



Year 6 – Animals Including humans

How do an animal's living systems work together to maintain a healthy body?



Overview of learning

During this unit, children develop a deeper understanding of how the human body works by learning about the circulatory system and its role in maintaining the body's health. They learn how the heart, blood, and blood vessels work together to transport oxygen, nutrients, water, and waste substances around the body so that cells can function properly. Children will learn how the circulatory and digestive systems work closely together to deliver nutrients to the body.

Pupils take part in a comparative investigation to explore how different types of physical activity affect heart rate. They plan and carry out tests, take measurements, record results, and use their findings to identify patterns and draw conclusions.

Using problem-solving skills, pupils examine different lifestyles and identify factors that may affect health. They make informed suggestions for improving health by referring to secondary sources, such as books, websites, and scientific reports. Pupils learn that information about health and substances that affect the body comes from scientific enquiry and research, including observations and long-term studies.

By the end of the unit, pupils understand how scientific knowledge helps people make healthy lifestyle choices and how evidence is used to explain the effects of exercise, diet, and drugs on the human body.

Knowledge and understanding objectives

NC Y6:

Children will:

- identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood
- recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
- describe the ways in which nutrients and water are transported within animals, including humans

Key vocabulary

Tier 1: blood, heart, muscle, pump

Tier 2: absorb, addictive, contract, diet, digest, drug, enquiry, evidence, exercise, function, illegal, illness, legal, lifestyle, prescribe, pulse, reliable, system, transport, variable

Tier 3: arteries, blood vessels, cells, circulatory, deoxygenated blood, heart rate, internal organs, nutrients, oxygenated blood, veins

Possible misconceptions

Children may think that oxygenated blood is red whilst blood with no oxygen is blue. Children need to know that blood is never blue, but some scientific diagrams show it as blue so we can distinguish between the different types of blood. Children may think that the heart stores blood instead of pumping it and that oxygen is 'made' in the heart. Children may think that healthy foods can be eaten in unlimited amounts and that fat is always bad for you. Children may not realise that exercise is needed to keep the heart healthy and you should aim to complete at least 30 minutes of exercise a day that increases your heart rate. They may have the misconception that the heart gets tired and weaker with exercise. Children may think all drugs are dangerous and not understand that medicines are classed as drugs.

Videos

Lesson 1:

1. https://www.youtube.com/watch?v=P6dngN2w8Ic&list=PL1V_0ame4_u9HDnig-k_ygna2qfWQe58&index=1
2. <https://grammarsaurus.co.uk/portal/2021/08/science-with-grammarsaurus-the-circulatory-system/>

Lesson 2:

3. <https://www.bing.com/videos/riverview/related-video?q=the+heart+chambers+for+kids&mid=C2D50899A4825929BC36C2D50899A4825929BC36&FORM=VRDGAR>
4. Heart Pump Model - YouTube
5. Blood Vessels Animals Including Humans Year 6 Lesson 2 - YouTube

Lesson 3:

6. <https://www.bing.com/videos/riverview/related-video?q=Heart+Beats+Sounds&mid-OD1403308D1181013F640D1403308D1181013F64&FORM=VCGVRP>

Lesson 4:

7. Science with Grammarsaurus - The Digestive System

1.



2.



3.



4.



5.



6.



7.



Previous learning

Year 1 – Children learn to identify and name common animals; identify and name basic body parts; learn the five main senses, and say which part of the body is linked to each sense.

Year 2 – Children learn about the basic needs of animals and humans and understand that animals need the right conditions to survive. They learn that animals (including humans) have offspring that grow into adults.

Year 3 – Children learn about the muscular-skeletal system. They identify different types of skeletons and learn about muscles and how they help us move.

Year 4 – Children identify the main parts of the digestive system and understand its basic function. They learn about the different types of teeth and simple food chains.

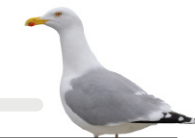
Year 5 – Children learn to describe the change as humans develop from birth to old age, and that humans grow and change over time.

Future learning

Children will learn more about the importance of a healthy diet and how different foods are absorbed and used in the human body. They will learn more about the gas-exchange systems in the human lungs. Children will learn about cells and organisation, and how they apply to humans and animals (e.g. the digestive and circulatory systems). They will also look at the effects of recreational drugs, including substance misuse.

How are scientific enquiry types and working scientifically skills developed within this unit?

Scientific enquiry type		Working scientifically skills	
	Identifying the main parts of the human circulatory system and describe the function of the heart, blood and blood vessels.		Asking questions about the circulatory system parts and their functions.
			Recording data by completing a flow diagram that shows how the main parts of the circulatory system are identified and organised.
	Classifying the parts of the circulatory system.		Communicating how the parts of the circulatory system work together.
	Observing the function of a model heart.		Observing and communicating the effects of adding more pressure to a model of a heart on blood flow.
	Testing to investigate the effects of exercise on heart rate.		Setting up an investigation, identifying the variables in a comparative test.
			Observing and measuring the effects of exercise on heart rate.
			Recording resting and exercising heart rate in bpm.
			Interpreting the data recorded to draw a simple conclusion.
	Use research to describe the ways in which nutrients and water are transported within humans.		Present their findings in written form.
	Children use their problem solving skills to make suggestions about how to live a healthy lifestyle.		Reporting and presenting findings from their enquiry.
	Using different sources to research information about the effects of substances.		Organise, classify and interpret evidence and communicate findings.



