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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

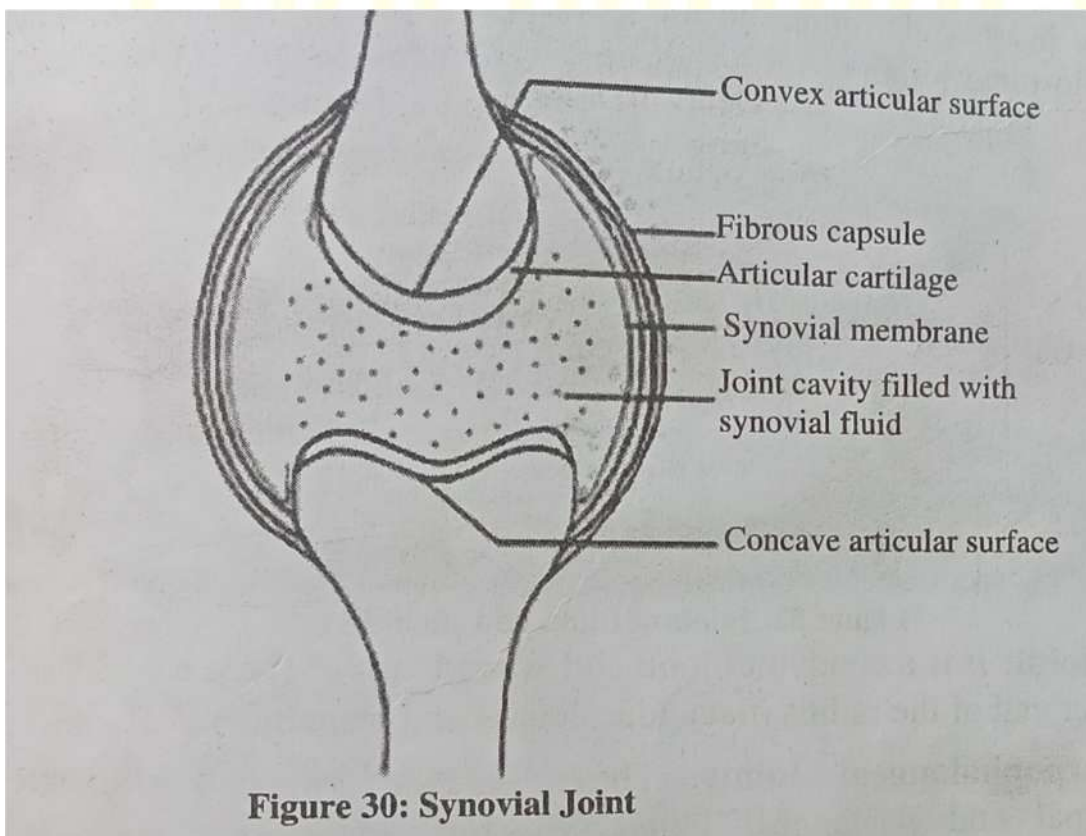
- 1) **Fibrous Joints:** They are also termed fixed or immovable joints. There is a strong bond between the bones in these joints. As a result, these joints are immobile. For example, sutures of the skull and teeth in their sockets.
- 2) **Cartilaginous Joints:** They are also known as moveable joints.
 - 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.

