

JOINTS



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LEARNING OUTCOMES

- DEFINITION OF JOINTS
- FIBEROUS JOINTS
- CARTILAGINOUS JOINTS
- SYNOVIAL JOINTS

FEATURES

CLASSIFICATION

FACTORS AFFECTING THE STABILITY

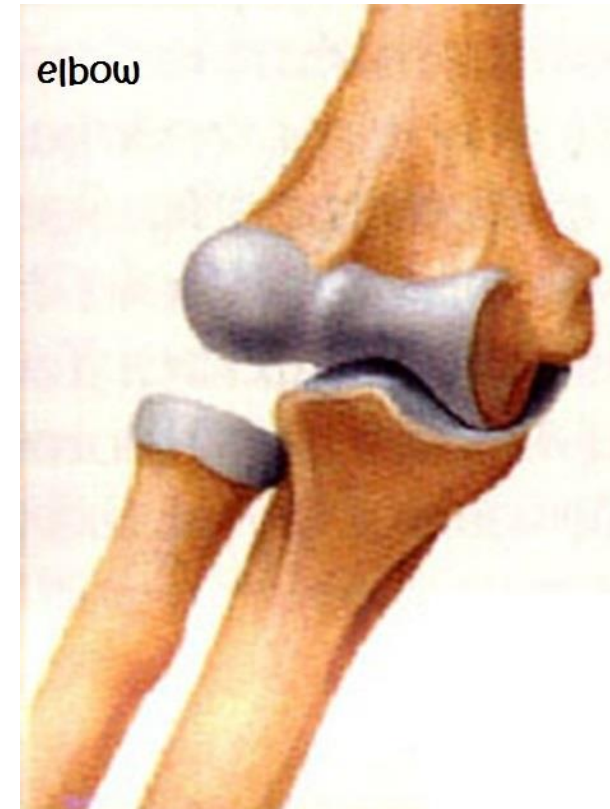
NERVE SUPPLY

DEFINITION

Def.: site of meeting of - 2 or more bones

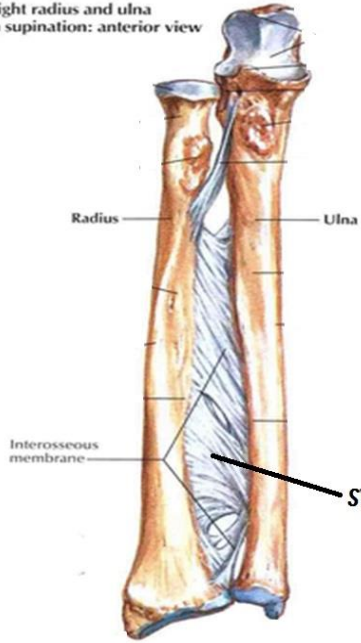
-bone & cartilage

- cartilage & cartilage as in larynx



TYPES OF JOINTS

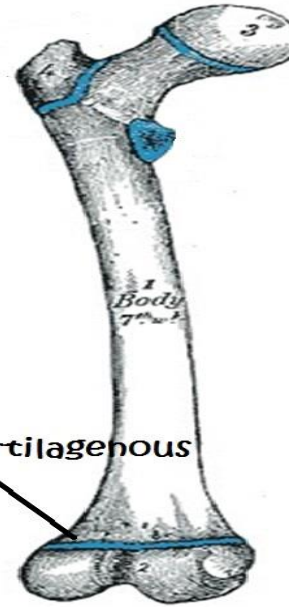
Right radius and ulna in supination: anterior view



