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Diploma in Pharmacy 1st Year
Human Anatomy & Physiology
Experiment

To study the given model of human joints.

Aim:

To study the given model of human joints.

Reference :

Dr. Gupta G.D , Dr. Sharma Shailesh , Dr. Sharma Rahul Kumar , "Practical Manual of Human Anatomy and Physiology" Published by Nirali Prakashan , Pg.No 53 - 56

Theory :

Any connection between bones of the skeleton is termed as a joint or articulation

Classification of Joints

1) **Fibrous Joints:** They are also termed fixed or immovable joints. There is a strong bond between the bones in these joints. As a result, these joints are immobile. For example, sutures of the skull and teeth in their sockets.
2) **Cartilaginous Joints:** They are also known as moveable joints.
   I. Hyaline cartilage covers the articular ends of the bones.
   II. The pad of fibro cartilage is present between the joints.
   III. Ligaments cover the joint.

   For example, symphysis pubis and intervertebral joints
3) **Synovial Joints**: They are also known as freely moving joints. These joints have the following characteristics:
   - Hyaline cartilage covers the articular ends of bones.
   - Ligaments hold bones together.
   - A fibrous capsule surrounds the joints.
   - Synovial membrane lines the capsule of the joint.
   - Synovial fluid is found in the joint cavity.

Classification of Synovial Joints

1) **Gliding Joint:** In this joint, two flat surfaces of bones glide on each other,
   For example, joint between tarsals and carpals bones.
2) **Hinge Joint:** In this joint, the movement is possible at one plane only.
   For example, elbow joint
3) **Pivot Joint:** In this joint, rotation is the only possible movement. For example, joints between radius and ulna.
4) **Ball and Socket Joint:** In this joint, end of one bone is ball like. It fits into the socket like cavity of another bone. For example, shoulder joint and hip joint.
5) **Condyloid Joint:** It is similar to hinge joints but movement occurs in two planes. For example, wrist joint.
6) **Saddle Joint:** It has one concave surface. This leads to free movement in all directions. For example, joint between metacarpal bone of thumb and trapezium.

