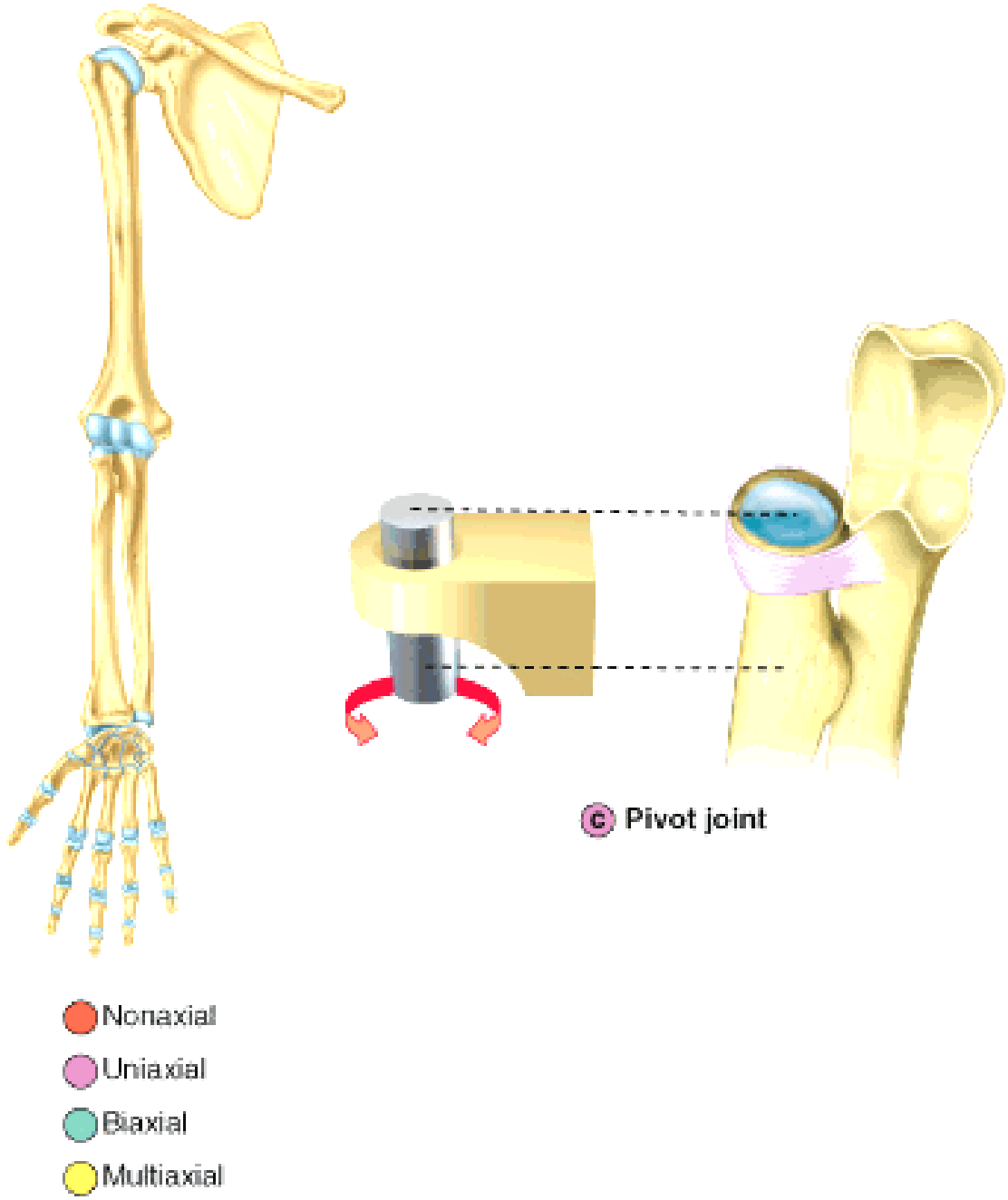
Elbow joint



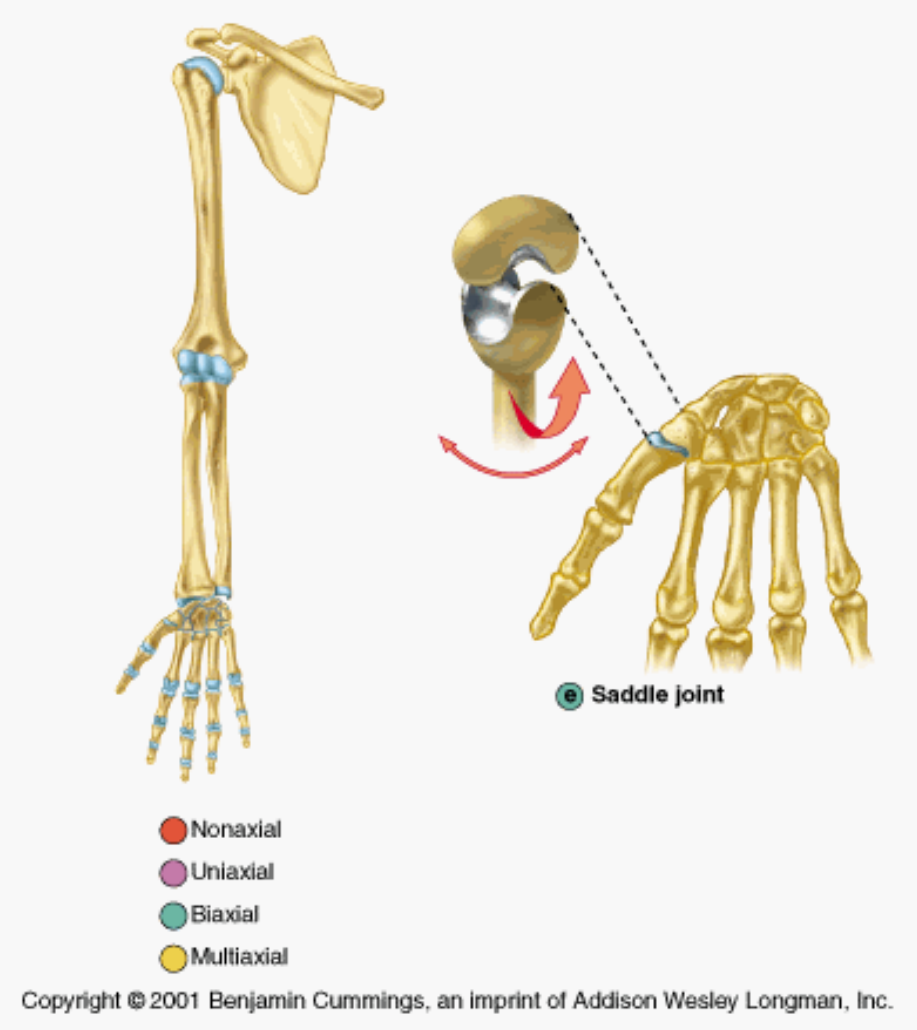
