St Peter's CE Primary School

Human Healthy Body (3 Weeks)

Unit Overview:

Year 3 and 4

This topic fills the National Curriculum requirement to learn about the human body. Throughout this unit, year 3 and 4 will describe the simple functions of the basic parts of the digestive system in humans. Learn the different types of teeth in humans and their simple functions. Pupils will identify that humans have skeletons and muscles for support, protection and movement.
They will learn that humans need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Pupils should be introduced to the main body parts associated with the digestive system, for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestine and explore questions that help them to understand their special functions. Pupils might work scientifically by: comparing the teeth of carnivores and herbivores, and suggesting reasons for differences; finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images. Pupils will look at the impact on a healthy and unhealthy lifestyle on the body, including diet, drugs and exercise.

Year 5 and 6

This topic fills the National Curriculum requirement to learn about the human body. Throughout this unit, year 5 and 6 will recognise that living things have changed over time by learning about evolution and survival of the fittest by adaptation to the environment. They recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Pupils will describe the changes as humans develop to old age. They will identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Pupils will describe the ways in which nutrients and water are transported within animals, including humans. Pupils should draw a timeline to indicate stages in the growth and development of humans. Pupils will recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.

Working Scientifically

Alongside electricity and throughout the year, pupils will continue to work scientifically in lower KS2 by:

- asking relevant questions and using different types of scientific enquiries to answer them.
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables

- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Key Questions:

Spring 2 Term LKS2

1) What is the key vocabulary associated with the human body?
2) What are the different kinds of teeth and what is their function?
3) How does the digestive system work?
4) What is the function of the human skeleton and muscles?
5) What is a healthy lifestyle? (impact of diet, including nutrition, drugs and exercise)

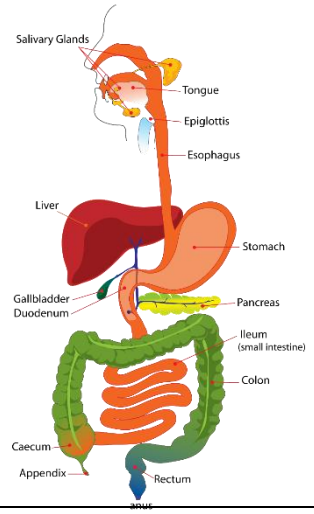
Spring 2 Term UKS2

1) What is the key vocabulary associated with the human body?
2) How have living things change over time? (Evolution)
3) How do living things produce offspring of the same kind?
4) How do humans develop?
5) How does the circulatory system work?
6) How are nutrients and water transported within humans?

Objectives covered in this unit:

Science (see progression in expectations document)	LKS2: • describe the simple functions of the basic parts of the digestive system in humans • identify the different types of teeth in humans and their simple functions • identify that humans have skeletons and muscles for support, protection and movement. • Recognise the impact of diet, exercise, drugs and lifestyle on the ways our bodies function. • identify that, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat UKS2 • recognise that living things have changed over time • recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • describe the changes as humans develop to old age. • identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • describe the ways in which nutrients and water are transported within animals, including humans.

Human Healthy Body
Key Knowledge LKS2

What is the key vocabulary associated with the human body	See vocabulary sheet
What are the different kinds of teeth and what is their function?	Pupils need to know: - Teeth are found in our mouths – we use them to help us eat. - Humans have up to **32 adult teeth**, made up of four different types: **incisors, canines, pre-molars and molars.** - Each type of tooth is designed to do different things. Incisors cut food, canines tear food, pre-molars crush food, and molars grind food. - Humans are omnivores, which means we eat a mixed diet of plants and meat – this is why our teeth are designed and laid out in our mouths the way they are. - Teeth are made of two main parts: the crown (the bit you can see) and the root (the bit inside your gum that holds your tooth in place). - A tooth is made of four different substances: enamel, dentine, pulp and cementum. The enamel is the bit on the outside of your tooth (it is very hard), while the dentine and pulp are found inside the tooth. The pulp contains the nerves and blood vessels of the tooth. Cementum is the substance at the bottom of the tooth root which helps to anchor it into the jaw bone. - Humans get two sets of teeth in their lifetime, so we need to look after them well and make sure that they don't rot. **Cleaning** teeth, eating the right **foods**, and regular visits to the **dentist** help to keep our teeth and gums healthy. - Pupils need to learn how to look after their teeth and keep them healthy Pupils need to know the difference between baby teeth and adult teeth
How does the digestive system work?	Pupils will need to label the digestive system and how it works including facts about it. 