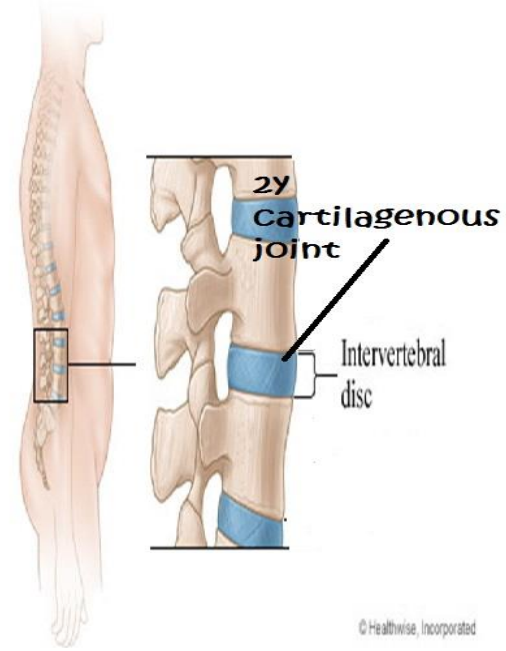
Right radius and ulna in pronation: anterior view



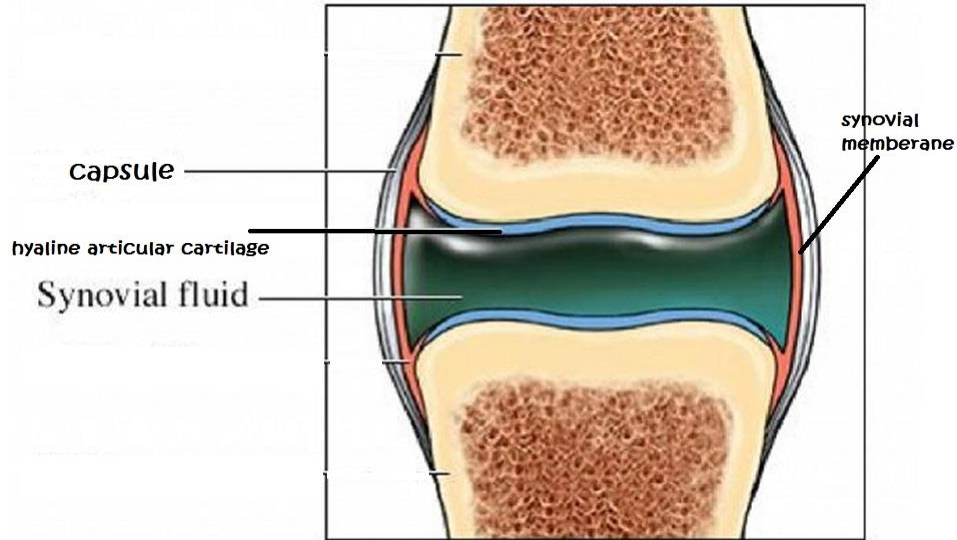
syndesmosis



1ry Cartilagenous joint



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synovial joints

TYPES OF JOINTS

according to the tissue that connects the bones.

