

Joints (articulations)

Synovial (free movement)

Fibrous (limited or no movement)

Cartilaginous (limited or no movement)

synovial fluid

connected by dense C.T

connected by cartilages

1. suture in skull
2. gomphosis (teeth)
3. syndesmosis (interosseous membrane)

synarthrosis: no movement
amphiarthrosis: small degree movement
diarthrosis: free movement

1. synchondrosis: growth plate (hyaline cartilage)
2. symphysis: 1. intervertebral plate 2. pubis (fibrocartilage)

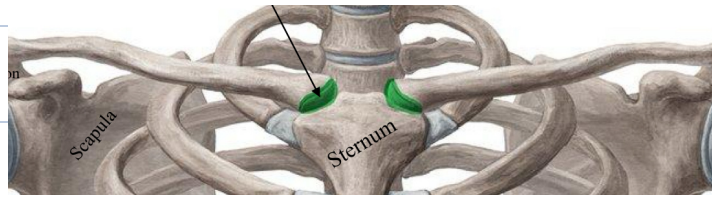
1. hinge: flexion and extension → (uniaxial)
2. Ball and socket: → (multiaxial)
3. gliding: plane → (uniaxial)
4. pivot: rotation → (uniaxial)

5. condyloid: ellipsoid } flexion, extension (biaxial)
 6. saddle: } adduction, abduction, circumduction (biaxial)
- (condyloid more limited movement)

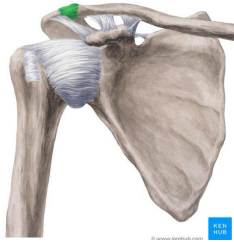
Joints of upper limb:

* Clavicle:

1. Sternoclavicular → synovial plane joint

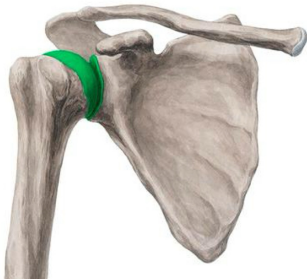


2. Acromioclavicular → synovial plane joint



* Scapula:

1. Glenohumeral → ball and socket synovial

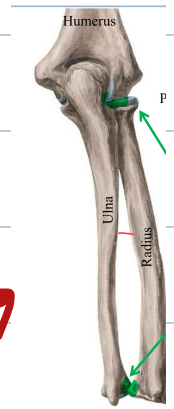


flexion, extension, adduction, abduction, medial and lateral rotation, circumduction

2. Acromioclavicular → synovial plane

* Humerus:

1. Glenohumeral → ball and socket synovial
2. elbow joint → hinge synovial

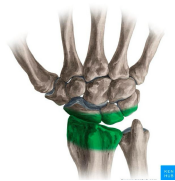


* radius and ulna:

1. proximal and distal radioulnar joint → synovial pivot
(pronation and supination)

(radiocarpal joint)

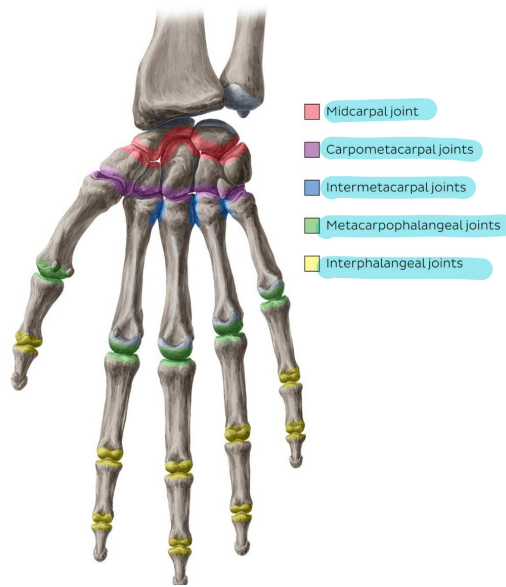
2. wrist joint → synovial condyloid ellipsoid



