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Definition: a joint is a point where two bones or a bone and cartilage make contact.

3 Point wher Teeth & bone met
Arthrology: is the science of studying the anatomy and function of joints. → (اللتهاب المفاصل) arthritis منها اجت كلمة

Can be classified **Structurally:**

- 1. Fibrous joints → الجزء الي يفصل ال 2 bones من
- 2. Cartilaginous joints
- 3. Synovial joints

Or **Functionally:** كيف حركتو بتحرك ما يتحرك

- 1. Synarthrosis (immovable) ما يتحرك
- 2. Amphiarthrosis (slightly movable) حركة بسيطة
- 3. Diarthrosis (freely movable) يتحرك

- 1. Fibrous joints >> immobile to slightly mobile joints
- 2. Cartilaginous joints >> immobile to slight movement
- 3. Synovial joints >> freely movable joints دايمًا يتحرك

type	exam	extra notes
Fibrous joints	<p>1/ sutures of skull (immobile) <small>→ ossify by age</small></p> <p>2/ syndesmoses (slight movement) between 2 bones ; <small>don't ossify by age</small> ← 1/ interosseous membrane 2/ ligament, distal tibiofibular joint</p> <p>3/ gomphoses (root of the teeth and the alveolar part of maxilla and mandible) (immobile)</p>	no joint cavity immovable or limited movement
Cartilaginous <small>ossify with age</small>	<p>primary : (synchondroses)</p> <p>1/ 1st costal cartilage and sternum</p> <p>2/ epiphysis and diaphysis in growing long bone</p> <p>secondary : (symphysis) → fibrocartilage disk</p> <p>1/ intervertebral disk</p> <p>2/ pubic symphysis</p>	2 bones articulate with each others by : hyaline cartilage (nasal septum) and fibrocartilage

Synovial joints

1. Freely movable and has a joint cavity

2. Consists of: يعني في space between 2 articulates bone

➤ **Articular hyaline cartilage** covering the articular surfaces of bone

➤ **Fibrous capsule** بتغطي من outside

➤ **Synovial membrane:** lines the fibrous capsule from inside and the margins of the articular surfaces

➤ **Synovial fluid (Synovia)** the synovial membrane secretes synovial fluid

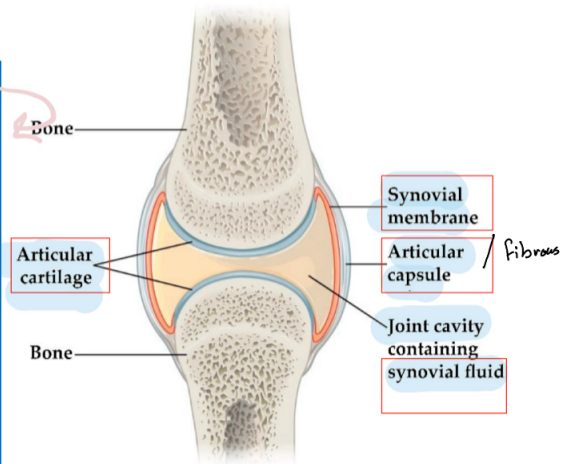
اطراف

Fibrous capsule lined with membrane called synovial membrane من يتكون cells يتقرز synovial fluid

طبعاً اي synovial joint لازم يكون الة joint cavity مليانه fluid ال fluid يتوفر ليونة بتساعد على الحركة

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Hyaline cartilage is avascular !



Synovial joints

➤ **Accessory Ligaments and Articular Discs** ممكن يتكون موجودة ويمكن لا: يفصل 2 articular joint

• **Articular disks (TMJ and sternoclavicular joint)**

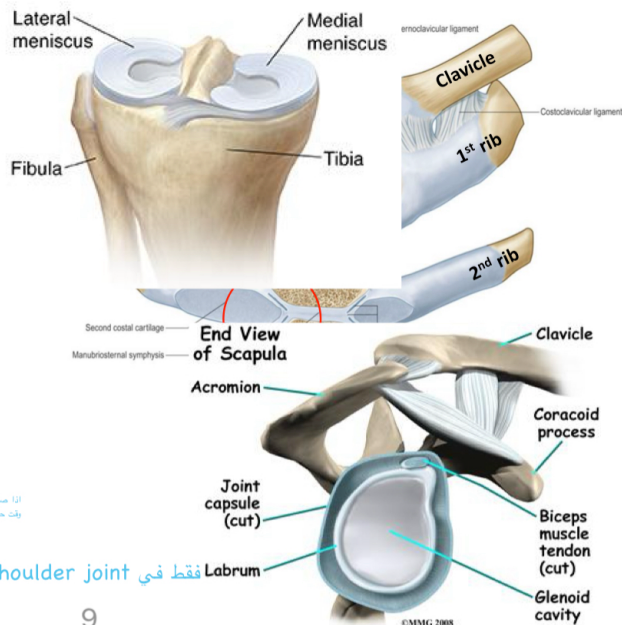
بتشبهه المخدات

• **Menisci** Pads of cartilage lie between the articular surfaces of the bones, allow bones of different shapes to fit together more tightly (**Knee joint**) 3

