

The Mechanics of Movement: Skeletons and Muscles

Learning objective: To identify and explain the function of the human skeleton and the role of muscles in movement.

Read the text carefully and answer the questions below. Use full sentences where appropriate.

Nova the owl observed the children in the playground, noting how they moved with grace and speed. She knew that this was all thanks to the complex interplay between the human skeleton and the muscular system. The skeleton acts as a sturdy framework, providing essential support for the body and protection for delicate internal organs, such as the brain and heart. Without these rigid bones, humans would be unable to stand or maintain their shape.

However, bones cannot move on their own. Movement is achieved through the action of muscles, which are attached to bones by tough, fibrous bands called tendons. Muscles operate in pairs; as one muscle pulls by contracting—becoming shorter and thicker—the other relaxes. This antagonistic relationship allows limbs to bend and straighten. For instance, to lift your forearm, your bicep muscle contracts while the tricep relaxes. When you lower your arm, the roles reverse. Joints, where two or more bones meet, serve as the pivot points for this movement, cushioned by cartilage to prevent friction. Through this remarkable biological engineering, humans can perform everything from intricate writing to agile running.

Word bank: skeleton · muscles · joints · tendons · contract · support · protection · antagonistic

1. Identify two primary functions of the human skeleton mentioned in the passage. (2 marks)

2. According to the text, what is the specific role of tendons in the body? (2 marks)

3. Explain why muscles need to work in pairs rather than moving bones individually. (3 marks)

4. What might happen if a person's joints lacked cartilage? Justify your answer. (3 marks)

5. Compare and contrast the roles of the skeleton and the muscular system. Which do you believe is more important for survival, and why? (4 marks)

Draw: Draw a diagram of a human arm showing how the bicep and tricep muscles are connected to the bones, clearly labelling the tendons and the elbow joint.



Extension challenge: Research and describe how the human skeleton changes from infancy to adulthood. Why do babies have more bones than adults, and what happens to them as we grow?