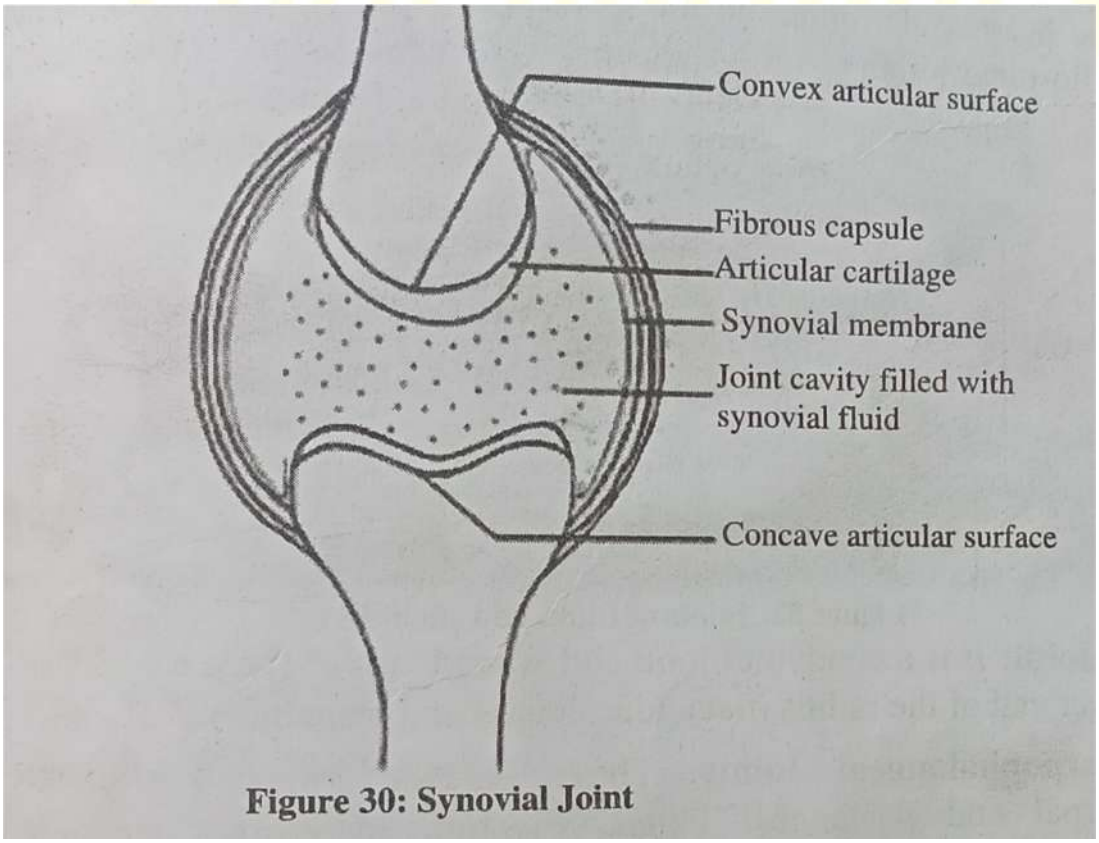

Figure 30: Synovial Joint

Joint of Upper Limb

1. **Sternoclavicular Joint:** It is a gliding joint that connects the stem and the clavicle. In the joint cavity between the bones, there is a cartilage pad
2. **Acromioclavicular Joint**: They are formed by the clavicle's roter end scaling with the scapula's acromion process. Between the ends of the bones, a cartilage pad is present. There is a limited amount of movement in all directions.

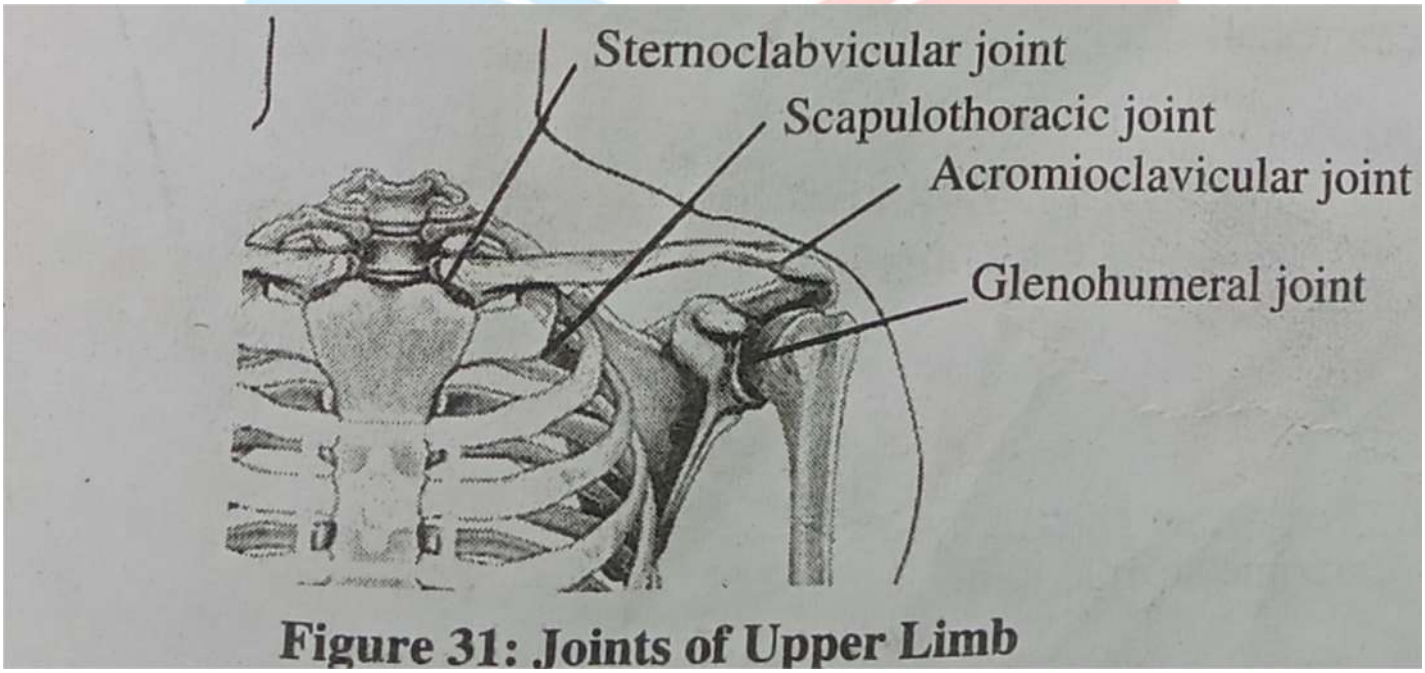

Figure 31: Joints of Upper Limb

3. **Shoulder Joint:** The shoulder joint is a ball and socket jone it is present between the head of the humerus and the glenoid cavity of the scapula Ligaments connect the bones together. These ligaments also produce a very loose capsule. A synovial cavity exists in the shoulder joint
4. **Elbow Joint:** It is a hinge joint. The humerus is on top, and the radios and ulna are on the bottom.
    i. The trochlear notch of the ulna and the trochlear surface of the funera form the humero-ulan joint.

ii. The head of the radius and the capitulum of the humerus form the humero-radial joint.