• **Collateral ligaments & cruciate ligaments** الرباط الصليبي موجودة فقط في مفصل الركبة: 2

• **Tendons; tendon of long head of biceps brachii.** جزء من humenas

اربطه: بتثبت joint مكانه



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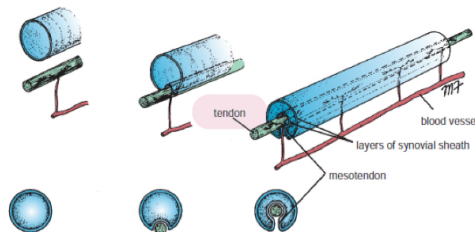
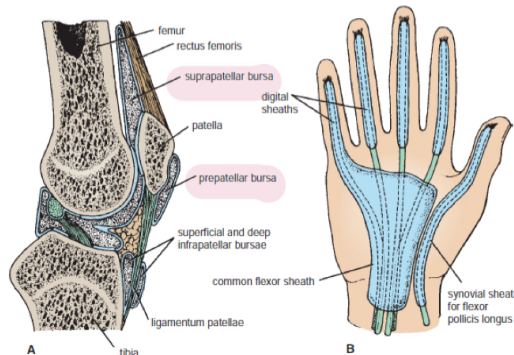
➤ **Bursae and Tendon Sheaths**

• **Bursae:** sac-like structures containing fluid similar to synovial fluid كيسين يحفظون من الاحتكاك بين السطوح المتجاورة

• Located between tendons, ligaments and bones في المداخل

• Cushion the movement of these body parts

• **Tendon sheaths:** Tube-like bursae that rap around tendons to reduce friction at joints تقلل من احتكاك المفاصل



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type	action	exm
pivot joint (uniaxial joint)	rotation around longitudinal axis	1/ median atlanto-axial joint 2/ proximal radioulnar joint
plane joints	gliding movement	between carpal bones between tarsal bones between sup and inf articular processes on adjoining vertebrae
saddle joints (Biaxial joints) concave-convex surfaces	Flexion - extension - Adduction abduction - opposition (thumb)	1 st carpometacarpal joint (thumb) sternoclavicular joint → synovial saddle-type joint
condyloid and ellipsoid joint (Biaxial joints)	Flexion - extension - adduction abduction	wrist joint (ellipsoid) metacarpophalangeal joint (Knuckle joint) as condyloid joint

ball and socket joint (multiaxial)

<p>glenohumeral (shoulder joint)</p>	<p>Flexion-Extension Adduction-Abduction Medial rotation-Lateral rotation</p>	<p>fibrocartilaginous → glenoid labrum deepens the glenoid cavity bursae → synovial fluid-filled sac الكيسات المحيطة بالعملاق ←</p>
<p>acetabulo-femoral (hip joint)</p>	<p>same movements just more stable than shoulder joints</p>	<p>more stable than shoulder because (shape of articular surfaces) Acetabulo-femoral joint (Hip joint)</p>

- Ligaments of hip joint:**
1. Iliofemoral ligament
 2. Pubofemoral
 3. Ischiofemoral

Ligaments are important in connecting bones and providing support and stability to the joint

hinge joint (uniaxial joint)

<p>elbow joint</p>	<p>flexion - extension</p>	<p>humerus, radius, ulna</p>
<p>Knee joint</p> <p>Intra-capsular structures:</p> <ul style="list-style-type: none"> • Ligaments: <ol style="list-style-type: none"> 1. Anterior cruciate ligament (ACL) 2. Posterior cruciate ligament (PCL) • Menisci (crescent-shaped fibrocartilage), increase fit and act as cushion: <ol style="list-style-type: none"> 1. Medial meniscus 2. Lateral meniscus <p>Extracapsular ligaments</p> <ol style="list-style-type: none"> 1. Medial collateral ligament 2. Lateral collateral ligaments <p>There are a number of bursae that protect the knee joint. → see full with fluid</p>	<p>medial and lateral rotation</p>	<p>largest and most complex injured → joint between tibia, patella and femur Fibula لا تتحرك في تشابك Knee balance</p>

Temporomandibular Joint

- It is an articulation between **the articular tubercle and the anterior portion of the mandibular fossa** of the temporal bone above and the **head (condyloid process)** of the mandible.
- The **capsule** surrounds the joint and is attached above to the articular tubercle and the margins of the mandibular fossa and below to the neck of the mandible.
- **Articular Disc:** is a fibrocartilage articular disc intervenes between the bony surfaces and divides the TMJ into **upper and lower compartments**