

1A)Protection :- This where the skeleton is used to protect vital organs. The ribs are used in this to protect the lungs and heart and they are attached to the thick bone called the sternum. The pelvis is also used to protect the reproductive organs.

Movement :- The skeleton is used to move the whole body anywhere. Every bone in the body is used for movement but the most important ones are the vertebrae, femur, tibia, fibula (legs) humerus, ulna and radius (arms).

Storage :- Bones store calcium which is needed to live and it is a core component of bone. It is stored in the centre of the bone and is used to replace dead and damaged bone.

Attachment for muscles :- the body cannot move without the help of muscles and so the muscles are attached to the bone and grow with the bone. They also allow the body to do complex movements like bending and give the body flexibility.

Production of red blood cells :- Bones help the production of blood cells and also provide a pathway for them to travel.

The skeleton is divided into 2 sections which are the axial skeleton which is the skull, ribs, vertebral column and sternum these are used to protect vital organs.

The second section is the appendicular skeleton. This allows movement it features the hips, shoulder, arms, hands, legs and feet. There are many types of movement like flexion and extension (in the arms, feet, knee and others), Abduction and adduction (in the shoulders, hands,).

1B) Bone starts to develop 6-7 weeks into pregnancy. There are 2 types of bone formation which are

A) Intramembranous ossification- Formation of bone on or within fibrous membrane.

B) Endochondral ossification- Formation of bone in cartilage. There are 4 main stages.

i) Osteoblasts appear in the centre of the diaphysis. They then cover themselves with calcium and phosphate ions from blood. A cavity then forms when bone replaces cartilage. The osteoblasts become embedded in the lacuna of the bone matrix which becomes an osteocyte.

ii) Bone starts to appear in the epiphysis. On the outside, periosteal ossification continues.

iii) A cartilage disc called the epiphyseal or growth disc separates the bone at the diaphysis from the bone at the epiphysis. This is where the bone grows.

- iv) When growth stops the diaphysis is united with the epiphysis and is marked with a thick layer of bone. This usually happens in late adolescence.

1c) Bone is constantly reforming itself after it is first formed. Remodelling occurs when a bone is worn or injured and can take place in different body regions and at different rates. In a human there is a very fine balance between the activity of osteoclasts which remove calcium from the bones and osteoblasts which deposit calcium in the bone. If osteoclasts are over active you can get weak bones and they become flexible and break easily. When osteoblasts become over active you can get thick bumps or spurs in the bone which can interfere with the movement of joints.

There are a number of factors which affect bone replacement and growth which are :-

Calcium :- and phosphorus salts are primary components of bone and so must be included in your diet in order to have a healthy lifestyle and have an equilibrium between osteoblasts and osteoclasts.

Vitamins :-

Vitamin A= helps control activity of osteoblasts and osteoclasts.

Vitamin C= can lead to decreased collagen productivity and affect bones ability to heal and grow.

Vitamin D= helps absorption of calcium from digestive tract and help calcium removal from bone.

Sex hormones :- (oestrogen/testosterone)

Helps osteoblastic activity and help new bone growth

Growth hormone :- Too much or too little growth hormone production may result in abnormally tall or short people because it affects the rate at which your bones grow whether it be too slow or too fast.

Other hormones :-

Calcitonin= inhibits osteoclast activity and accelerates calcium absorption by bone.

Parathormone= increases osteoclasts activity. It releases calcium and phosphates from bones into blood. It takes calcium from urine to blood and vice versa for phosphate.

2a) A synovial joint is a joint where there is a cavity between the bones. This has synovial fluid inside it and this is a complex mixture of polysaccharides, fats, proteins and cells. The main polysaccharide is hyaluronic acid and this gives the fluid its lubricating film and covers the joint. There are 5 synovial joints and they are the ball and socket joint, hinge joint, pivot joint, condyloid joint, gliding joint and the saddle joint.

2b) Pivot joint :- Monoaxial joints which restrict movement to around only 1 axis. The joint consists of a cylindrical bony process which turns in a ring made from bone and ligament. The proximal end of the ulna is a prime example of a pivot joint.

Saddle joint :- 2 saddled shaped articulating surfaces orientated at right angles. This is so that they articulate with one and other. They are biaxial joints and 1 example is the thumb.

Condyloid joint :- These joints allow a lot of movement except rotation. It is named condyloid because it is a condyle containing joint. This is a curved process which goes into other bones to give its articulating movement. This joint is found in the hand and jaw.

Ball and socket joint :- A rounded bone goes into a cup shaped socket which allows free movement in every direction. It is found in the hips and shoulder.

2c) When a tennis player takes a serve there are 4 joints involved in the arm action. The first is the saddle joint which is found in the thumb and used to grip the racket tightly. Then there is a condyloid joint in the wrist which helps you flick the racket over the ball. The third is the hinge joint found in the elbow which helps you bend your arm and get over the ball and give it power. The last is the ball and socket joint which is in the shoulder and allows your arm to rotate and provide power to the server.

BIBLIOGRAPHY

I used these web sites in making creating my assignment.

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