**Class VI**

**Science**

**Ch-8 Body Movements**

A change in the position of any object or any body part is called **movement**. Movement of the whole body from one place to another is called **locomotion**.

## Human Body and Its Movements

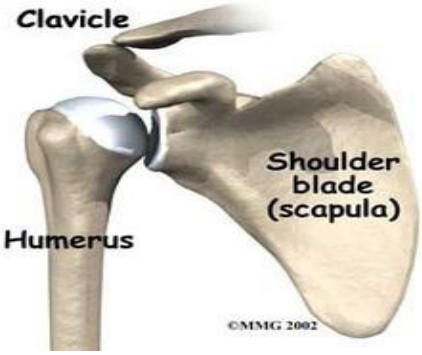
Our body can move its different parts in different directions easily. These movements of body parts are possible only where two parts of our body meet or joined together.

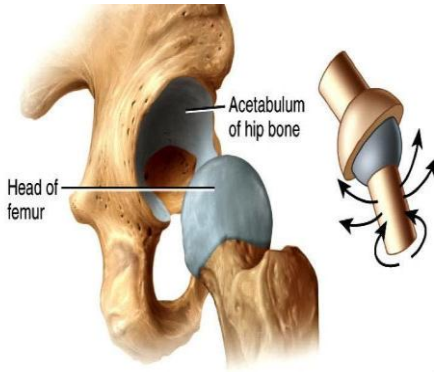
## Joints

The places where two or more bones meet or joined together are called **joints**. The hard structures inside our body are called **bones**. There are different types of joints in our body that help us to carry out different movements and activities. Most of the joints in the human body are **freely movable joints**. These freely movable joints are of four main types, depending on the type of movement they allow. The joints in which no movement of bones is possible are called **fixed joints.**

## Movable Joints

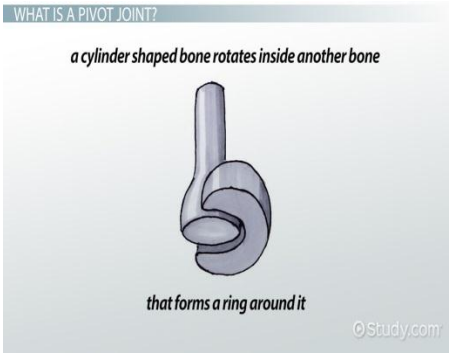
### Ball and Socket Joints

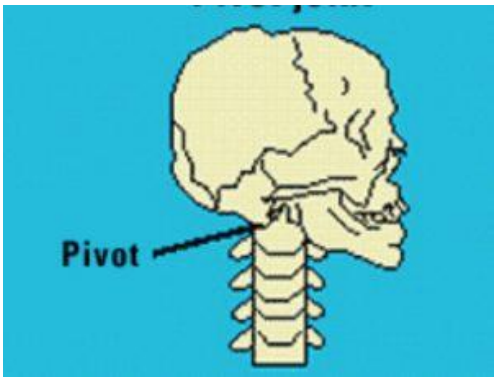



In ball and socket joint, one end of the bone has a round shape like a 'ball' which fits into the cavity (socket or hollow space) of the other bone. In this joint, bones can be turned in any direction. **E.g. joints between shoulder and upper arm, joints between thigh and hip are ball and socket joints.**