1- Fibrous joints: bone connected by fibrous tissue

Sutures

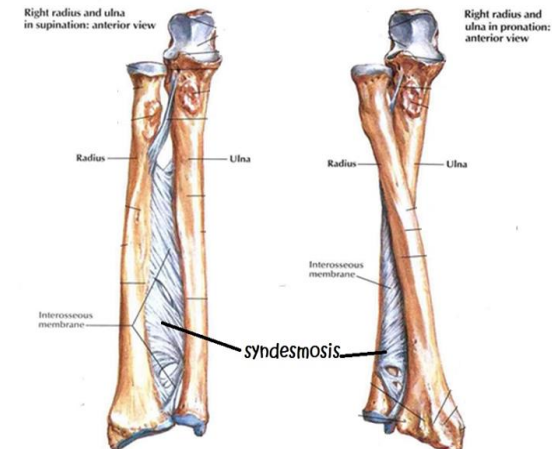
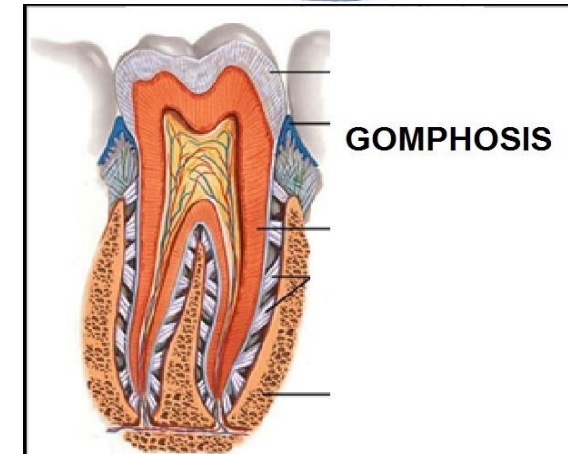
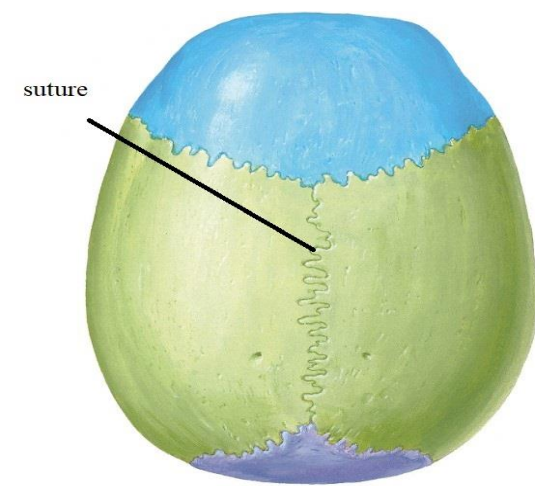
- minimal amount of fibrous tissue () the bones
- present in the skull
- immobile ?

Gomphoses

- moderate amount of fibrous tissue () the bones
- present () the tooth & its socket
- immobile

Syndesmoses

- large amount of fibrous tissue () the bones
 - present () widely separated bones
- e.g. interosseous membrane () radius & ulna
slightly mobile



