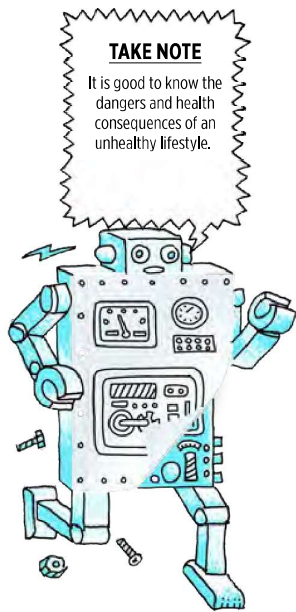


Anorexia nervosa: This is one of many eating disorders. People who suffer from this eating disorder have an abnormal fear of gaining weight and therefore starve themselves on purpose. This can lead to many health issues such as bone thinning, kidney damage, heart problems and even death.

Diarrhoea: Someone who passes very frequent, loose, watery stools has diarrhoea. Many diseases cause undigested food to pass through the large intestines too quickly for water to be absorbed and cause diarrhoea.



Do not forget to wash your hands with lots of soap and water!

Liver cirrhosis: This disease slowly replaces healthy liver tissue with scar tissue and eventually prevents the liver from functioning properly. Alcohol abuse and fatty liver caused by obesity and diabetes are the most common causes of liver cirrhosis.

NEW WORDS

- arteries
- blood
- blood vessels
- capillary
- closed blood system
- deoxygenate
- excrete
- gaseous exchange
- heart
- lungs
- network
- oxygenate
- temperature
- veins



2.2 The circulatory system

Did you know that the blood moving throughout your body forms a system? To "circulate" means to move around, and so we have the circulatory system within the human body which transports blood.

Purpose of the circulatory system

The circulatory system is responsible for transporting blood with oxygen (O_2) from the lungs to cells and then transporting blood with carbon dioxide (CO_2) back to the lungs. It also has to distribute nutrients from the digestive system to the cells in the body and remove waste products to be excreted.

Components of the circulatory system:

The circulatory system is composed of the heart and a system of blood vessels, including arteries, veins and capillaries.

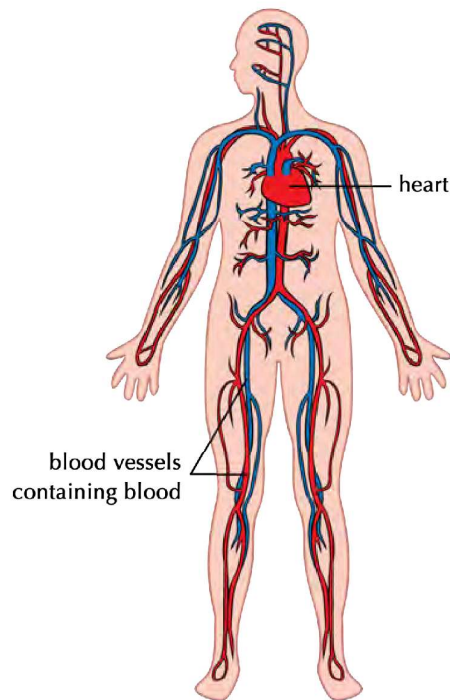
1. Heart

The heart is a very strong muscle and pumps blood throughout the body. There are four chambers in the heart that receive and send blood to all parts of the body. The top two chambers are called *atria* (singular= atrium) and the bottom two chambers are called *ventricles*.

2. Blood vessels

There are various blood vessels which carry the blood throughout the body. These are:

- arteries
- capillaries
- veins



The circulatory system is composed of the heart and blood vessels

3. Blood

The blood is transported throughout your body and carries various substances. The substances can be dissolved in the blood liquid (plasma), such as carbon dioxide, nutrients and waste products, or else within red blood cells, such as oxygen.

Main processes in the circulatory system

Our circulatory system is actually made up of two systems that function together:

- a short system that circulates blood between the lungs and the heart; and
- a much longer system that circulates blood from the heart throughout the body and back again.

This process occurs as follows:

- Blood is circulated from the heart to the lungs. At the lungs, carbon dioxide (CO_2) leaves the blood and oxygen (O_2) enters the blood. This process is known as **gaseous exchange**. Since the blood now contains more oxygen than carbon dioxide, we say it is **oxygenated**. This oxygenated blood returns back to the heart again.
- Once in the heart the oxygenated blood is then circulated to deliver the oxygen to all the cells in the body before returning back to the heart. At the same times as it delivers oxygen, the blood also collects carbon dioxide from the cells. This blood has more CO_2 than O_2 , so it is **deoxygenated** blood. The carbon dioxide is excreted when it next returns to the lungs.