(b) Hinge joint

Nonaxial
Uniaxial
Biaxial
Multiaxial

Superior radio ulnar joint



First carpometacarpal joint



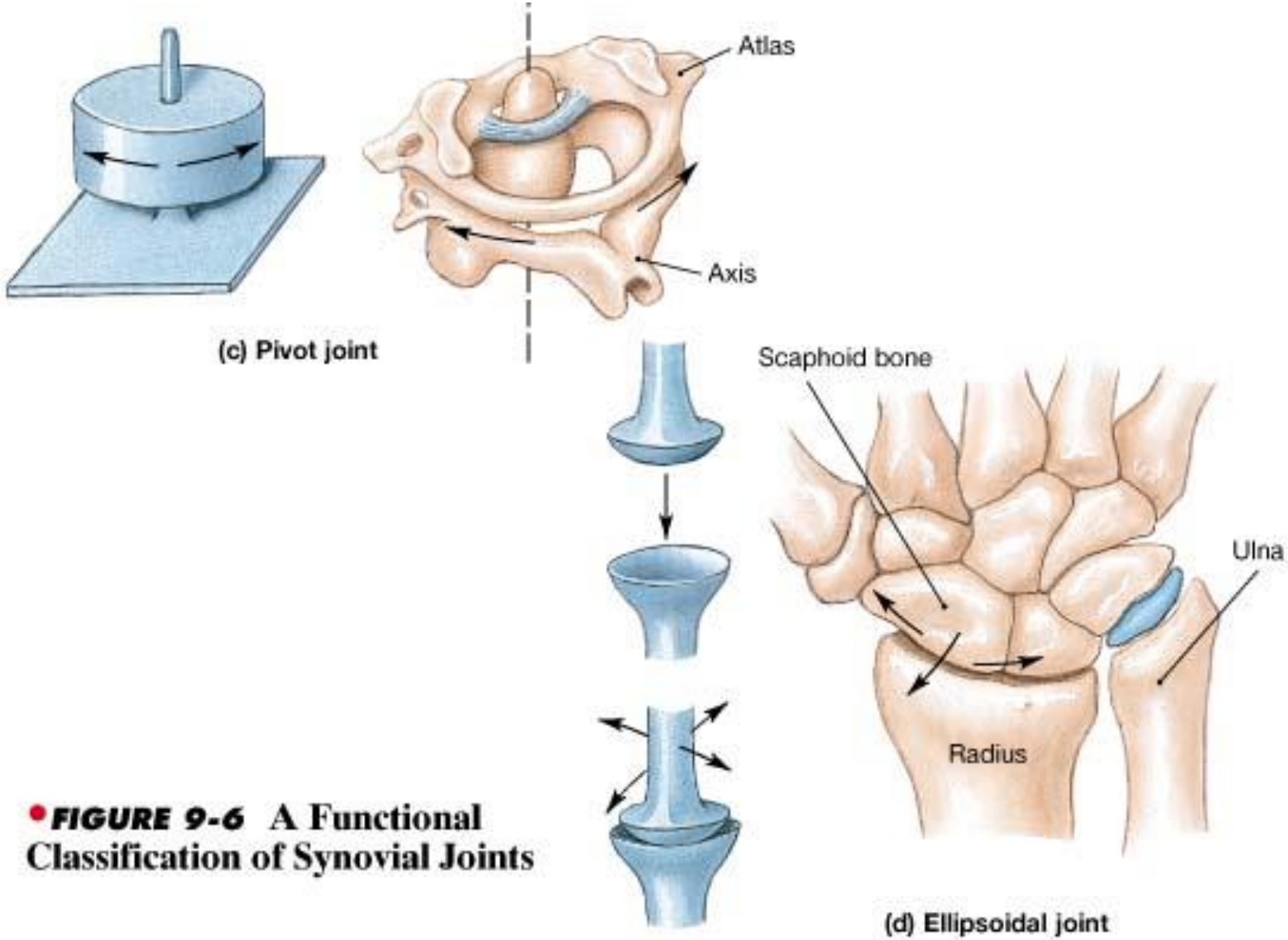
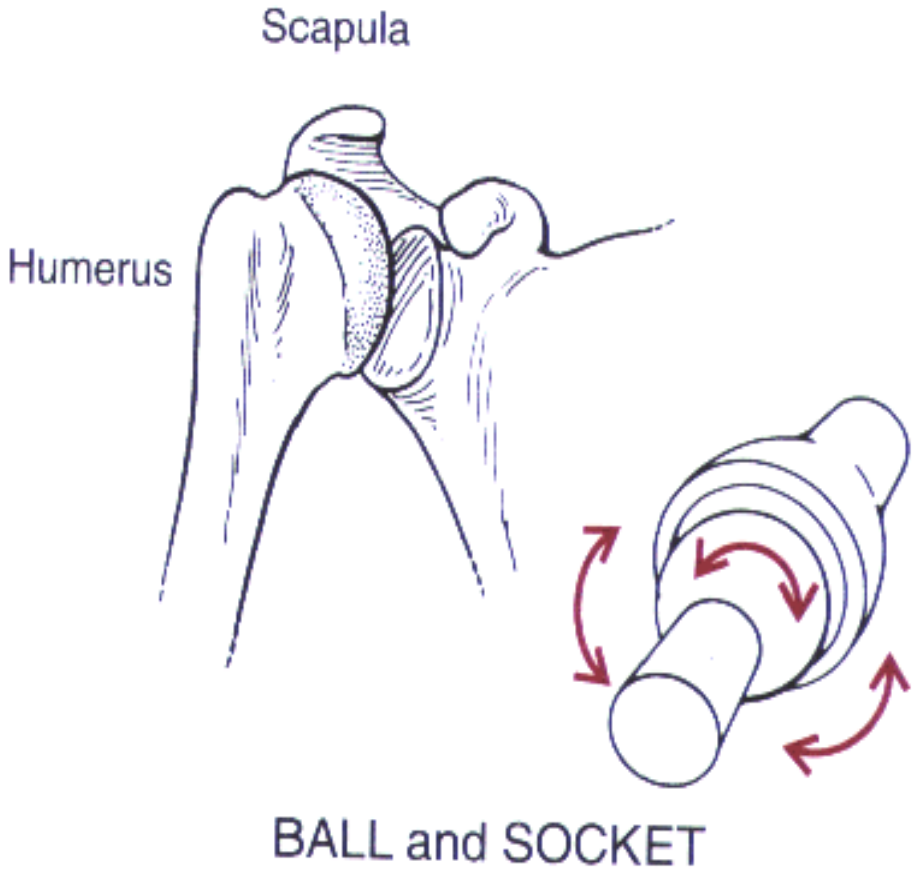