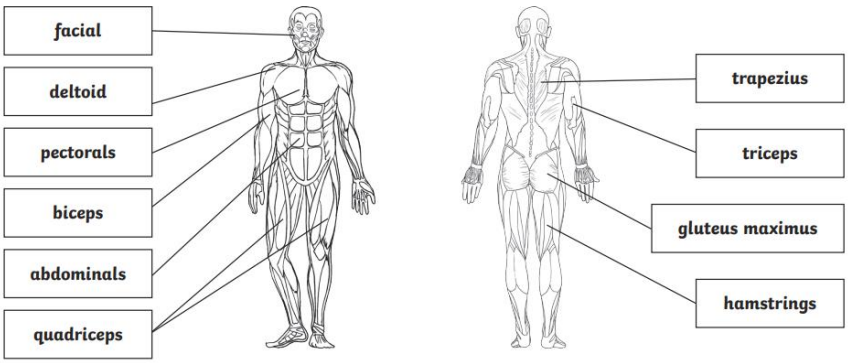
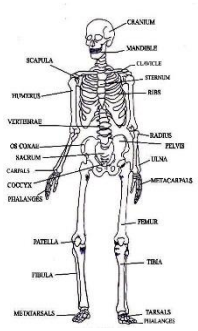
Pupils need to know:

- The human digestive system is a complex series of organs that processes food.
- In order to use the food we eat as energy, our body has to break the food down into smaller molecules that it can process; it also has to excrete (or get rid of) waste.
- Pupils need to know that muscles constrict and relax to move food down the oesophagus and into the stomach
- Pupils need to know what happens in the stomach and how food is broken down and turned into a thick paste (chyme)
- They need to know that the small intestine is where most of the digestion and absorption of nutrients into the blood stream takes place and food is moved by contracting and then relaxing of the small intestine
- Pupils need to know that the large intestine absorbs water and salt from the material not digested as food and gets rid of the waste- most digestion has already happened by this point

- Most of the digestive organs (like the stomach and intestines) are tube-like and contain the food as it makes its way through the body.
- The digestive system is essentially a long, twisting tube that runs from the mouth to the anus, plus a few other organs (like the liver and pancreas) that produce or store digestive chemicals. Without the digestive system, our bodies would not be able to get nutrients from the food we eat or get rid of the waste products that food makes and we would soon become ill!

<u>Interesting Facts</u>

1. The small intestine is about 7 metres long, and about 2.5 centimetres in diameter. The surface area is around 250 square metres, or about the size of a tennis court!
2. We make 1 to 3 pints of saliva a day.
3. It takes your mouth, oesophagus, stomach, small intestine, large intestine, gallbladder, pancreas and liver just to digest a glass of milk.
4. An adult's stomach can hold approximately 1.5 litres of material.
5. Food stays in your stomach for 3 to 4 hours.
6. Cells along the inner wall of the stomach secrete roughly 2 litres of hydrochloric acid (the powerful chemical commonly found in some cleaning supplies, including toilet-bowl cleaners!) each day, which helps kill bacteria and aids in digestion. To protect itself from the corrosive acid, the stomach lining has a thick coating of mucus. But this mucus can't buffer the digestive juices indefinitely, so the stomach produces a new coat of mucus every two weeks.
7. When your tummy rumbles, it's the normal movements in the stomach and small intestines as food, fluid and gases pass through your gastrointestinal tract. When the tract is empty, however, the noises are louder because there's nothing in there to muffle the sound.
8. Within the colon, a typical person harbours more than 400 distinct species of bacteria.

