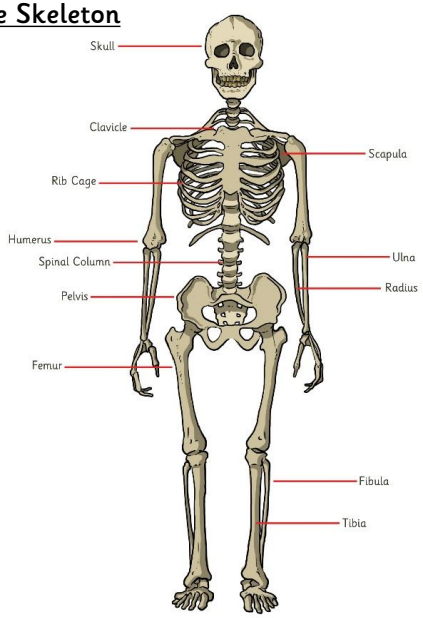
Human Muscles and the Skeleton

Bones are rigid and strong and make up the frame for your body called the skeleton.

When you are fully grown, your adult skeleton has 206 bones.

In a living person bones are not hard and brittle. They have blood vessels that run through them and are actually quite soft. Your skeleton and bones give your body its shape, support your body, move your body with the help of your muscles, protect your organs and it releases minerals like calcium as well as making blood cells in the bone marrow.

All of the bones in your body have special names such as the skull, the ribs, the spine, the sternum, the pelvis and the femur.



What does the skeleton do?

The skeleton has four main jobs:

- To support the body. For example, without a backbone we would not be able to stand upright.
- To help the body move. Some bones in the skeleton are joined together and cannot move against each other. Other bones are joined to each other by flexible joints.
- To protect some of the vital organs of the body, the skull protects the brain, the ribcage protects the heart and lungs and the backbone protects the spine.
- To make blood cells. Red and white blood cells are made in the bone marrow. This is soft tissue contained inside our larger bones which is protected by the hard part of the bone which surrounds it.

Types of bones

Bones come in all different shapes and sizes. We can classify them in the following ways:

- Flat bones – bones like those in the skull
- Sesamoid bones – these look like sesame seeds, for example the patella in the knee
- Long bones – bones like those in our limbs
- Short bones – bones like those in our foot and wrist

Muscles

Muscles move you. Without them you couldn't move anything inside or outside of your body. How many muscles do you think there are in your body? There are over 650 and they make up nearly half of your body weight.

Muscles are all made of the same material: a type of elastic tissue (almost like the material in a rubber band). Thousands, or even tens of thousands of small fibres make up each muscle.

How do muscles move?

The cells that make up muscles contract and then relax back to their original size. You have two sets of muscles connected to many of your bones which allow them to move. They work in pairs. To bend your arm, one muscle gets shorter and fatter. It pulls on the bone in the lower arm to which it is attached. At the same time, the other muscles relaxes, getting longer and thinner.

To move the arm back to where it started, the opposite happens. The relaxed muscle contracts and the other muscle relaxes.

Types of muscles

Did you know that you have three different types of muscles in your body?

- Skeletal muscle – attached to the skeleton and helps you to move
- Cardiac muscle – heart muscles
- Smooth muscle – found inside organs

Some muscles are known as 'voluntary'. They only work when you tell them to. Examples of voluntary movements include clapping your hands or lifting your leg. Other contracting muscles are 'automatic'. These include the contracting of your heart and blinking your eyes. Through signals from your nerves and, in some cases, your brain.

The different muscles around your body all have different jobs:

- Shoulder muscles raise and lower the arms.
- Stomach muscles move the chest and help with breathing.
- Leg muscles pull the heel up and point the toes.
- Biceps bend the arm and triceps straighten the arm.
- Neck muscles hold the head up and move it in all directions.

classroomsecrets.com

Human Muscles and the Skeleton – 2a – Text

© Classroom Secrets Limited 2016

Human Muscles and the Skeleton – Follow-Up Work

Give two functions of the human skeleton. (AF2)

Give three names of bones in the human body. (AF2)

Which of your organs do you think the ribcage protects? (AF2)

Where does the word 'sesamoid' come from when describing bones? (AF2)

Why do you think the writer has chosen to ask a range of questions throughout the text? (AF5)

The writer uses sub-headings throughout the text. Can you think of a suitable sub-heading for the first section of the text? (AF4)

Why has the writer chosen to include a labelled diagram of the human skeleton at the start of the text? (AF4)

The text is organised into clear sections with sub-headings. Why do you think the writer has chosen to do this? (AF4)

In your own words, can you explain how muscles work in pairs to move your limbs? (AF2)

In the text, some muscles are described as 'automatic'. What does this mean? (AF3)

Which muscles would you need to move to bend and straighten your arm? (AF2)

Do you think humans would be able to survive without muscles and bones? Explain your answer. (AF2/AF7)

Why do you think it is important for athletes to have strong muscles and bones? (AF3/AF7)

classroomsecrets.com

Human Muscles and the Skeleton – 2a – Follow-Up Work

© Classroom Secrets Limited 2016