Science

Animals, including Humans Year 6

Remember when:
The basic needs of animals for survival (water, food, air) (Y2)
The importance of exercise, hygiene and a balanced diet. (Y2,Y3,Y4)
Some animals have skeletons for support, protection and movement. (Y3)
The basic parts of the digestive system. (Y4)
Respiration is one of the seven life processes. (Y3/Y4/Y5)
The life cycle of a human and how we change as we grow. (Y5)

Sticky knowledge:
The circulatory system includes the heart, blood vessels and blood, and is vital for fighting diseases and maintaining proper temperature.
The heart is a muscular organ in most animals, which pumps blood through the blood vessels of the circulatory system.
Blood is the red liquid that circulates in the arteries and veins of humans and other vertebrate animals, carrying oxygen to and carbon dioxide from the heart.
A blood vessel is a tube that carries blood in the circulatory system.
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
The circulatory system works as a whole to provide oxygen, nutrients and water to the body.
Exercise and diet can tone our muscles, reduce fat, increase fitness, make you feel physically and mentally healthier, strengthens the heart and improves lung function.
Some lifestyle choices, such as smoking and drinking alcohol can be harmful to our health causing short-term effects like loss of control and long-term effects like organ damage, cancer and death.

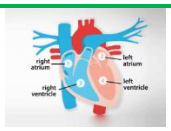
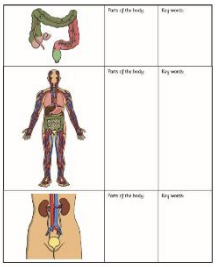
Key vocabulary

alcohol	arteries
artery	blood
blood vessels	
capillaries	cycle
carbon dioxide	
cardiovascular	
circulatory system	
deoxygenated	diet
disease	drug
healthier	heart
lungs	lifestyle
mentally	exercise
muscles	transported
nutrients	water
oxygen	ventricles
oxygenated	physical
pump	pulse rate
smoking	vein

National Curriculum:
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.

Common Misconceptions
Some children may think:
• your heart is on the left side of your chest
• the heart makes blood
• the blood travels in one loop from the heart to the lungs and around the body
• when we exercise, our heart beats faster to work the muscles more
• some blood in our bodies is blue and some blood is red
• we just eat food for energy
• all fat is bad for you
• all dairy is good for you
• protein is good for you, so you can eat as much as you want
• foods only contain fat if you can see it
• all drugs are bad for you.

	LO	Lesson outline
Lesson 1 LO: To identify the main parts of the human circulatory system. LO: To explain how the functions of the body work together. Enquiry type: Research	SK: The circulatory system includes the heart, blood vessels and blood, and is vital for fighting diseases and maintaining proper temperature. SK: The circulatory system works as a whole to provide oxygen, nutrients and water to the body. Skill: Record data and results of increasing complexity using scientific diagrams and labels	How does our body work? Explain that every part of our body needs blood to keep working. Mark out a space on the playground to represent the heart- in this place there will be piles of cards blue side up (this represents deoxygenated blood) Mark out another space, this can represent the lungs. Mark out other body parts (hula hoops) state to the children that they represent arms, legs etc. The children will act as the blood- they go to heart and collect a blue card- take to the lungs- then they turn the card which will be red (it's now oxygenated) They then take it to a selected body part and it becomes blue – deoxygenated. Repeat the process but always remember the children will move back to the heart and then the lungs before moving to the body part. Task: using the materials given or from the environment get the children to work in groups and recreate their own circulatory system. (Take pictures of the process) Children to then write up a step by step guide of the circulatory system. SEN- supported with pictures GDS- more detail discuss: veins, capillaries and arteries.