This process occurs over and over again throughout your life, thousands of times a day!

DID YOU KNOW?

The first heart transplant in the world was done by Dr Chris Barnard in South Africa in 1967!



DID YOU KNOW?

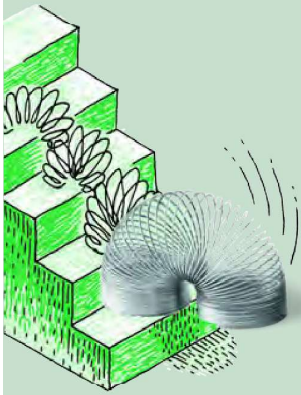
On average your heart beats about 100 000 times a day and 30 million times a year. If you live to age 70, your heart would beat an average of 2.5 billion times!



VISIT

Watch a video that shows the direction of blood flow through the four chambers of the heart.
bit.ly/14Fccla
 Watch a video on the circulatory system.
bit.ly/19Wf20d

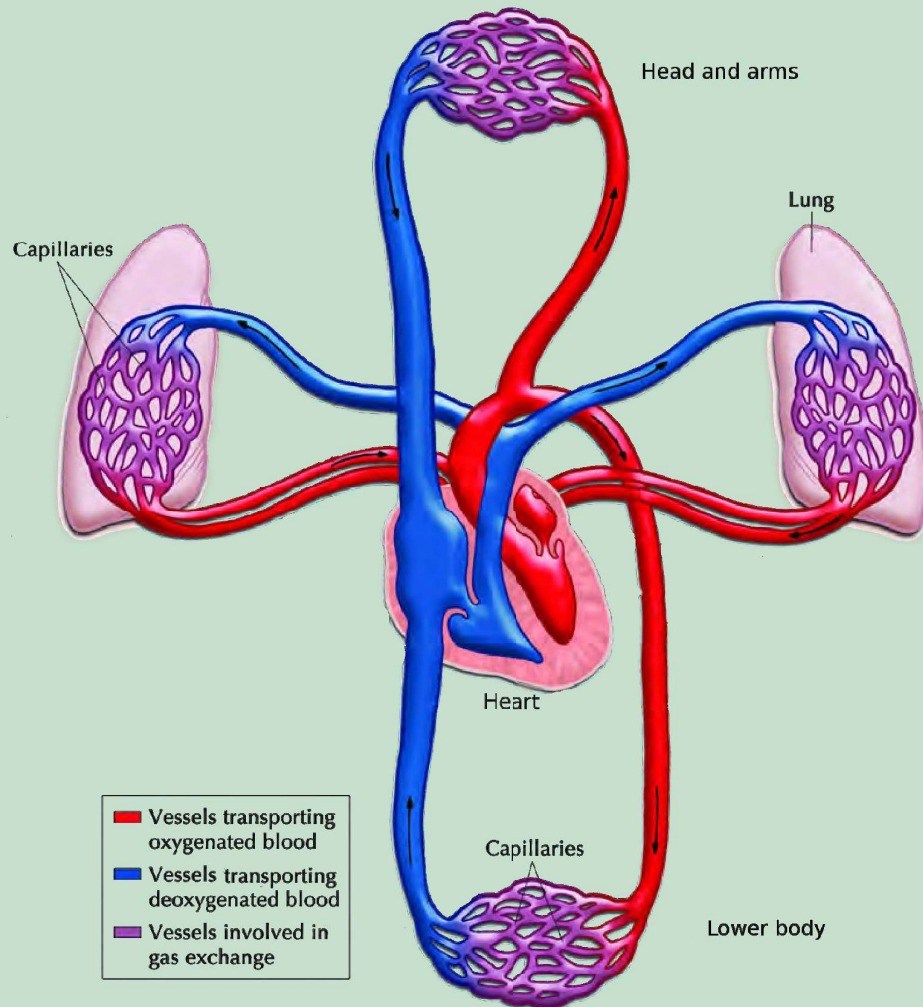




ACTIVITY: Chart the circulatory system

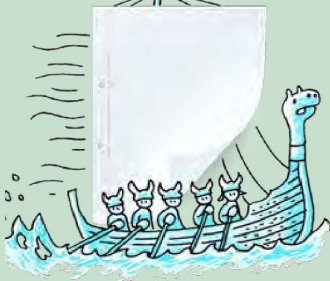
INSTRUCTIONS :

- Study the diagram below that explains the circulatory process.

