Muscles in Motion

Locate muscles and connect them to joint movements

HAP.5.4 "Use models to locate the major muscles and investigate the movements controlled by each muscle."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each muscle name and circle the part of the body where it is located. Draw an arrow from each name to the movement that muscle controls.

A Body Model That Moves

1. Imagine using your body as a living model before moving a heavy backpack. A muscle can pull on bones across a joint when it contracts, but it cannot push them back. Locate the biceps brachii on the front of the upper arm. Its contraction bends the elbow, bringing the forearm toward the upper arm. The triceps brachii lies on the back of the upper arm and straightens the elbow when it contracts. These two muscles can produce opposite movements at the same joint. Feel your upper arm during a slow bend and straighten, and compare which side firms up.

2. Now trace the shoulder and chest on the same body model. The deltoid caps the outer shoulder and helps lift the arm out to the side. The pectoralis major spreads across the front of the chest; it pulls the raised arm across the front of the body. On the broad lower and middle back, the latissimus dorsi helps pull the upper arm down toward the body. These motions all involve the shoulder joint, yet the muscles sit in different places. A muscle's location can help predict its pull, but several muscles often work together during a real movement.

3. The legs show another useful pattern. On the front of the thigh, the quadriceps group straightens the knee. On the back of the thigh, the hamstrings bend the knee. Below them, the gastrocnemius makes the calf bulge at the back of the lower leg; it points the foot downward at the ankle, as when you rise onto your toes. The tibialis anterior runs along the front of the lower leg and lifts the front of the foot toward the shin. To investigate any movement, identify its joint, then match the change in position with a muscle's location and action.

2 ANSWER WITH EVIDENCE

Use the passage

1. On a body model, where would you locate the two muscles that move the elbow in opposite directions? State the movement each controls.

2. Which muscle would you locate to lift an arm out to the side, and which would you locate to pull a raised arm across the front of the body? Give each location.

3. Locate the muscle group on each side of the thigh. How does each group move the knee?

4. A foot points downward, then lifts toward the shin. Which lower-leg muscle controls each ankle movement, and where is each located?

3 YOUR TURN

Your own words

Invent a three-step movement for an everyday goal not described in the passage. In three sentences, one per step, name a muscle, locate it on your body model, and explain the joint movement it controls; include at least two different joints.

ANSWER KEY

Muscles in Motion

PART 1 · READ AND MARK

Underline each muscle name and circle the part of the body where it is located. Draw an arrow from each name to the movement that muscle controls. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	On a body model, where would you locate the two muscles that move the elbow in opposite directions? State the movement each controls.	**The biceps brachii is on the front of the upper arm and bends the elbow. The triceps brachii is on the back of the upper arm and straightens it.**
2	Which muscle would you locate to lift an arm out to the side, and which would you locate to pull a raised arm across the front of the body? Give each location.	**The deltoid at the outer shoulder helps lift the arm to the side. The pectoralis major across the front of the chest pulls the raised arm across the body.**
3	Locate the muscle group on each side of the thigh. How does each group move the knee?	**The quadriceps on the front of the thigh straighten the knee. The hamstrings on the back of the thigh bend it.**
4	A foot points downward, then lifts toward the shin. Which lower-leg muscle controls each ankle movement, and where is each located?	**The gastrocnemius at the back of the lower leg points the foot downward. The tibialis anterior at the front of the lower leg lifts the foot toward the shin.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

To put a cereal box on a high shelf, I bend my elbow to bring it close, using the biceps brachii on the front of my upper arm. I lift my arm to the side at the shoulder with the deltoid at my outer shoulder. I rise onto my toes as the gastrocnemius at the back of my lower leg points my foot downward at the ankle.

Accept accurate muscle locations and joint movements stated in the passage. For Part 3, check that each of the three steps connects a named muscle to its location and action, with at least two joints represented.