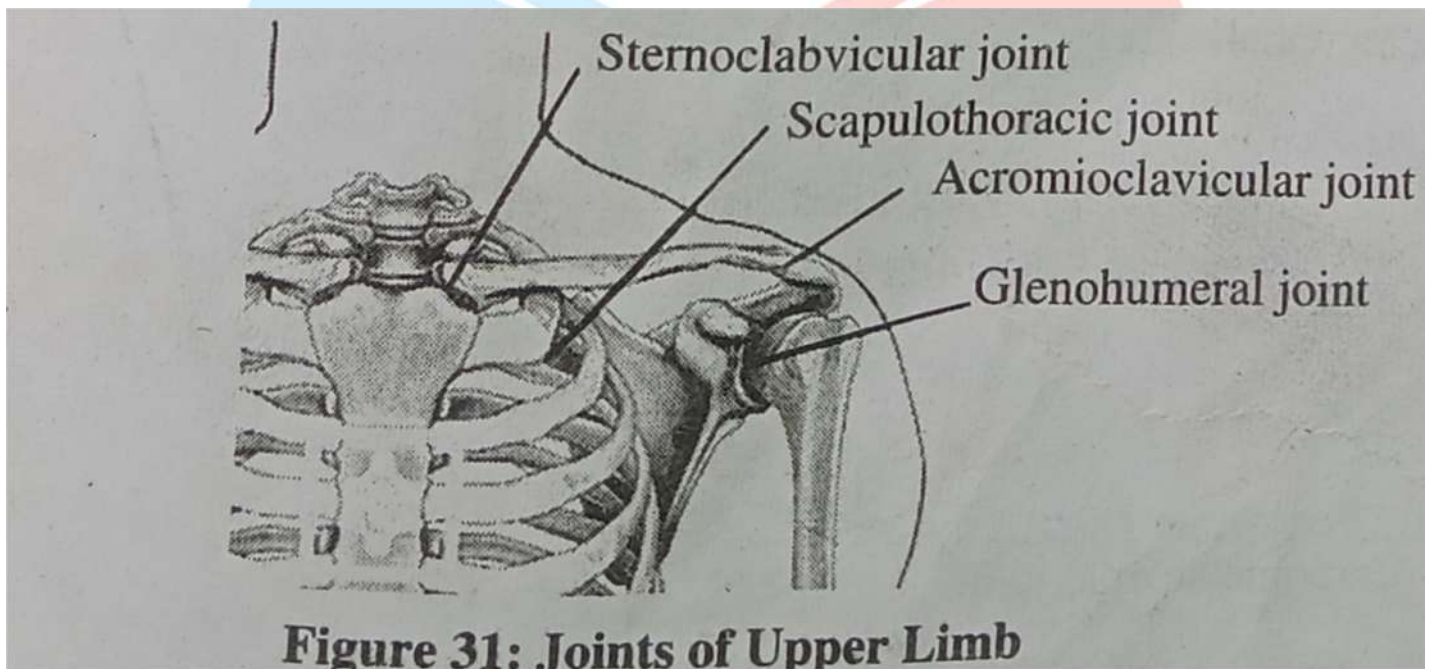
Classification of Synovial Joints

- 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.



