Articulation (Joints)

Objective

- Discuss the general structure and purpose of articulations.
- Identify types of joints.
- Differentiate types of movement around articulations.

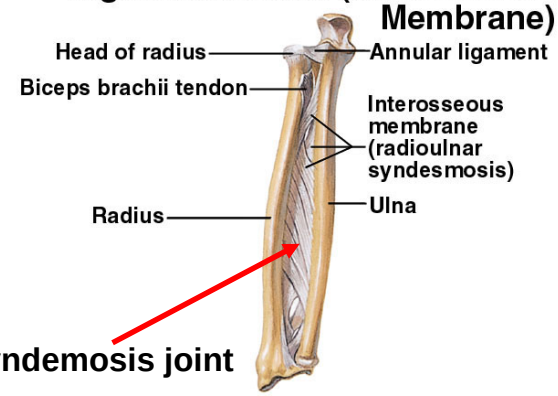
Classification of Joints

- Categorized structurally based on:
  (1) the type of connective tissue that binds articulation surface of the bones
  (2) whether a space occurs between the articulating bones.
    ~ fibrous (connect by dense connective tissue)
    ~ cartilaginous (joint by cartilage)
    ~ synovial (fluid filled)
  - based on the extend of movement they permit.
    ~ synarthosis (joined together - immobile)
    ~ amphiarthrosis (slightly movable)
    ~ diarthrosis (freely movable)

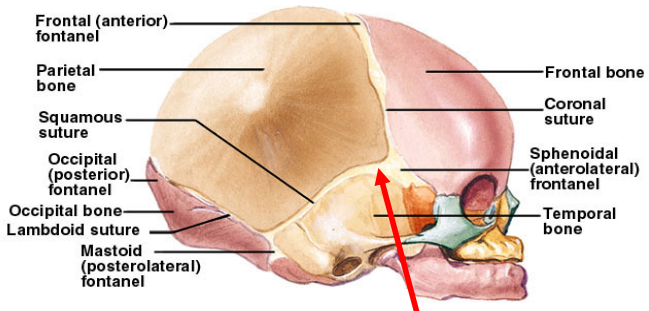
Fibrous Joint

- Structural category
  - ~ Gomphosis
    - periodontal ligaments holds tooth to bony jaws
    - eg: tooth jaw
    - synarthrosis (immobile)
  - ~ Suture
    - dense regular connective tissue
    - eg: lympoid suture (between occipital & parietal)
    - synarthrosis (immobile)
  - ~ Syndesmosis
    - dense regular connective tissue fibers between bone
    - eg: between radius ulna
    - amphiarthosis (slightly movable)

Right Radioulnar (interosseous Membrane)



Fetal Skull, Lateral View

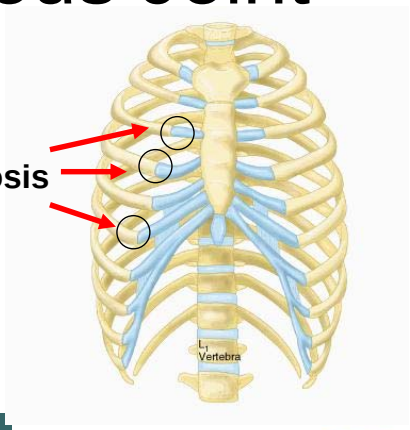


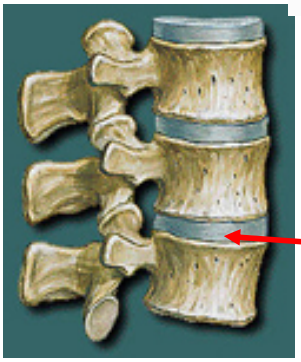
Cartilaginous Joint

- Synchondrosis
  ~ hyaline cartilage plate between bones
  ~ eg: epiphyseal plates in growing bones
  ~ synarthrosis (immobile)
- Symphysis
  ~ fibrocartilage pad between bones
  ~ eg: pubic symphysis, intervertebral disc articulations
  ~ amphiarthosis (slightly movable)

