# Hands On Learning
## *with Reading Museum Service*

## HUMAN SKELETON Z23C

This box contains a small model of a human skeleton. The word skeleton comes from the Greek for 'dried-up'.



The adult human skeleton has 206 bones. We are actually born with about 300 bones but some fuse together by the time we reach twenty.

The most obvious purpose of the skeleton is to hold us up and allow us to move. Without it we would just be a pile of skin and muscle on the floor! But bones are also important for other reasons such as storing minerals, producing red blood cells in the bone marrow and protecting our vital organs. By looking at this model you can see which bones protect organs such as the brain, heart and lungs.

The longest and heaviest bone is the femur (thigh bone) and the smallest bone is the stirrup, which is inside the ear. The bones of the hands and feet are very complex. There are 27 individual bones in one hand alone!

You can move because opposing sets of muscles are attached to your bones and pull your limbs in the right direction. Your bones are connected to other bones by flexible joints. Some joints, like those in the skull, are fixed and have no movement. Most are moveable and are known as synovial joints because they are surrounded by a liquid called synovial fluid, which protects and lubricates the joints helping them to move easily. There are different types of synovial joints. The most common ones are:

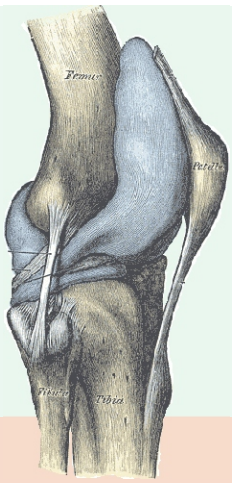
- Hinge joints like the elbow or knee. These move in a similar way to opening a door.
- Pivot joint like the neck. This joint allows movement from side to side.
- Ball-and-socket joints like the shoulder and hip. These allow the greatest amount of movement.
- Gliding joints like bones in the wrists and ankles. These bones have flat surfaces at the end and move by sliding against each other.

The different types of joints can be tested out by moving the joints on the model and in your own body!

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Some bones are not connected to others with joints. On the model it looks as though the patella (knee cap) is attached to the tibia (lower leg bone), but it is actually only connected to the other bones by muscles and tendons. This can be seen in the picture to the right. The patella protects the knee joint and helps it to bend by pulling on the tendons.

Some people think that the nose and ears are made of bone, but they are actually made of a flexible substance called cartilage that is strong but not as hard as bone. That is why the nose and ears are missing on this model skeleton.

There are differences between male and female skeletons. Males have slightly thicker and longer bones and tend to have broader rib cages, larger jaws and a ridge over the eye sockets. Females have a wider pelvis because they can give birth. You can tell if a skeleton is male or female by looking at the front part of the pelvis. If it is V shaped and matches the shape between your first and second fingers then it is male. If it is U shaped and matches the shape between your thumb and first finger then it is female.

### Did you know?

- Humans have the same number of vertebrae in their neck as a giraffe! The giraffe's vertebrae are just much longer!
- Over half the bones in the body are in the hands and feet
- A person's height is usually about 4 times the length of his or her femur.
- The tallest person ever recorded was an American man called Robert Pershing Wadlow. By the time he was 8 years old he was 1.88 m (6 feet 2 inches) tall. When he died in 1940 aged 22 he was 2.72 m (8 feet 11 inches) and his bones were still growing. The tallest person living in 2007 is Bao Xishun from China. His arms measure 1.06 metres each.

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This diagram shows the names of the bones that make up the skeleton.

