

2.6 Understand the structure of and list the functions of ligaments.

The elasticity of the fibrous ligaments allows them to change shape and lengthen under stress and then return to their original shapes.

Functions:

1. *Define Range of Motion*

- *Ligaments determine how much joints can move.*
- *Structures that keep a joint from becoming dislocated; that is, they limit how much a joint can move in any direction.*
- *This function serves to stabilize each joint.*
- *For example, spinal ligaments hold the vertebrae together and thus maintain the shape and limit the movement of the spine.*

2. *Protect Joints and Bones*

- *Function to protect the bones that form each joint.*
- *Ligaments can stretch and contract when necessary which allows them to absorb shock under stress.*
- *For example, the ligaments in the spine protect the vertebrae when you suddenly change your posture or lift a heavy object*

3. *Proprioception*

- *Are part of the proprioception function in the human body.*
- *Proprioception refers to your ability to know the position of any joint in your body, thus maintaining the correct posture and movement of an individual.*
- *This function enables bones, muscles and ligaments to work together to make the joint work correctly and without injury.*

2.7 Understand the classification of ligaments as capsular, extracapsular and intracapsular.

2.8 Identify examples of capsular, intracapsular and extracapsular ligaments.

1. **Capsular Ligaments:** (forms part of a capsule) Capsular ligaments are part of the articular capsule that surrounds synovial joints. They act as mechanical reinforcements. - Inner fibers: Circular
 - Outer fibers: longitudinal
 - Example: Capsular ligament of shoulder
2. **Intracapsular Ligaments:**
 - A ligament in a joint that is within the capsule.
 - Provide stability but permit a far larger range of motion.
 - An example of an intracapsular ligament is any of the **cruciate ligaments** of the knee joint.

3. Extracapsular Ligaments: A ligament around a joint that is outside the capsule.

- Provide joint stability
- Example: The sacrotuberosus ligament

2.10 Understand the structure of and list the functions of articular disks.

- Pads of fibrocartilage that are situated between the articular surfaces of some synovial joints.
- Functions: Act as shock absorbers between bones.
 - Aid mechanical fit between articular surfaces. (sometimes the end of bones cupped/curved to improve bone attachment/how well bones fit well together).
 - Restrain movement: Act like ligaments to help prevent unwanted movement.
 - Assist lubrication: Assist in spreading synovial fluid, making sure it is around the articular cartilage, where it needs to be.
 - Permit different movements to occur simultaneously in the one point. E.g. Jaw (TMJ2 separate cavities that allow rotational movement)

2.10 Understand the structure of and list the functions of bursae. (purse) - A small sac with synovial fluid within the sac.

- Reduces the mechanical friction between structure as they slide on one another.e.g. a bone and another bone.
- Located between layers of muscle and where muscles and tendons lie over bony premises.
- Muscle and bone
- Tendon and bone
- Ligament and bone

2.11 Define and demonstrate the following types of movement about synovial joints: - Active: Movements that we control ourselves.

- Produced by muscles contracting and pulling on a bone to cause movement. - Passive Movements: (Physiological) An external force causes this movement.
 - The movement can be produced voluntarily by the person as well.
 - E.g. Someone flexing another person's knee to see the range of motion.
- Passive Movement: (Accessory) A joint movement that is necessary for a full range of motion but is not under direct voluntary control. Examples include rotation and gliding. • Used during treatment and diagnosis
 - Cannot be produced actively.
 - Movement of articular surfaces within joint capsule.

2.12 Define and demonstrate the terms used to describe active movement about joints

Angular Movement: Produced by changing the angle between the bones of a joint.

1. **Flexion:** Flexion refers to a movement that decreases the angle between two body parts. Flexion at the elbow is decreasing the angle between the ulna and the humerus.
2. **Extension:** Refers to a movement that increases the angle between two body parts. Extension at the elbow increases the angle between the ulna and the humerus.
3. **Abduction:** A movement away from the midline – just as abducting someone is to take them away. For example, abduction of the shoulder raises the arms out to the sides of the body.
4. **Adduction** is a movement towards the midline. Adduction of the hip squeezes the legs together.

Rotational Movement: The movement of a bone as it rotates around its longitudinal axis.

1. **Medial rotation:** A rotational movement towards the midline. It is sometimes referred to as internal rotation. Example: With a straight leg, rotate it to point the toes inward.
2. **Lateral rotation** is a rotating movement away from the midline.
 - **Elevation** refers to movement in a superior direction (e.g. shoulder shrug) - **Depression** refers to movement in an inferior direction.
 - **Supination:** This is easily confused with medial and lateral rotation, but the difference is subtle. With your hand resting on a table in front of you, and keeping your shoulder and elbow still, turn your hand into its back, palm up. This is the supine position, and so this movement is **supination**.
 - Again, keeping the elbow and shoulder still, flip your hand into its front, palm down. This is the prone position, and so this movement is named **pronation**.
 - When lying flat on the back, the body is supine. When lying flat on the front, the body is prone.
 - Inversion and eversion refer to movements that tilt the sole of the foot away from (eversion) or towards (inversion) the midline of the body.