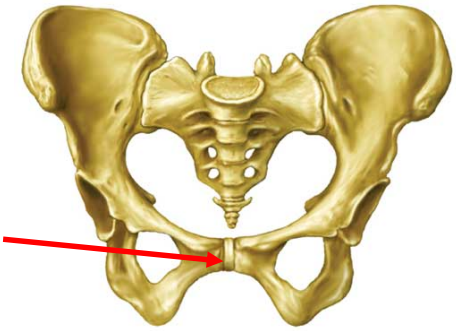
6

Cartilaginous Joint



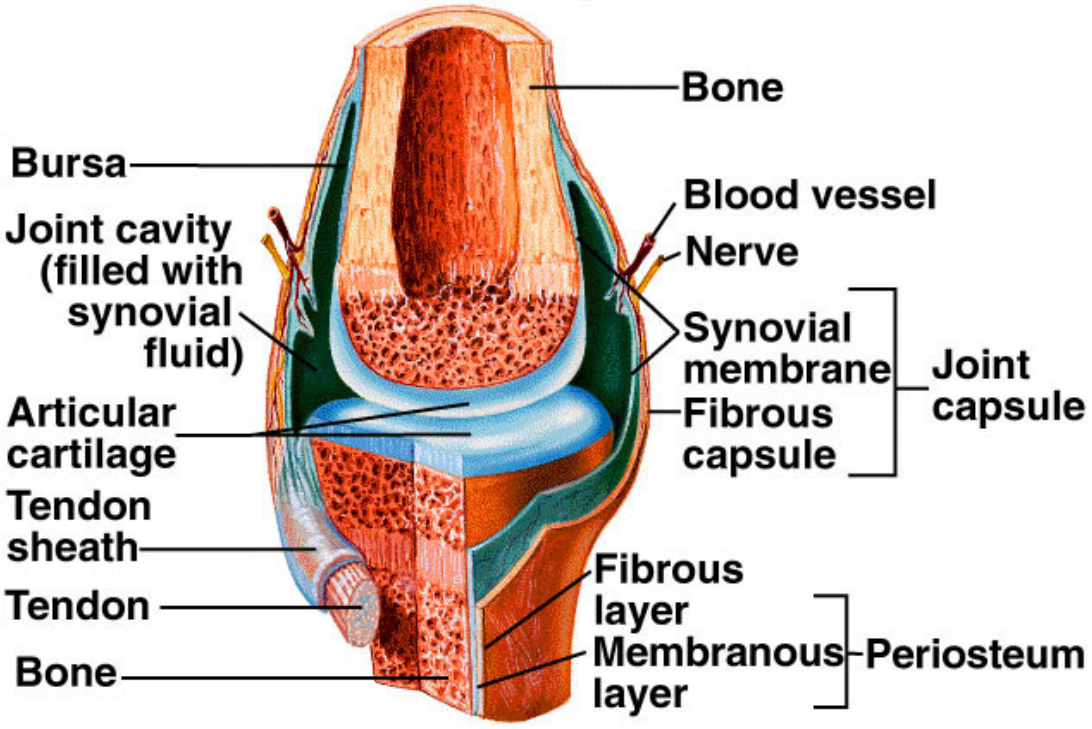


Symphysis
Joint



7

Structure of a Synovial Joint



8

Synovial Joint

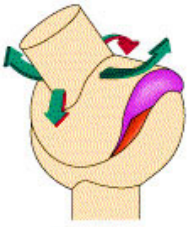
- Uniaxial
  ~ planar (intercarpal, intertarsal)
  ~ hinge (elbow)
  ~ pivot (atlantoaxial)
- Biaxial
  ~ condyloid (metacarpophalangeal)
  ~ saddle (between carpal & 1st metacarpal)
- Multiaxial
  ~ ball & socket (glenohumeral joint)