TYPES OF JOINTS

Cartilaginous joints

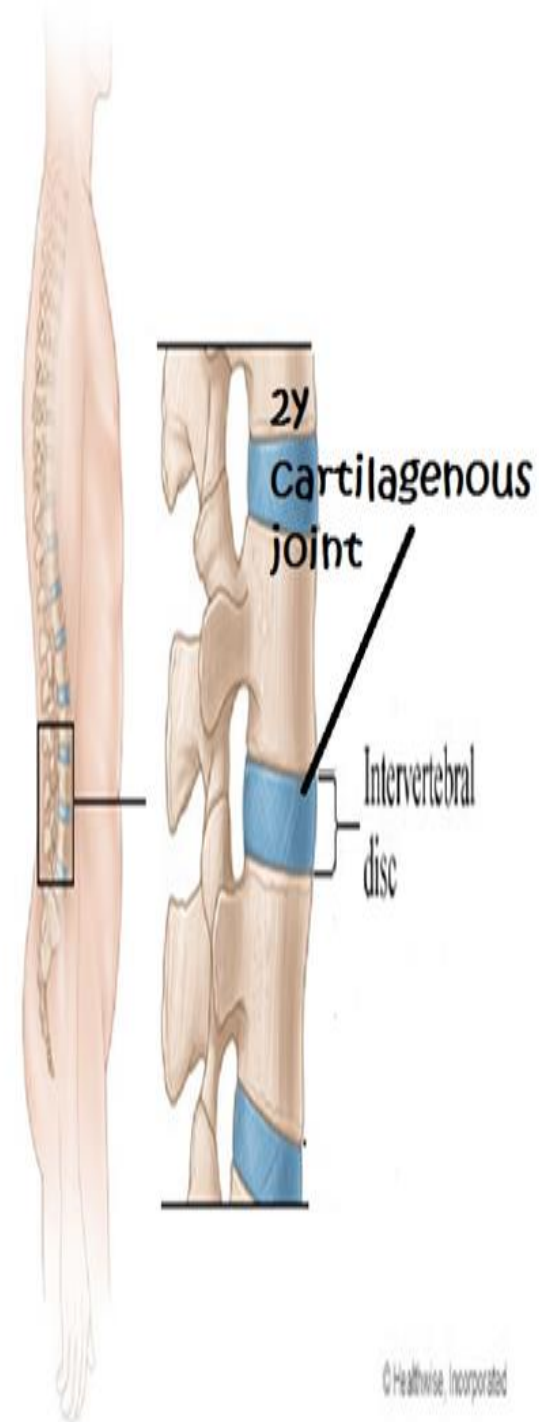
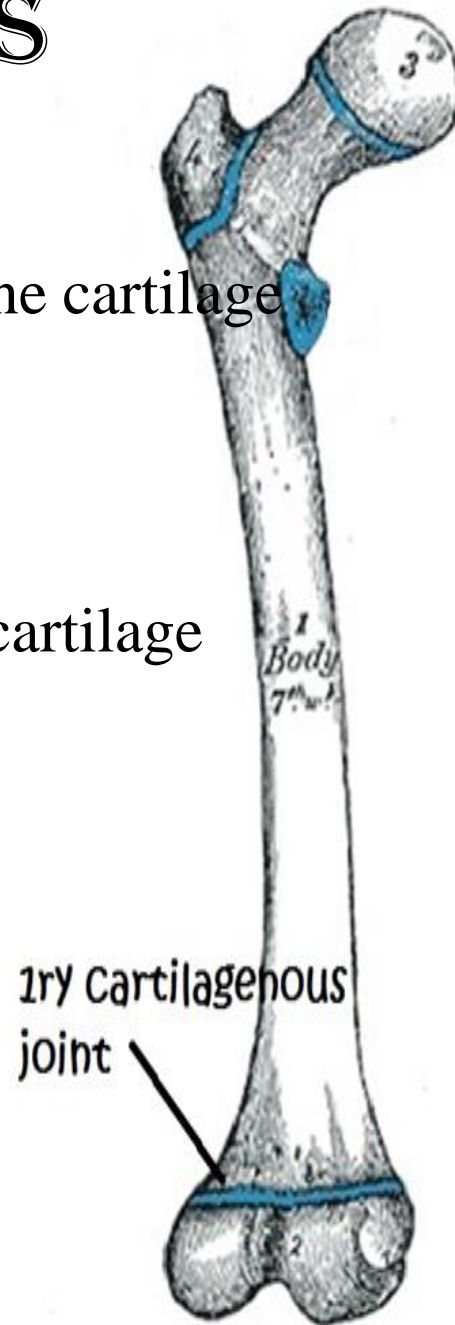
Primary cartilaginous

- Bones are connected by hyaline cartilage
- Immobile
- E.G. epimetaphyseal junction

Secondary cartilaginous

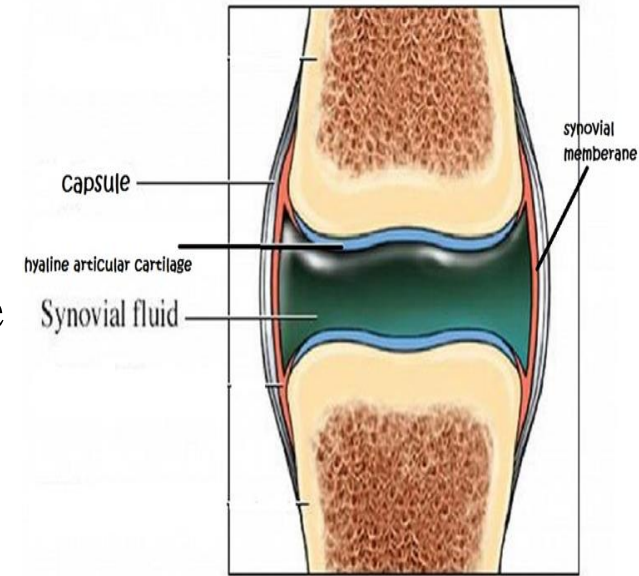
- Bones are connected by fibrocartilage
- slightly mobile
- Lie in median plane

E.G. 1-IVD



FEATURES OF SYNOVIAL JOINTS

- 1- the bones are covered by hyaline cartilage
- 2- the bones are separated by a joint cavity that contains synovial fluid
- 3- the bones are held together by fibrous capsule
- 4- the capsule is strengthened by ligaments
- 5- the capsule is lined by synovial membrane that secretes synovial fluid

