

Science Unit Overview

Year 6 Heart

How does the circulatory system keep the body alive?




National Curriculum Reference	Lesson Objectives	Vocabulary	Need to Know
<p>1. Can identify and name the main parts of the human circulatory system.</p> <p>2. Can describe the functions of the heart, blood vessels and blood.</p> <p>3. Can tell you about the impact of diet, exercise, drugs and lifestyle on the function of the human body.</p> <p>4. Can describe the way in which nutrients and water are transported within animals and humans.</p>	<p>1 Can I explain the importance of blood within the body?</p> <p>2 Can I describe the structure of the heart?</p> <p>3 Can I describe the role of arteries and veins ?</p> <p>4 Can I describe what exchanges take place within capillaries?</p> <p>5 Can I describe the main events within the circulatory system?</p> <p>6 Can I investigate how body position affects heart rate and blood pressure?</p>	<p>Circulation - The movement of blood around the body.</p> <p>Arteries - The tubes carrying oxygenated blood to respiring cells</p> <p>Veins - The tubes deoxygenated blood back to the heart</p> <p>Heart - The muscle used to pump blood around the body</p> <p>Ventricle - A large chamber within the heart where blood flows</p> <p>Oxygen - A form of energy used cells for respiration</p> <p>Carbon Dioxide - The waste product from respiration</p> <p>Respiration - Cells working, using oxygen and producing carbon dioxide</p> <p>Capillaries - Where arteries and veins meet and substances pass in and out of the blood stream</p> <p>Atrium - Chamber within the heart where returning blood enters</p>	<p>Blood is made up of different parts which perform different functions</p> <p>Blood transports oxygen, nutrients, carbon dioxide and waste products around the body</p> <p>The heart is a type of muscle which delivers blood to the lungs and then around the body</p> <p>The heart has 4 chambers (2 atrium and 2 ventricles) as well as major arteries and veins joining it to the rest of the body</p> <p>The body transports blood within veins and arteries to all respiring cells</p> <p>Arteries are thicker and actively push the blood to the capillaries</p> <p>Veins are thinner and return deoxygenated blood back to the heart. They have valves to stop blood travelling in the wrong direction</p> <p>Lifestyle can affect the way blood travels through the circulatory system</p> <p>Capillaries are where products are passed in and out of the bloodstream. This happens throughout the body</p> <p>Body position can affect the heart rate and how hard it is working (Blood Pressure)</p>
Skills			

Links across the curriculum (including moral and British Values)	Prior Knowledge	Future Coverage
<p>Respect for our body</p> <p>Link to exercise and health e.g. smoking, diet</p> <p>Heart rate monitoring in Year 2</p>	<p>The teeth are used to break food down into small pieces, ready for digestion</p> <p>There are 3 types of teeth: Molars for grinding, incisors which cut through the teeth and canines for ripping (often meat)</p> <p>The amount of each teeth depends on whether an animal is a herbivore, omnivore or carnivore</p> <p>The tongue mixes the food with saliva which moistens the food and starts to break it down</p> <p>The chewed food is made into a ball called a bolus.</p> <p>The food is swallowed and travels down the oesophagus into the stomach</p> <p>The stomach squashes the food by circular muscles which contract and relax</p> <p>The food in the stomach is mixed with a strong acid that breaks down the food into smaller pieces and begins to be absorbed in the small intestine.</p>	<p>Further Heart related work in Year 7</p>
Resources		Evaluation
<p>Heart – needed for dissection</p> <p>Images and videos</p> <p>Heart rate monitor</p>		

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Lesson 1 – Can I explain the importance of blood within the body?




