

## Knowledge Organiser

Year Group	Subject	Topic
6	Science	Animals including humans – The Circulatory system

### The Big Picture

In this topic children build on learning from Years 3 and 4 about the main body parts and internal organs (skeletal, muscular and digestive system). It considers life processes that are internal to the body, such as the circulatory system. The impact of lifestyle on bodies, particularly of humans, is also considered. Scientists are continually finding out what is good and bad for us, and their ideas do change as more research is carried out.

### Enquiry Question

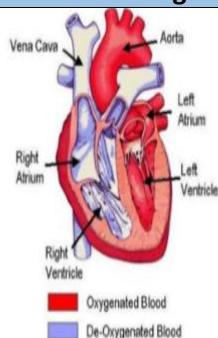
Do all animals have hearts?  
Does the heart ever get tired? Does it ever rest?  
What happens if you hold your breath?  
What happens to people's organs when they don't exercise? Find out what is the least healthy country in the world. Why is that and how could they change it?  
How would you go about finding out if a food stuff had an impact on health? What are vitamins and minerals for? What happens if we don't have them?  
People say food is addictive – is this correct?

### Key Vocabulary

aorta	the main artery through which blood leaves your heart before it flows through the rest of your body
arteries	a tube in your body that carries oxygenated blood from your heart to the rest of your body
atrium	one of the chambers in the heart blood
vessels	the narrow tubes through which your blood flows. Arteries, veins and capillaries are blood vessels.
capillaries	tiny blood vessels in your body
carbon dioxide	a gas produced by animals and people breathing out
circulatory system	the system responsible for circulating blood through the body, that supplies nutrients and oxygen to the body and removes waste products such as carbon dioxide.
deoxygenated	blood that does not contain oxygen
heart	the organ in your chest that pumps the blood around your body

oxygen	a colourless gas that plants and animals need to survive oxygenated blood that contains oxygen
lungs	two organs inside your chest which fill with air when you breathe in. They oxygenate the blood and remove carbon dioxide from it.
nutrients	substances that help plants and animals to grow organ a part of your body that has a particular purpose
pulse	the regular beating of blood through your body. How fast or slow your pulse is depends on the activity you are doing.
respiration	process of respiring; breathing ; inhaling and exhaling air
veins	a tube in your body that carries deoxygenated blood to your heart from the rest of your body
vena cava	a large vein through which deoxygenated blood reaches your heart from the body
ventricle	one of the chambers in the heart
via	through

### Diagram – The heart



- The **heart** is composed of four chambers; the right **atrium**, the right **ventricle**, the left **atrium** and the left **ventricle**.
- How often your **heart** pumps is called your **pulse**.

### Drugs

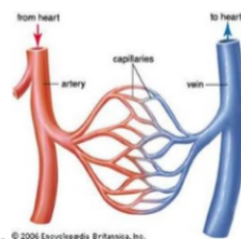
Smoking accounts for a quarter of all deaths by cancer in the UK. Cigarette smoke contains around 4000 different chemicals, including 70 that can cause cancer. It contains tar, which can damage the lungs and stain teeth and fingers as well as cause cancer. These can also damage the heart and blood vessels. The smoke also contains poisons such as hydrogen cyanide and carbon monoxide. The nicotine in cigarettes is very addictive, and many people find it very hard to give up smoking. These chemicals are contained in tiny doses, but accumulate in the body with every cigarette. The trend for using Vapes is not without issues for health, they still give a dose of nicotine and the vapor from e-cigarettes has chemicals in it that can be harmful to children. The liquid in e-smoking devices is also poisonous if drunk or if it comes into contact with the skin.

Research shows that smoking as little as one cigarette a day is bad for a person's health, making them nine times more likely to die from lung cancer as a non-smoker.

Alcohol is also a drug, but not one that many consider in the same light as smoking. However, it is just as addictive. Alcohol causes damage to organs in the body too, this time the liver. The liver breaks down the alcohol as part of its detoxification process. However, it also produces chemicals that aid digestion, and if the liver is damaged through excess alcohol then these chemicals cannot be made. Drinking too much can also affect your emotional state, as it can make you feel very happy or send you into depression as you feel panicky.

What is the **circulatory system**?

- The **circulatory system** is made of the **heart**, **lungs** and the **blood vessels**.
- **Arteries** carry **oxygenated** blood from the **heart** to the rest of the body.
- **Veins** carry **deoxygenated** blood from the body to the **heart**.
- **Nutrients, oxygen** and **carbon dioxide** are exchanged **via** the **capillaries**.



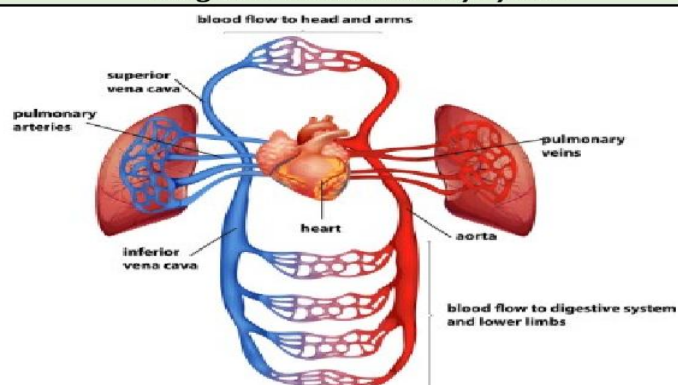
Choices that can harm the **circulatory system**

- Some choices, such as smoking and drinking alcohol can be harmful to our health.
- Tobacco can cause short-term effects such as shortness of breath, difficulty sleeping and loss of taste and long-term effects such as lung disease, cancer and death
- Alcohol can cause short-term effects such as addiction and loss of control and long-term effects such as **organ** damage, cancer and death

Why is exercise so important?

- Exercise can:
- tone our muscles and reduce fat
  - increase fitness
  - make you feel physically and mentally healthier
  - strengthens the **heart**
  - improves **lung** function
  - improves skin

### Diagram - The Circulatory System



1. The right **atrium** collects the **deoxygenated** blood from the body, **via** the **vena cava**. It sends the **deoxygenated** blood to the right **ventricle**.
2. The right **ventricle** **pumps** the **deoxygenated** blood to the **lungs**. Here the blood picks up **oxygen** and disposes of **carbon dioxide**.
3. The **lungs** send **oxygenated** blood back to the left **atrium** which pumps it to the left **ventricle**.
4. The left **ventricle** pumps the blood to the rest of the body, **via** the **aorta**.

