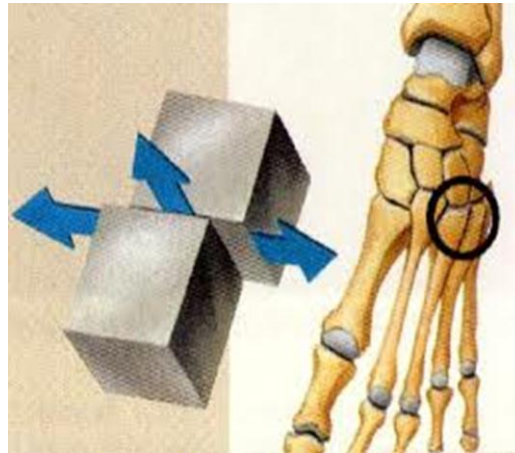


FOUNDAION YEAR

ANATOMY



JOINTS LECTURE-3-

OBJECTIVES

By the end of the lecture, students should be able to:

- *Define the term “Joint”.*
- *Describe the classification of 3 types of joints & give an example of each.*
- *Describe the characteristics of synovial joints.*
- *Describe the classification of synovial joints & give an example of each.*
- *List factors maintaining stability of joints.*
- *Recite “Hilton’s law” for nerve supply of joints.*

Joints										
Classifications	Fibrous		Cartilaginous		Synovial					
Types	Temporary	Permanent	Primary (temporary)	Secondary (Permanent)	Plane	Axial				
						Uniaxial		Biaxial		Polyaxial
						Hinge	Pivot	Ellipsoid	Saddle	Ball-and-socket
Bones joined by:	Fibrous Tissue		Hyaline cartilage	Fibrocartilage (and the articulating surfaces are covered by a thin plate of hyaline cartilage)	Fibrous Capsule that encloses the joint					
Movement	x	✓ (little)	x	✓ (little)	✓ (gliding)	Transverse axis	Longitudinal axis	Transverse and antero-posterior		Transverse, longitudinal, and antero-posterior
Location	Sutures of the skull vault	Inferior tibifibular joints	1- Between the Epiphysis and Diaphysis of a growing bone. 2- Between the first rib and the sternum (1st sternocostal joint)	Midline joints: 1- joints between the vertebral bodies (Intravertebral discs) 2- Symphysis Pubis	1- Intercarpal joints 2- Sternoclavicular joints 3- Acromioclavicular joints	Elbow joint	Radio-ulnar joints	Wrest joint	Carpometacarpal joint (rotation of the thumb).	Shoulders and hips

- A joint is the site where two bones join together.
- A temporary joint → changes to bone, while a permanent one never changes.

- ◆ Synovial joints are freely movable.
- ◆ Fibrous capsule $\xrightarrow{\text{attached to}}$ articular surfaces $\xrightarrow{\text{covered by}}$ a thin layer of hyaline (articular) cartilage $\xrightarrow{\text{all enclosing}}$ the joint cavity.
- ◆ The inner surface of the capsule is lined by a thin vascular membrane called: Synovial membrane.
- ◆ Synovial Fluid:
 - Produced by the synovial membrane
 - Minimizes friction between articular surfaces.
- ◆ Movements in Axial Synovial joints:
 - Transverse → Flexion and extension.
 - Longitudinal → Rotation.
 - Antero-posterior → Abduction and adduction.

Factors that Affect the Stability of Synovial Joints

e.g. The short muscles around the shoulder joint that keep the head of the humerus in the shallow glenoid cavity.

The tone of the surrounding muscle (the major factor in most joints).

The shape of articular surfaces.

e.g. The ball-and-socket shape of the hip.*

Strength of the ligaments.

Function: prevents excessive movements.

* The shape of the joints forming the knee has nothing to do with stability

♦ The capsule and ligaments receive an abundant sensory nerve supply.

Hilton's Law: A sensory nerve supplying a joint also supplies the muscles moving that joint and the skin overlaying the insertions of these muscles.

Extra Notes:

Opposition → small rotation.

Supination → radius and ulna being parallel.

Pronation → radius rotating over ulna.

♦ The first pair of ribs do not move.