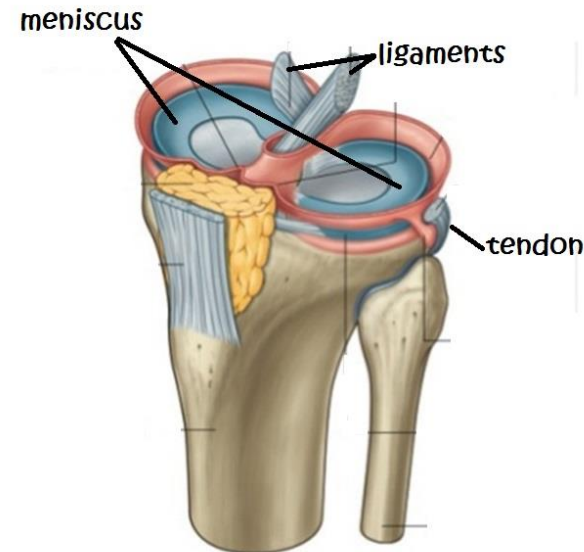


synovial joints

N.B.: the synovial membrane:-
a Membrane lines the capsule and is reflected to cover all the intracapsular structures except the articular cartilages

N.B.:-other intracapsular structures:

- menisci
- intracapsular ligaments
- tendon of muscle



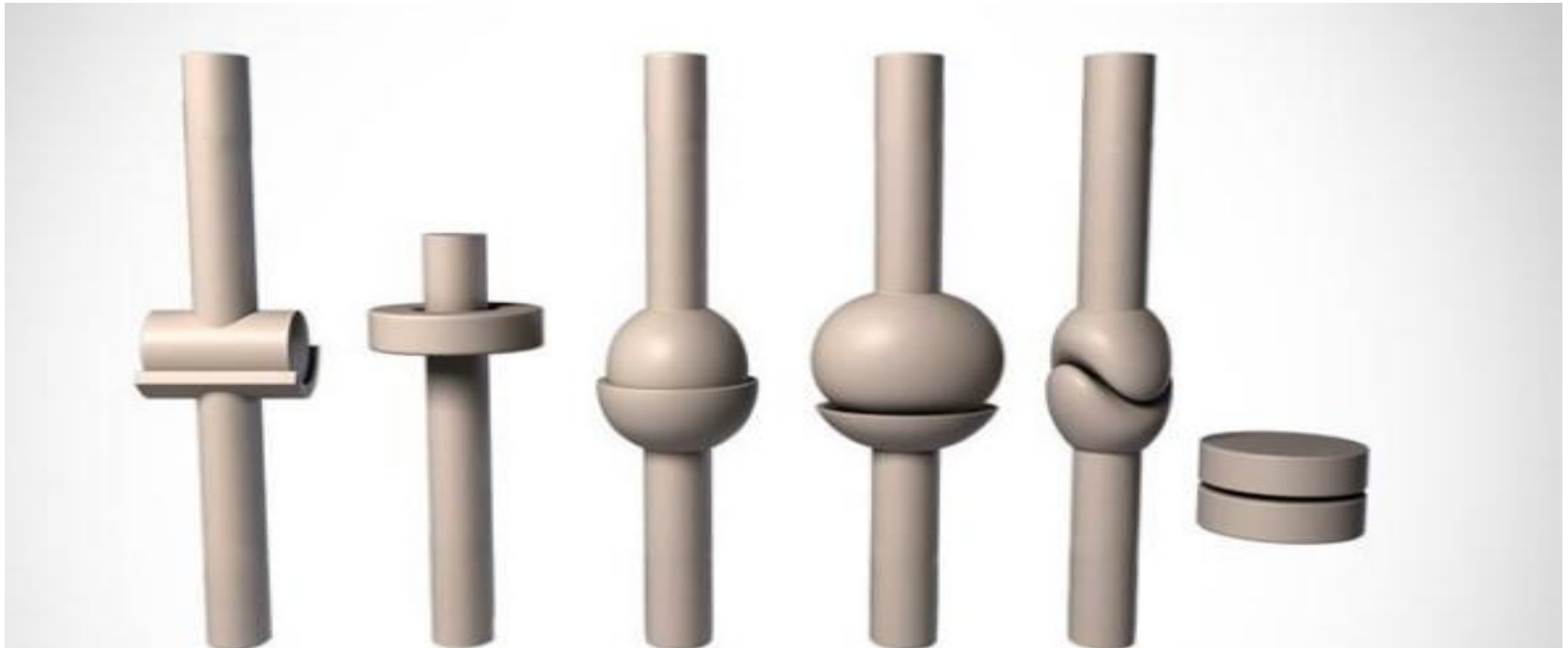
some intracapsular structures

CLASSIF. OF THE SYNOVIAL JOINTS

According to possible movements that are determined by number of axis that are determined by the shape of articulating bone

N.B: axes of body and movements around them:

- 1- Vertical : for rotation.
- 2- Transverse : for flexion and extension.
- 3- Anteroposterior : for abduction and adduction.



CLASSIF. OF THE SYNOVIAL JOINTS

1- Uniaxial joints

Hinge joint