What is the function of the human skeleton and muscles?	- The living skeleton has moving joints and provides a framework that protects and supports your body's organs. - Pupils need to know that the skeleton is alive and works with other body systems - Pupils need to know about bone marrow and what it is for- to produce fresh blood cells. - The muscles are attached to the bones by strong chords called tendons so the muscles can pull the bone enabling us to move KS2 Human Muscles Labelling Activity **Answers**  Muscles provide the tug on the bones needed to bend, straighten, and support joints. Muscles can pull on bones, but they can't push them back to their original position, so the muscles work in pairs of flexors and extensors. The extensor muscle relaxes and stretches as the flexor muscle contracts to bend the joint.
	Pupils label the main parts of the human skeleton and then write more information about the following:  **Bone-** Bones are far from solid. They have a hard outer shell but inside an equally tough but sponge like layer made from tiny spaces like a honeycomb structure. This makes the bone strong but light. In the middle of the bones is a jelly like substance called marrow that produces different kinds of blood cells. **The skull**- Most complex part of the skeleton. Made from many bones joined together tightly to protect the brain and support the face The upper part of the skill is like a helmet that surrounds the brain. The lower part forms a structure that helps shape your facial features The bones of the skull slot together like a jigsaw and all but one is locked in place which makes the skull very strong

	There are 22 bones in the skull Babies have spaces between the skull bones so their heads can withstand being squashed during birth. **The spine**- a column of bones running down the back of the body and without it we couldn't hold up our head and body or make any sort of movement. It consists of 26 bones called vertebrae. This is where the spinal chord passes through. The spinal cord carries messages from your brain to the rest of the body. **Moving Joints-** Joints are places where bones meet. There are more than 400 of them in the body. Most familiar are the moveable joints which can be found from the jaw down to the toes. Each moveable joint has its own design. The different joints are the ball and socket joint, saddle joint, pivot joint, ellipsoidal joint, hinge joint and gliding joint

What is a healthy lifestyle?	Lifestyle means the way we live our life and this could be anything from your hobbies to what you enjoy doing as a family. Pupils learn that a few simple changes to lifestyle can make changes to your body. Lifestyle choices could be influenced by television adverts and programmes and peer pressure. Pupils learn that if a family spent a lot of time watching television and eating takeaways, how would this be different to a family who played tennis together or went roller skating together in the evenings? <u>Exercise</u> Exercise strengthens your heart and improves your circulation. The increased blood flow raises the oxygen levels in your body. This helps lower your risk of heart diseases such as high cholesterol, coronary artery disease, and heart attack. Regular exercise can also lower your blood pressure and triglyceride levels. Exercise = better blood circulation, better stamina and fitness, stronger bones and a whole host of other benefits. A 'drug' is something that you eat or drink that has an effect on your body. This effect can be good or bad. It is important that you follow the advice of doctors and responsible adults when taking a drug as even medicines have to be taken in a particular way to keep them safe. <u>Diet</u> The human body needs a balanced diet to work properly. Good health involves drinking enough water and eating the right amount of foods from the different food groups: Eat at least 5 portions of a variety of fruit and vegetables a day. Most of us still are not eating enough fruit and vegetables. They should make up over a third of the food we eat each day. Aim to eat at least 5 portions of a variety of fruit and veg each day. We should drink between 6 to 8 glasses of water each day. Water is critical for digestion. It prevents constipation and keeps the bowels moving by helping to process soluble fibre and fat. Staying hydrated also helps to eliminate toxins from the body, which can damage the gut by causing inflammation and irritation. Drinking more water can also aid with weight loss. **https://www.twinkl.co.uk/resource/t2-s-1366-y6-the-impact-of-diet-exercise-drugs-and-lifestyle-on-bodies-powerpoint**