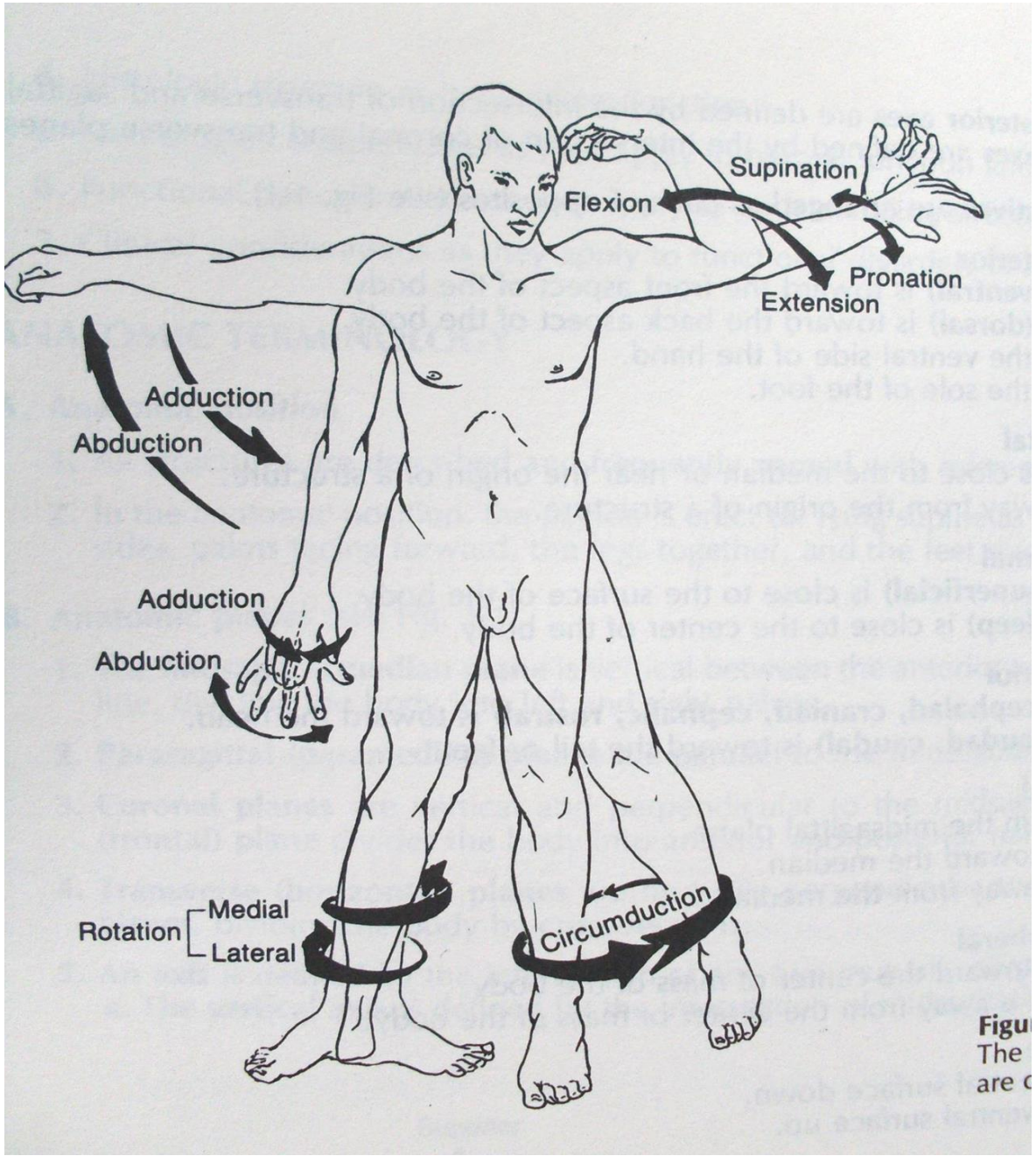
FIGURE 9-6 A Functional Classification of Synovial Joints