### Pivotal Joint

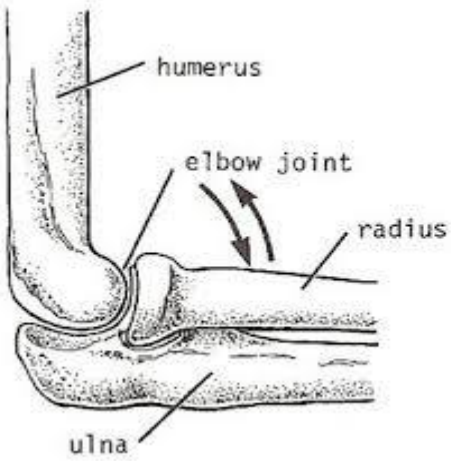


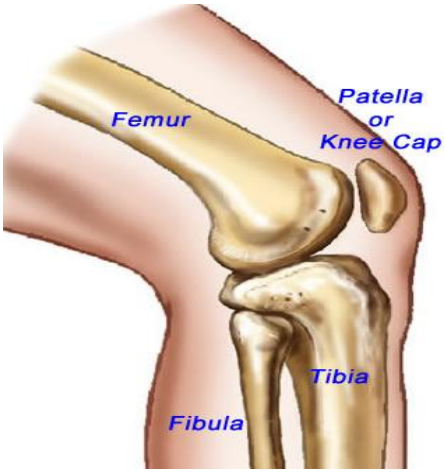




In this joint a cylindrical bone rotates in a ring. It allows rotation around an axis.

**E.g. Pivotal joint exists between our skull and top vertebra of backbone.**

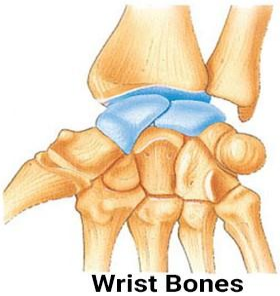
## Hinge Joint



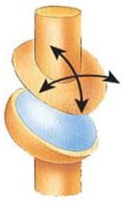




A hinge joint allows the movement of bones in only one direction i.e forward and backward. **E.g. Elbow joint between upper arm and forearm, knee joint between thigh bone and lower leg are hinge joint.**

## Gliding Joint

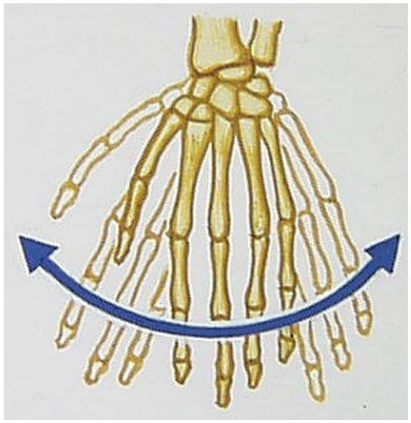

Wrist Bones

Gliding Joint



# Gliding Joints

- Gliding Joint allows some movement in all directions, where by the bones slide along each other.
  - Examples: wrist, ankle, vertebrae

In this joint ,two bones can slide upon each other. **E.g Joints between the bones of wrist and between the bones of ankle are gliding joint**

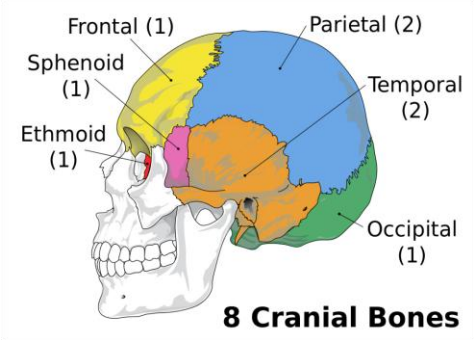
**SKELETAL SYSTEM**

The bony framework inside our body is called **skeleton**. Functions of skeleton are:

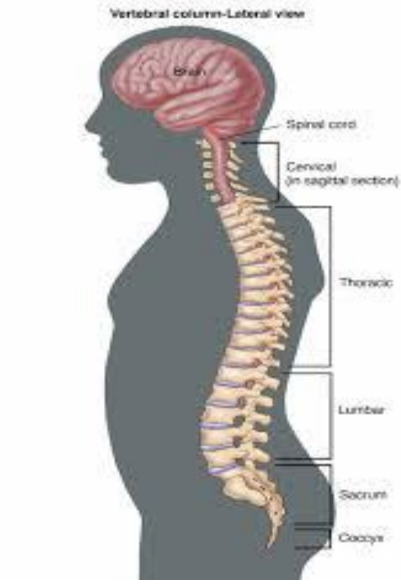
- ❖ Skeleton gives shape to our body.
- ❖ Skeleton protects delicate organs of the body.
- ❖ Skeleton helps in movement of body parts and locomotion.
- ❖ Skeleton provides joints for attachment of muscles of the body.