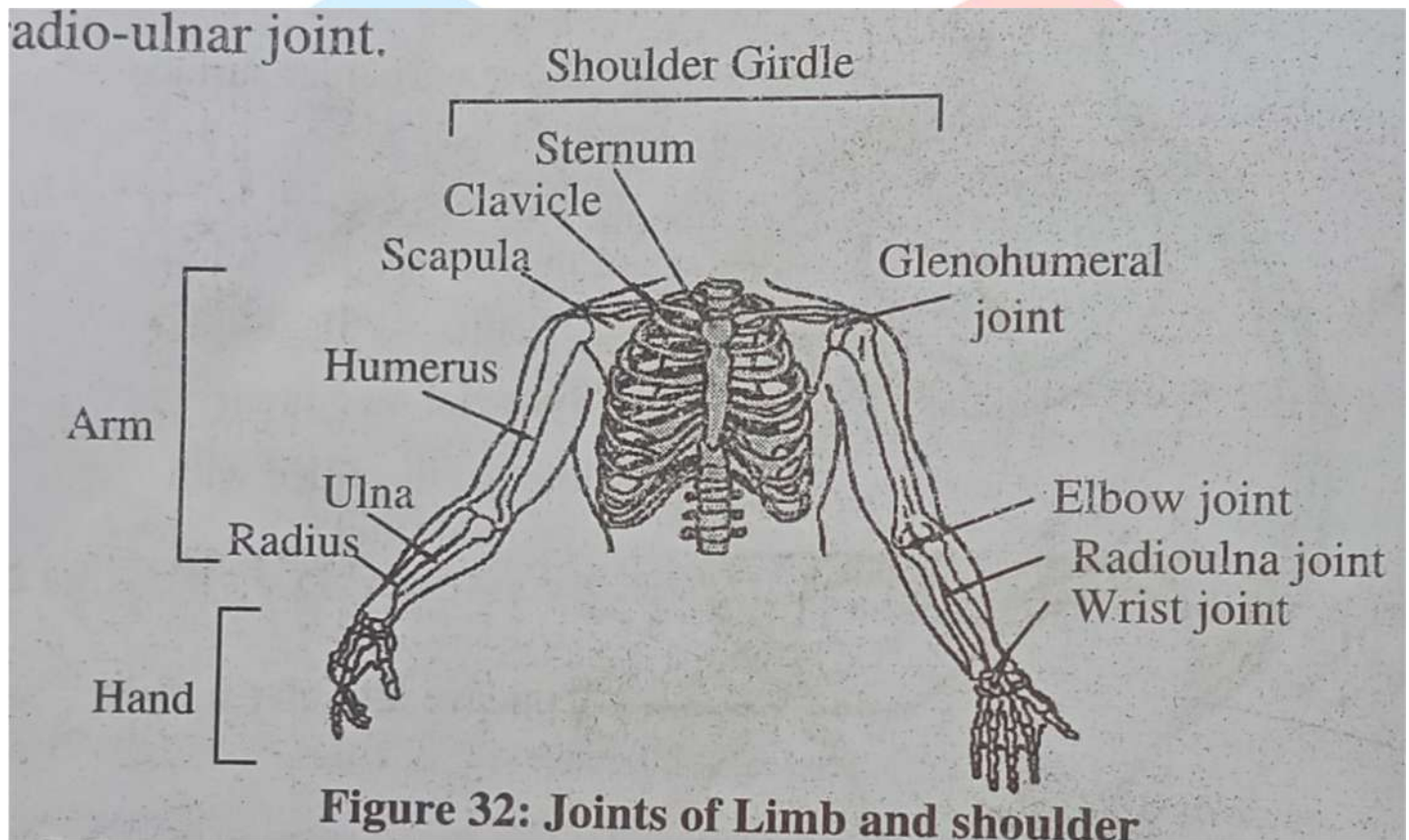
Joint of Upper Limb

1. **Sternoclavicular Joint:** It is a gliding joint that connects the sternum 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 rounded end articulating 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.



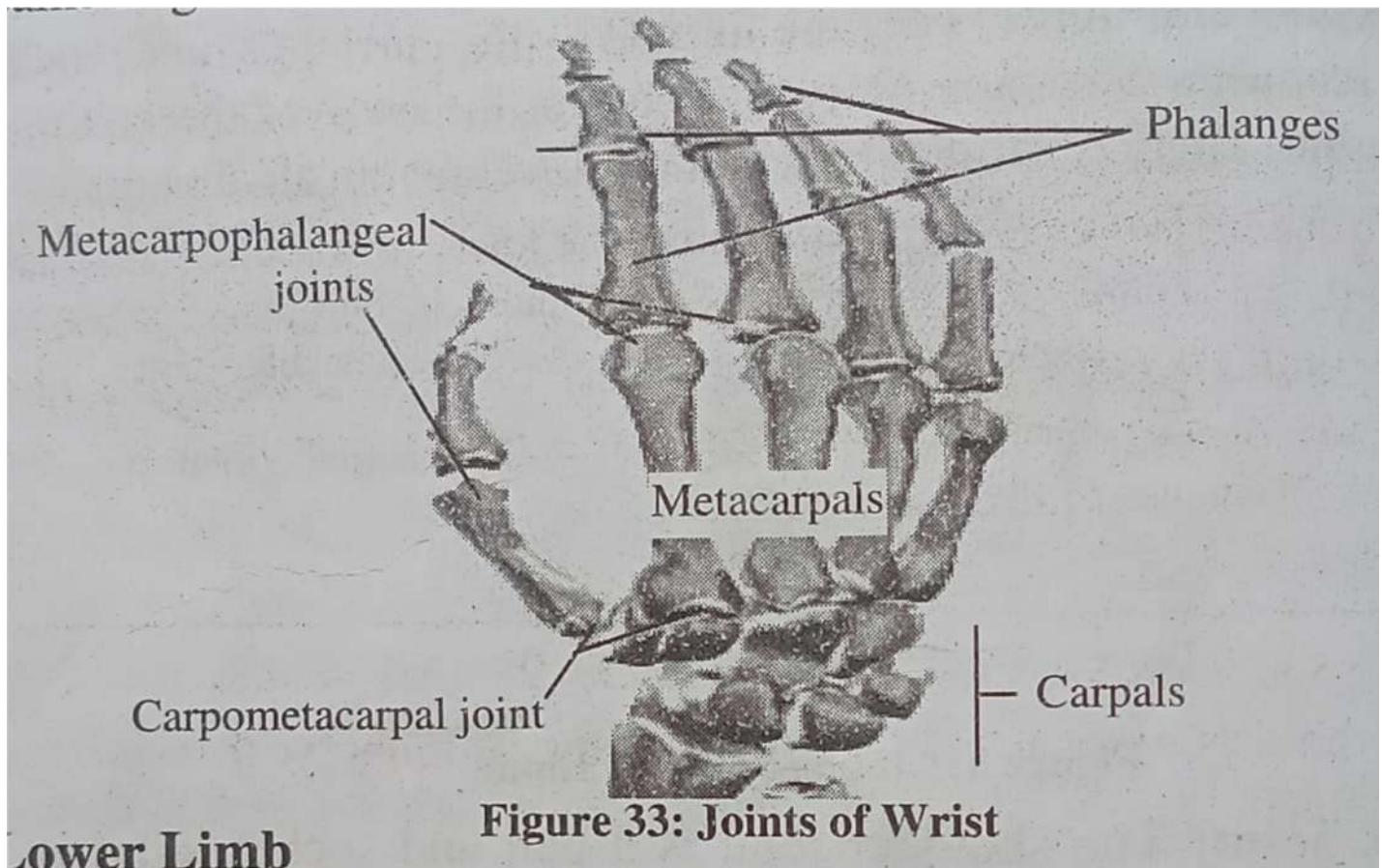
3. **Shoulder Joint:** The shoulder joint is a ball and socket joint. It is present between the head of the humerus and the glenoid cavity of the scapula. Ligaments connect the bones together. These ligaments also produce a very loose capsule. A synovial cavity exists in the shoulder joint
4. **Elbow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



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.