Ball and Sockets Joints

- **Ball + Socket**: spherical head + round socket
  - multiaxial movement
  - (eg) shoulder, femur,



Movements
At joints



Flexion and Extension

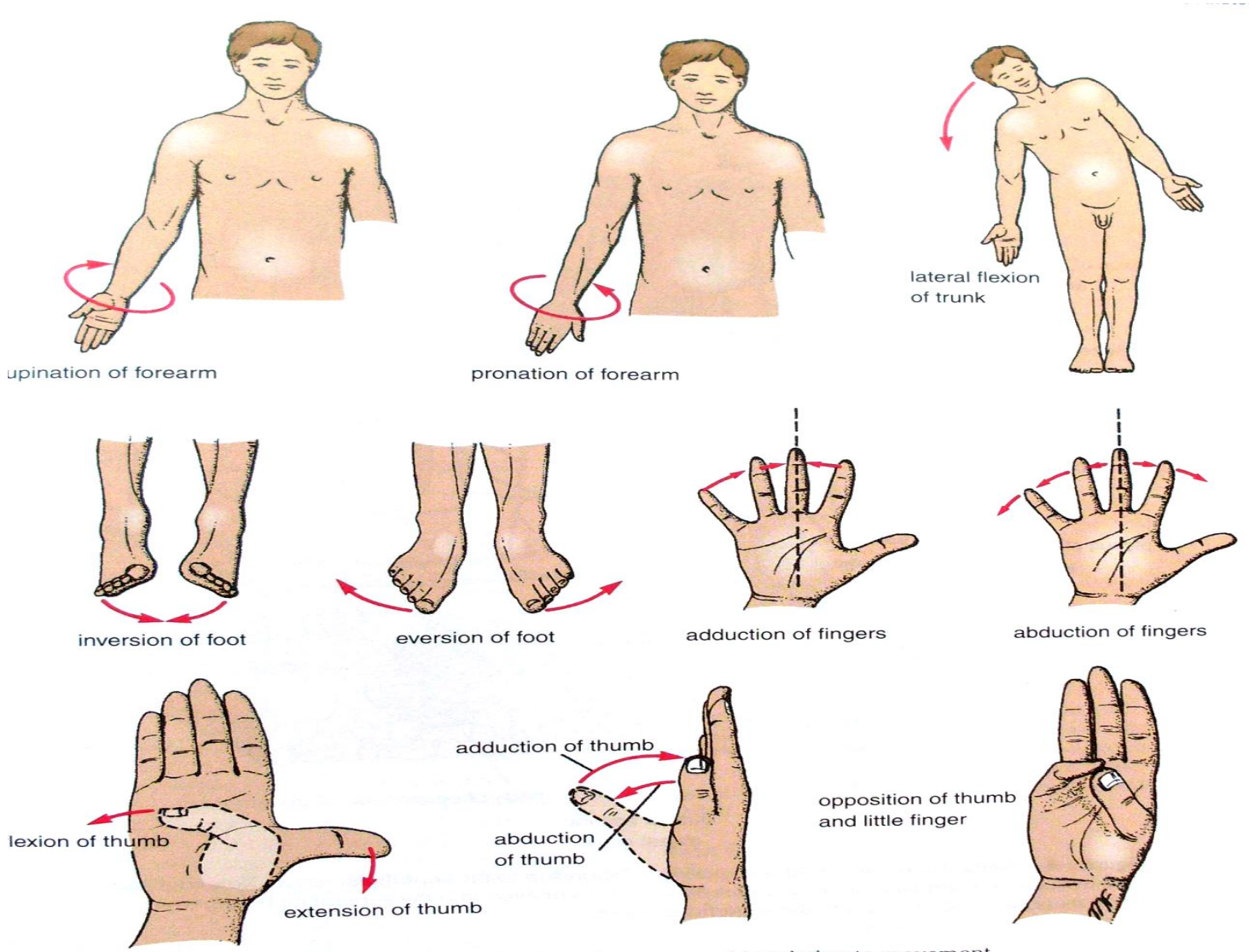
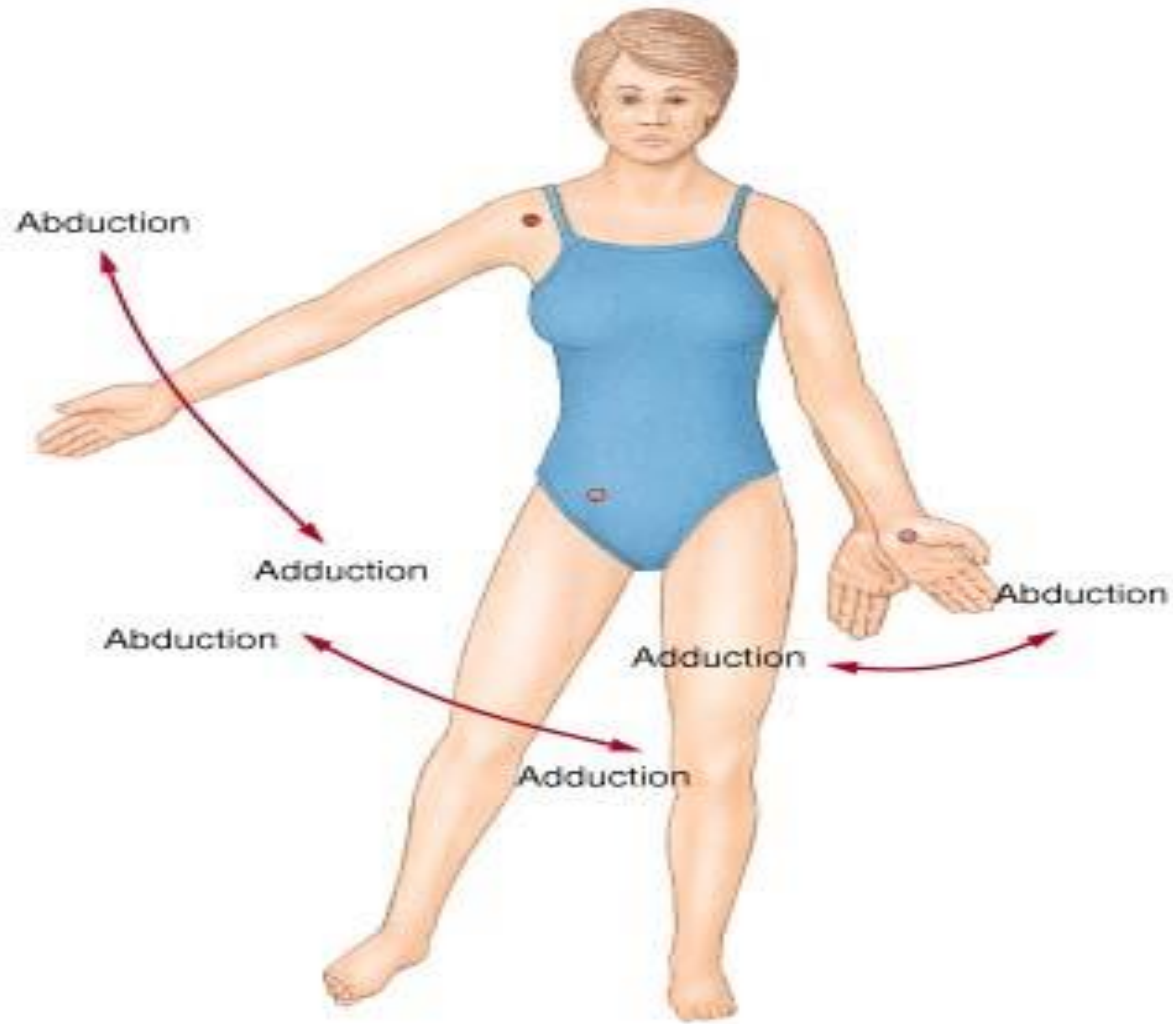


Figure 1-3 Additional anatomic terms used in relation to movement.

