Body Movements

- **Human Skeletal system**
  - The bony framework of our body is called skeleton
  - The human skeleton is made up of bones and cartilages.
  - Cartilage is the additional part of the skeleton which is not as hard as bone and which can be bent. E.g. Upper part of an ear.
  - The human skeleton is classified as **Axial Skeletal** (consists of the skull, rib cage, and backbone) and **Appendicular Skeletal** (consists of upper limbs, lower limbs, girdles-shoulder bones, and pelvic bones).
  - It protects many internal organs.
  - It gives shape to the body and helps in movement.

- **Joints**

  - The places where two parts of our body seem to be joined are known as joints. For example, elbow, shoulder, neck, etc.

  - There are different types of joints in our body that help in movement.

- **Ball and socket joint**

  - This joint allows movement in all directions.
  - Example - shoulder joint

- **Pivotal joint**
  - This joint allows only rotating movements i.e. one bone rotates over other in a ring fashion.
  - Example - neck joint

- **Hinge joint**
  - This joint allows only back and forth movement.
  - Example - knee joint

- **Fixed joint**
  - The bones at this joint cannot move.
  - Example - skull joint

- **Movement in other animals**

- **Earthworm -** It moves by alternate extension and contraction of the body using muscles. It has bristles connected to muscles that help in gripping the ground.
- **Snail -** It moves with the help of a muscular foot.
- **Cockroach -** It has distinct muscles for movement and also has two pairs of wings.
- **Birds -** The bones of hind limbs are used for walking and perching and the bones of forelimbs are modified as wings. The bones of birds are hollow and light.
- **Fish -** It has streamlined body shape, fins, and tail that help in movement.
- **Snake -** It curves to form many loops. These loops press hard against the ground and cause the snake to be pushed forward. The bones and muscles help in movement.
- ***Hydra*** – It shows movement with the help of its tentacles. In looping movement it bends and touches the surface with its tentacles. After that foot also looses its hold and in this way *Hydra* moves forth. In **somersaulting movement,** *Hydra* takes a somersault to move forth.

- Muscles are one of the contractile organs of our body.
- They are the fleshy parts of our body, which help in the movement of different body parts.
- Alternate contraction and relaxation of muscles helps in the movement of bones.
- The muscles work in pairs to move a bone.
- Muscles are of of three types: voluntary muscles, that can be controlled by our will, involuntary muscles, that cannot be controlled by us, and cardiac muscles, that are special kind of involuntary muscles and are found only in heart.
- Lever Mechanisms in Human Skeleton
  - First Order Lever: Fulcrum (F) is in between Power (P) and Weight (W). Example, extension of arm at the elbow by the action of triceps muscles, and resting of skull on first and second neck vertebrae.
  - Second Order Lever: Fulcrum and power are at the two ends with the weight in between. Example, gastrocnemius muscle raising weight of the body on the toes.
  - Third Order Lever: Fulcrum and weight are at the two ends with the power in between. Example, biceps muscles flexing the arms.
- When some muscles undergoes contraction, at the some time there are some muscles of the same group that relax which helps in performing various operations.
- **Biceps** are present on the front part of our upper arm while **triceps** are at the back.
- **Abdominal muscles** (abs) are pair of muscles present in the front of abdomen.