(between distal end of radius and carpals (scaphoid¹, lunate², triquetrum³))

3. elbow joint → hinge synovial joint

* Hand:



1. midcarpal joint → synovial plane joint
(between proximal and distal rows of carpals)

2. Carpometacarpal joint (CMC)

CMC1 (thumb)

CMC(2, 3, 4, 5)

synovial saddle joint

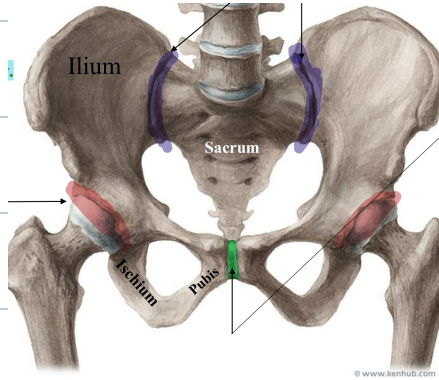
synovial plane joint

3. Metacarpophalangeal (MCP) → synovial condyloid

4. Interphalangeal joints (IP) → hinge synovial

Joints of lower limb:

* Hip bones:



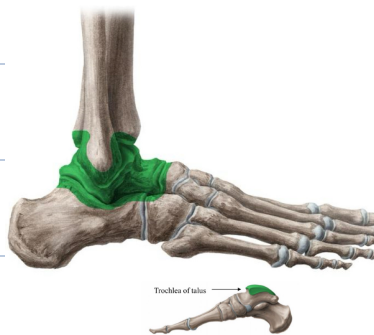
1. Sacroiliac joint → plane synovial joint
2. Symphysis pubis → Secondary cartilaginous joint
3. Hip joint → Ball and Socket synovial
↓
(Acetabulo femoral joint) → (between head of femur and lunette surface of acetabulum)

* Ankle Joint:

1. Ankle → Synovial hinge (dorsi flexion and plantar flexion)

Articular surfaces:

Articular facet of medial malleolus (tibia), articular facet of lateral malleolus (fibula), trochlea of talus, medial/lateral malleolar facets (talus).



* Knee Joint: (largest joint)

1. Tibiofemoral Joint → Hinge synovial

Articular surfaces:
Tibiofemoral joint: Lateral and medial condyles of femur, tibial plateau



Movements: (extension, flexion, medial and lateral rotation)

2. Patellofemoral Joint → Plane synovial

Articular surfaces: (patellar surface of femur and articular surface of Patella)

* Tibiofibular Joints: (articulation uniting tibia and fibula)

From the lab slides

superior (proximal)

plane synovial joint

middle (shafts)

interosseus membrane

inferior (distal)