Articular surface: one convex surface articulate with one concave surface

axis & movements: Transverse for flexion & extension

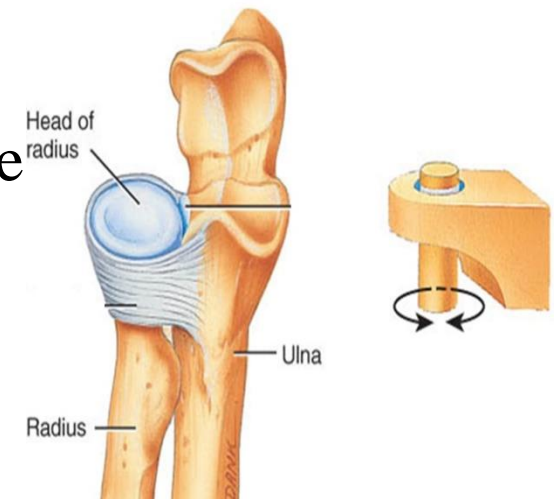
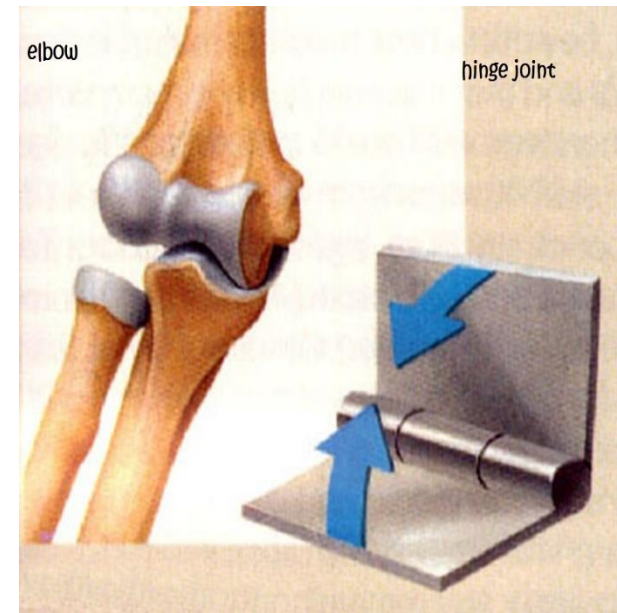
E.G.: elbow & interphalangeal joints

Pivot joint

Articular surface: Central bony pivot surrounded by osteofibrous ring one is fixed & the other is mobile

Axis & movements : Vertical for rotation

E.G.:- superior & inferior radio ulnar joints for pronation & supination



(c) Pivot joint between head of radius and ulna

CLASSIF. OF THE SYNOVIAL JOINTS

2- Biaxial joints

Ellipsoid

Articular surface: oval convex surface articulate with oval concave surface

axis & movements:- Transverse for flexion, extension
antero- posterior for abduction & adduction

