

# Body Movements

## Introduction

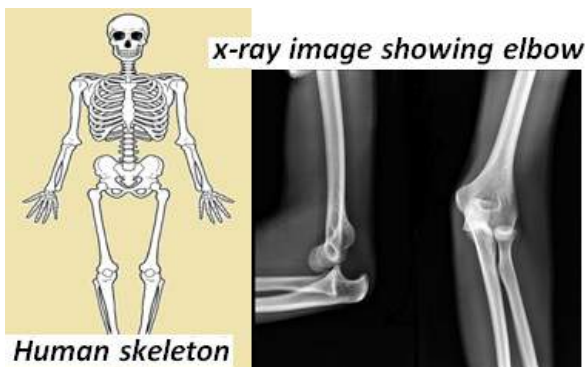
- There are various kinds of movement that we observe in our day to day activities.
- Movement of hands while playing, skipping and doing exercise, blinking of our eyes, movement of leg while walking and running.
- We are able to bend and rotate our body in place where two bones are joint together due to which we can move our hands, fingers, necks, leg in different directions.
- In this chapter we will learn about these joints present in human body and how it works.



*Pictures showing various types of movements we do in our daily life*

## Types of joints in Human Body

- The bones present in our body form a framework this frame work is called **Skeleton**.
- This frame work is necessary to support many organs present in our body, because of this framework we can stand still, can walk, can run and can do various physical activities.
- Each part of our body has different work. So the structure of bones and joints present is also different from one another, you can observe this by feeling your hands, legs, ankle, knee, head, neck.
- You also had come across the x-ray image of any of the body part which clearly shows the bones beneath the skin.

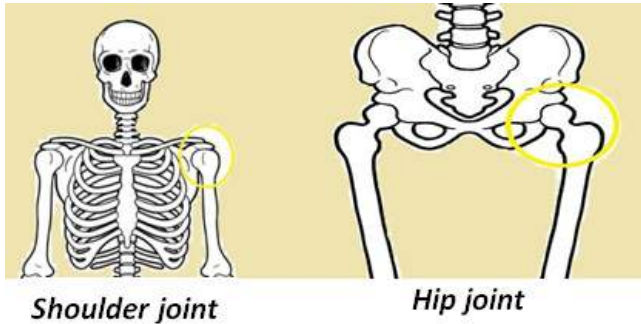


### Different types of Joints

- Ball and socket joints
- Pivotal joints
- Hinge joints
- Fixed joints

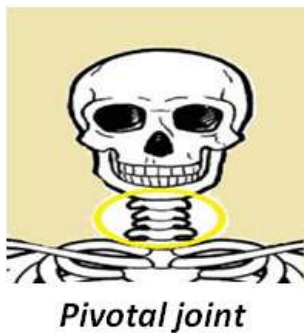
## Ball and socket joints

- This is the type of joint in which ball shape surface of one bone fitted into the hollow space of another bone also called socket.
- In this type of joint movement can be done in all the directions. For example: shoulder joint, hip joint



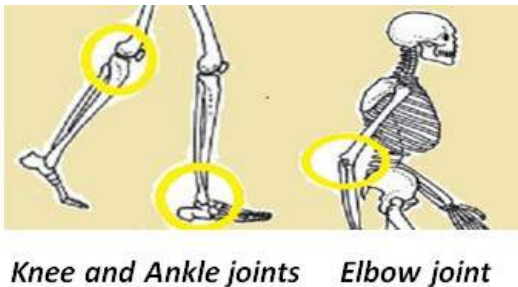
## Pivotal Joints

- Pivotal joints allow for rotation, twisting, extension, and flexibility.
- This is the joint where our neck joints head and allow the movement of forward, backward, left and right direction.
- It is moreover like a cylindrical bone moving in a ring.



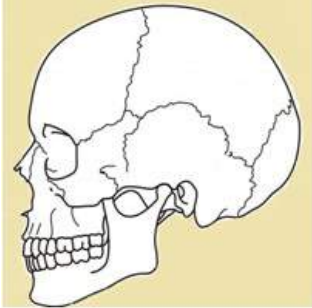
## Hinge Joint

- Hinge joints are found between the two or more than two bones where we need back and forth movement. For example: knees, elbow, ankle joints.



## Fixed Joint

- As the name says these type of joints are called fixed because it does not move in any direction.
- For examples : Bones present in your head also called skull bone which does not move. You can observe by moving your jaw but you can not move your upper part of mouth because it is fixed.



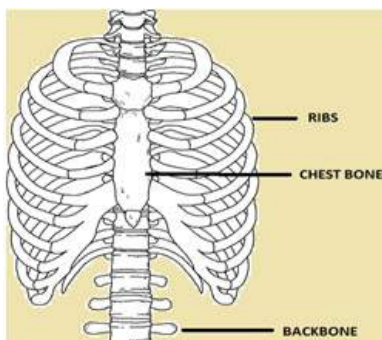
***Fixed joint present in skull***

## Bones

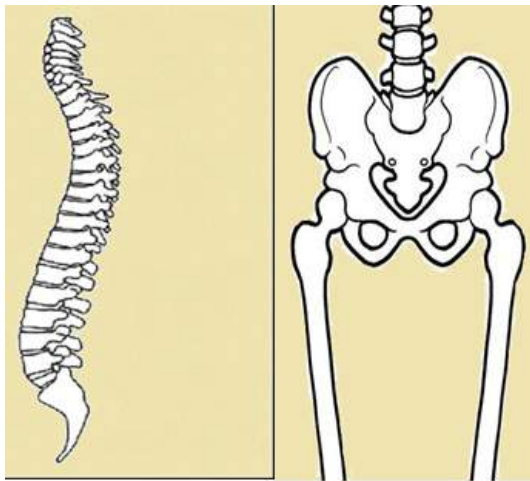
- Skeletal structure is composed of hard material which is made up of calcium called
- In adult human body **206 bones** are present of various shape and size according to there functions.

