

Movement

The Skeleton

The skeleton has several functions:

Support – The skeleton provides a frame to hold your body upright and keep your organs in place.

Protection - Bones are hard and strong to protect important organs such as the heart and the brain.

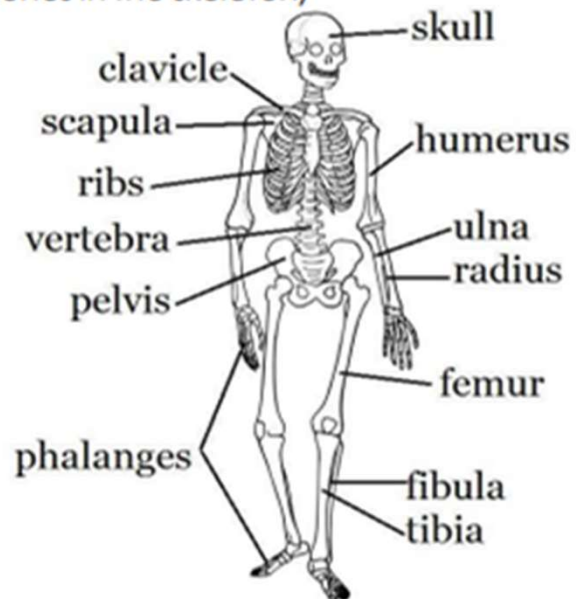
Movement - Your bones and muscles work together to allow your body to move.

Making blood cells – Some bones contain a soft tissue called bone marrow. Red blood cells and white blood cells are made in the bone marrow.

The adult body contains around 206 bones. Some are shown below:

Skeletons and bones

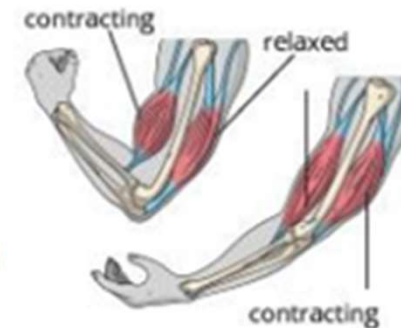
(you should be able to name the major bones in the skeleton)



Muscles

Muscles can't push, they can only pull.

A pair of muscles that work together are called antagonistic muscles.



This combination of muscles, bones and joints making our bodies move is called biomechanics.

Joints

Joints are found where bones meet. Sometimes these joints are fixed but most joints are flexible to allow the body to move.

A hinge joint allows backwards and forwards movements. Knees and elbows are hinge joints.



A ball and socket joint allows movement in all directions. Shoulders and hips are ball and socket joints.



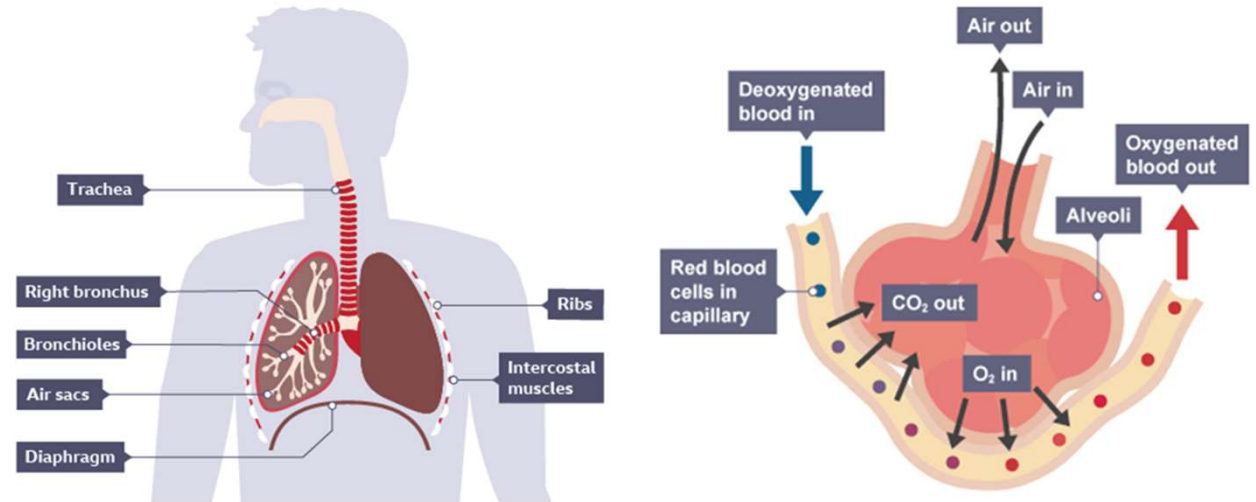
Cartilage is a strong, smooth tissue that covers the ends of the bones to protect them from damage.

Fluid in the joints keeps the cartilage slippery to reduce friction.

Ligaments hold the bones together.

Breathing

Part of the gas exchange system	Function
Trachea	This is also called the windpipe. This tube runs from the mouth, down the throat towards the lungs. It is lined with rings of cartilage which keep it open at all times.
Bronchus	The trachea splits into a left and right bronchus (plural: bronchi), each leads to a lung.
Bronchiole	Each bronchus splits again and again into thousands of smaller tubes called bronchioles which take the air deeper into the lungs.
Alveoli	At the ends of bronchioles are tiny air sacs called alveoli. Here oxygen moves into the blood and carbon dioxide moves out.
Intercostal muscles	These muscles run between the ribs and form the chest wall. They contract and relax with the diaphragm when a person breathes.

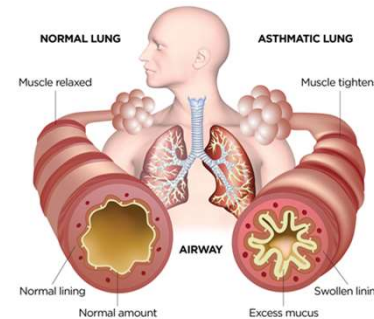


Exercise, Asthma and Smoking.

- Regular exercise strengthens the intercostal muscles and diaphragm which make breathing more efficient.

- Asthma is a medical condition in which the lining of the airways from the mouth to the lungs become irritated and swell up. This reduces the air that can move in and out from the lungs.

It is often treated by inhaling medication from an inhaler.



- Smoking damages the cilia (tiny hairs that line the gas exchange system). These hairs normally move the dust, and pathogens that have been trapped in the mucus away from the lungs. This can result in smokers developing a cough to remove this mucus.

Adaptations of the Alveoli:

- Alveoli have a very large surface area to enable more diffusion of oxygen into the blood from the alveoli, and more carbon dioxide out of the blood into the alveoli.
- They are only one cell thick so that the diffusion distance is small.
- They have lots of blood capillaries to ensure a good blood supply to maintain concentration gradients of oxygen and carbon dioxide.
- They have moist surfaces for gases to dissolve in to form a solution to pass through the cell membrane.

Process of Breathing