5. **Radio-Ulnar Joint:** The articulation of the radius and ulna at their upper and lower extremities forms the Radio-Ulnar Joint.
   i. The head of the radius and the radial notch of the ulna form the superio radio-ulnar joint
   ii. The head of the ulna and the lower end of the radius form the inferior radio-ulnar joint.

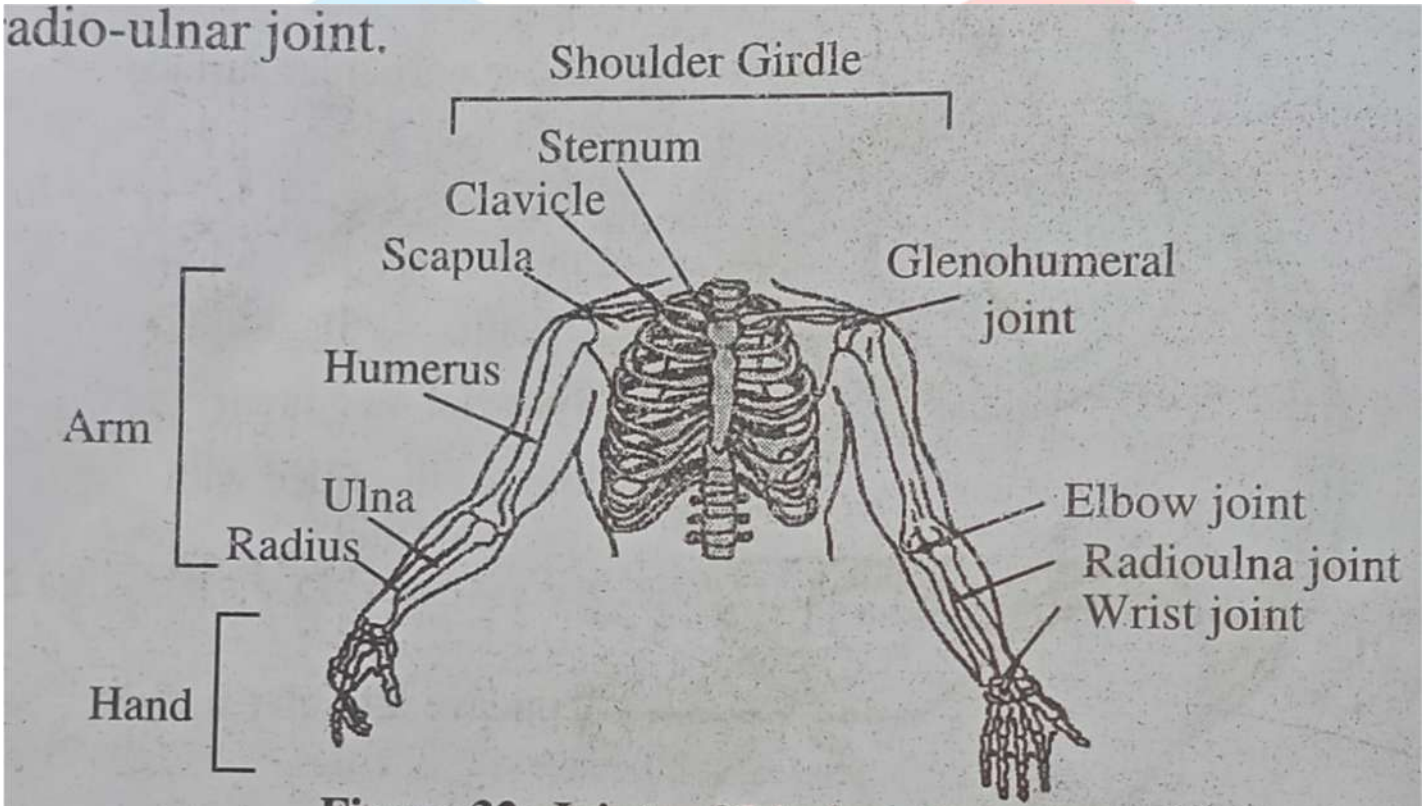

Figure 32: Joints of Limb and shoulder

6. **Wrist Joint:** It is a condyloid joint and is made up of three carpal bones and the lower end of the radius (navicular, lunate and triquetral).
7. **Metacarpophalangeal Joints:** These are the joints that connect the metacarpal and phalangeal bones. Flexion, extension, adduction, and abduction are the movements at these joints.