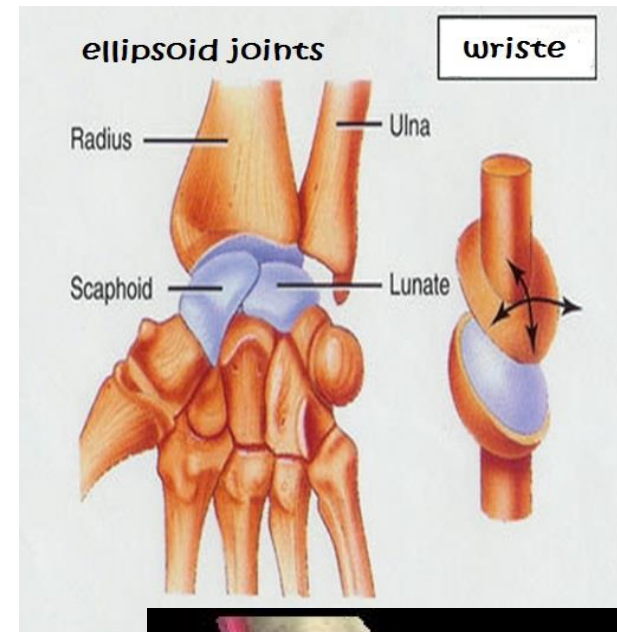
E.G.:- wrist

Bicondylar joints

Articular surface: 2 convex surface articulate with 2 concave surfaces

axis & movements:- Transverse for flexion, extension
Vertical for rotation

E.G.:- knee joint (it may be considered as modified hinge due to its limited rotation)



CLASSIF. OF THE SYNOVIAL JOINTS

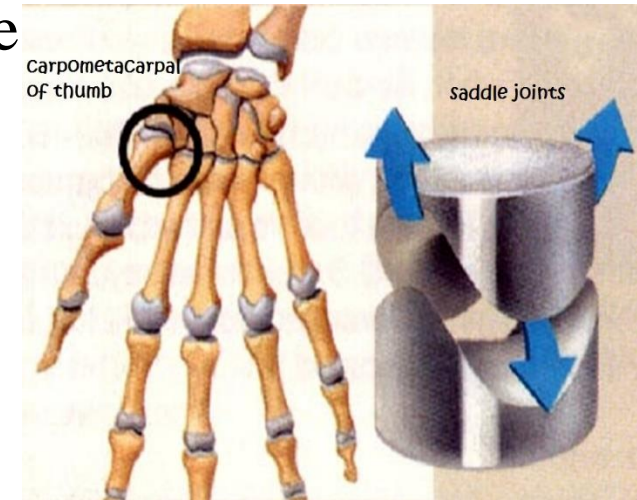
2- Biaxial joints:

Saddle joint

Articular surface: concavo convex surface articulate with convexo- concave surface

axis & movements:- Transverse for flexion, extension
Antero- post. for abduction & adduction

E.G.: Carpometacarpal of thumb



CLASSIF. OF THE SYNOVIAL JOINTS

3- Poly axial joints:

Articular surface : Ball fitting in cup shaped socket.

axis & movements: 3 axis:

transverse for flexion, extension

Vertical for rotation

Antero- posterior for abduction & adduction

Circumduction.

E.G.:-shoulder & hip joints.

