

## The circulatory system

The **circulatory system** is the system that circulates blood through the body

Blood circulates through the **heart**, which pumps it to the lungs and the rest of the body. When blood circulates from the heart to the lungs to pick up oxygen, it is called **pulmonary circulation**. When blood circulates to the rest of the body, it is called **systemic circulation**.

The **blood** picks up oxygen inhaled into the **lungs** and delivers it through **blood vessels**, called **arteries**, to the rest of the body.

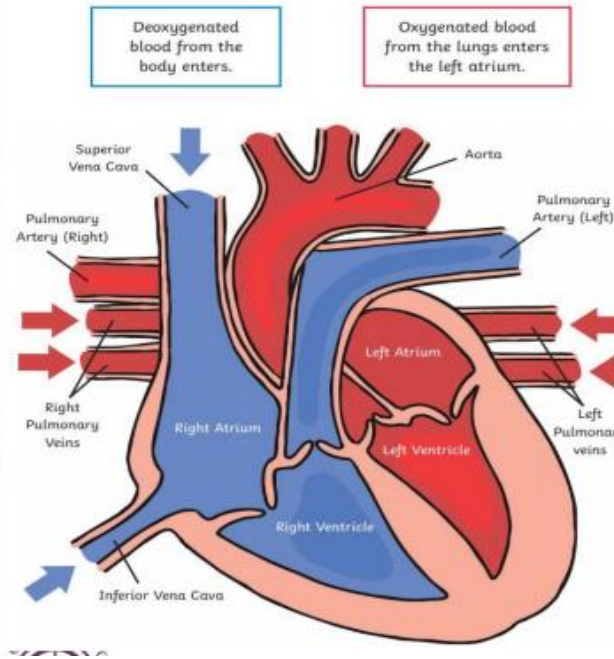
The *lub dub* heart beat is the sound of the heart's **valves** opening and closing as the heart muscle contracts and squeezes the blood on its way.

Blood leaving the heart to circulate through the body is **arterial blood**. It is full of oxygen that will be delivered through **arteries** to the rest of the body. The largest artery leaving the heart is called the **aorta**.

Blood coming back to the heart from the body is called **venous blood**. It has dropped off all its oxygen and is carrying carbon dioxide that will be brought back to the lungs to be exhaled. It enters the heart through two large **veins** called the **vena cavas**.

## The function of the heart

1. **Deoxygenated** blood flows into the heart from the body through the veins
2. This blood is pumped out to the lungs through the **pulmonary artery**
3. Blood is then **oxygenated** in the lungs
4. Blood returns to the heart through the **pulmonary vein**
5. The oxygenated blood is then pumped out of the heart through the **aorta**
6. The blood travels around the body delivering oxygen and nutrients to the organs.



## Key Vocab

<b>Heart</b>	the organ in your chest that pumps the blood around your body
<b>Blood vessels</b>	the narrow tubes through which your blood flows includes the arteries, veins and capillaries
<b>Blood</b>	a red fluid that is pumped by the heart and supplies the body with nutrients and oxygen.
<b>Veins</b>	blood vessels that carry blood to the heart.
<b>Arteries</b>	blood vessels that carry blood away from the heart.
<b>Capillaries</b>	microscopic blood vessels found in the muscles and lungs
<b>Oxygen</b>	a colourless gas that exists in large quantities in the air. All plants and animals need oxygen in order to live.
<b>Lungs</b>	the two spongy organs inside your chest which fill with air when you breathe in. They remove carbon dioxide from blood and add oxygen.
<b>Ribcage</b>	the bony structure consisting of the ribs and their connective tissue that encloses and protects the lungs and heart
<b>Carbon dioxide</b>	carbon dioxide a gas produced by animals and people breathing out
<b>Oxygenated</b>	to be enriched with oxygen
<b>Deoxygenated</b>	deoxygenated to be depleted of oxygen



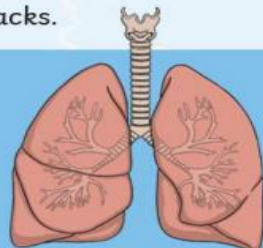
### How Does Smoking Affect the Heart and Lungs?

As there is less oxygen in the blood, the heart starts to beat faster to create more oxygen to pump round the body.

This means that the heart is working harder than it normally does (sometimes up to 30% harder).



The longer a person smokes, the more fatty deposits build up in their blood vessels. This can cause problems like heart attacks.



The poisons and smoke in cigarettes also cause problems for the lungs. These problems can be as simple as a chesty cough or as serious as cancer.

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.

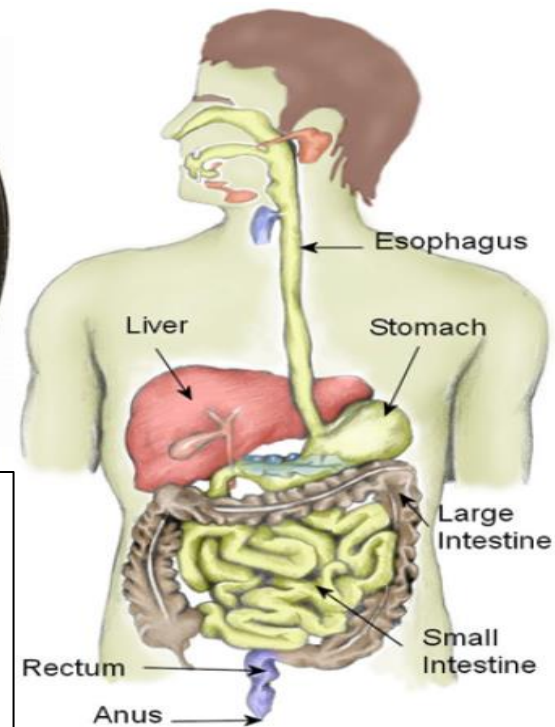


### Diet and lifestyle

Fatty rich foods can **clog** arteries and veins, preventing blood from delivering what is needed.

Exercise can improve the health of a person by removing **fatty deposits** from the body.

Some exercises are called **cardiovascular**, and are designed to improve the fitness of the overall circulatory system by **strengthening** the organs and **pulse rate**.



**William Harvey** (1 April 1578 – 3 June 1657) was an English physician who made influential contributions in anatomy and physiology. He was the first known physician to describe completely, and in detail, the systemic circulation and properties of blood being pumped to the brain and the rest of the body by the heart.