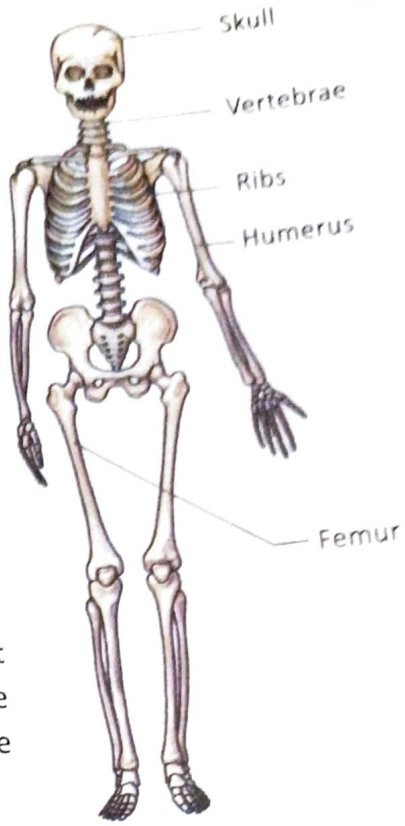
It occurs in the form of scales in fish, epidermal scales and long scales in reptiles, wings, feathers and claws in birds and hair and nails in mammals.

b. ***Endoskeleton***

The hard skeletal framework inside the body is called endoskeleton. It is formed of cartilages or bones or both. In birds and mammals, endoskeleton is bony. In fishes and frogs, the endoskeleton is made of both cartilages and bones.



Skeletal system

Functions of Skeletal System

a. It is necessary to have a hard framework to support soft parts otherwise the body will collapse. The skeleton provides this support and holds the body upright.

b. It gives proper shape to the body. It protects the soft organs of our body like lungs, heart, brain, etc. The brain is protected by skull, the heart and lungs by the thin long bones in our chest called ribs.

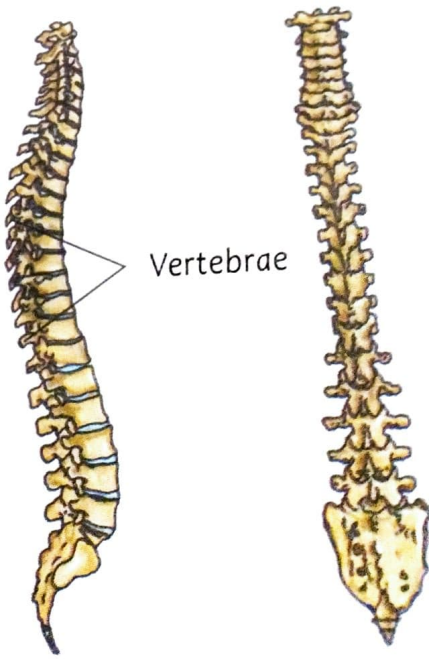
c. Though the individual bones are hard, several of them can move at places where they are joined to other bones. It helps in the movement of fingers, legs, arms and many other parts of the body.

d. Bones are hard from outside, but they are soft and spongy on the inside. The inside of bone contains a soft substance called bone marrow. Blood cells are made in the bone marrow.

e. Bones store essential body minerals like calcium and magnesium.

Backbone

The backbone is made up of 33 small bones called vertebrae. They are joined to each other. The joints allow the slight movement of vertebrae which helps us to bend and twist our back. The backbone is attached to the base of the skull. It forms the central supporting rod for the skeleton. Each vertebra has a hole in it. The delicate organ of our body called the spinal cord passes through these holes. So, backbone protects the spinal cord. The backbone is also called the vertebral column. The backbone serves several important functions. It allows humans to stand upright and maintain their balance.



Sagittal (Lateral view) Posterior

Rib Cage

The rib cage is divided into three categories- true ribs, false ribs and floating ribs. The ribs are thin, flat, curved bones that form a protective cage around the delicate organs in the upper part of the body. It consists of 24 bones arranged in 12 pairs. The upper seven ribs are called true ribs as they are directly attached to the breast bone. The next three are called false ribs. They are joined to the ribs above each other. The last two pairs are called floating ribs as they are not attached to the breast bone. It is the framework of bones in the chest. They resemble a cage enclosing three vital organs i.e. heart, lungs and liver.

