

HUMAN ANATOMY AND PHYSIOLOGY-I, BP-101(T)

UNIT-II (Integumentary system)

CLASS:8

TOPIC – Introduction to Joints and Classification

The point at which two or more bones meet is called a joint or articulation. Joints are responsible for movement (e.g., the movement of limbs) and stability (e.g., the stability found in the bones of the skull). There are two ways to classify joints: on the basis of their structure or on the basis of their function.

Function of Joints

- 1. Serve as functional junctions between bones.
- 2. Bind bones, strokes, and other related tissues together.
- 3. Allow bone growth to occur.
- 4. Permit certain structures to change shape during childbirth (i.e. pubic symphysis).
- 5. Enable the body to have movements, lever actions, and body posture.

Classification of Joints on the Basis of Structure and Function

The point at which two or more bones meet is called a joint or articulation. Joints are responsible for movement (e.g., the movement of limbs) and stability (e.g., the stability found in the bones of the skull). There are two ways to classify joints: on the basis of their structure or on the basis of their function.

The structural classification divides joints into fibrous, cartilaginous, and synovial joints depending on the material composing the joint and the presence or absence of a cavity in the joint. The functional classification divides joints into three categories: synarthroses, amphiarthroses, and diarthroses.

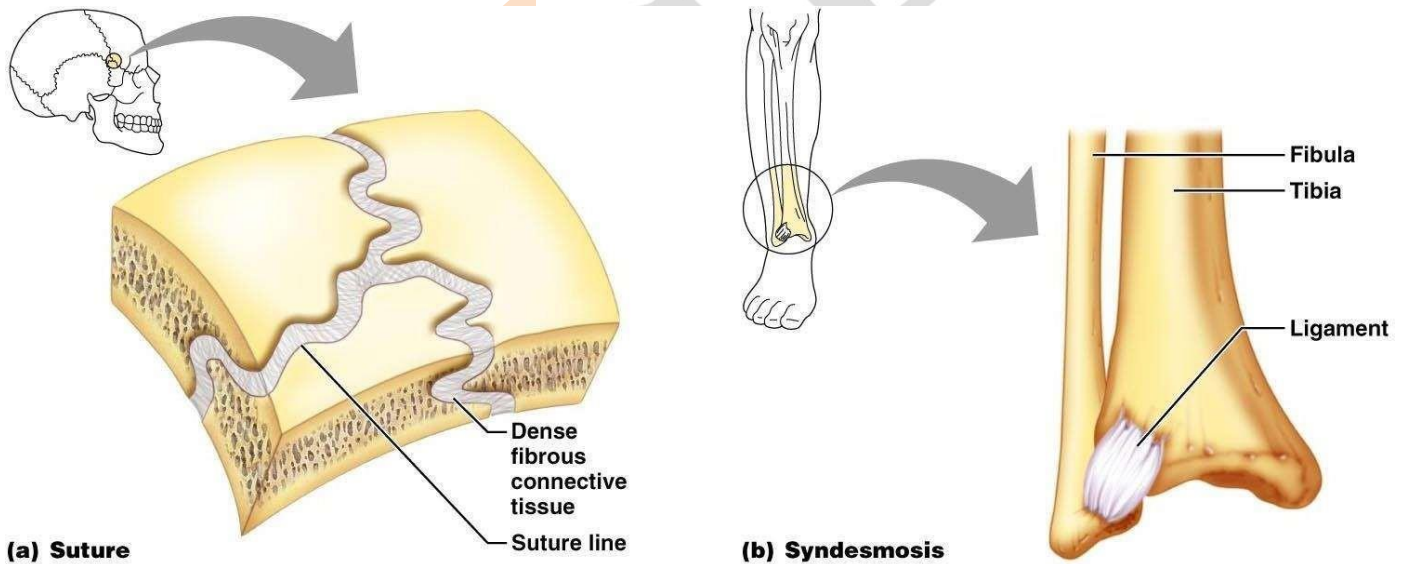
- 1. According to the type of tissue at the joint:
- a) **Fibrous joint** -- uses fibrous connective tissue to articulate bones.

