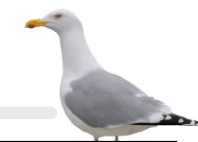




Year 3 – Animals including humans

How do the systems inside our body work?



Overview of learning

In this unit, children learn how the skeleton and muscles support the body, protect organs and allow movement. They identify major bones, explore joints and discover that muscles work in pairs to pull the skeleton. Children then compare humans with other animals, learning that some have internal skeletons, some have exoskeletons and some have none. They classify animals based on these structures.

Next, they learn that all animals need nutrients to stay alive, grow and repair. They explore the three main nutrients - carbohydrates, proteins and fats - and how herbivores, carnivores and omnivores obtain them.

Finally, children apply this to humans, learning that we are omnivores and can get nutrients from many foods. They explore why families may eat different foods while still needing the same nutrients.

Knowledge and understanding objectives

NC Y3:

Children will:

- identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
- identify that humans and some other animals have skeletons and muscles for support, protection and movement

Key vocabulary

Tier 2: bone, contract, diet, fats, human, involuntary, movement, pairs, prediction, protection, relax, support, voluntary

Tier 3: carbohydrates, carnivore, exoskeleton, herbivore, invertebrate, joint, muscles, nutrients, nutrition, omnivore, proteins, skeleton, vertebrate

Possible misconceptions

Children may assume that every animal has a skeleton or that all skeletons look human-shaped. They may overlook invertebrates or not understand that exoskeletons are a different type of support structure.

Some children may not yet grasp that **muscles also help with posture** and that bones and muscles work together. They may think muscles are linked to strength or gender. They need to understand that **all humans have muscles** and use them to move. Children often believe muscles can **push**. They need to learn that **skeletal muscles only pull** and work in **pairs** to create movement. They may also think exoskeletons are the same as shells and forget that animals with exoskeletons still have **muscles attached to the inside** to help them move. Children may associate 'diet' with weight loss. They need to understand that **diet simply means what an animal eats** to get nutrients. Children may confuse the **three nutrients that animals need** (carbohydrates, proteins and fats) with the **five food groups** used in healthy-eating messages. They need to understand that nutrient groups describe **what the body needs**, while food groups describe **types of foods that people choose to eat**.

Videos

Lesson 1. <https://www.youtube.com/watch?v=iqrQRsFDDbC>

Lesson 3. <https://www.bbc.co.uk/programmes/p01199jh>

Lesson 4. <https://www.youtube.com/watch?v=EmcdhDUQzik&t=39s>

1.



3.



4.



Previous learning

Year 1 – Children will have looked at how to group animals including based on their diet.

Year 2 – Children studied animals and their offspring as well as the basic needs of animals to survive.

Future learning

Animals and humans are studied in each year group.

Year 4 – Children will learn how to group plants and animals in different ways based on their features. They will also create classification keys based on their study.

Year 5 – Children will explore how humans change over time.

Year 6 – Children will learn about the impact exercise, diet, drugs and lifestyle have on the human body as well as learning about how water and nutrients are transported around the body.

KS3 – Children will study the skeleton and muscles in more depth including biomechanics where they will investigate the interaction between the muscles and bones. They will also study nutrition in more depth looking at the requirements for a healthy diet, calculations for energy requirements and the consequences of imbalances.

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

Scientific enquiry type		Working scientifically skills	
	Identifying bones in the human skeleton and their location		Labelling the bones of a human skeleton
	Finding patterns between the length of leg bones and the distance jumped		Setting up a pattern seeking investigation
			Measuring and recording the length of bones and distances jumped
			Interpreting results to look for a pattern
	Observing how muscles work in pairs, moving bones as they contract and relax		Creating a model arm with muscles, explaining how the arm moves as the muscles contract
	Classifying animals by characteristic features		Making close observation of animal skeletons, looking for similarities and differences
			Sorting animals into vertebrate and invertebrate groups
	Identifying and classifying how animals including humans get nutrition from their food		Sorting human foods into nutritional groups
			Identifying foods that fit the diets of different animals



Unit overview

How do the systems inside our body work?



Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Key question: How does our skeleton help us?	Key question: Do our bones affect the way we move?	Key question: How do our muscles work?	Key question: Do all animals have a skeleton?	Key question: What types of nutrition do animals need?
Learning objective: I can identify that humans have bones for support, protection and movement.	Learning objective: I can investigate a scientific question and interpret results to find out if our bones affect the way we move.	Learning objective: I can explain how muscles work in pairs to help us move.	Learning objective: I can identify that some other animals have bones for support, protection and movement.	Learning objective: I understand that animals, including humans, need the right types of nutrition.
Success criteria: By the end of this lesson, children will be able to identify the names of some of the bones in the human body and understand that we need bones for support, protection and movement.	Success criteria: By the end of this lesson, children will be able to investigate a question by planning out what they will do, gathering data and interpreting their results.	Success criteria: By the end of this lesson, children will be able to identify how humans use muscles and understand that we need muscles to help us move.	Success criteria: By the end of this lesson, children will be able to identify differences in the skeleton of different animals. They will also be able to group animals based on whether they have a backbone or no internal skeleton.	Success criteria: By the end of this lesson, children will recognise that animals, including humans, get nutrients from their food. They will be able to identify the three main nutrient groups: carbohydrates, proteins and fats.
Cumulative quiz: Q 1 – 3	Cumulative quiz: Q 4 – 6	Cumulative quiz: Q 7 – 9	Cumulative quiz: Q 10 – 12	Cumulative quiz: Q 13 – 15
Scientific enquiry type:  Identifying & classifying	Scientific enquiry type:  Pattern seeking	Scientific enquiry type:  Observing	Scientific enquiry type:  Identifying & classifying	Scientific enquiry type:  Identifying & classifying
Working scientifically skills:  Recording data	Working scientifically skills:  Setting up tests  Observing & measuring  Interpreting & communicating results	Working scientifically skills:  Interpreting & communicating results	Working scientifically skills:  Observing & measuring  Recording data	Working scientifically skills:  Recording data



Unit overview

How do the systems inside our body work?



Stretch and challenge ideas

Children could:

- investigate their own questions based on the investigation in lesson 2
- make up a song/poem/rap to help them remember the names of the bones
- make a model to show how the muscles work
- design a healthy packed lunch/meal that has each food type
- research other animals that have skeletons similar/different to humans
- research the use of muscles in other animals

Assessment

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

The **post-unit test** can assess the knowledge and understanding of 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 allow identifying children who do not understand.

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

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