8. **Interphalangeal Joints**: These are the joints that connect the phalangeal bone of the same finger. The movements that are possible are flexion and extension.

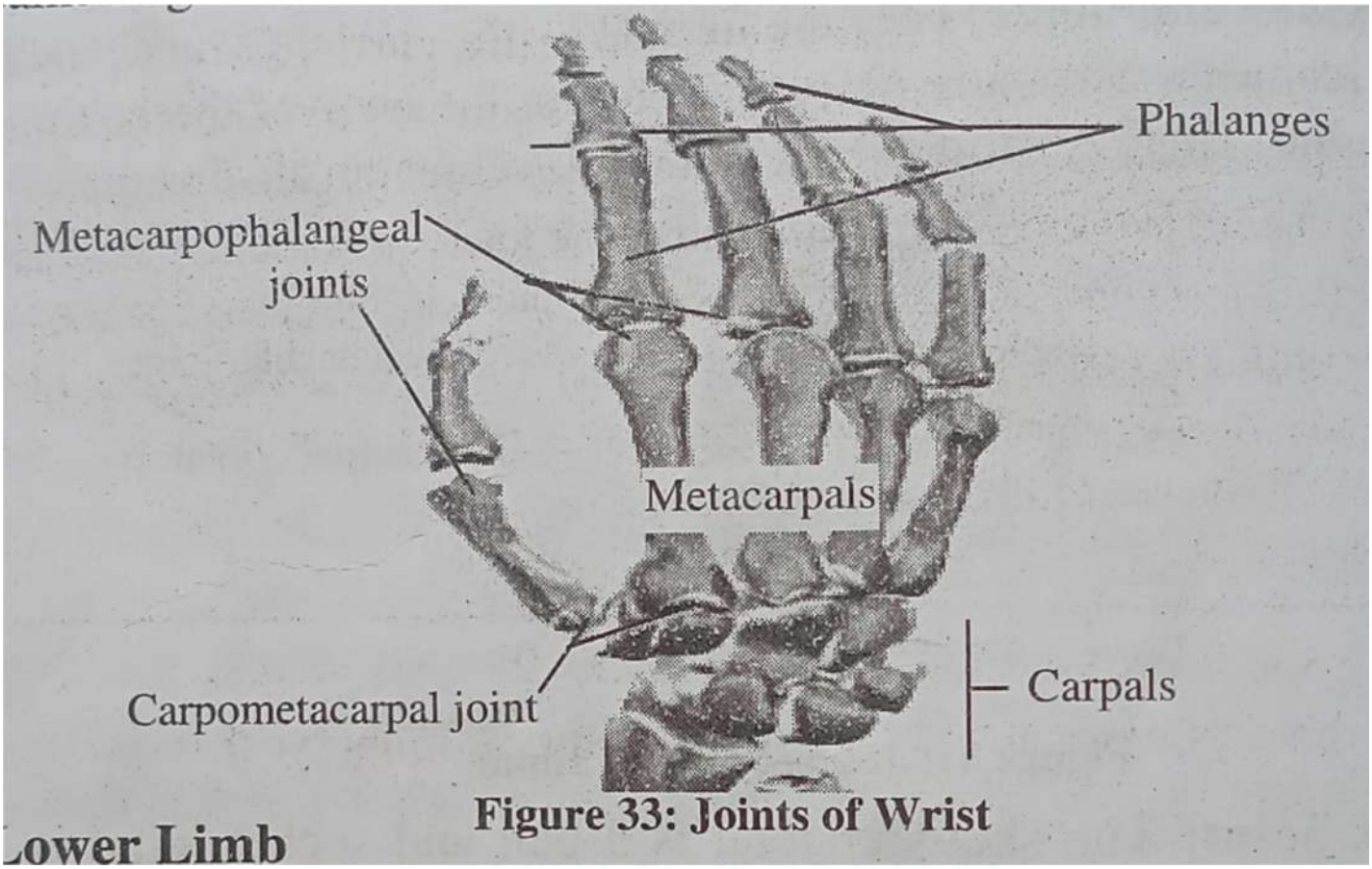

Figure 33: Joints of Wrist

Lower Limb

Joints of Lower Limb

1) **Hip Joint:** It is a ball and socket type of joint. It occurs between acetabulum of innominate bone and head of femur. The autabulum is deepened by ring of fibrocartilage called acetabular labrum.
2) **Knee Joint:** It is a hinge-jointformed by:
   i) Two condyles of femur articulating with the condyles of tibia.
   ii) Patella.
3) **Ankle Joint:** It is a hinge joint formed by tibia and its medial malleolus, lateral malleolus of fibula and talus below.