- b) **Cartilaginous joint** -- uses hyaline cartilage and/or fibro-cartilage to articulate bones.
- c) **Synovial joint** -- uses auricular cartilage, synovial membrane, joint capsule, and ligaments to articulate bones.
- 2. According to the amount of movement at the joint:
 - a) **Synarthrotic joint** -- immovable joint.
 - b) **Amphiarthrotic joint** -- immovable joint.
 - c) **Diarthrotic joint** -- freely movable joint.

Fibrous Joints

- a) Occur between bones that have close case contact (e.g. cranial bones, tibia and fibula, ulna and radius).
- b) Fibrous connective tissue fastens the bones tightly.
- c) Small amount of movement (amphiarthrosis) or no movements at all is possible (synarthrosis).
- d) Subdivided into:
 - -- **Syndesmosis** = uses interosseous ligaments; amphiarthrotic (e.g. distal end of tibia and fibula).
 - -- **Suture** = uses sutural ligaments; synarthrotic (e.g. cranial sutures in the skull).
 - -- **Gomphosis** = uses periodontal ligaments; synarthrotic (e.g. joining teeth to maxilla and mandible).

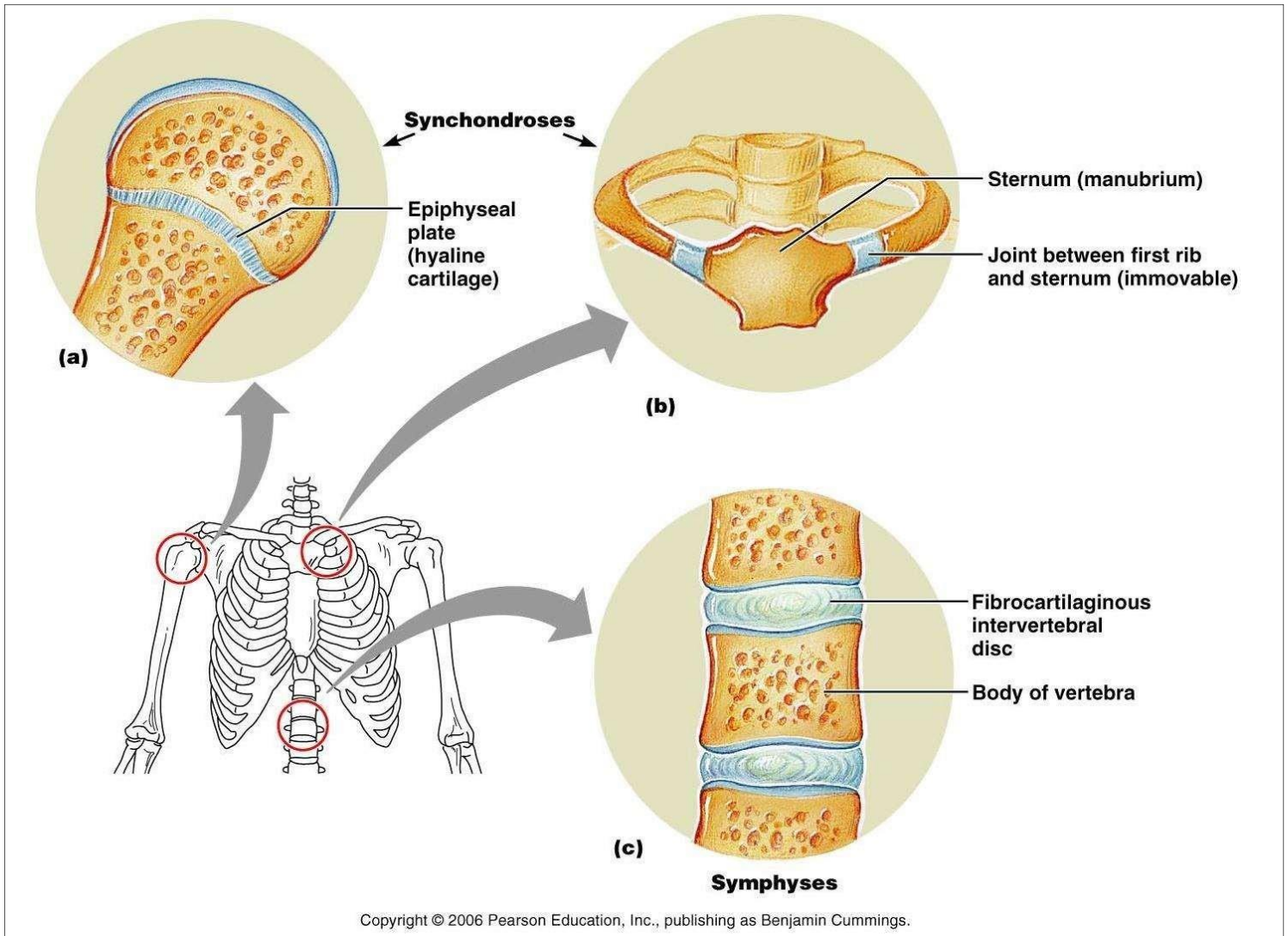
Fibrous Joint



Copyright © 2006 Pearson Education, Inc., publishing as Benjamin Cummings.