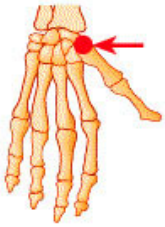
9

Types of Synovial Joints

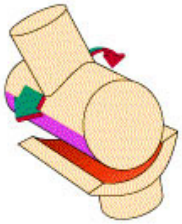
(a) Plane

(b) Saddle





(c) Hinge

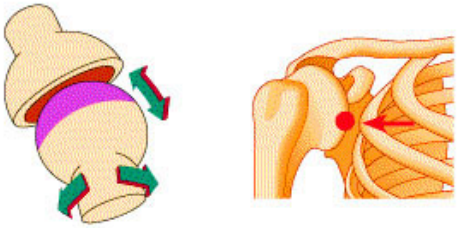


10

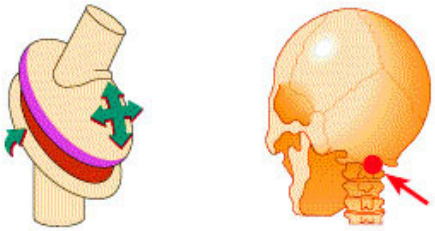
Types of Synovial Joints

(d) Pivot

(e) Ball-and-Socket



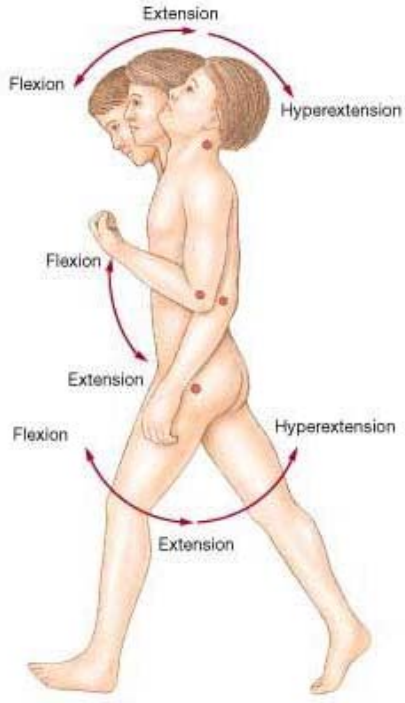
(f) Elipsoid



Movement at Synovial Joints

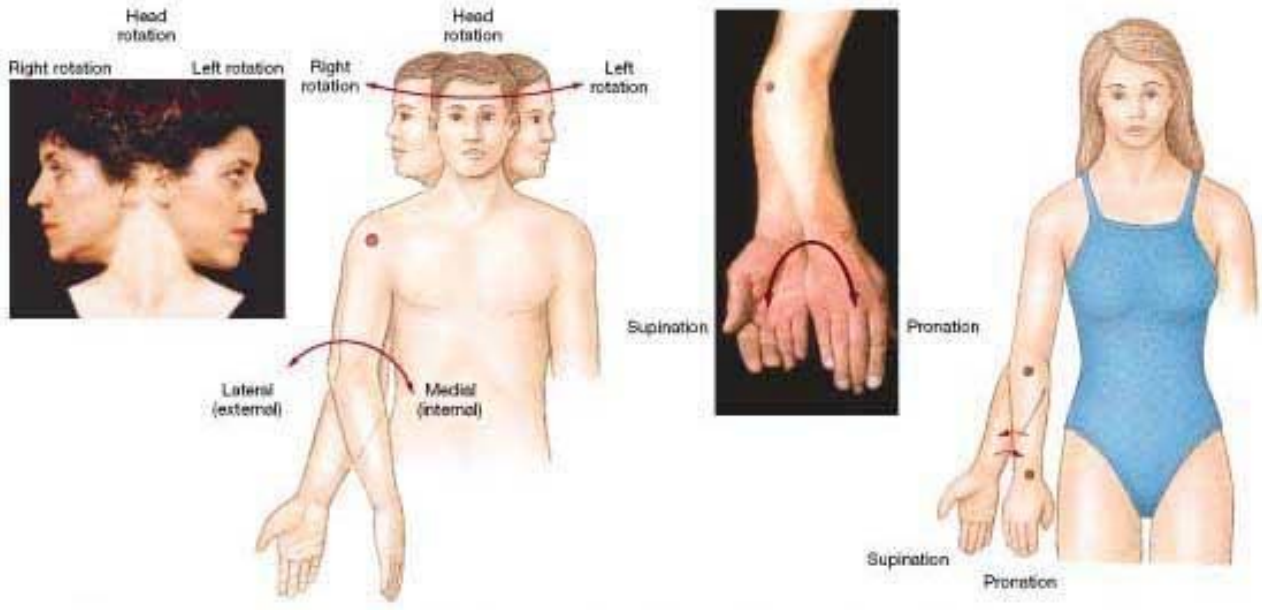
- 4 types of motion:
  - gliding
  - angular
  - rotational
  - special movement