The human skeleton consists of skull, backbone, ribs, ribcage, shoulder bones, hip bone (pelvic bones), arm bones and leg bones.

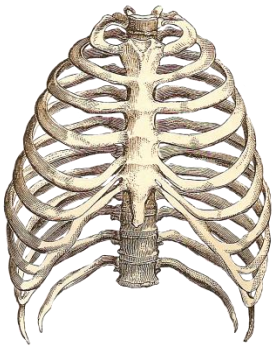
- ➢ Skull-The skull protects the brain as well as special sense organs of vision, hearing and smell. Skull consists of 22 bones. **Cranium** is the upper part of the brain which consists of 8 bones. It protects the brain. There are 14 **facial bones**, which consist of upper jaw and lower jaw. The lower jaw is movable.

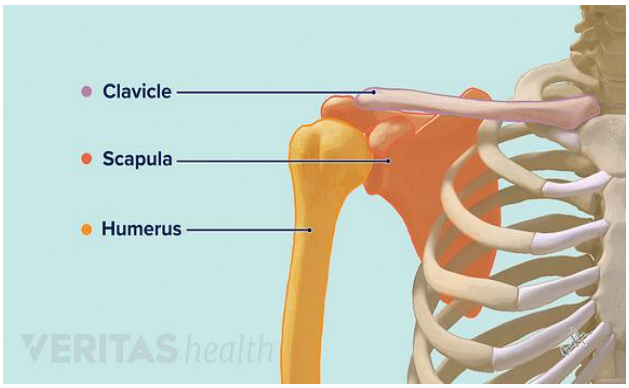



- Backbone (Vertebral column)-The backbone extends from the base of the skull to the hip. It consists of 33 small ring-like bones called vertebrae. Vertebrae are joined to each other and form a hollow bone tube-like structure which protects spinal cord that passes through it.




- Rib Cage- Rib cage is formed of 12 pairs of **ribs**. Ribs are the curved bones in our chest. The first 10 pairs of these ribs are attached to the breastbone at the front. The last 2 ribs are free. These are called **floating ribs**. The rib cage protects lungs, heart and liver.






- Shoulder Bones- The shoulder bone is formed by the collar bone (clavicle) and the shoulder blade (scapula) at the back.

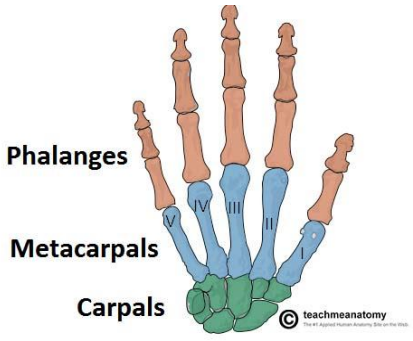
- Hip Bone (Pelvic Bone)-The hip bone is made up of a number of bones fused together by fixed joints. It encloses the portion of our body below the stomach.

- Bones of the Hand-Our hand is made up of three parts: wrist, palm and finger

Wrist: 8 bones called carpals

Palm: 5 bones called metacarpals

Fingers: 3 bones in each finger, but thumb has only 2 bones called phalanges.




Cartilage-Cartilage are additional parts of the skeleton that are not as hard as the bones and can be bent. Cartilage is present in upper part of ears, at the end of nose. It is also found in the bone joints.

Functions of cartilage- It gives support and shape to the ear and nose. Reduces the friction and allows the bones to move easily over each other without damaging them.

Muscles- Muscles are the elastic bundle-like structures, attached to the bones by tough fibres called **tendons**.

- A muscle can only pull a bone, it cannot push a bone.

- The muscles joined to our bones work in pairs. When one muscle of the pair contracts(shortens), then the other muscle of the pair is stretched (relaxed). Thus muscles work by **contraction** and **relaxation**.
- At joints , bones are held together by the flexibe and elastic connective tissue called **ligaments**.