	The word 'diet' simply means all the food and drink you choose to put into your body. Pupils learn about a healthy diet or an unhealthy diet. They learn about special diets, perhaps because they are diabetic, have coeliac disease, are vegetarians or because they need to lose weight. <u>Nutrients</u> Pupils need to know that we have to eat food to get the nutrients that we need and that we need a balanced diet. We cannot make our own food like plants can. **Fruit and Vegetables** These are good sources of vitamins and minerals and fibre. Aim to eat 5 portions a day! Choose from fresh, frozen, tinned, dried or juiced. Fruit juice and/or smoothies should be limited to 110 more than a combined total of 150ml per day. **Carbohydrates** Starchy foods such as potatoes, bread, rice, pasta and cereals should make up just over a third of the food you eat. These are important for giving us energy. Choose higher-fibre, wholegrain varieties, such as wholewheat pasta and brown rice, or simply leave skins on potatoes. **Dairy and Alternatives** These are a source of calcium which is important for strong teeth and bones. Choose lower fat and sugar options. **Food and Drinks High in Fat and / or Sugar** Eat less often and in small amounts. **Oil and Spreads** Choose unsaturated oils and spreads and use in small amounts. Eat sparingly. **Fruit and Vegetables** Proteins such as beans, pulses, fish, eggs, meat are very important for helping us grow and build muscles. Beans and pulses are a good alternative to meat as they contain less fat and are higher in fibre and protein. Try to eat 2 portions of fish a week, and try to reduce intake of red and processed meat. Doing one hour of exercise per day has a huge positive effect on your body. Drugs can be medicines that are helping the body but they can also be substances, such as alcohol or chemicals found in cigarettes, that have a very bad effect on your body. Doctors prescribe drugs (medicines) to people to help them overcome an illness. This is fine and actually helps the body. The drugs that have a bad effect on someone's body can also make people think that it is having a good effect. On top of this, they can also make someone's body want more of that drug and this is where someone can become addicted.

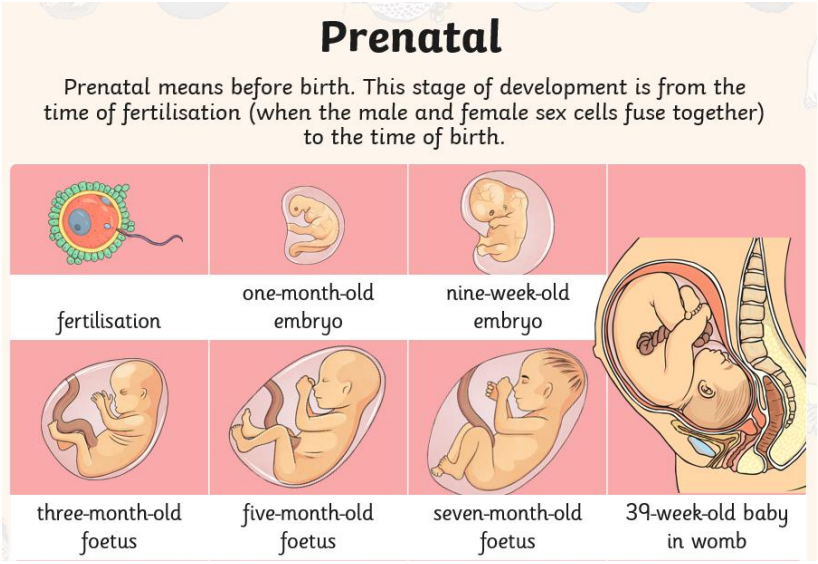
	1. Carbohydrates give us energy. They are found in foods such as bread, potatoes and pasta. 2. Proteins help our bodies to repair themselves. They are found in foods such as fish, meat, nuts, seeds, eggs and cheese. 3. Fats help store energy for our bodies. They are found in foods such as butter, cheese, nuts and fried food. 4. Fibre is important for helping us digest our foods. It's found in fruit and vegetables.