Abduction-Adduction

FIGURE 9-3 Angular Movements. The red dots indicate the locations of the joints involved in the illustrated movement.



Rotation

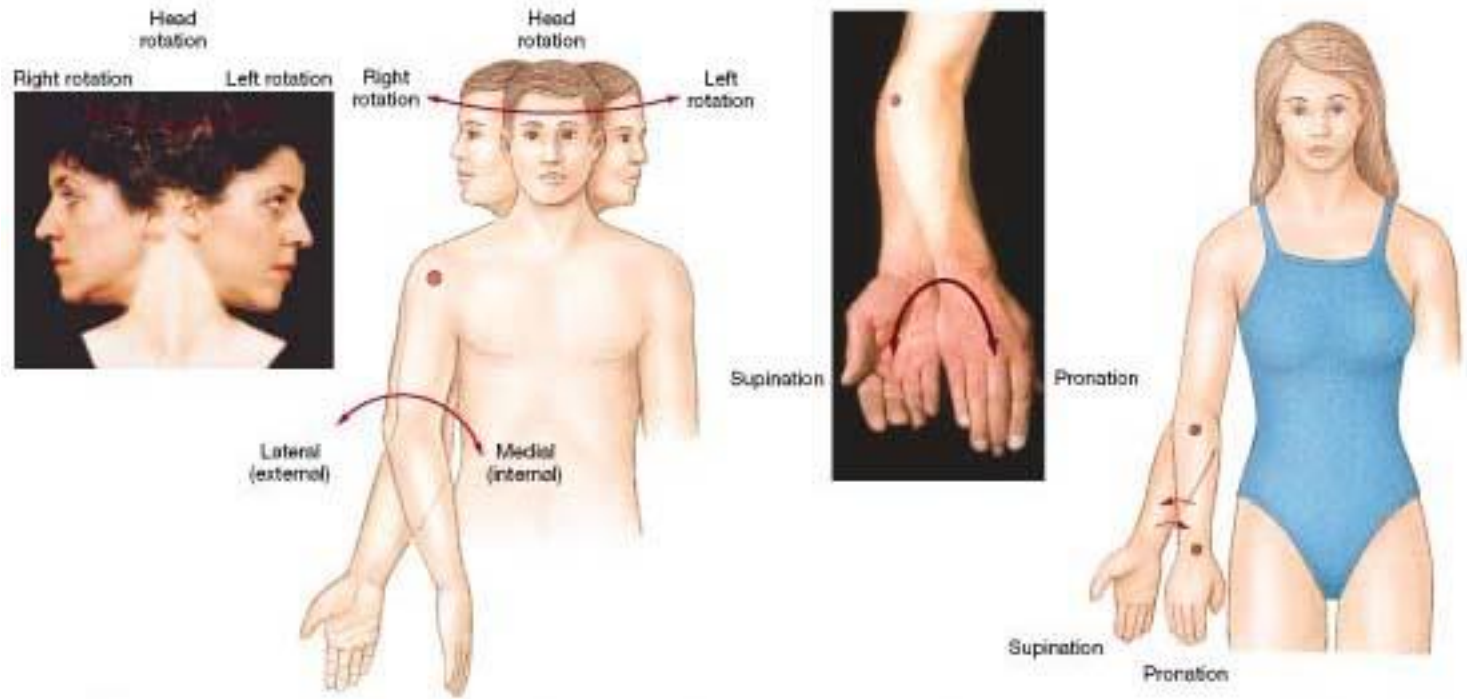


FIGURE 9-4 Rotational Movements. The red dots indicate the locations of the joints involved in the illustrated movement.

Factors limiting joint movements

- Stretching of ligaments & capsule.
- Stiff ligaments reducing flexibility at the joint .
- Excessive tone of opposing muscles.
- Shape of articulating surfaces
- Deep socket in hip joint
- Perfect fit of joint surfaces

Thank You