Syndesmosis fibrous joint

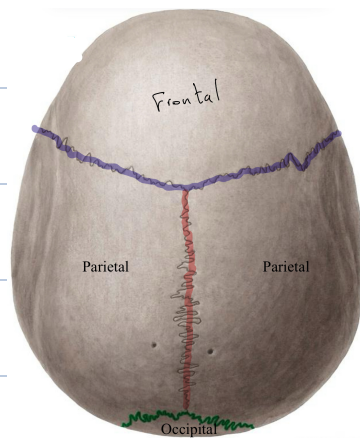
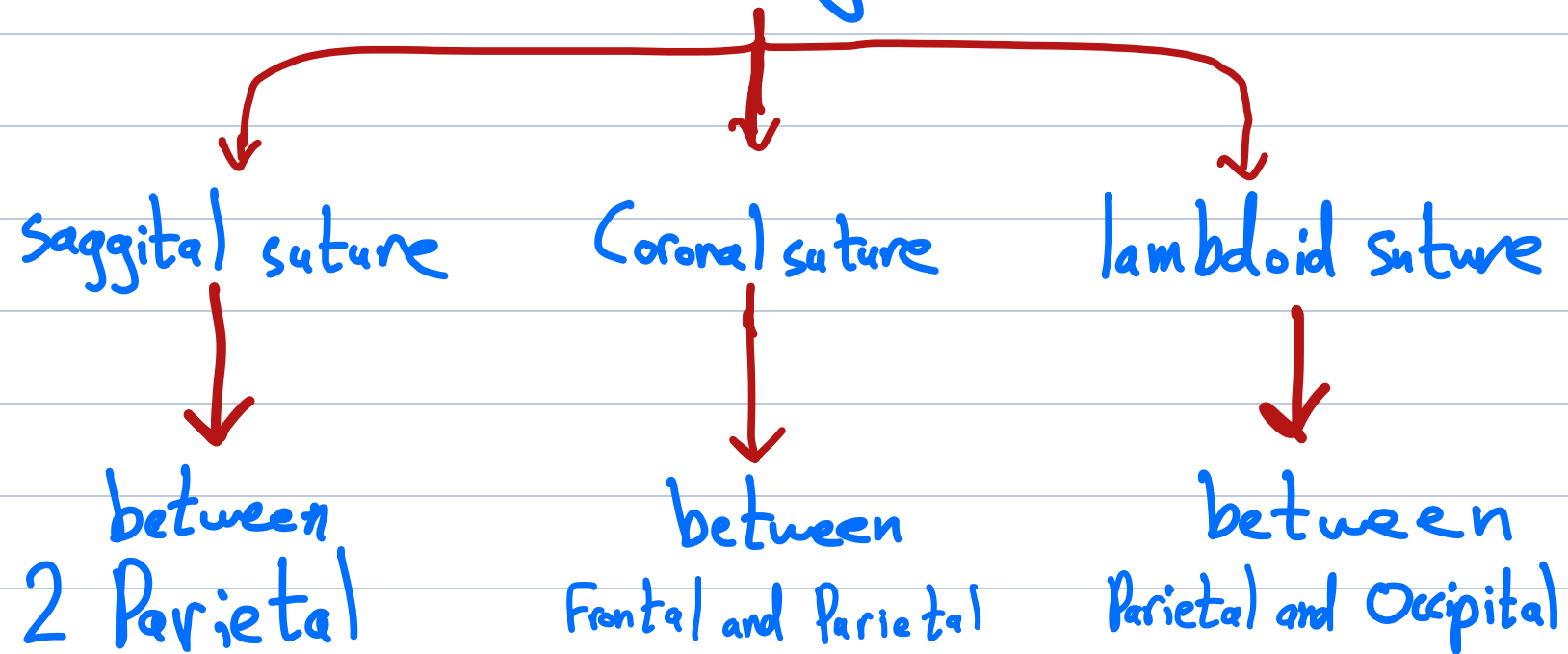


Joints of axial skeleton:

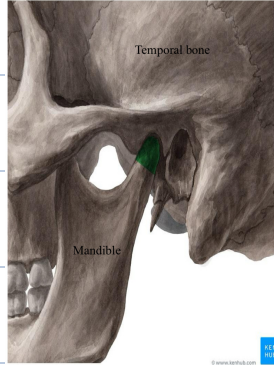
* Skull:

1. Coronal Sutures

↓
fibrous joints



2. Temporomandibular joint → synovial hinge joint

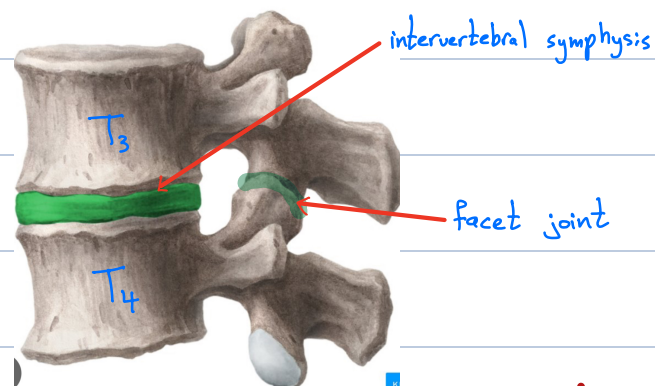


(mandible: protraction, retraction, elevation, depression, rotation)
(chewing)