Human Healthy Body
Key Knowledge UKS2

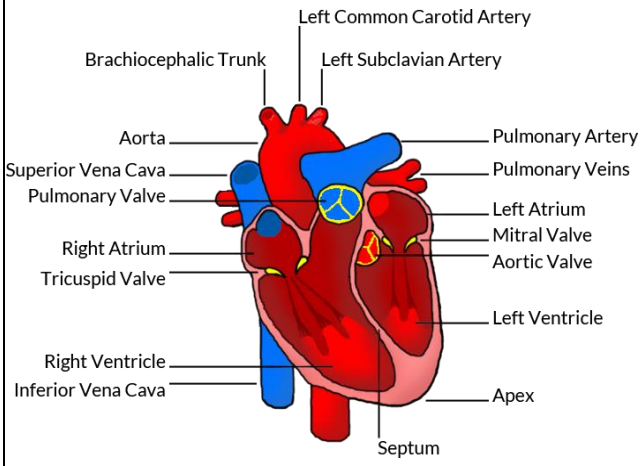
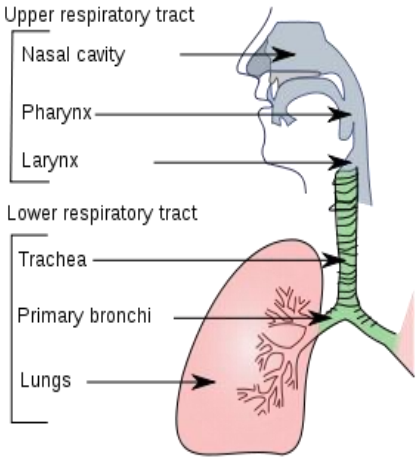
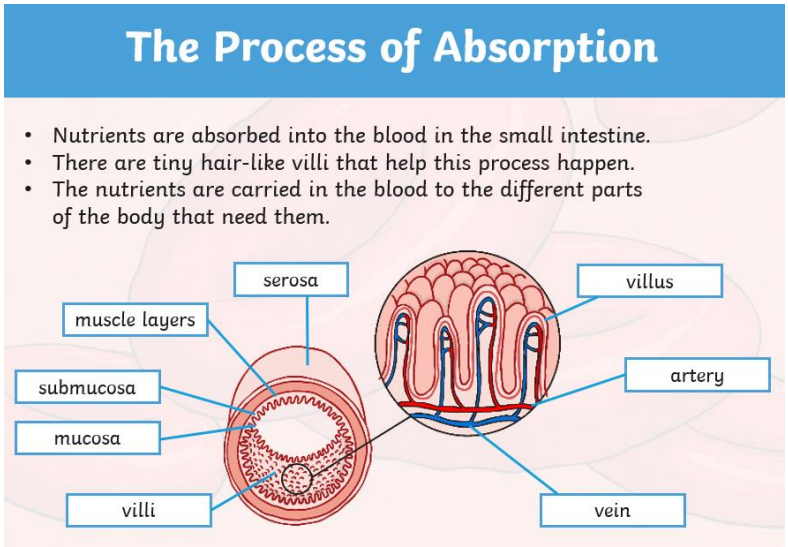
How have living things change over time? (Evolution) How does the circulatory system work? How are nutrients and water transported within animals including humans?	**Adaptation** Living creatures (animals and plants) adapt or evolve to survive in their environment and to live amongst a specific group of other living things. Every animal or plant on Earth has adaptations, or specific characteristics, that help it stay alive in its habitat. Examples of adaptations are fur, feather and fat (to help animals keep warm in cold habitats), long legs (to help animals escape from their predators) or camouflage (to help animals hide from their predators).
	Evolution Over time, animals and plants change and evolve because offspring have slightly different characteristics to their parents. Living things born with adaptations that make their lives easier in specific habitats are more likely to survive; the process of advantageous adaptations being passed on to future generations is known as natural selection. The theory of evolution explains how primitive life forms have changed and adapted over millions of years to become the complex living organisms living on Earth today. The physical features or behaviours of plants and animals have adjusted to survive in their environment and cope better with the conditions around them. The most useful and strongest characteristics or **adaptations** are passed on to the next generation and enable the plants or animals to survive. Example of adaptations include a camel's ability to store water, polar bears' white fur to camouflage themselves on the ice and a chameleon's