### Various shape and functions of bones

- If you breath in deeply you can feel with your hands the chest bone in front side which is joined to the number of small bones on the back side these small bones combinely called as **backbone**, which is helpful in bending front and back.
- Bones which join the chest and the backbone is called ribs present left and right side of chest bone these were 12 pairs of ribs these bones combinely called as **rib cage**.
- It protects lungs and heart from any mechanical rear and tear.
- If you will touch just below your stomach area you will find the presence of **pelvic bone**. This is the kind of bone you sit on.
- **The skull** is the most hard and tough bone of our body which protects our brain from any mechanical injuries.



***Rib cage***



***Backbone***

***Pelvic bone***

## Cartilage

- **Cartilage** is also an important component of body. when you touch your ear and nose you will find it flexible this is due to the presence of cartilages.
- It is softer and more flexible than bone. Cartilage is also found between the joints of knee and hips.



***cartilage present in nose and ear***

## Muscles

- **Muscles** are attached to the bones and is responsible for the movement of human body. There is change in the length of muscle due to contraction and relaxation.
- If you move your arm touching your shoulder you will observe the bulging part on your arm, this is muscle due to contraction and it come back to its normal position if you stretch your arm and muscle come to relax.



***Picture showing contraction and relaxation of muscles***

## Various kinds of movements in animals

Various animals possess various kind of movement like swimming, running, jumping, flying, gliding, crawling etc. which is necessary for them to search food and for reproduction. Some of the kinds were discussed below,

### Earthworm:



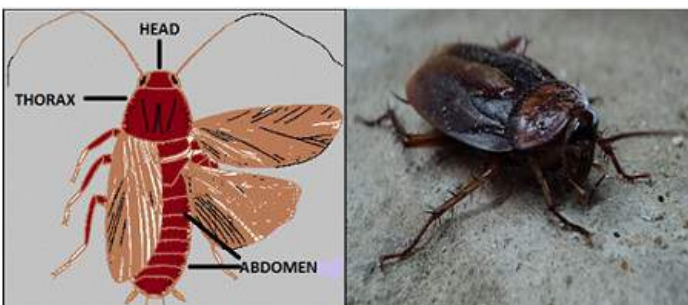
- Earth worms commonly found in soil, feed on dead organic matter (for example: dead leaves, dead animals)
- Earthworms do not have bones.
- Their body is segmented, forms rings all over.
- The earthworm stretches one part of its body while contracting the other and this alternative stretching and contracting movement makes its body move forward.
- Earthworm eats its way through the soil and excretes the undigested material.
- Their movement in soil makes the soil fertile that's why earthworms are also called farmers' friend.

### Snail:



- Snails are commonly found on land or in soil.
- A snail possesses wavy movement with muscular contraction.
- It also secretes a sticky substance called mucus which helps to reduce friction between the snail and the ground so that they can move easily.
- It has a shell on its back which is hard but not made of bone and is not helpful in locomotion.
- A snail's locomotion is frequently called crawling.

### Cockroach:



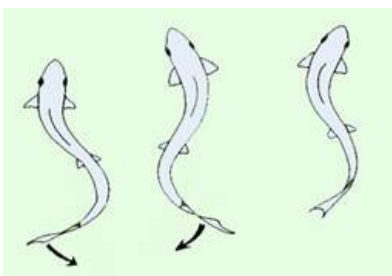
- Cockroach is an insect and is a terrestrial animal mostly a common household pest.
- Cockroaches possess various type of locomotion they can walk, climb, fly.
- The body is divided into three parts—head, thorax, and abdomen. 3 pair of legs are present in thoracic part which moves by the muscles present near its limbs (legs).
- The body is covered with the outer hard exoskeleton. It uses breast muscles for the movement of wings due to which they can fly.

#### **Birds:**



- Birds were egg laying animal with feathers, wings and beak.
- Birds can fly, can run, can walk, can perch, can swim as well possess various kinds of movements.
- But not all the birds can fly. For example: Penguin, Ostrich cannot fly these are called flightless birds.
- Fore limbs of birds were modified into wings due to which these can fly.
- Hind limbs are legs due to which they can jump, walk or swim as can be seen in ducks.
- The skeleton of birds is hollow to reduce weight and the breastbone muscle use to move the wings up and down.
- The birds with heavy bone weight cannot fly much higher.

#### **Fishes:**



- Fishes found in oceans, rivers, lakes, aquarium etc.
- Fish locomotion is swimming in water. Body of fish is slimmer than the middle portion, it is called tapered ends and this shape is called streamlined body.
- This type of shape allows the fish to move easily in the water.
- Fishes has well-arranged skeleton covered with strong muscles.
- Fishes swims by moving its body and tail in opposite direction to each other, they stretch the body and relaxing the tail in opposite direction this forms a curve, then quickly the body moves other side and the tail on the opposite this creates the jerk and pushes the fish in forward direction.
- This movement is helped by the fins present on tail and also the fins presents on body helps to balance the body while swimming.

**Snakes:**

- Snakes live on ground, water, on trees. These were legless reptile.
- Snakes possess wavy motion it has a long backbone covered with muscles and skin.
- Snakes cannot move on frictionless surface like glass.
- During its movement snakes creates curves in many loops which pushes them to the forward direction, they moves very fast but not in straight-line the motion created by snakes is called serpentine motion.