

ADAPTATION OF THE HUMAN HAND

Introduction:

Living things have bodies that are adapted for the places they live and the things they do. Fish have gills so that they can remove oxygen that is dissolved in water. Most plants have green leaves which contain chlorophyll so that they can make food. Jellyfish have stinging cells to capture prey. Birds have hollow spongy bones so that they will be light enough to fly. Arctic animals have layers of fat and thick coats of fur to keep warm in the frigid Arctic climate. There are hundreds of examples of ways that organisms are adapted for a successful lifestyle.

Humans, too, are adapted for the things they do. One of our adaptations is our hand. Humans, as well as monkeys, gorillas, and other primates, have a hand that can grasp objects. In this lab exercise, you will perform several common actions. Then you will change your hand so that it resembles that of a non-primate animal. You will determine whether or not you can successfully perform the same actions. This will demonstrate how the human hand is adapted for the actions it performs. You will work with a partner to do this exercise.

Procedures:

1. Do each of the following activities and have your partner time how long it takes you to do each one. Record the times in the data sheet.
 - A. Tie a knot in a piece of string.
 - B. Remove one shoe and replace it on your foot.
 - C. Unscrew a bottle cap or jar cover.
 - D. Tear a small piece of tape.
 - E. Cut a straight line (first draw a straight line 15 cm (6 inch) long)
 - F. Write your name on a piece of paper.
2. Using masking tape, have your partner tightly tape each of your thumbs to the palm of the hand.
3. After your thumbs are securely taped, try each of the activities listed in Procedure 1 again. Time each activity as you did before and record the time in the data chart. ***If an activity is not done in two minutes, record the word "unsuccessful."***

Data:

Table 1: Time Taken To Perform Various Actions

Action	Time (In Seconds) To Do Perform The Action With	
	THUMBS FREE	THUMBS TAPED
A. Tie knot in string		
B. Remove and replace shoe		
C. Unscrew a cap/jar		
D. Tear a piece of tape		
E. Cut a straight line		
F. Write your name		

Analysis and Conclusion:

1. Explain why dog and cat paws are not adapted for doing the six actions you tested.
2. What are cat and dog paws adapted for?
3. You have an opposable thumb. Explain what you think this means.
4. Why do you feel that human hand adaptations have helped to make humans such a successful species on earth?
(List and explain at least 2 reasons.)