



Joints And Movement

The joints in the body are the places where two bones are joined together. The joints are strong enough to withstand jerks. The ends of bones are covered with soft cartilage. It acts as a shock absorber and reduces friction between the bones. Cartilage is also present in some parts of the body that are not as hard as the bones, for example the upper part of the ear. The bones are held together at the joints by strong, stretchy bands called Ligaments. There are many joints in the body. The joints are of three types, depending on the types of movement they allow—immovable, slightly movable and freely movable.

The bones in the skull (except the lower jaw bone) do not allow any movement. The joints between the ribs and the breastbone allow only slight movement. 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.

Hinge Joint: The elbow, knee and finger joints allow movement in one plane only, that is, up and down, or backward and forward, like the hinges of a door. Such joints are therefore called hinge joints.

Ball and Socket Joint: The shoulder and hip joints allow movement in all directions. In such joints, the end of one of the bones is round like a ball. It fits into a hollow part (or socket) in the other bone.

Pivot Joint: The neck joint also allows movement in all directions. It allows you to move your head up and down, left and right and also to rotate it. In such joints, one of the bones ends in a rounded or conical surface that fits into a dent in the other bone. Such a joint is called a pivot joint.

Gliding Joint: The wrist or ankle joints have flattened ends of bones that can move (or glide) against each other. These joints allow side to side as well as backward and forward movement. The vertebrae also have similar joints that allow slight movement.

What makes the bones move?: bones cannot move by themselves. It is your muscles, attached to the bones that make them move at the joints. Muscles are like elastic bands. They are attached to the bones by means of tough connecting bands called tendons. The muscles move the bones by their pull. Muscles cannot push. Therefore, to move the bone in one direction, at least two sets of muscles are required. For example, the up and down movements of your arm are controlled by two muscles—biceps and triceps.

Movement In Other Animals

The body structure of an animal determines the kind of movement they exhibit. We know that our backbone helps us stand upright and enables us to move. Based on the presence or absence of the backbone (vertebral column), animals are divided into two groups:

Vertebrates Animals that have a backbone are called vertebrates. For example, fish, frog, lizard, horse, and birds.

Invertebrates Animals that do not have a backbone are called invertebrates. For example, earthworm, snail, cockroach, etc.

Animals have different types of skeletons—the skeletons of some animals do not have bones at all! Therefore, the ways in which they move are also different.

Earthworm: Earthworms have liquid skeletons. They have liquid trapped in spaces inside the body. The muscles squeeze against the liquid. This keeps the body firm. The earthworm first extends the front part of its body, keeping the rear part fixed to the ground. Next, it fixes the front part and shortens it, thus pulling the rear end forward. It carries out such expansion and contraction of muscles repeatedly to move forward.

Snail and Cockroach: The snail carries a house on its back. It is a skeleton which is outside the body, but is not made up of bones. Such a skeleton is known as an exoskeleton. Crabs and insects such as cockroaches also have exoskeletons. Exoskeletons give support and protection and also allow movement at the joints.

6th – Forms And Movements In Animals II



The snail has a thick structure called a foot. It is made up of strong muscles. It produces a series of wave-like movements that push the snail's body forward.

Fish: The skeleton of a human body is inside the body. Such a skeleton is known as endoskeleton. Fish, amphibians, reptiles, birds and mammals have endoskeletons. They all have backbones and are known as vertebrates. Muscles that enable the fish to move are found on either side of back-bone. These muscles contract on one side and expand on the other. This moves the body from side to side, in a zig-zag pattern. The tail fin of the fish moves along with the body in a zig-zag pattern, it pushes against the water. This force moves the fish's body forward. To help movement in water, fishes have a streamlined shape—rounded in front and narrow at the back. This reduces the water resistance and enables the fish to glide along in the water.

Snake: A snake is a vertebrate. It has a long backbone which is very flexible. The snake can curve its body into many loops. Each loop pushes against the ground to give a forward push to the body. Therefore, when moving forward, its body moves from side-to-side in a wavelike motion.

Bird: Birds fly with their wings which are modified forelimbs. They use their legs or hind limbs to walk, run and hop. Some birds also swim in water. The bones of the birds are hollow and very light, making it easy for them to rise in air. Strong muscles in their breastbones help birds to flap their wings and fly.

X-rays: Sometimes when we get hurt, doctors take an 'X-ray' photograph of the injured part to find out if there is any fracture in the bones. X-rays were discovered by German physicist Wilhelm Conrad Roentgen in 1895. Roentgen discovered these rays accidentally, while working in his laboratory. In various experiments, he found that these rays were able to pass through tissues, but not through bones. Today, X-rays are commonly used in medicine (to diagnose fractures) and scientific research.

