

Key Facts

Heart

The heart is a very strong muscle that pumps blood in the blood vessels around the body. It is made up of four chambers - two upper and two lower. Blood enters the upper chambers which squeeze and push the blood into the lower chambers. Here it is squeezed and pushed out of the heart.

Nutrients, water and oxygen are transported in the blood to the muscles and other parts of the body where they are needed. As they are used they produce carbon dioxide and other waste products. Carbon dioxide is carried by the blood back to the heart and then the cycle starts again as it is transported back to the lungs to be removed from the body. This is the human circulatory system.

Blood vessels

These are the tubes that carry blood around the body. There are three main types:

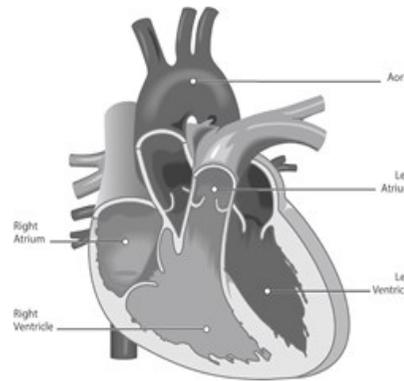
Veins carry blood back to the heart. In the veins that collect blood from the body and return it to the heart the blood is deoxygenated which means the oxygen has been removed. However, the blood in the pulmonary vein, which carries blood back to the heart from the lungs, is oxygenated.

Arteries carry blood away from the heart. Arteries that transport blood around the body carry oxygenated blood. However, the pulmonary artery, which transports blood from the heart to the lungs, carries deoxygenated blood.

Capillaries are the small (in some cases very small) blood vessels that carry blood through the various tissues of the body, taking oxygen to the cells and taking away carbon dioxide. In effect they form the links between arteries and veins.



Science Year 6 Body Pump



Vocabulary

Word	Definition
Arteries	Muscular-walled tubes which carry blood from the heart to the rest of the body.
Atrium	Each of the two upper cavities of the heart from which blood is passed to the ventricles.
Capillaries	Thin blood vessels that connect arteries to veins.
Circulatory system	It is made up of the blood, heart and blood vessels. It delivers nutrients, water, and oxygen to the body cells and carries away wastes such as carbon dioxide that body cells produce.
Plasma	Blood is made up of blood cells and plasma. It is a yellowish liquid that has nutrients, proteins, hormones and waste products.
Platelets	Cell fragments that work with blood clotting chemicals at the site of wounds by sticking to the walls of blood vessels, thereby plugging the gap.
Red blood cells	Red blood cells carry fresh oxygen throughout the body using a protein called haemoglobin. They also carry carbon dioxide to the lungs for removal.
Veins	Muscular-walled tubes which carry blood from the body to the heart.
Ventricles	Each of the two lower main chambers of the heart, left and right.
White blood cells	White blood cells make up about 1% of blood. They are also called leukocytes. They protect against illness and disease.

Common misconceptions:

Children may think that heart is love-heart shaped and in the left hand side of the chest. The heart is actually roughly the size and shape of a person's clenched fist. It is located in centre of the chest but 'leans' slightly to left. Children may think that blood in our veins is blue. In fact, all human blood is red, ranging from bright red when oxygenated to dark red when not. It owes its colour to haemoglobin. Blood is never blue, but veins appear blue because light is diffused by the skin. Red and blue colours are typically used to show oxygenated and deoxygenated blood in scientific diagrams of the human circulatory system. Children may think that air tubes connect the lungs to the heart. The process of the transfer of oxygen gas from the air into liquid blood is actually more complex. After a breath of air is inhaled it ends up in air sacs (alveoli) in the lungs where it dissolves into the blood across capillaries. At the same time carbon dioxide leaves the blood and enters the alveoli, ready to be exhaled from the body.

Knowledge and Understanding:

Children will learn:

- Building on learning about the human body from Key Stage 1 and also during lower Key Stage 2.
- The human circulatory system and how it enables their bodies to function.
- The main parts of the circulatory system: the heart, blood vessels (arteries, veins and capillaries) and blood, and how these work together to deliver oxygen and nutrients to every part of the body.
- How the heart works, the main components of blood and the function of the different types of blood vessels.
- How water is transported through the body and develop their understanding of the importance of water to

Key skills and concepts:

Children will be able to:

- Use **secondary sources** of information with increasing independence in order to find answers to questions about the functions of different parts of the circulatory system that they cannot investigate first hand. This should involve them using quality non-fiction books, web-based material and health education publications.
- They could also **question** local medical experts.
- Children will **report and present findings** from their enquiries in a variety of ways, both orally and in written forms including labelling diagrams, drawing conclusions, identifying causal relationships and explaining their thinking.
- They can carry out a range of pulse rate **investigations** such as fair tests to investigate the effect of different activities on their pulse rate.
- **Identify patterns** - exploring which groups of people may have higher or lower resting pulse rates
- exploring recovery rate for different groups of people
- **Make Observation over time** - how long does it take my pulse rate to return to my resting pulse rate (recovery rate)

Key Questions

What are the main parts of the circulatory system and how does it work?

What is the function of the heart?

What does blood do in the body?

What are the different types of blood cells and their functions?

What are the different types of blood vessels and their functions?

What happens to water in our bodies?