

# INTRODUCTION TO ARTHROLOGY

# Arthrology

- The study about joints is termed **arthrology or syndesmology**. A joint or articulations are the structures, where two or more bones of the skeleton meet one another by certain determined areas of their surface named articular areas with the help of certain binding materials.



# Arthrology

- **In immovable joints**, the adjacent margins of the bones in contact, being separated merely by a thin layer of fibrous membrane called the sutural ligament e.g. joints in the skull. In certain regions at the base of the skull this fibrous membrane is replaced by a layer of cartilage.
- Where **slight movement** combined with great strength is required, the osseous surfaces are united by tough and elastic fibrocartilages E.g. joints in the vertebral bodies.

# Arthrology

- **In freely movable joints**, the surfaces are completely separated and the bones forming the joints are expanded for greater convenience of mutual connection are covered by cartilage and enveloped by capsules of fibrous tissue. The cells lining the interior of the fibrous capsule form an imperfect membrane—the synovial membrane—which secretes a lubricating fluid. The joints are strengthened by strong fibrous bands called ligaments, which extend between the bones forming the joint.

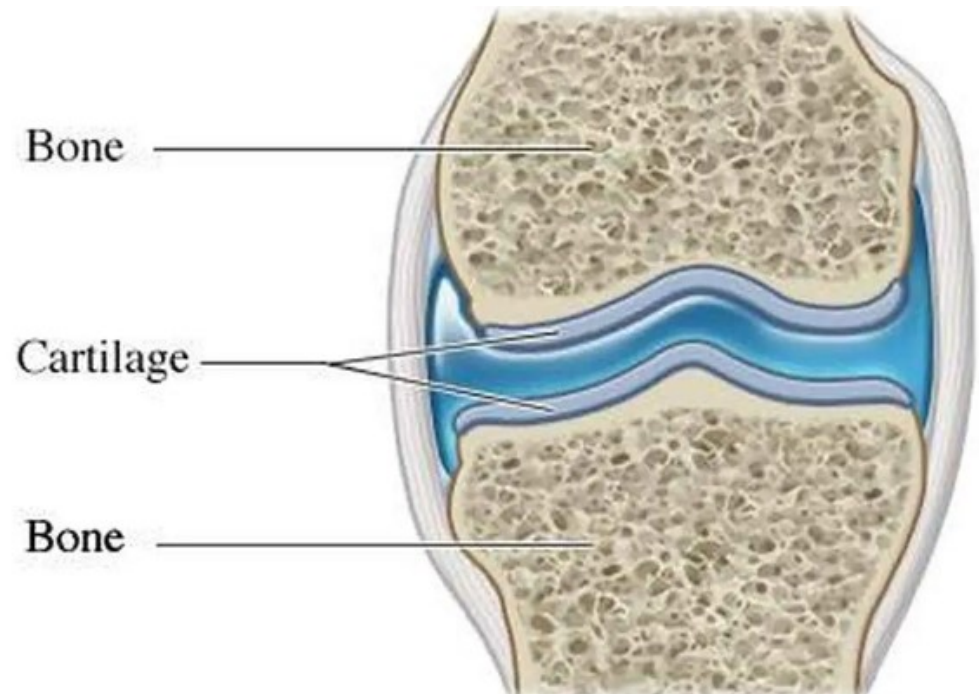
# Bone

- Bone constitutes the fundamental element of all the joints.
- In the long bones, the extremities are the parts which form the articulations. They are generally enlarged and consist of spongy cancellous tissue with a thin coating of compact substance.
- In the flat bones, the articulations usually take place at the edges.
- In the short bones at various parts of their surfaces.