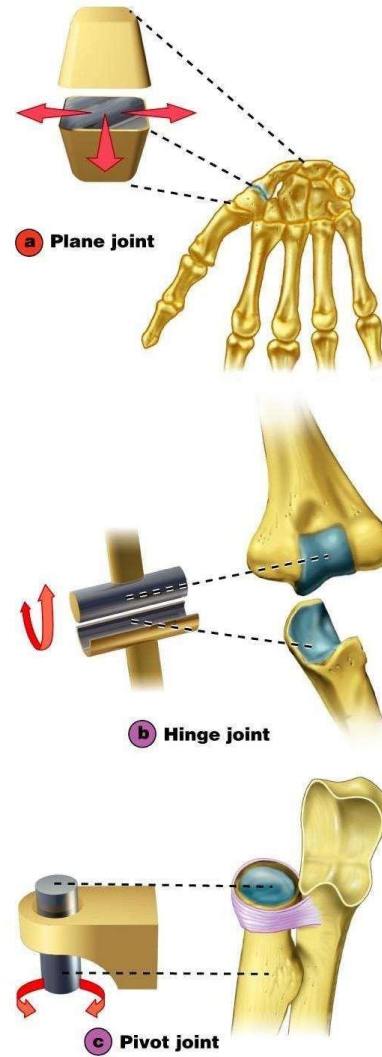
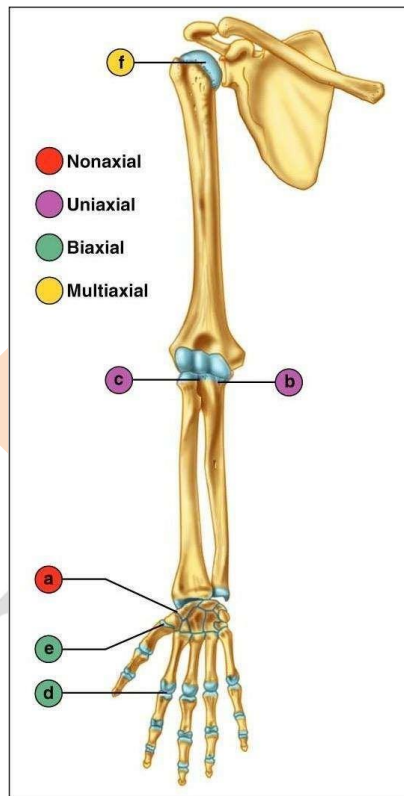
Cartilaginous joints

- a) Hyaline cartilage and/or fibro cartilage form the joint.
- b) Usually slightly movable (amphiarthrotic) and very strong.
- c) Subdivided into:
 - -- **Symphysis** = uses hyaline cartilage, synarthrotic (e.g. between the first rib and manubrium).
 - -- **Symphysis** = uses hyaline cartilage at the ends of bones, and a layer of fibrocartilage at the center; amphiarthrotic (e.g. intervertebral disk, pubic symphysis).



Synovial Joints

- a) Most joints are synovial joints.
- b) Usually freely movable (diarthrotic).
- c) Contain articular cartilage (at the ends of bones), joint capsule (fibrous connective tissue surrounding the joint), and synovial membrane (inner lining of the joint capsule).
- d) Subdivided into:
 - -- **gliding** = allows back and forth movement (e.g. carpals sliding onto one another during wrist movements).
 - -- **hinge** = allows folding movement (e.g. elbow joint).
 - -- **pivot** = allows rotation around an axis (e.g. between atlas and axis at the odontoid process).



Copyright © 2006 Pearson Education, Inc., publishing as Benjamin Cummings.