4) **Joints of the Foot:** They are - tarsal joint, tarso-metatarsal joints. Metatarsophalangeal joints and Interphalangeal joints.

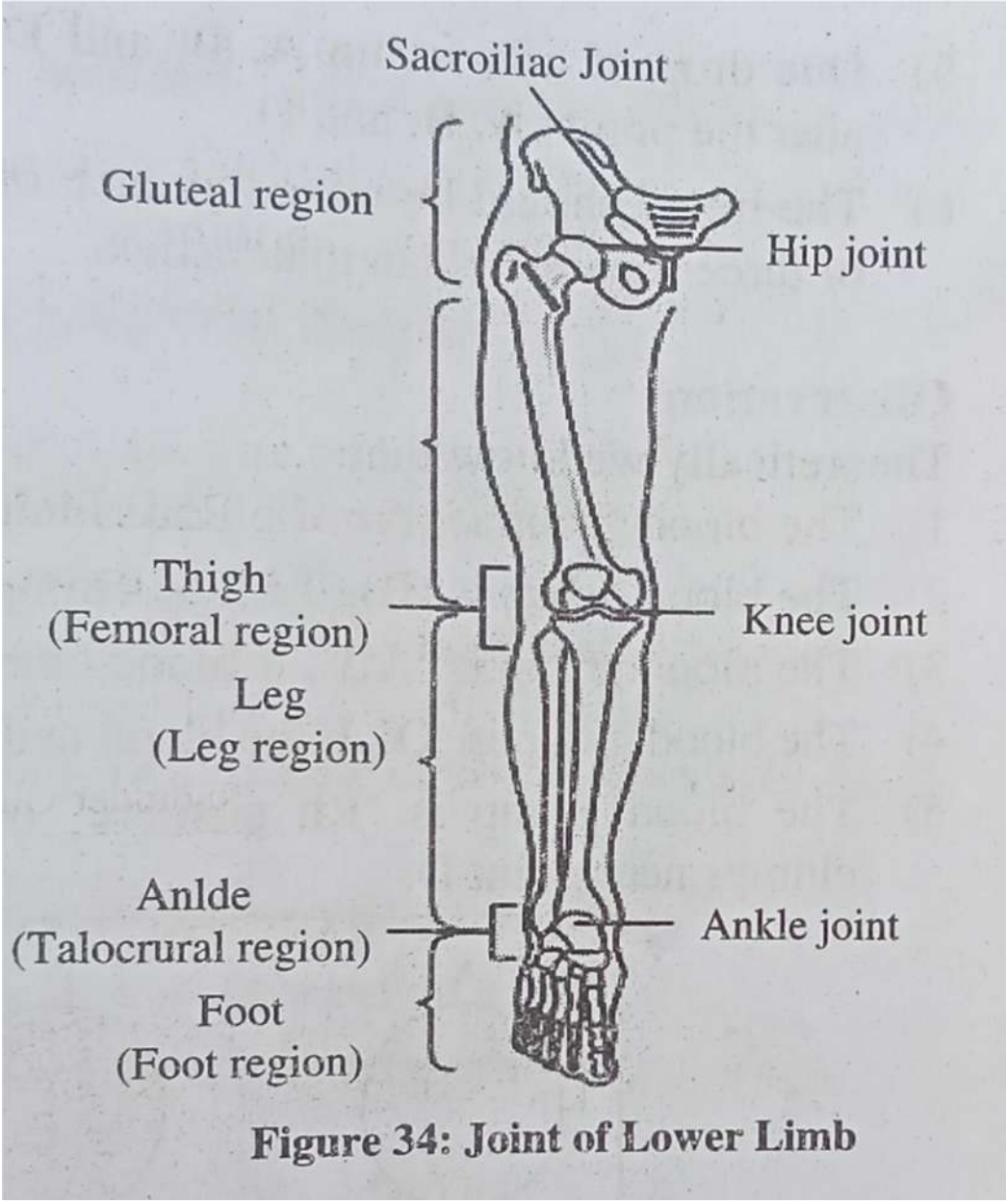

Figure 34: Joint of Lower Limb

Result: The given model of human joints was studied.