

The Circulatory System and Healthy Living

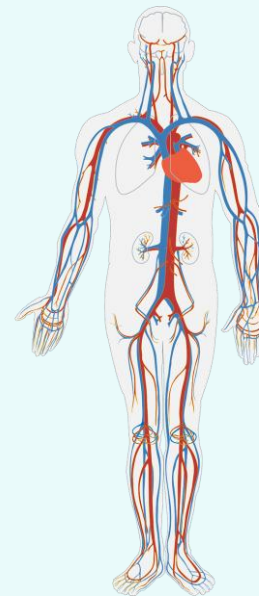
Instructions: Read the text about the human circulatory system. Look for the science vocabulary in bold. Then answer the questions.

Animals including humans

Humans are **animals**. Like other animals, we need food, water and oxygen to stay alive. Our body has different **organ systems** that work together. One important system is the **circulatory system**, which moves blood around the body.

The circulatory system is vital because it helps to transport oxygen and nutrients to cells and removes waste such as carbon dioxide. This is one way that **nutrients** and water are transported within animals, including humans.

Human body systems

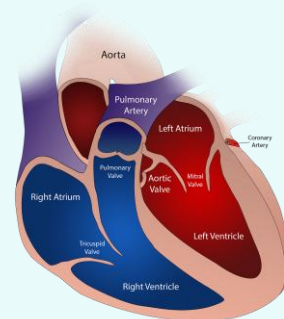


The heart and blood vessels

The **heart** is a strong muscle that pumps blood. Blood travels through tubes called **blood vessels**. There are three main types of blood vessel: **arteries**, **veins** and **capillaries**.

Arteries carry blood away from the heart. **Veins** carry blood back to the heart. **Capillaries** are very tiny vessels where oxygen and nutrients move into body cells, and wastes such as carbon dioxide move out.

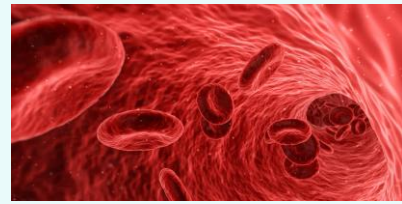
Heart and vessels



What is blood?

Blood is a liquid that travels around the body. It has different parts with different jobs. **Red blood cells** carry oxygen. **White blood cells** help to fight infection. **Platelets** help blood to clot (thicken) if you cut yourself. The liquid part is called **plasma**; it carries nutrients, water, hormones and waste.

Blood



Oxygen, carbon dioxide and the lungs

When you breathe in, oxygen enters your lungs. Oxygen passes into the blood and is transported around the body. Body cells use oxygen to release energy from food. The cells produce carbon dioxide as a waste gas. Blood carries carbon dioxide back to the lungs, and you breathe it out.

Lungs



Healthy living and lifestyle

The way your body works can be affected by **diet**, **exercise**, **drugs** and lifestyle choices. A balanced diet provides the right amount of energy and nutrients, such as protein, carbohydrates, fats, vitamins, minerals and fibre. Regular exercise can strengthen the heart muscle and improve fitness.

Some drugs can be harmful. For example, smoking damages the lungs and makes it harder for oxygen to enter the blood. Alcohol can affect how the brain and liver work, and it can also increase health risks if misused. Learning how to make safe choices helps people stay healthy.

Healthy choices



Glossary

Word	Meaning
Circulatory system	The body system that moves blood around the body.
Heart	A muscle that pumps blood.
Blood vessel	A tube that carries blood around the body.
Artery	A blood vessel that carries blood away from the heart.
Vein	A blood vessel that carries blood back to the heart.
Capillary	A tiny blood vessel where substances move between the blood and body cells.
Plasma	The liquid part of blood that carries nutrients, water and wastes.
Red blood cells	Cells in the blood that carry oxygen.
White blood cells	Cells in the blood that help to fight infection.
Platelets	Small parts of blood that help it to clot and stop bleeding.

Questions

1. Using information from *two different paragraphs*, explain **why** the circulatory system is described as "vital." Your answer must include: (1) what it delivers, (2) what it removes, and (3) what body cells do with what is delivered.

2. The text says the heart is a strong muscle and that blood travels in blood vessels. Explain how these two facts fit together as a **cause-and-effect chain** (heart → blood movement → where blood goes). Use the words **pump** and **tubes** in your answer.

3. Compare **arteries** and **veins** by stating: (a) the direction blood travels in each, and (b) one way they are similar based on the passage.

