

Science Knowledge Organiser

Year 6

Summer (i)

What are the main parts of the circulatory system?

Portable knowledge- The human circulatory system includes the heart, blood vessels and veins and blood (specifically red blood cells).

To know and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood.

Red Blood Cells

Structure:

- Large surface area
- Contains haemoglobin which picks up oxygen
- Has no nucleus to make room for more oxygen

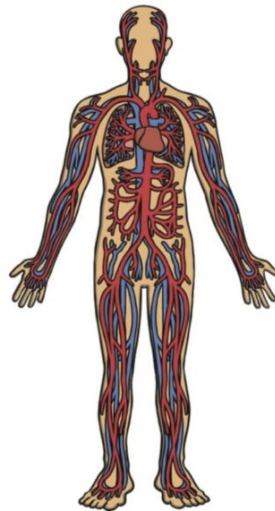
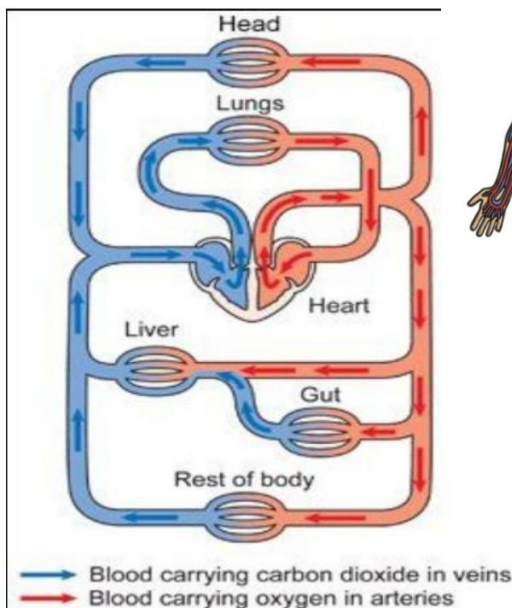


Red blood cell

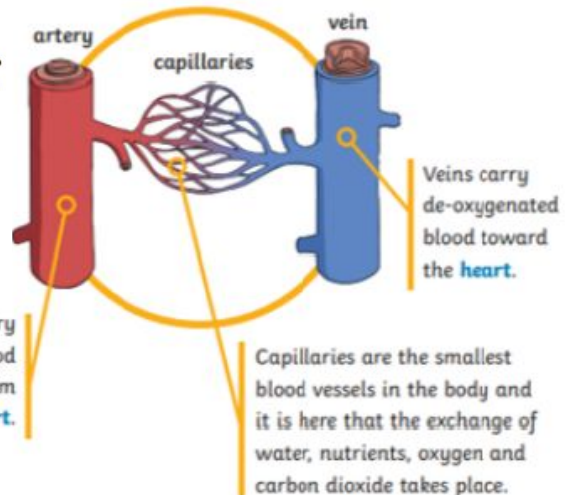


Function:

- Carries oxygen from the lungs to the body and carbon dioxide from the body back to the lungs.



Arteries carry oxygenated blood away from the heart.



General Functions of the Circulatory System

Heart:

The heart plays an important role because it keeps all the blood flowing in the circulatory system. The process of exercising results in the body requiring more oxygen, this means that the heart has to circulate more oxygenated blood through the circulatory system. That is why your heart beats faster when you exercise.

Lungs:

When we breathe, we inhale air containing oxygen into our lungs. It is in the lungs that blood picks up oxygen and leaves carbon dioxide to be released.

Blood Vessels:

Blood vessels are tubes that carry the blood around the body.

There are three main types of blood vessels:

Arteries – these carry oxygenated blood away from the heart to the rest of the body.

Veins – these carry deoxygenated blood back to the heart to be pumped to the lungs to become oxygenated.

Capillaries – these are blood vessels that connect to both arteries and veins. They are also connected directly to cells. Blood with nutrients and oxygen passes from the artery, through the capillary to a cell. Any waste is passed through the capillaries to the vein.

To know the impact of diet, exercise, drugs and lifestyle on the way their bodies function

Drugs, alcohol and smoking have negative effects on the body.



Regular exercise:

- strengthens muscles including the heart muscle;
- improves circulation;
- increases the amount of oxygen around the body;
- releases brain chemicals which help you feel calm and relaxed;
- helps you sleep more easily;
- strengthens bones.

It can even help to stop us from getting ill.



