Caroline Haslett - Science: Animals/Humans inc. Features of the Heart Y6

What should I already know?

- Which things are living and which are not.
- Classification of animals (e.g. amphibians, reptiles, birds, fish, mammals, invertebrates)
- Animals that are carnivores, herbivores and omnivores.
- Animals have offspring which grow into adults.
- The basic needs of animals for survival (water, food, air)
- The importance of exercise, hygiene and a balanced diet.
- Animals get nutrition from what they eat.
- Some animals have skeletons for support, protection and movement.
- The basic parts of the digestive system.
- The different types of teeth in humans.
- **Respiration** is one of the seven life processes.
- The life cycle of a human and how we change as we grow.

What will I know by the end of the unit?

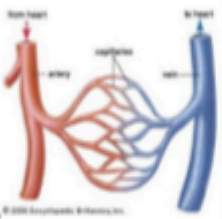
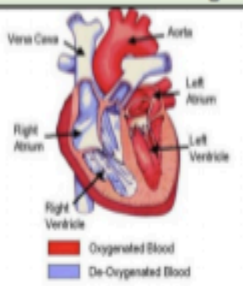
What is the **circulatory system**?	• The **circulatory system** is made of the **heart, lungs** and the **blood vessels**. • **Arteries** carry **oxygenated** blood from the **heart** to the rest of the body. • **Veins** carry **deoxygenated** blood from the body to the **heart**. • **Nutrients, oxygen** 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 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**.

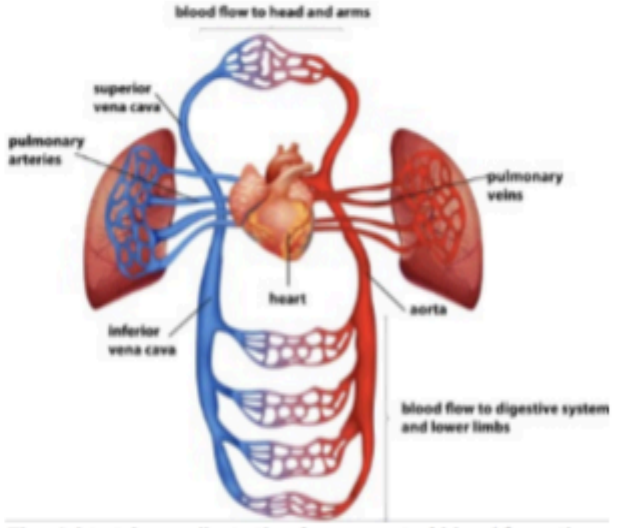
Investigate!

- How does your **pulse** change with exercise? What is the most efficient way of presenting this data?
- Which exercise produces the fastest **pulse**? How would you make this a fair test?
- Analyse line graphs that show the change in **heart** rate over time before, during and after exercise.

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
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
oxygen	a colourless gas that plants and animals need to survive
oxygenated	blood that contains **oxygen**
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. In KS3 Science, this process is referred to as **ventilation**.
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
ventilation	The exchange of air between the lungs and the atmosphere so that **oxygen** can be exchanged for **carbon dioxide**
ventricle	one of the chambers in the **heart**
via	through

Diagram - The Circulatory System



1. The right **atrium** collects the **deoxygenated** blood from the body, **via** the **vena cava**. It sends the 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**.

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Working scientifically	Questions can help us find out about the world and can be answered using a range of scientific enquiries, including fair tests, research and observation. Ask and answer deeper and broader scientific questions about the local and wider world that build on and extend their own and others' experiences and knowledge. A method is a set of clear instructions for how to carry out a scientific investigation, including what equipment to use and observations to make. A variable is something that can be changed during a fair test. A prediction is a statement about what might happen in an investigation based on some prior knowledge or understanding. Plan and carry out a range of enquiries, including writing methods, identifying and controlling variables, deciding on equipment and data to collect and make predictions based on prior knowledge and understanding. An observation involves looking closely at objects, materials and living things. Accurate observations can be made repeatedly or at regular intervals to identify changes over time, identify processes and make comparisons. Specialised equipment is used to take accurate measurements in standard units eg. data loggers plus sensors, such as light (lux), sound (dB) and temperature (°C); timers (seconds, minutes and hours); thermometers (°C) and measuring tapes (millimetres, centimetres, metres). Take accurate, precise and repeated measurements in standard units, using a range of chosen equipment. Independently decide which observations to make, when and for how long and make systematic and careful observations. Use them to make comparisons, identify changes, classify and make links between cause and effect. The results are information, such as measurements or observations, that have been collected during an investigation. Data can be recorded and displayed in different ways, including tables, bar and line charts, scatter graphs, classification keys and labelled diagrams. Choose an appropriate approach to recording accurate results, including scientific diagrams, labels, timelines, classification keys, tables, models and graphs (bar, line and scatter), linking to mathematical knowledge. A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence. Report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology/ predictions, separate facts from opinions, pose further questions and make predictions for what they might observe.
Animals including humans and evolution	The circulatory system includes the heart, lungs, blood vessels and blood. Its role is to transport oxygen, water and nutrients around the body. They are transported in blood and delivered to where they are needed. Name and describe the purpose of the circulatory system and the functions of the heart, blood vessels and blood. Explain that the circulatory system in animals transports oxygen, water and nutrients around the body. The heart pumps blood through the blood vessels and around the body. There are three types of blood vessels: arteries, veins and capillaries. They each have a different-sized hole (lumen) and walls. The blood carries gases (oxygen and carbon dioxide), water and nutrients to where they are needed. The red blood cells carry oxygen and carbon dioxide around the body. The blood also contains white blood cells, which protect the body from infection. Lifestyle choices can have a positive (exercise and eating healthily) or negative (drugs, smoking and alcohol) impact on the body. Explain the impact of positive and negative lifestyle choices on the body.

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