Rib cage

Joints

The joints in the body are places where two bones are joined together. The joints strong enough to withstand jerks. The ends of the bones are covered with cartilage. It acts as a shock absorber and reduces friction between the bones ankles and the feet have a number of small bones.

The femur is attached to the hip bone through hip joint. The upper arm has one bone called the humerus.

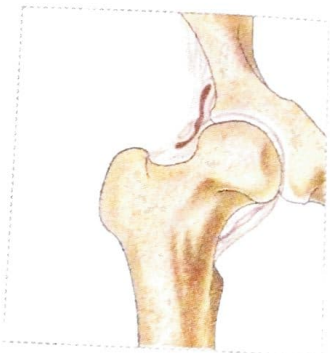
The humerus is attached to the vertebral column through the collar bone and shoulder blade. The bones are held together at the joints by strong bands ca ligaments.

The main part of the skeleton from which the movement is possible are the joints joint is the meeting place of two bones.

There are various types of joints in our body like– Ball and socket joint, Pivot joint, Hinge joint, Fixed joint, Gliding joint and Saddle joint.

Bones are rigid structures and we cannot imagine any kind of movement in the body without joints and muscles.

Now, we will learn about the different types of oints–



Hips

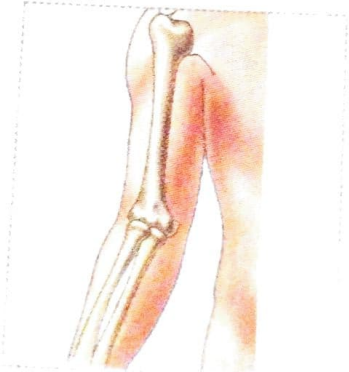
Shoulder

1. Ball and Socket Joint

In ball and socket joint, a ball like end of one bone fits into a socket like hollow of the other bone.

These bones freely rotate about the joint.

Location– Hips and shoulders.



b. Hinge Joint

In hinge joint, the end of one bone fits into a corresponding depression of the other bone.

The movement of such joints is similar to the swinging of a door on its hinge. Such joints are therefore called hinge joints.

Location– Knee and elbow joints.

c. Pivot Joint

In this joint, the rounded structure of one bone fits into the ring like structure of the other bone.

The first bone is capable of free movement about the other bone. 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.

Location– Joints between different vertebra.

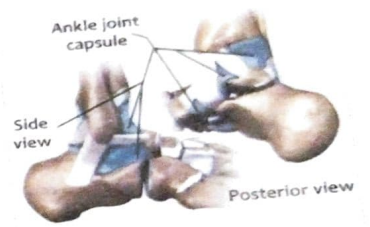
Pivot joint–Neck

d. Gliding Joint

The wrist or ankle joints have flattened ends of the 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. Such joints are called gliding joints.

Location– Wrist and ankle joints.

Wrist joint



Ankle joint

e. Fixed Joint

Fixed joint does not allow any movement. It is present just for the sake of protection.

Location– Bone of the skull.

f. Saddle Joint

It is an imperfect ball and socket joint, in which one bone is moveable on the other fixed bone in many directions.

Location– Thumb joint i.e., the joint between first metacarpal and carpal.

Cartilage

As already stated, the skull has holes for eyes, nose and ears. The nose and ears are made up of structures which can be called as false bones. These false bones are called cartilage. Cartilage is soft bone like structure which makes up our ears and nose.

Muscles

As we have already seen that bones help in movement of our body. But bones alone cannot do this as they are stiff. If you bring your hands close to your face, you see your arms looking stout. When you let your hands go back to its position, you find it straight again. What is it that makes it look stout or straight?

There is something that is attached to our bones which makes us look flabby and fleshy. This is what we call muscles.