		 How your heart works – Heart and circulatory system – British Heart Foundation (bhf.org.uk) Page 108 Teaching Primary Science Outdoors TPSOresources - Millgate (millgatehouse.co.uk)
Lesson 2 LO: To describe the functions of the heart Enquiry type: Research	SK: The heart is a muscular organ in most animals, which pumps blood through the blood vessels of the circulatory system. Skill: Record data and results of increasing complexity using scientific diagrams and labels	Children will take part in Animal heart dissection all risk assessed before this will take place. Using a lamb's heart, the children will look at the different chambers of the heart and their functions. Step by step instruction will be given https://www.youtube.com/watch?v=yb_bY1iy0wI Demonstrate function of the heart using model (p37)
Lesson 3 LO: To describe the functions of the blood vessels and blood. Enquiry type: Research	SK: Blood is the red liquid that circulates in the arteries and veins of humans and other vertebrate animals, carrying oxygen to and carbon dioxide from the heart. A blood vessel is a tube that carries blood in the circulatory system. Skill: Record data and results of increasing complexity using scientific diagrams and labels	Blood soup- recipe saved in planning folder- pupils to draw a labelled diagram of what blood is made from. Opportunity to recap previous lesson. Pictures will be taken as evidence Link: They Might Be Giants - The Bloodmobile on Vimeo
Lesson 4 LO: To explain how nutrients and water are transported in animals and humans. Enquiry type: Observation	SK: Nutrients, oxygen and carbon dioxide are exchanged via the capillaries Skill: Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations	Video link: https://www.bbc.co.uk/bitesize/topics/z6wwxnb/articles/zsgk4xs Why Do We Need Nutrients? Cards given- match the types of nutrients with the reason why we need them. How Do We Get Nutrients? Using the Lesson Presentation, show a picture of the digestive system and body (blood) How Does It Work? Encourage the children to read through the information on the slides and explain the process to a partner. Demonstrate water and nutrient absorption using jelly babies or gummy bears soaked in water. Can also be shown using skittles placed around a plate and warm water added in the middle – the water draws the colour (nutrients) out of the skittles. 
Lesson 5 LO: To know how exercise and diet can affect your body. Enquiry type: Pattern seeking	SK: Exercise and diet can tone our muscles, reduce fat, increase fitness, make you feel physically and mentally healthier, strengthens the heart and improves lung function. Skill: Take measurements, using a range of scientific	Healthy Lifestyle: The children will be shown a variety of images on the Lesson Presentation regarding lifestyles. Which of these are necessary for a healthy lifestyle? Which ones would you not include? In groups, children sort the pictures on the Healthy and Unhealthy Lifestyle Choices Sorting Sheet, discussing and explaining the reasons for their choices. Can children discuss what might make a lifestyle more healthy or less healthy? Energy from Food: Calories and food intake. The children will then be shown how energy is inputted into the body via food and outputted via activity. Look at the questions and, although this is an independent activity, allow for some discussion. Show a range of people- People who don't do a lot of exercise and professional athletes - Adam Peaty and research what kind of lifestyle an Olympic swimmer has. Research what Adam Peaty's 7500 calorie training diet and exercise regime consists of and share with the class. How does

	equipment, with increasing accuracy and precision, taking repeat readings where appropriate	exercise impact on this? Why does Adam Peaty need a higher calorie intake? Can he just eat whatever he wants or does he need a specific diet? Discussing their lifestyle alongside information about their diet/exercise. Children calculate the typical food intake for one day for each person and then use this information to give advice about what each individual could do to maintain a healthy body. Can children interpret the diet and activities of a range of different people? Why is it important to exercise along with having a healthy diet (muscles don't tone by themselves, they need building) Task: children will look at case studies and identify their calorie intake and what actions need putting in place to help them maintain a healthy lifestyle.
Lesson 6 LO: To understand that drugs and lifestyle can affect your body. Enquiry type: Research	SK: Some lifestyle choices, such as smoking and drinking alcohol can be harmful to our health causing short-term effects like loss of control and long-term effects like organ damage, cancer and death. Skill: Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentation	What Are Drugs? Discuss the different uses of drugs. Show children the range of slides with information about the different types of drugs. Discuss prescription drugs, legal drugs, illegal drugs and alcohol and see what the children know about each of these terms and the effects of the different drugs. Can children explain how drugs and alcohol affect us? The Circulatory System: Share the information on the Lesson Presentation and encourage children to use their knowledge to confidently talk with their partner about what they already know about the circulatory system. Drugs and the Circulatory System: Follow prompts on the Lesson Presentation discussing the effects of smoking and alcohol on the circulatory system. Ask children to compare what the healthy and unhealthy circulatory systems look like. Can children describe the impact of drugs and alcohol on the circulatory system? Task 1: Impact of Smoking and Alcohol on the Body: Children to complete the differentiated Impact of Smoking and Alcohol on the Body Activity. Children will sort or create information about the effects on the body of smoking and the effects of drinking too much alcohol. Can children explain how drugs and alcohol can affect our bodies. Task 2: Drug and Alcohol Laws: Share some of the main drug and alcohol laws using the Lesson Presentation. Discuss these with the children and whether they think the laws go far enough and are justified. Can children give their opinion about whether or not the government guidance on drugs and alcohol is suitable? SEN- word banks provided GDS- Children complete the Impact of Smoking and alcohol.
Assessment		