* Intervertebral Joints: (Typical vertebra)

1. Intervertebral Symphysis → Fibrocartilagenous Joint

(between 2 vertebral bodies and intervertebral disk)



2. Two Facet Joints

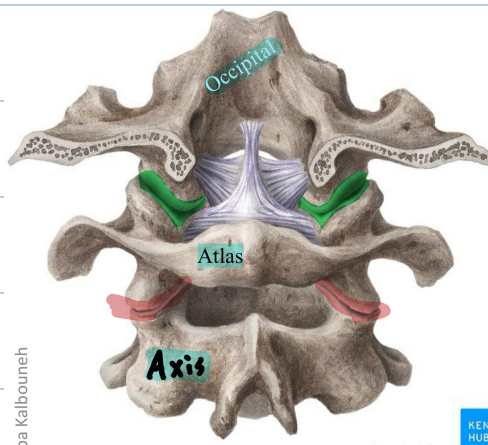
Synovial Plane Joint

(between superior articular process of one vertebra and inferior articular process of the vertebra above)

* Atlas Joints

1. atlanto-occipital → Synovial condyloid (epsiiloid)
(Flexion and extension)

2. Atlanto-axial → synovial pivot joint
(rotation)



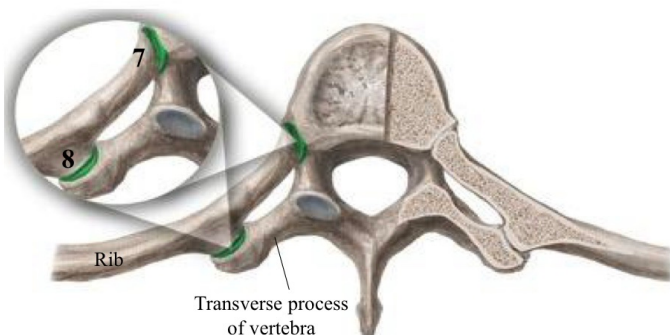
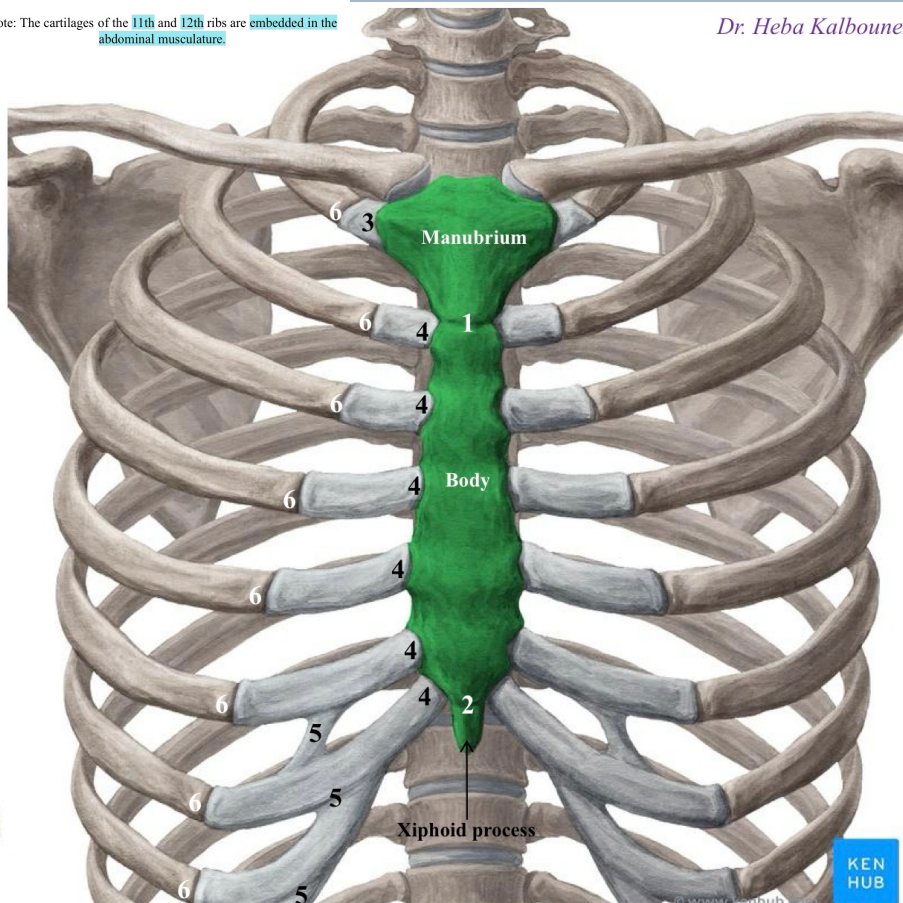
Identify the parts of sternum: Manubrium sterni, Body of the sternum, Xiphoid process.