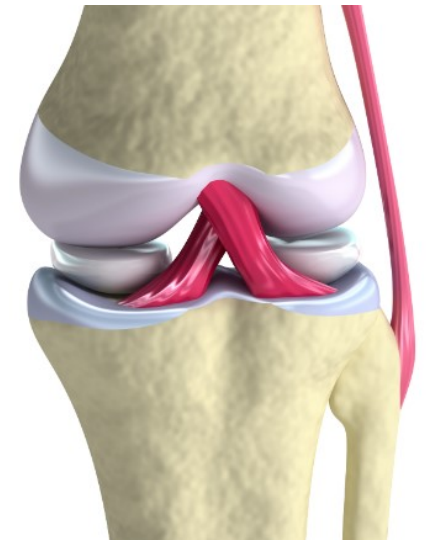
# Cartilage

- Cartilage is a non-vascular structure which is found in various parts of the body in adult life chiefly in the joints, in the parieties of the thorax, and in various tubes, such as the trachea and bronchi, nose, and ears, which require to be kept permanently open.
- In the early period of fetus, the greater part of the skeleton is cartilaginous and are replaced by bone.
- Cartilage is divided according to its structure into hyaline cartilage, white fibrocartilage, and yellow or elastic fibrocartilage.



# Ligaments

- Ligaments are composed mainly of bundles of white fibrous tissue placed parallel closely interlaced with one another and present a white, shining, silvery appearance.
- They are pliant and flexible to allow perfect freedom of movement, but strong, tough, and inextensible to yield readily to applied force.
- Some ligaments consist entirely of yellow elastic tissue, as the ligamentaflava which connect together the laminæ of adjacent vertebræ. In these cases the elasticity of the ligament is intended to act as a substitute for muscular power.



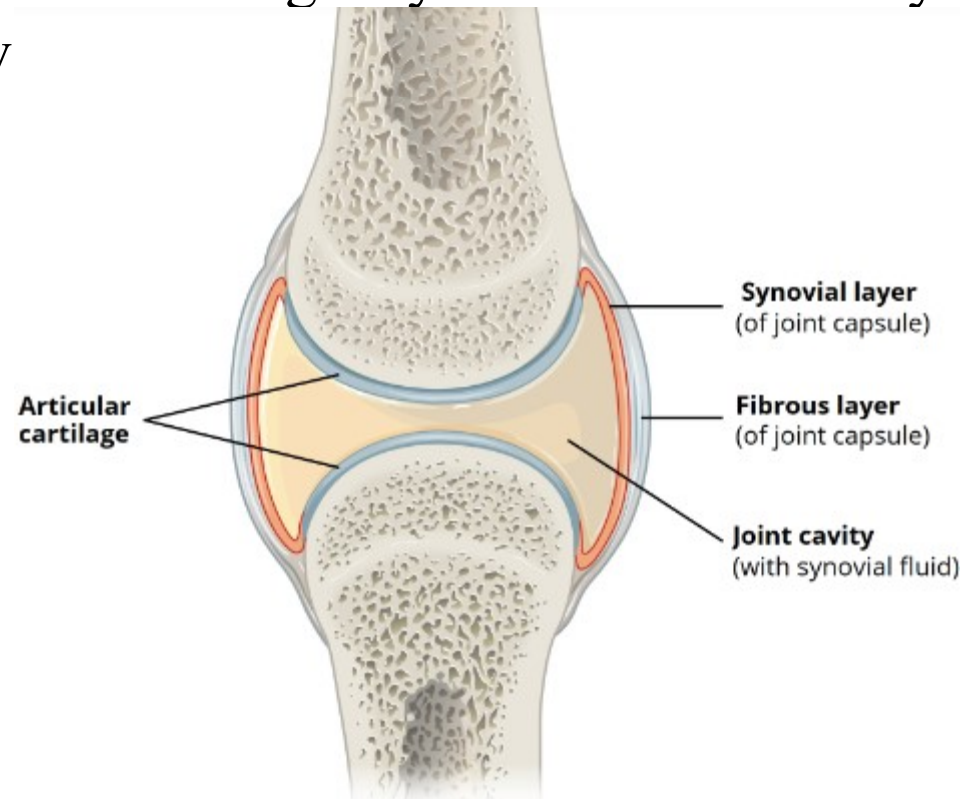
# Capsules

## Articular Capsules

- The articular capsules form complete envelopes for the freely movable joints. Each capsule consists of two strata—an external (stratum fibrosum) composed of white fibrous tissue, and an internal (stratum synoviale) which is a secreting layer and is usually described separately as the synov

