

Nova's Structural Discovery: Skeletons and Muscles in Motion

Learning objective: To identify that humans and some other animals have skeletons and muscles for support, protection, and movement.

Nova the owl has been observing how animals move in the forest. Use your scientific knowledge to complete the 'Anatomical Architecture' activity. For each question, decide if the statement is true or false. If it is false, you must justify your answer by explaining the correct scientific reasoning. Use the word bank to help you construct your explanations.

Word bank: exoskeleton · endoskeleton · muscles · contraction · support · protection · joints · tendons

1. True or False: The human skeleton is an exoskeleton that sits on the outside of the body to provide protection. (2 marks)

2. True or False: Muscles work by pushing bones away from each other to create movement. (2 marks)

3. True or False: Without a skeleton, a mammal would be unable to stand upright or move effectively. (2 marks)

4. Explain why joints are essential for the movement of an endoskeleton. (2 marks)

5. Compare and contrast: How does the support structure of a beetle differ from that of a lion? (3 marks)

6. Justify your answer: If a human had no muscles, but kept their skeleton, would they still be able to perform complex tasks? Explain your reasoning. (3 marks)

Draw: Draw a diagram of a human arm. Label the bicep muscle and the elbow joint. Use an arrow to show how the muscle shortens (contracts) to lift the forearm.



Extension challenge: Nova asks: 'What might happen if our bones were made of rubber instead of hard tissue?' Write a creative paragraph explaining how this would change the way humans interact with their environment, considering the need for both support and movement.