

Nova's Anatomy Investigation: Skeletons and Muscles

Learning objective: To identify, describe, and explain the roles of the human skeleton and muscular system in providing support, protection, and movement.

Use this template to document your scientific findings. Imagine you are assisting Nova the owl in her study of human biology. Use the word bank to help explain how your body functions. Ensure you use technical vocabulary to justify your observations.

Word bank: vertebrae · cranium · antagonistic pair · biceps · triceps · contract · tendons · support · protection · femur

1. The Skeleton's Roles: Explain why the human skeleton is essential for both protection and movement. Provide specific examples of bones that protect vital organs. (3 marks)

2. Muscle Mechanics: Describe how muscles work in an antagonistic pair to move a joint, such as the elbow. What happens to the biceps and triceps when you bend your arm? (4 marks)

3. Compare and Contrast: Compare the function of the cranium with the function of the femur. How does the shape of these bones relate to their specific jobs? (4 marks)

4. Justify Your Answer: Why do we need joints in our skeleton? What might happen if our bodies were made of only one solid piece of bone? (3 marks)

5. Scientific Observation: If you were to observe a person jumping, which skeletal parts provide support and which muscles are primarily responsible for the explosive force? (3 marks)

6. Reflective Thinking: How do tendons act as a bridge between the muscular and skeletal systems? Explain their importance in physical activity. (3 marks)

Extension challenge: Design a 'Biomechanical Blueprint': Research a specific injury, such as a torn tendon or a fracture. Write a paragraph explaining how this injury would disrupt the movement of the affected area, using your knowledge of how muscles and bones collaborate.