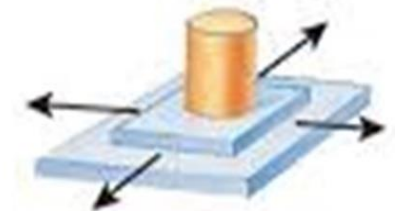
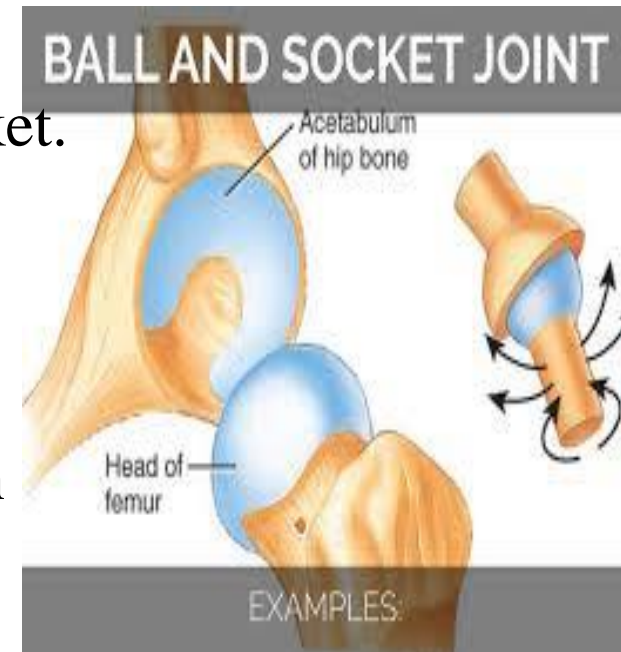
4- Non axial (plane) joints

articular surfaces: flat

axis & movements: no axis and so there is no angular movement but there is only gliding (sliding)

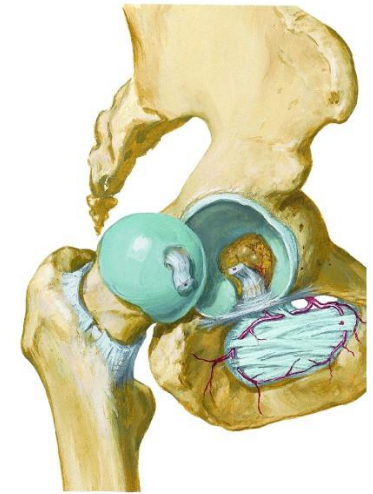
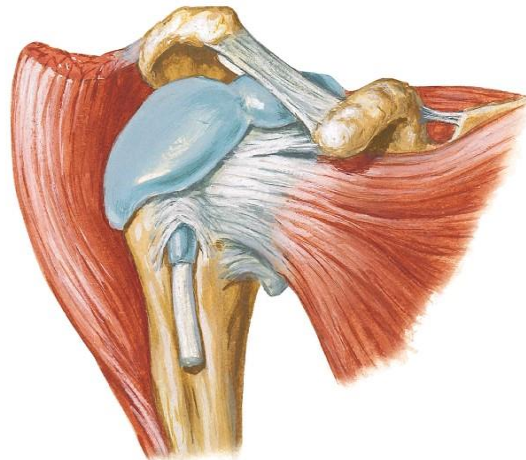
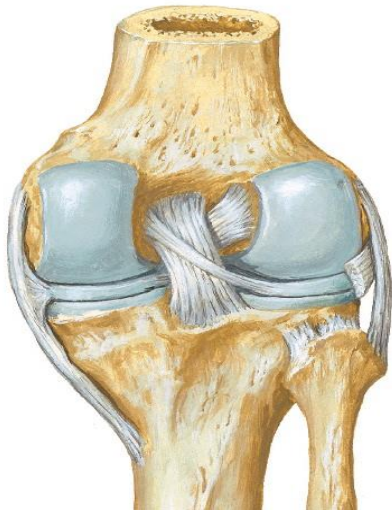
in variable directions that accompany movements of near joints

E.g. intercarpal joints



FACTORS AFFECTING JOINT STABILITY

1. Shape and fitting of articulating surfaces.
2. Thickness and strength of the capsule.
3. Position and strength of ligaments.
4. Strength of muscles surrounding the joint



NERVE SUPPLY OF JOINT

-capsule & its close ligaments

are richly innervated and contain pain & stretch receptors

-synovial membrane

is less innervated and contains few pain receptors

N.B:- Hilton's law:

The nerve supplying a muscle, also supply the joint moved by that muscle & also supply the area of skin over the joint and insertion of the muscle

THANQ