	ability to change colour to hide from predators. **Evolution** is the process of change to animal and plant species over long periods of time, or how plant species and animals have developed from generation to generation. Plants and animals produce offspring of the same kind. These offspring are similar but not exactly the same as their parents. Characteristics are passed on from parent to offspring. These characteristics are **inherited**. As part of their study of evolution children may learn about famous scientists who explored evolution concepts and ideas (Charles Darwin, Thomas Huxley, Alfred Russel Wallace and **Mary Anning**). They might also discuss how scientists learn about adaptation and evolution through studying fossils to find out what things were like millions of years ago.
How do living things produce offspring of the same kind?	<u>Reproduction</u> https://www.bbc.co.uk/bitesize/topics/zgssgk7/articles/z9xb39q **Types of Reproduction** How does new life start? To reproduce, animals need a male and female. Together they can create offspring, or babies. Some animals, such as chickens, fish and snakes, lay eggs which contain their offspring. Humans grow their babies inside them until they are developed enough to be born. <u>Inheritance</u> We inherit characteristics from our parents because offspring takes half the DNA from each parent and the DNA carries the information that gives offspring characteristics from their parents.

	Asexual Reproduction	Sexual Reproduction	Both Sexual and Asexual Reproduction
What is it?	One parent produces new life.	Two parents – one male and one female – are required to produce new life.	Either one or two parents.
How does it occur?	One cell simply starts to divide itself. All cells of the offspring are **identical** to the parent. This means that it is a **clone** of the parent.	Male sex cells (sperm/angiosperm/pollen are different versions of male sex cells) fertilise female sex cells (eggs). This fusion means that the offspring resembles but is **not** identical to the parents.	Some living things have the capacity to reproduce in sexually or asexually.

	All living things produce offspring of the same kind but the offspring are rarely identical to the parents. There are variations which make them different. We don't inherit everything from our parents. For example, things like hairstyles, scars and ear piercings are not passed on. Identical twins are often very similar to look at. If you have a brother or sister and aren't an identical twin you are still likely to be very similar, but you are probably not identical. This is because different offspring from the same parents don't inherit the same mix of characteristics. These differences are called variation.
How do humans develop?	**Life cycle** https://www.bbc.co.uk/bitesize/topics/zgssgk7/articles/zwn6mnb All animals, including humans, are born, they get older and bigger and some will go on to have children. In the end, all animals die. We call this a life cycle. Humans are small when they start life. Over time they grow bigger and their bodies change. When they are grown up, they might reproduce and have young humans of their own. These humans will get older and may eventually also have children too, and so the life cycle keeps going! https://www.twinkl.co.uk/resource/tp2-s-034-planit-science-year-5-animals-including-humans-lesson-1-human-timeline-lesson-pack  Pupils learn the stages of development in the womb Pupils learn the stages of development of baby to toddler to child, adolescent, adult and old age.