Movement at Synovial Joints

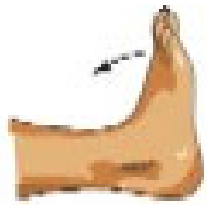


13

Movement at Synovial Joints



Movement at Synovial Joints



Dorsiflexion

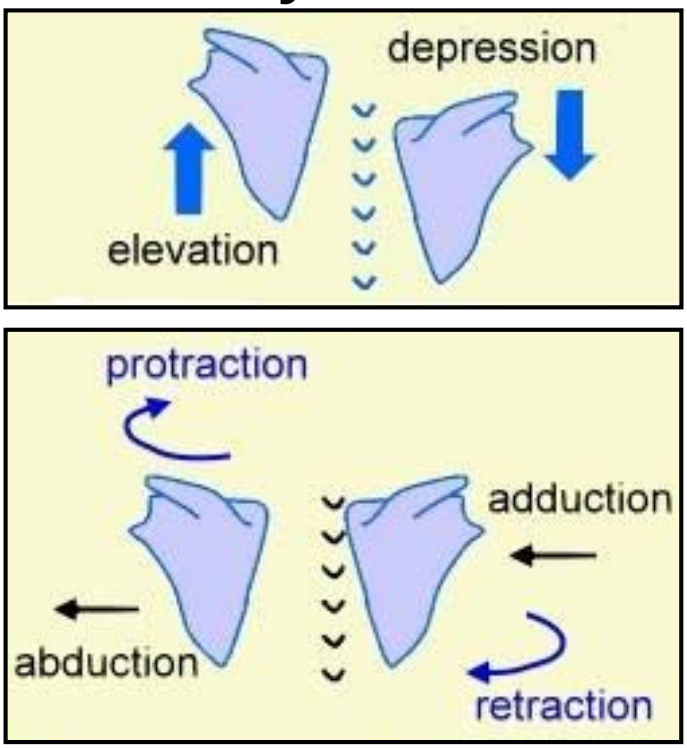
Plantarflexion

Inversion

Eversion

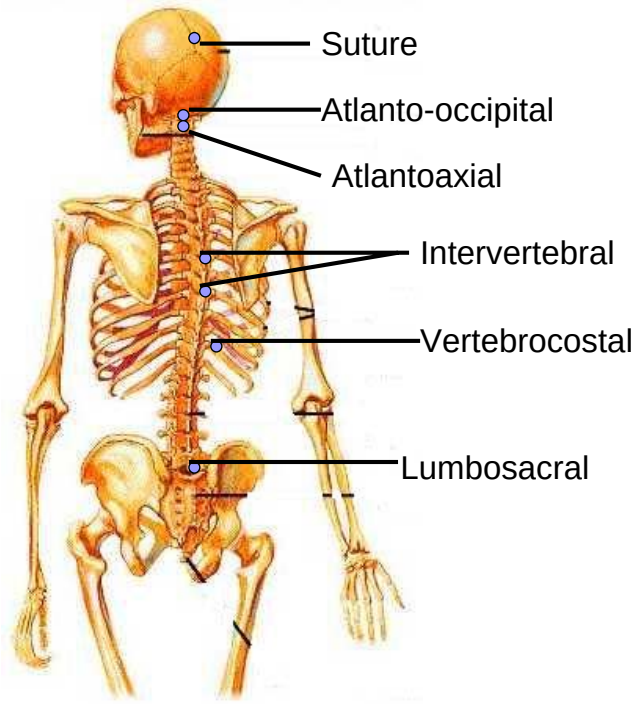
15

Movement at Synovial Joints



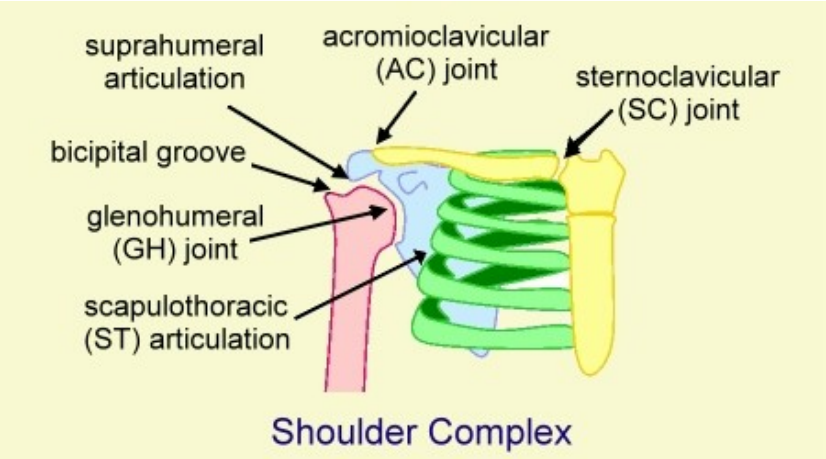
