

# Science

## Animals including Humans Year 3 (muscles and skeletons)

### Remember when

Named parts of the human body and what they do. (Y1)  
 Grouped and named five types of vertebrates (mammals, fish, reptiles, amphibians, birds) (Y1/Y2)  
 Vertebrates are animals that have a backbone and invertebrates have no backbone. (Y1/Y2)  
 Animals need water, air and food to survive. (Y2)  
 Humans can be healthy by exercising, hygiene, medicines and eating healthy. (Y2)

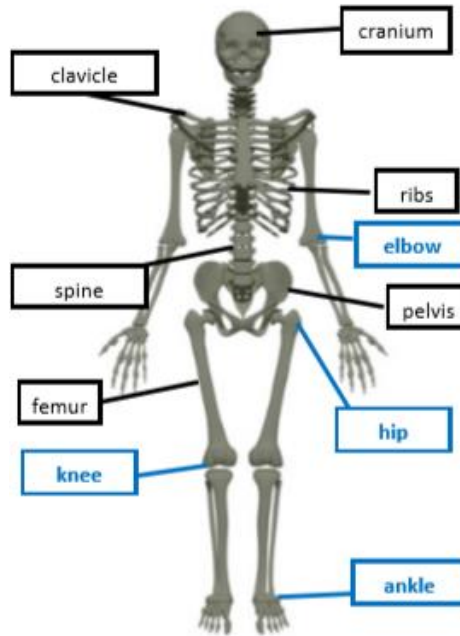
### Sticky knowledge

Babies are born with about 300 bones, almost a third of which eventually fuse together to form the 206-bone skeleton of an adult.

Vertebrates are animals that have a backbone. These skeletons are called endoskeletons - this means that the skeletons are on the inside of the bodies. These skeletons grow with the bodies.

When the skeleton exists outside the body, it is called an exoskeleton. An exoskeleton is a covering that supports and protects animals. These have to be shed and a new skeleton is grown.

The three most important things a skeleton does are to provide support and shape to an animal's body, allow movement through the joints and protect organs. Joints allow the body to make movements. The body has many bones and are connected through the joints. Muscles are attached to the bone by tendons and help them to move. When a muscle contracts it gets shorter and pulls on the bone it is attached to.



### Key vocabulary

skeleton  
 bones  
 muscles  
 joint  
 endoskeleton  
 ankle  
 exoskeleton  
 hip  
 pelvis  
 rib cage  
 spine  
 organs  
 protect  
 clavicle  
 cranium  
 tendons  
 femur  
 ribs  
 elbow  
 spine  
 vertebrates  
 invertebrates

### National Curriculum

Identify that humans and some animals have skeletons and muscles for support, protection and movement.

### Common Misconceptions

Some children may think that:

- snakes are similar to worms, so they must also be invertebrates
- invertebrates have no form of skeleton.

LO and Enquiry type:	Knowledge and Skills	Lesson outline
<p>Lesson 1</p> <p>LO: To know the purpose and functions of a skeleton.</p> <p>Enquiry type: Research</p>	<p>SK: Babies are born with about 300 bones, almost a third of which eventually fuse together to form the 206-bone skeleton of an adult.</p> <p>The three most important things a skeleton does are to provide support and shape to an animal's body, allow movement through the joints and protect organs.</p> <p>Skill: Record findings using labelled diagrams</p>	<p>Discuss why we have skeletons, what would happen if we didn't have a skeleton.</p> <p>How many bones a baby has and how many an adult has. Why is this number different?</p> <p>Discuss names of bones, e.g. cranium (bones that protect the brain)</p> <p>Group work:</p> <p>SEN/WTS - Label the picture of the skeleton using first letters to support.</p> <p>EXS – Label picture of a skeleton</p> <p>GD – Label picture of skeleton. Brief description of what the bones do/protect.</p> <p>Colour code the skeleton (bones that protect in one colour, bones for support in another)</p>