Identify the joints of thoracic wall and their types:

1. Manubriosternal joint (cartilaginous joint)
2. Xiphisternal joint (cartilaginous joint)
3. Sternochondral synchondrosis of 1st rib (cartilaginous joint)
4. Sternochondral joints (2nd-7th costal cartilages) (synovial plane joints)
5. Interchondral joints (6th-10th costal cartilages) (synovial plane joints ?)
6. Costochondral joints (cartilaginous joints)
7. Joints of the heads of the ribs (costocorporeal joints) (synovial plane joints) (1, 10, 11, 12): 1 joint / (2-9): 2 joints
8. Joints of the tubercles of the ribs (costotransverse joints) (synovial plane joints) (1-10) only

Note: The cartilages of the 11th and 12th ribs are embedded in the abdominal musculature.

Dr. Heba Kalbouneh



* Costovertebral joints

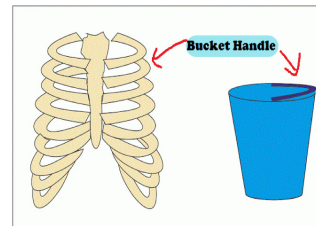
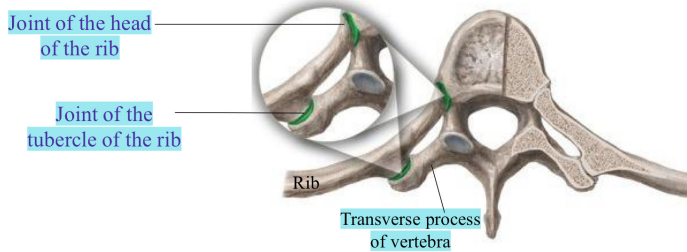
1- Joints of the Heads of the Ribs (Costocorporeal joints)

The first rib and the three lowest ribs have a single synovial joint with their corresponding vertebral body. For the second to the ninth ribs, the head articulates by means of a synovial joint with the corresponding vertebral body and that of the vertebra above it.

2- Joints of the Tubercles of the Ribs (Costotransverse joints)

The tubercle of a rib articulates by means of a synovial joint with the transverse process of the corresponding vertebra.

(This joint is absent on the 11th and 12th ribs.)



The movements on these joints are called 'pump-handle' or 'bucket-handle' movements, and are limited to a small degree of gliding and rotation of the rib head. The function of these movements is to enable lifting of the ribs upwards and outwards during breathing. The end result is the increase of the lateral diameter of the thorax and subsequent expansion of the lung as the air is being inhaled.

Done by: Mohammad Al-Amawi

لجان ٠٢٤

اللهم صلّ وسلّم و بارك على سيدنا محمد