16

Axial Skeleton Joints

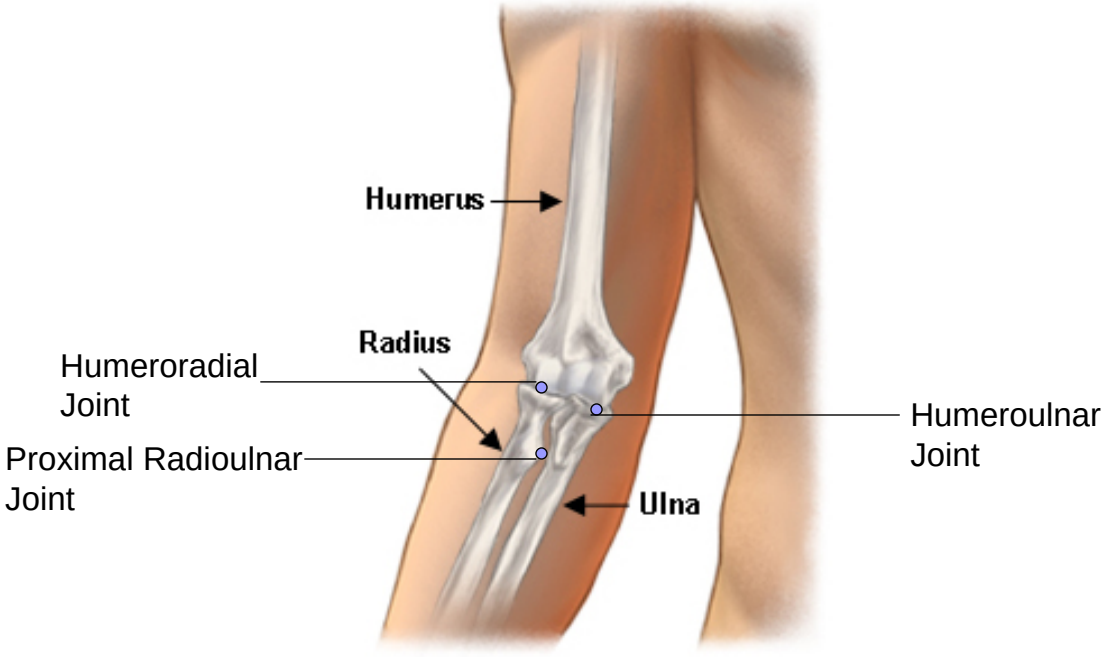


17

Shoulder Joints



Elbow Joints

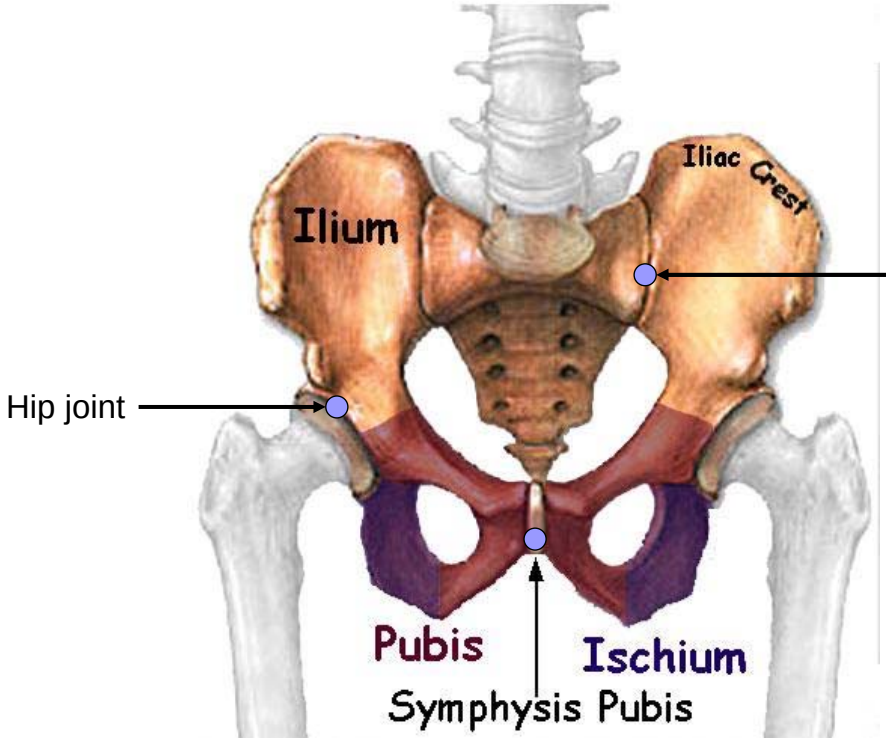


19