Success Criteria	Lesson Section	Description / Task	Tier 2 Vocabulary	Need to Know
<p>Understand where blood is in our body?</p> <p>Understand its composition and the role of each component part</p> <p>Understand that blood is different in all humans</p>	 Overview	What is blood? Where does this sit in our series of lessons? Why are we starting with this? Experiences have you had with blood? Is blood blue?	Blood Pump Organ	<p>Blood is made up of different parts which perform different functions</p> <p>Blood transports oxygen, nutrients, carbon dioxide and waste products around the body</p>
	 Memory	Wonderball – what do you know? Are there any misconceptions?		
	 Connect	Tell me on fact from Year 4		
	<div>I</div> <div>We</div> <div>You</div>	<p>I - Watch the video and take notes on the composition and functions of the blood</p> <p>We - Ask questions in quiz format –</p> <ol style="list-style-type: none"> What are the red blood cells for? How does the blood clot? How does the body fight off infections <p>You - Draw a mind map splitting blood into 3 component parts</p>	Tier 3 Vocabulary	Curriculum Links
	<div>I</div> <div>We</div> <div>You</div>	<p>I – Draw and explain the composition of blood in body. Colours important here for visual understanding.</p> <p>We – Draw together on whiteboards labelling each part as we go? Retrieval – Dip back into quiz questions earlier</p> <p>I – Complete in booklets</p> <p>DD – Which part of the blood is not living?</p>	<p>Circulation</p> <p>Veins</p> <p>Arteries</p> <p>Plasma</p> <p>Platelets</p> <p>Haemoglobin</p>	Transport through digestive system
	<div>I</div> <div>We</div> <div>You</div>	<p>I – Explain different blood types in body</p> <p>We – Research your own blood type</p>		

Resources

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Lesson 2 – Can I describe the structure of the heart?

Success Criteria	Lesson Section	Description / Task	Tier 2 Vocabulary	Need to Know
<p>Label structure of the heart</p> <p>Explain the flow of blood and the importance of the heart in this process</p>	 Overview	How does heart link to the blood? Pair and share – write down 2 ways.	Heart	<p>The heart is a type of muscle which delivers blood to the lungs and then around the body</p> <p>The heart has 4 chambers (2 atrium and 2 ventricles) as well as major arteries and veins joining it to the rest of the body</p> <p>Lifestyle can affect the way blood travels through the circulatory system</p>
	 Memory	Draw test tube showing the composition of blood DD – Label the functions for each part		
	 Connect	In a nutshell – what is blood? Write a definition		
	<div>I</div> <div>We</div> <div>You</div>	<p>I – Model the structure of the heart – Label parts as go How big is it? What is its role? Difference between child and adult?</p> <p>We – Discuss and label together</p> <p>You – Complete booklet activity</p>	Tier 3 Vocabulary	Curriculum Links
	<div>I</div> <div>We</div> <div>You</div>	<p>I – Model the flow of blood – 1. Concrete (move people outside) 2. On SMART</p> <p>We – Repeat until fully understood. Lots of questioning. Link to bigger picture. Q – When is it oxygenated? Q – Do valves have a role to play?</p> <p>You – Complete questions</p> <p>DD – What happens if there is a faulty flow (link to heart attacks)</p>	<p>Ventricle</p> <p>Atrium</p> <p>Valve</p> <p>Vena Cava</p> <p>Aorta</p> <p>Pulmonary Vein</p>	
Resources – Ball, Heart				

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Lesson 3 – Can I describe role of arteries and veins?




Success Criteria	Lesson Section	Description / Task	Tier 2 Vocabulary	Need to Know
<p>Understand the composition of a vein and artery</p> <p>Understand the key differences</p> <p>Link to lifestyle to understand how healthy living is essential for vein/artery maintenance</p>	 Overview	How is blood transported around the body? Do we have blood in our toes and hands? When does our beat faster and why?	Thicker Wrong thinner	<p>The body transports blood within veins and arteries to all respiring cells</p> <p>Arteries are thicker and actively push the blood to the capillaries</p> <p>Veins are thinner and return deoxygenated blood back to the heart. They have valves to stop blood travelling in the wrong direction</p>
	 Memory	Label and explain the functions of the heart – sheet already provided		
	 Connect	Name on the head game – asking questions		
	<div>I</div> <div>We</div> <div>You</div>	<p>I – Talk and explain about the key differences using a cross section e.g. position, transport, oxygen, composition</p> <p>We – Quiz (True or False). Correct misconceptions</p> <p>You – Activity table in booklet</p>	Tier 3 Vocabulary	Curriculum Links
	<div>I</div> <div>We</div> <div>You</div>	<p>I – Show video about plaque and unhealthy lifestyle. Children to take notes.</p> <p>We – Discussion – What affects heart rate? What affects blood pressure? How can you look after veins/arteries? What is a stent? What is a normal blood pressure (use Heart Rate monitor)</p> <p>You – Children to choose which activity to write about Model – use sentence starter, but so because.</p>	Arteries Veins Venules Arterioles Valves Oxygenated De-oxygenated	

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Lesson 4 – Can I explain what changes take place at the capillaries?

