

HUMAN ANATOMY AND PHYSIOLOGY-1(BP101T)

UNIT: 2 SKELETAL SYSTEM

CLASS: 8

TOPIC: STRUCTURAL AND FUNCTIONAL CLASSIFICATION JOINTS AND TYPES OF JOINTS

1. The human skeleton needs to move, but bones are too rigid to bend without being damaged. Fortunately, flexible connective tissues hold bones together at points of contact called **joints**.
2. A joint, also called an **articulation** or **arthrosis** is a point of contact between two bones, between bone and cartilage, or between bone and teeth. The scientific study of joints is termed **ARTHROLOGY**.
3. The study of motion of the human body is called **KINESIOLOGY**.
4. **Joints are basically classified in to two types**

A. Functional classification: What is the function of the joint is called as functional classification. It furtherly divided in to 3 types

- ✓ Freely movable (**Diarthrosis**): It movable in two directions.
EX: Shoulder joint
- ✓ Slightly movable(**Amphiarthrosis**): A slightly movable joint. EX: Intervertebral disc.
- ✓ Immovable (**Synarthrosis**): Fusion of joints EX: Skull sutures.

B. Structural Classification: What is the structure of the joint that is called as structural classification.

- ✓ **FIBROUS JOINTS:** Also called as fixed joints/ Synarthrosis. It classified in to three types:

- **Sutures:** A suture is a fibrous joint composed of a thin layer of **dense irregular connective tissue**; sutures occur only between bones of the skull. There are different types of sutures. Both the bones are joining together surface of both the bones where they are joining these surfaces are smooth these kind of sutures called as **plain sutures**.
- Both bones the surfaces of the both bones are also same right they are also even but difference this that one bone is overlapping on another bone so such kind of suture called as **squamous suture**.
- Both the ends are uneven, looking like a saw edge so called as **saw edge sutures** or **serrated sutures**.
- **Syndesmoses:** **Band or ligament**, it is a **fibrous joint** in which there is a greater distance between the articulating surfaces and more dense irregular connective tissue than in a suture. The dense irregular connective tissue is typically arranged as a **bundle (ligament)**, allowing the joint to permit limited movement.
- EX: syndesmosis is the distal tibiofibular joint, where the **anterior tibiofibular ligament** connects the tibia and fibula. It permits slight movement
- **Gomphosis:** Dentoalveolar joint, in which a cone-shaped peg fits into a socket. The only examples of gomphoses in the human body are the articulations between the roots of the teeth

(cone-shaped pegs) and their sockets. The dense irregular connective tissue between a tooth and its socket is the thin periodontal ligament (membrane).

✓ **CARTILAGINOUS JOINTS:** cartilaginous joint lacks a synovial cavity and allows little or no movement. Here the articulating bones are tightly connected by either hyaline cartilage or fibrocartilage. The three types of cartilaginous joints are synchondroses, symphyses, and epiphyseal cartilages.

- **Primary cartilaginous joint:** They appear from birth.
- **Secondary cartilaginous joint:** They appear after birth.
- **Synchondroses:** A synchondrosis is a cartilaginous joint in which the connecting material is hyaline cartilage and is slightly movable to immovable (synarthrosis).
- **Ex:** Synchondrosis is the joint between the first rib and the manubrium of the sternum.
- **Symphyses:** A symphysis is a cartilaginous joint in which the ends of the articulating bones are covered with hyaline cartilage, but a broad, flat disc of fibrocartilage connects the bones. All symphyses occur in the midline of the body.
- The pubic symphysis between the anterior surfaces of the hip bones is one example of a symphysis.

- **Epiphyseal Cartilages:** Epiphyseal cartilages are actually hyaline cartilage growth centers during endochondral bone formation, not joints associated with movements. epiphyseal cartilage is the epiphyseal (growth) plate that connects the epiphysis and diaphysis of a growing bone. Functionally, epiphyseal cartilage is an **immovable joint** (synarthrosis).