How does the circulatory system work?	The circulatory system is one of the most important systems in the body. Made up of the **heart, blood and blood vessels**, the circulatory system is your body's delivery system. Your heart plays and important part in being healthy. It keeps all the blood in your circulatory system flowing. Blood helps oxygen get around your body. When you **exercise** you can feel your pulse, it tells you how fast your heart is pumping. The body's circulatory system is responsible for transporting materials throughout the entire body. It **delivers nutrients, water, and oxygen** to your billions of body cells and **carries away wastes** such as carbon dioxide that body cells produce. It is an amazing highway that travels through your entire body connecting all your body cells. At the centre of this system is the heart, an amazing organ. **The heart beats about 3 billion times during an average lifetime**. It is a muscle about the size of the fist. The heart is located in the centre of the chest slightly to the left. I**ts job is to pump blood and keep the blood moving throughout the body**. The blood is pumped around a complex network of blood vessels extending to every part of the body. **Blood carries the oxygen and nutrients needed to fuel the activities of the body's tissues and organs**, and it plays a vital role in removing the body's waste products. An average-sized adult carries about 5 litres (9 pints) of blood. We see and hear about hearts everywhere. A long time ago, people even thought that their emotions came from their hearts, maybe because the heart beats faster when a person is scared or excited. Now we know that emotions come from the brain, and in this case, the brain tells the heart to speed up. **Your heart is a very strong muscle** that pumps blood around your body. It is made of four chambers, two upper chambers and two lower chambers. Blood enters the upper chambers. These squeeze and push the blood into the lower chambers, which then squeeze and push the blood out of your heart. The heart works tirelessly – more than 2.5 billion times over an average lifetime – to pump blood around the body. The heart's **contractions** or 'squeezes' are triggered by electrical impulses that come from a specialised area of heart tissue. Your **pulse** is a measure of how fast your heart is beating. It is the number of beats your heart makes in one minute. Your heart beats faster or slower depending on what you are doing. You can feel your pulse at certain points on your body. The easiest place to feel it is in your wrist, using the first two fingers of your other hand. When you sit, the average heart beats about 80 times per minute. However, everybody is different, so your pulse could be higher or lower than this. When you **exercise**, your heart beats more quickly. This is because your muscles are working harder and need more oxygen to keep going. Your **lungs** also work harder, making you breathe more quickly to get more oxygen. When you sleep, your muscles need less oxygen, so your heart slows down.
	Respiratory System The **respiratory system** is the group of tissues and organs in your body that **allow you to breathe**. This system includes your **airways**, your **lungs**,

	and the **blood vessels** and **muscles** attached to them that work together so you can breathe. The respiratory system's main function is to **supply oxygen** to all the parts of your body. It does this through breathing: **inhaling** oxygen-rich air and **exhaling** air filled with carbon dioxide, which is a waste gas. The respiratory system works in the following way: first you breathe air in through your nose and mouth, which wet and warm the air so it won't irritate your lungs. Then the air travels through your voice box, down your windpipe, and though two tubes into your lungs. Cilia, tiny mucus-covered hairs, in your airways trap foreign particles and germs to filter the air that you breathe. You then cough or sneeze the particles out of your body. **Red blood cells** are responsible for picking up the oxygen in the lungs and carry oxygen to the body cells. The red blood cells then collect the carbon dioxide (waste gas product) produced by our cells and transport the carbon dioxide back to the lungs which we breathe out when we exhale.
	 
How are nutrients and water transported within humans?	https://www.twinkl.co.uk/resource/t2-s-452-year-6-transporting-nutrients-teaching-pack See twinkl pack 

	Focus on how nutrients are absorbed into the blood in the small intestine Blood is circulated all around your body. The blood is doing a really important job - it is taking nutrients, hormones and oxygen all around the body to all the places they need to go. The oxygen comes into your body when we breathe in and it goes into our lungs. Then, inside the lungs, this oxygen goes into our blood and starts its journey around the body. You could think of the blood cells a bit like delivery drivers that drop off the oxygen to where it needs to be. Oxygen is dropped off all around the body to thinner blood vessels, which transfer (move across) the oxygen to the cells in the body.

Human Healthy Body Vocabulary

Vocabulary				
Tier 1 (general)	Heart Humans Joints Excrete Secrete Substances	Digestion Nutrition Heart rate Constrict Protect Oxygen	Diet Exercise Energy Contract Support Carbon dioxide	Bones Muscles System Absorb Structure
Tier 2	Skeleton Saliva Saturated Protein	Digestive Omnivore System Fibre	Organs Nerves Unsaturated Bacteria	Teeth Molecules Carbohydrate
Tier 3	Vertebrae Saddle joint Tendons Rectum Molars Enamel Cranium	Skull Ball and socket joint Intestine Canines Dentine Pulp Patella	Ellipsoidal Spinal cord Oesophagus Blood cells Vessels Cementum Ileum Fibula	Gliding joint Marrow Stomach Incisors Crown Root Femur