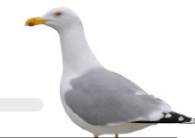
Unit overview

How do an animal's living systems work together to maintain a healthy body?

Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6
Key question: What is the circulatory system?	Key question: What is the function of the heart, blood and blood vessels?	Key question: How does exercise affect my heart rate?	Key question: How does blood transport around my body?	Key question: How can I live a healthy lifestyle?	Key question: What can damage our health?
Learning objective: I can identify and name the main parts of the human circulatory system. I can describe how blood moves around the body.	Learning objective: I can identify the three main parts of the circulatory system. I can make a model of a heart and describe how it works to pump blood around the body.	Learning objective: I can plan and conduct a comparative test to investigate the effects of exercise on heart rate.	Learning objective: I can describe the ways in which nutrients and water are transported in the human body.	Learning objective: I can explain how diet, exercise, drugs and lifestyle affect how the body functions. I can use scientific research to solve a health-related problem and make suggestions using evidence.	Learning objective: I can explain how drugs can affect the body.
Success criteria: By the end of this lesson, children will be able to describe the main parts of the circulatory system and explain how blood circulates throughout our bodies.	Success criteria: By the end of this lesson, children will be able to describe how the heart contracts and relaxes to pump blood around the body, use a model to observe the effects of applying more pressure, relate this to how the heart works, and identify and classify the three main parts of the circulatory system.	Success criteria: By the end of this lesson, children will be able to plan and conduct a comparative test to investigate the effects of exercise on heart rate, identify the independent, dependent, and control variables in the investigation, and draw simple conclusions from their results.	Success criteria: By the end of this lesson, children will be able to describe the journey of food through the human digestive system, describe how water and nutrients are absorbed in the small and large intestines, and describe how water and nutrients are transported around the body.	Success criteria: By the end of this lesson, children will be able to identify which factors relate to diet, exercise, and lifestyle when assessing someone's health, explain how health guidance is based on scientific research, and make suggestions for living a healthy lifestyle.	Success criteria: By the end of this lesson, children will be able to explain the difference between legal and illegal drugs (giving examples) and explain the effects of alcohol, nicotine and caffeine on the body's systems.
Cumulative quiz: Q1 – Q3	Cumulative quiz: Q4 – Q6	Cumulative quiz: Q7 – Q9	Cumulative quiz: Q10 – Q12	Cumulative quiz: Q13 – Q15	Cumulative quiz: Q16 – Q18
Scientific enquiry type:  Identifying & classifying	Scientific enquiry type:  Identifying & classifying  Observing	Scientific enquiry type:  Testing	Scientific enquiry type:  Researching	Scientific enquiry type:  Problem solving	Scientific enquiry type:  Researching
Working scientifically skills:  Asking questions  Recording data	Working scientifically skills:  Interpreting & communicating results	Working scientifically skills:  Setting up tests  Recording data  Observing & measuring  Interpreting & communicating results	Working scientifically skills:  Interpreting & communicating results	Working scientifically skills:  Interpreting & communicating results	Working scientifically skills:  Interpreting & communicating results



Unit overview



How do an animal's living systems work together to maintain a healthy body?

Stretch and challenge ideas

Children could:

- research to see if all animals have the same circulatory system as humans
- explore the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health
- investigate other activities to see which one makes the heart beat faster
- create a game about the transportation of water and nutrients
- look at a short health-related text and highlight facts, opinions and evidence
- research a variety of current 'health statements' e.g. vaping is better than smoking or a fast heart rate is always healthy, to see if they are true or false.
- use adverts and flyers, get children to evaluate health claims, considering the facts, opinions, missing information and exaggerated claims
- investigate other variables that affect heart rate, such as hydration, temperature and body position
- give children a short, made-up social media post with mixed accurate and inaccurate claims, and get them to critique the fictional health influencer post

Assessment

The **knowledge organiser** can support children. This could be displayed on the tables, sent home, or used for pre-teaching key vocabulary or concepts.

The **post-unit assessment** can be used to assess the knowledge and understanding objectives taught throughout the unit. This can be done independently or in small groups with a teacher.

There is a **cumulative quiz** with questions that can be used to assess children throughout the topic. The quiz questions will link directly to each objective. They can also be used at the end of each lesson to give immediate feedback to inform future planning and give the opportunity to identify children who do not understand.

Where possible, each lesson also includes small 'pit stop' style activities, such as true-or-false or stop-and-jot activities.

Climate change and sustainability



Use the '**Climate change and sustainability links**' document and scenario-based discussion cards to help pupils explore real-world sustainability challenges and choices.

Scientific enquiry type key



Testing



Researching



Observing



Pattern seeking



Identifying & classifying



Problem solving

Working scientifically key



Asking questions



Making predictions



Setting up tests



Observing & measuring



Recording data



Interpreting & communicating results



Evaluating

*Please refer to the **Science activities safety guidance advice** when undertaking any practical activities.