## Fibrous capsules

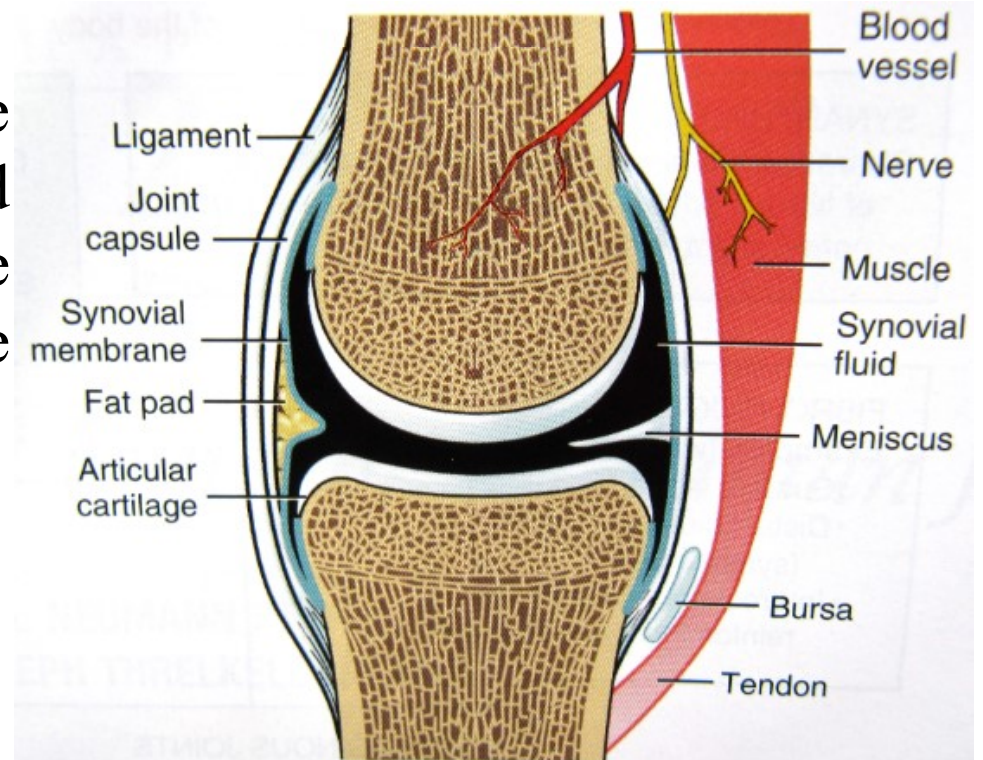
- It is attached to the whole circumference of the articular end of each bone entering into the joint, and thus entirely surrounds the articulation





# Synovial membrane

- It invests the inner surface of the fibrous capsule and is reflected over any tendons passing through the joint cavity
- It is composed of a thin, delicate, connective tissue with branched connective-tissue corpuscles.
- Its secretion is thick, viscid, and glairy, like the white of an egg, and is hence termed synovia.
- They consist of connective tissue covered with endothelium and contain fat cells in variable quantities with isolated cartilage cells.



# Synovial membrane

## **Synovial sheath**

- They serve to facilitate the gliding of tendons in fibroosseous canals.
- Each sheath is arranged in the form of an elongated closed sac, one layer of which adheres to the wall of the canal and the other is reflected upon the surface of the enclosed tendon.
- These sheaths are chiefly found surrounding the tendons of the Flexor and Extensor muscles of the fingers and toes as they pass through fibroosseous canals in or near the limb.

## **Synovial bursae**

- They are interposed between surfaces which glide upon each other.
- They consist of closed sacs containing a minute quantity of clear viscid fluid.

**Thank You**