Wrist Joints

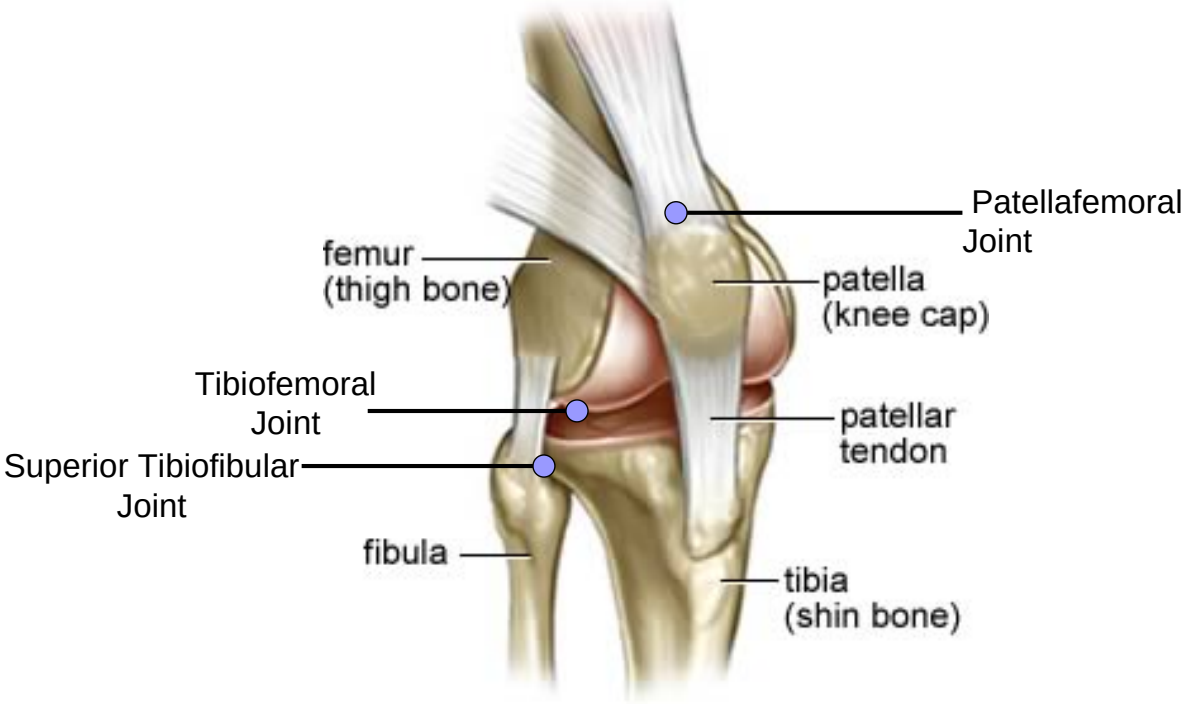
20

Pelvic Girdle Joints



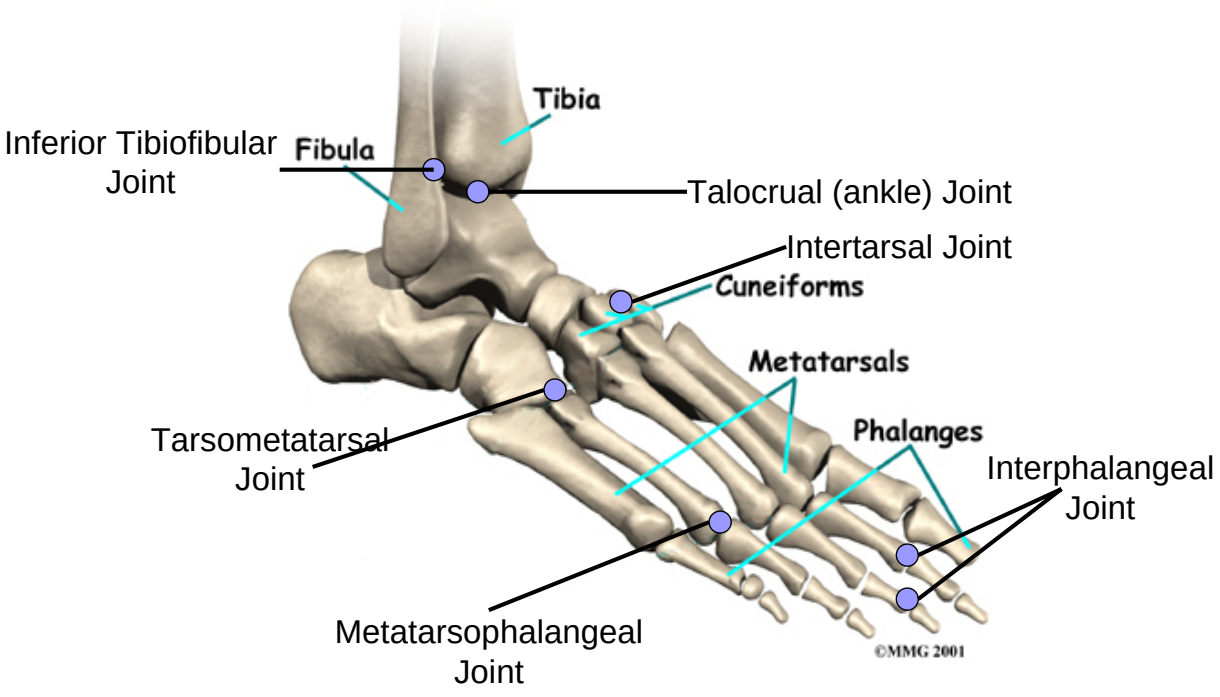
21

Knee Joints



22

Ankle Joints



23