<p>Lesson 2</p> <p>LO: To know how joints help the body to move.</p> <p>Enquiry type: Research</p>	<p>SK: Joints allow the body to make movements. The body has many bones and are connected through the joints.</p> <p>Skill:</p>	<p>Show models of different types of joints and where they are found in the body. Transfer into books. Explain the different types of joints in the body, explore the different ways they move..</p> <p>LA – Draw and stick in explanation to match</p> <p>MA – Draw and use word mat to explain (cloze)</p> <p>GD – Draw and explain (word mat to support).</p>
<p>Lesson 3</p> <p>LO: To understand the different types of skeleton.</p> <p>Enquiry type: Grouping and classifying</p>	<p>SK: Vertebrates are animals that have a backbone. These skeletons are called endoskeletons - this means that the skeletons are on the inside of the bodies. These skeletons grow with the bodies.</p> <p>When the skeleton exists outside the body, it is called an exoskeleton. An exoskeleton is a covering that supports and protects animals. These have to be shed and a new skeleton is grown.</p> <p>Skill: Gather, record and present data in a variety of ways to help in answering questions</p>	<p>Match skeletons to the correct animal (groups). Recap work from last week on function and purpose of a skeleton. Discuss invertebrates and animals with exoskeletons. What does this mean?</p> <p>Sort animals in books: SEN/LA: vertebrate, invertebrate; MA/GD: endoskeleton, exoskeleton.</p> <p>GD: look at the hydrostatic skeleton found in animals such as jellyfish.</p>
<p>Lesson 4</p> <p>LO: To know how muscles work.</p> <p>Enquiry type: Research</p>	<p>SK: Muscles are attached to the bone by tendons and help them to move. When a muscle contracts it gets shorter and pulls on the bone it is attached to.</p> <p>Skill: Gather, record and present data in a variety of ways to help in answering questions</p>	<p>What are muscles made up of? How do they move? Show model of muscle movement (voluntary and involuntary). Demonstrate muscle pairs using skewers and balloons.</p> <p>Children to demonstrate how muscles work by creating their own model of the hand using art straws and string. They can then explain how the muscle is working verbally (to be tweeted)</p>
<p>Lesson 5</p> <p>LO: To know how muscles help us to move.</p> <p>Enquiry type: Observation</p>	<p>SK: Muscles are attached to the bone by tendons and help them to move. When a muscle contracts it gets shorter and pulls on the bone it is attached to.</p> <p>Skill: To identify differences, similarities or changes related to simple scientific ideas and processes.</p>	<p>Think back to last week. Do muscles move differently when you do different activities? Predict the ways different muscle pairs move during different activities. Then carry out the activities and record the results.</p> <p>(Tug of war, squats, planks, tri-cep dip)</p> <p>LA – Group work (TA/teacher assisted)</p> <p>MA – Mixed groups; sentence starters for explanations</p> <p>GD – Group work (TA/teacher assisted for more in depth explanations)</p>
<p>Lesson 6</p> <p>LO: To design an enquiry.</p> <p>Enquiry type: Pattern seeking</p>	<p>SK: Joints allow the body to make movements. The body has many bones and are connected through the joints.</p> <p>Muscles are attached to the bone by tendons and help them to move. When a muscle contracts it gets shorter</p>	<p>Children will work in groups to design an enquiry.</p> <p>Possible enquiries:</p> <p>Do the children with the longest legs run fastest?</p> <p>Does height affect how far you can throw?</p> <p>Are the people who play sports fitter?</p> <p>Which warm up is most effective?</p>

	<p>and pulls on the bone it is attached to.</p> <p>Skill: setting up simple practical enquiries, comparative and fair tests</p>	<p>Children to write their own prediction based on enquiry question.</p> <p>Children to test enquiry question in their groups on the playground.</p> <p>Record data in a table.</p> <p>Conclusion, what have they found out? Was their prediction correct or incorrect?</p>	
Working towards	<p><b>End of unit assessment</b></p> <p>Working at Age related expectations</p>		Working at a greater depth