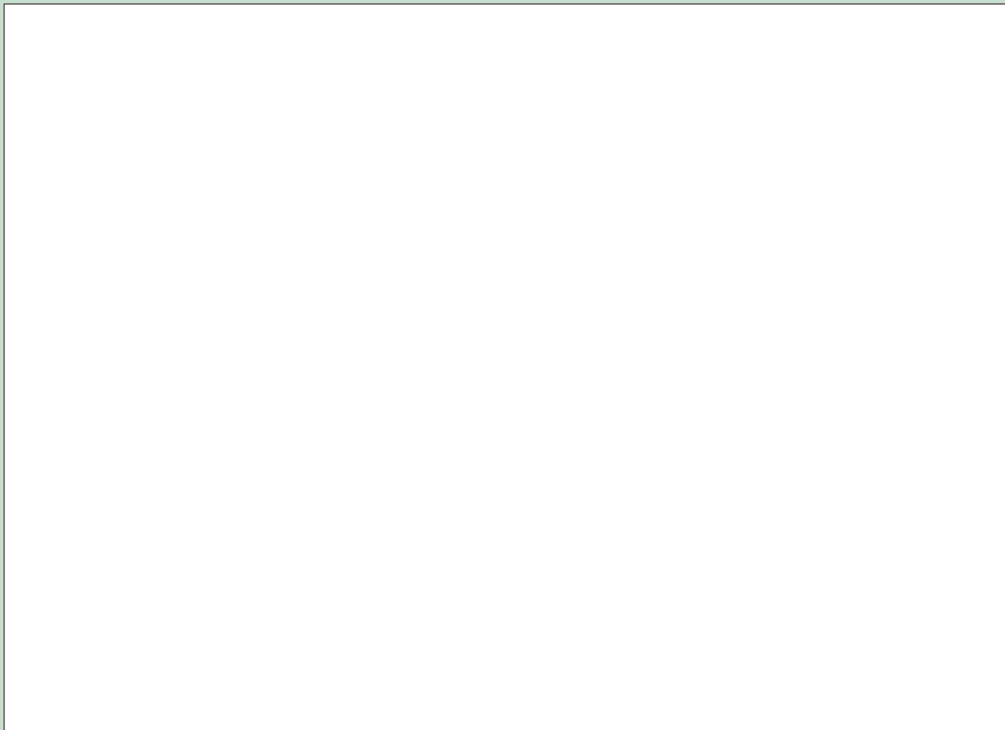


TAKE NOTE

In diagrams we generally use red to indicate blood vessels that contain oxygenated blood and blue to show blood vessels with deoxygenated blood.



- Use the diagram above to draw a circular diagram in the space provided to show how blood travels through the circulatory system (composed of two systems).
- Your circular diagram will form a complete circle.
- Add arrows to show the direction the process occurs in.



TAKE NOTE

You can find out lots more online by visiting the links provided in the **Visit** boxes. Be curious and discover the possibilities!



NEW WORDS

- blood pressure
- deprived
- rupture

Health issues involving the circulatory system

Common diseases of the circulatory system include:

High Blood Pressure: This occurs when the force with which the blood pushes against the walls of the blood vessels is too high and can cause damage to the capillaries and several organs.

Heart Attacks: Occur when a narrowing or blood clot develops in one of the blood vessels that supplies the heart muscle with blood. If the narrowing or blood clot is big enough it can stop the blood flow to the heart muscle and can stop the heart from pumping which is called a heart attack. The person can die.

Strokes: Occur when cells in your brain are deprived of oxygen. This often occurs as a result of a blockage in the blood vessels leading to the brain, or when one of these vessels rupture (break or burst open).



2.3 The respiratory system

Closely linked to the circulatory system is the respiratory system. The circulatory system maintains the circulation of blood in the body while the respiratory system deals with the exchange of gases in your body.

Purpose of the respiratory system

The respiratory system is responsible for supplying the body's cells with oxygen and for removing carbon dioxide.