4. A student says: "All blood vessels do the same job." Use evidence from the text to **challenge** this statement by naming **three** types of blood vessel and describing the **different job** each one does.

5. Explain why **capillaries** need to be "very tiny" for their role. Base your reasoning on what moves *into* cells and what moves *out* of cells at capillaries.

6. Construct a **flow description** of the gas exchange pathway described: start at breathing in, include where oxygen goes next, what body cells do with oxygen, what waste gas is produced, and how that waste leaves the body.

7. The text lists substances carried by **plasma**. Sort them into two groups: **inputs** (things the body needs) and **outputs** (things the body must remove). Provide at least **two** examples in each group using only items named in the passage.

8. Explain how **red blood cells** and **plasma** work together to support body cells. Your answer must name what each carries and connect it to what cells need to do their job.

9. If a person had fewer **white blood cells** than normal, what problem mentioned in the text could they have more difficulty with? Explain using the exact vocabulary from the passage.

10. The passage says **platelets** help blood to clot. Explain how clotting helps the body **immediately** after a cut, and what might happen if clotting did not occur.

11. Identify the two **organ systems** working together in the "oxygen, carbon dioxide and the lungs" section. For each system, state one specific job described in the text.

12. The text links oxygen to energy. Write a short explanation that uses the words **oxygen**, **body cells**, **energy**, and **food** to show this relationship.

13. The "healthy living and lifestyle" section lists factors that affect how the body works. Choose **two** factors and, for each one, give: (1) one benefit of a healthy choice or (2) one harm of an unhealthy choice—using details stated in the passage.

14. Use evidence from the text to argue which is more directly linked to improving the **circulatory system**: a balanced **diet** or regular **exercise**. Give one piece of evidence for your choice, and one sentence explaining why the other option is still important.

15. The text gives examples of harmful drugs/lifestyle choices. Compare **smoking** and **alcohol** by describing: (a) one body part each one affects, and (b) the specific effect described for each in the passage.

Answer Key

1. It is "vital" because it transports oxygen and nutrients to cells and removes wastes such as carbon dioxide. Body cells use oxygen to release energy from food.
2. Because the heart **pumps** blood, the blood can move through **tubes** called blood vessels and travel around the body (to deliver substances to cells and return wastes to be removed).
3. Arteries carry blood away from the heart and veins carry blood back to the heart. They are similar because both are blood vessels (tubes) that transport blood.
4. Arteries: carry blood away from the heart. Veins: carry blood back to the heart. Capillaries: tiny vessels where oxygen and nutrients move into body cells and wastes such as carbon dioxide move out.
5. Capillaries need to be very tiny because they are the place where substances move between blood and cells: oxygen and nutrients move into body cells, while wastes such as carbon dioxide move out of body cells.
6. You breathe in and oxygen enters the lungs. Oxygen passes into the blood and is transported around the body. Body cells use oxygen to release energy from food. Cells produce carbon dioxide as a waste gas. Blood carries carbon dioxide back to the lungs and you breathe it out.
7. Inputs (needs): nutrients, water, hormones. Outputs (remove): waste. (Any two correct examples for each group from the passage.)
8. Red blood cells carry oxygen and plasma carries nutrients (and water/hormones). Together these support body cells because cells need oxygen and nutrients, and cells use oxygen to release energy from food.
9. They could have more difficulty fighting **infection**, because white blood cells help to fight infection.
10. Clotting helps stop bleeding after a cut. If clotting did not occur, bleeding would continue for longer (it would be harder to stop the blood loss).
11. The respiratory system (lungs/breathing) and the circulatory system (blood/transport). Respiratory: oxygen enters the lungs and carbon dioxide is breathed out. Circulatory: transports oxygen around the body and carries carbon dioxide back to the lungs.
12. Body cells use **oxygen** to release **energy** from **food**.

13. Examples (any two factors with a correct detail each): Exercise—strengthens the heart muscle / improves fitness. Diet—a balanced diet provides the right amount of energy and nutrients. Smoking—damages the lungs and makes it harder for oxygen to enter the blood. Alcohol—can affect how the brain and liver work and increases health risks if misused.
14. Exercise is more directly linked to the circulatory system because the text says regular exercise can strengthen the heart muscle. Diet is still important because a balanced diet provides the right amount of energy and nutrients for the body to work properly.
15. Smoking affects the lungs: it damages the lungs and makes it harder for oxygen to enter the blood. Alcohol affects the brain and liver: it can affect how they work and can increase health risks if misused.