Food Groups

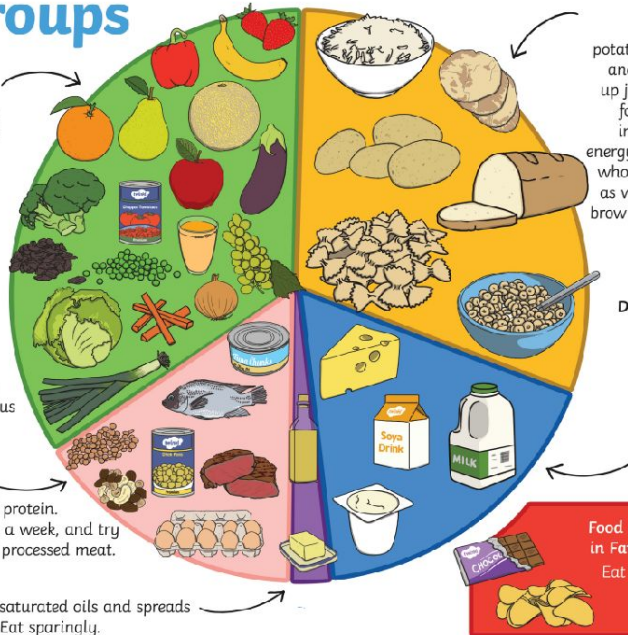
Fruit and Vegetables

These are good sources of vitamins and minerals and fibre. Aim to eat 5 portions a day! Choose from fresh, frozen, tinned, dried or juiced. Fruit juice and/or smoothies should be limited to no more than a combined total of 150ml per day.

Proteins

Proteins such as beans, pulses, fish, eggs, meat are very important for helping us grow and build muscles. Beans and pulses are a good alternative to meat as they contain less fat and are higher in fibre and protein. Try to eat 2 portions of fish a week, and try to reduce intake of red and processed meat.

Oil and Spreads Choose unsaturated oils and spreads and use in small amounts. Eat sparingly.



Carbohydrates
Starchy foods such as potatoes, bread, rice, pasta and cereals should make up just over a third of the food you eat. These are important for giving us energy. Choose higher-fibre, wholegrain varieties, such as wholewheat pasta and brown rice, or simply leave skins on potatoes.

Dairy and Alternatives
These are a source of calcium which is important for strong teeth and bones. Choose lower fat and sugar options.

Food and Drinks High in Fat and / or Sugar.
Eat less often and in small amounts.

Core vocabulary

Circulatory system-

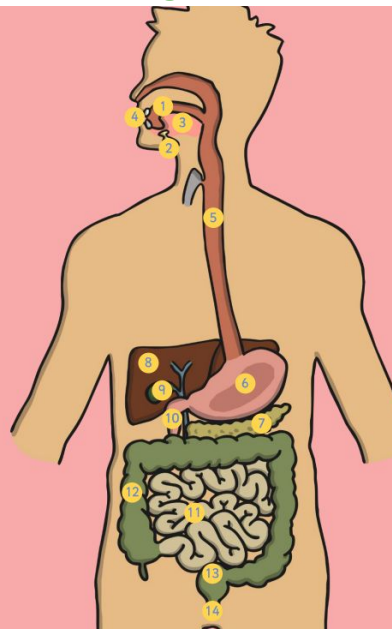
is made up of blood vessels that carry blood away from and towards the heart

blood vessels - a series of tubes inside your body. They move blood to and from your heart.

arteries - a type of blood vessel (something that carries blood) which has the job of taking the blood full of oxygen away from the heart and towards the body's tissues

To know the ways in which nutrients and water are transported within animals, including humans.

- 1. Mouth:** Food enters the system.
- 2. Salivary glands:** Produce saliva which contain an enzyme called amylase. This breaks down starch in carbohydrates.
- 3. Tongue:** Mixes food with saliva.
- 4. Teeth:** Tear, cut and grind food.
- 5. Oesophagus:** Tubes that leads food to the stomach.
- 6. Stomach:** Produces enzymes and acids to break food down. Churns food into small pieces. The mixture of stomach acids, enzymes and food is called 'chyme'.
- 7. Pancreas:** Produces enzymes to break down fats, carbohydrates and proteins which are released into the duodenum.
- 8. Liver:** Produces bile that breaks down fats.
- 9. Gall Bladder:** Stores bile and releases it to the Duodenum when needed.
- 10. Duodenum:** First part of the small intestine. Food is broken down by bile and enzymes.
- 11. Small Intestine:** Nutrients are absorbed into the bloodstream here. Remaining food is passed to the large intestine.
- 12. Large Intestine:** Absorbs water from remaining food. This food forms into stools.
- 13. Rectum:** Stores stools and signals to the brain that there are stools that need releasing.
- 14. Anus:** Stools are released out of the body.



Nutrients and water are absorbed in the system in the stomach, small and large intestines.

They enter the blood stream via the capillaries where they are passed through to the arteries.

The blood is circulated throughout the body (including being oxygenated in the lungs and the heart).

Nutrients are absorbed by the cells that need them and water is absorbed by all cells.