Success Criteria	Lesson Section	Description / Task	Tier 2 Vocabulary	Need to Know
<p>Explain what a capillary is and outline its importance</p> <p>Explain how changes take place at the capillaries</p> <p>Explain how this links into the whole circulatory system</p>	 Overview	What are capillaries? Brainstorm on whiteboard. How are they different from a vein or an artery?	Heart Flow	Capillaries are where products are passed in and out of the bloodstream. This happens throughout the body
	 Memory  Connect	<p>Name 3 features of a vein and 3 features of an artery</p> <p>Verbal rally – what do you know about the circulatory system.</p>		
	<div>I</div> <div>We</div> <div>You</div>	<p>I – Carefully model the capillary diagram (annotating and explaining as I go). Link to bigger picture all the time</p> <p>We – Label the key parts</p> <p>You – Label the diagram in booklets</p>	Tier 3 Vocabulary	Curriculum Links
	<div>I</div> <div>We</div> <div>You</div>		<p>Capillary</p> <p>Oxygen</p> <p>Diffuse</p> <p>Carbon dioxide</p> <p>Cells</p> <p>urea</p>	
	<div>I</div> <div>We</div> <div>You</div>	<p>I – Explain the process. Vocabulary – oxygen, diffuse, glucose, cells, urea. Drawing as I go to explain oxygen into cells and carbon dioxide into bloodstream.</p> <p>We – Talk and explain in small group. Each person to explain part of the process.</p> <p>You – Explain process in full sentences in book. Focus on starters, vocabulary and rich word choice to make explanations thorough.</p>		
Resources				

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Lesson 5 – Can I explain the main events within the circulatory system?

Success Criteria	Lesson Section	Description / Task	Tier 2 Vocabulary	Need to Know
Revisit capillary exchange	 Overview	What are the different parts we have discussed in Lessons 2,3 and 4. How do they link to lesson 5? How is blood pumped around our body?	Pump Flow exchange	The body transports blood within veins and arteries to all respiring cells
Explain what is happening at different points in the circulatory system	 Memory  Connect	Draw a basic model of capillary exchange DD – Explain the functions and use Level 3 vocabulary Link words – e.g. heart & aorta		Arteries are thicker and actively push the blood to the capillaries
Explain why digestive system needs good blood supply	<div>I</div> <div>We</div> <div>You</div>	I – Provide blank model of the heart. Backwards fade by starting the process. We – Work in groups to finish off. Top points for correct use of vocabulary. You – Write this into our booklets as the first stage of circulatory system. Model key words that need to be included.	Tier 3 Vocabulary	Veins are thinner and return deoxygenated blood back to the heart. They have valves to stop blood travelling in the wrong direction
	<div>I</div> <div>We</div> <div>You</div>	I – Provide blank model of veins & capillaries. Backwards fade by starting the process. We – Work in groups to finish off. Top points for correct use of vocabulary. You – Write this into our booklets as the last stages of circulatory system. Model key words that need to be included. DD – Explain that this is a system and a circuit and will loop around again.	Veins Arteries Capillaries tract	Curriculum Links
				Circuits - electricity
Resources				

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Lesson 6 – Can I investigate how body position affects heart rate and blood pressure?

Success Criteria	Lesson Section	Description / Task	Tier 2 Vocabulary	Need to Know
Predict what will happen in the experiment	 Overview	We have learnt how blood travels around the body but what happens if our body is in a different position? Link it again to the journey overview.	Rate Pressure flow	Body position can affect the heart rate and how hard it is working (Blood Pressure)
Carry out the experiment safely	 Memory	Chocolate Bar – Write down 8 facts you know about the heart and circulatory system		
Collect data and draw conclusions	 Connect			
	I	I – Model how to start prediction e.g. I predict that...	Tier 3 Vocabulary	
	We	We – Discuss position, direction, flow, backflow		
	You	You – Write prediction	Valve Aorta Arteries Veins	Curriculum Links
	I	I – Discuss with the class what to change (dependent). Pair and share. Feedback.		
	We	We – Questions – What will work? How shall we lay out the table? What will keep same ?		
	You	You – Organise table		
	I	I – How are we going to make this safe? How can we record results? What equipment needs to be available?		
	We	We – Clear on this?		
	You	You – Carry out experiment and record the results. Model with class how to draw conclusions based upon results.		

Resources

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