

**Opposable Thumbs Adaptation Lab**

Humans, like other living things, are adapted for the things we do. One of our adaptations is our hand. Humans, as well as monkeys, gorillas, and other primates, have a hand that can grasp objects. We can grasp objects because we have an **opposable thumb**. 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.

**Question**:How does the opposable thumbs adaptation help humans survive?

**Hypothesis: IF \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, THEN \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, Because\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**Materials**

* pipecleaner
* A shoe
* Scissors
* 5 beads
* 5 paper clips
* Lab Sheet
* Timer (phone)

**Procedure**

1. Work in groups of 2 (pairs). One person will do each of the following activities while the other keeps time. Record the times in Table 1.

1. Tie a knot in a pipecleaner
2. Untie, remove, replace and retie a shoe
3. Connect 5 paperclips to each other to form a chain
4. Put 5 beads on a pipecleaner
5. Write your name on a sheet of paper
6. Cut a SMALL corner off your lab sheet

2. When you finish with the first part, nicely ask your awesome teacher to tightly tape each of your thumbs to the palm of your 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 time as "unsuccessful."

**Results**

**Table 1**: **Time Taken To Perform Various Actions**

|  |  |  |
| --- | --- | --- |
| **Action** | **Thumbs Free**  **Time** | **Thumbs Taped Time** |
| Tie a knot in pipecleaner |  |  |
| Remove and replace a shoe |  |  |
| Connect 5 paperclips |  |  |
| Put 5 beads on a pipecleaner |  |  |
| Write your name on a sheet of paper |  |  |
| Cut a SMALL corner off your lab sheet |  |  |

**Create a bar graph on a separate sheet of notebook paper to illustrate the above data.**

**Make sure to staple your graph to your lab sheet**

**Conclusion**.

1. Do the results support your hypothesis? Explain by citing specific data.

2. Describe how your hand is adapted for doing the actions you tested by describing your opposable thumb and its benefits.

3. When your thumb was taped, were you able to adapt at all? Explain?

4. What other adaptations are humans born with?

5. List four animals and their species’ adaptation that help them survive in their environment.

6. How have human hand adaptations helped to make humans a successful and powerful species?