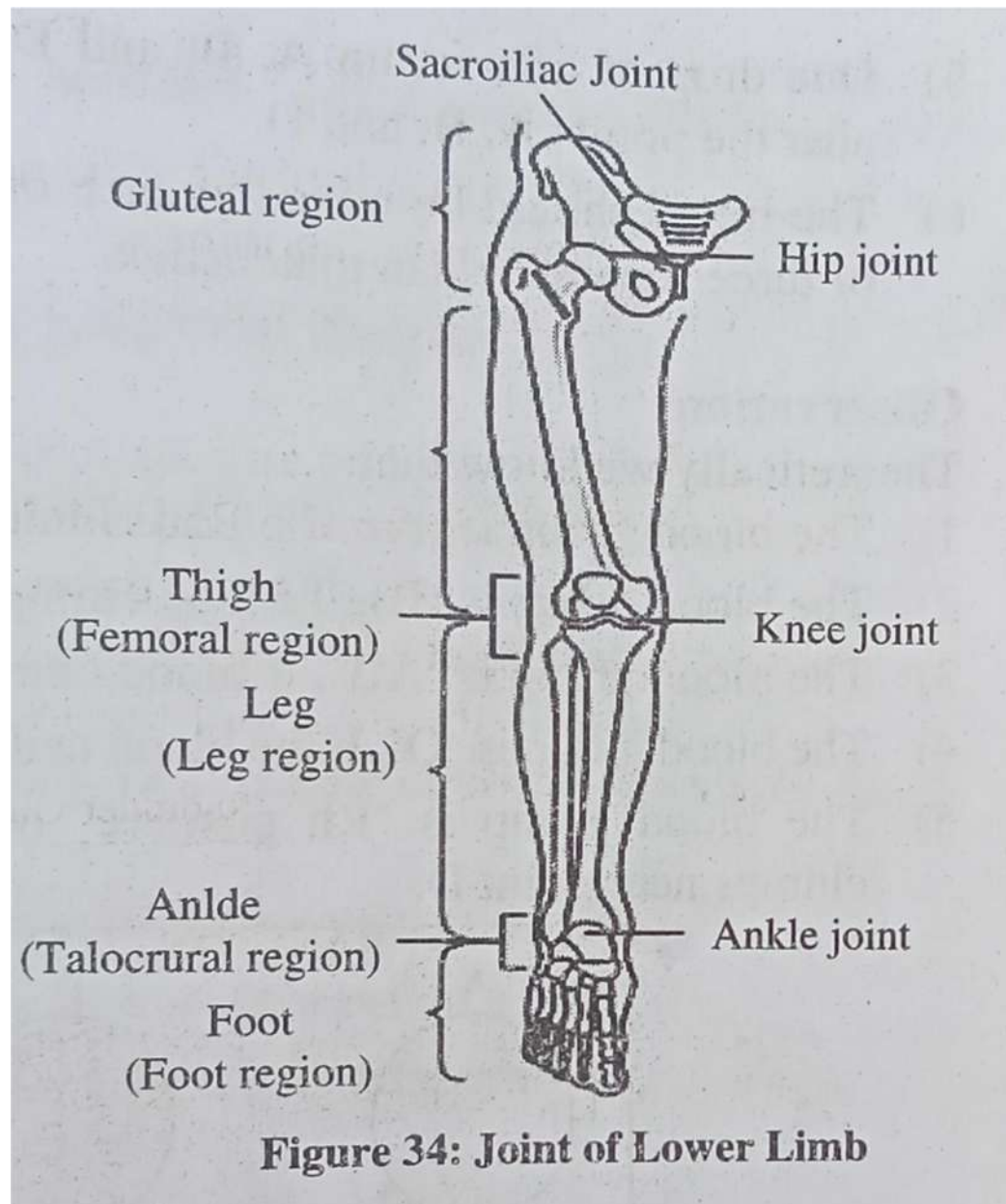
8. Interphalangeal Joints: These are the joints that connect the phalangeal bone of the same finger. The movements that are possible are flexion and extension.



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 acetabulum is deepened by ring of fibrocartilage called acetabular labrum.
- 2) **Knee Joint:** It is a hinge-joint formed 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.



Result: The given model of human joints was studied.

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