



COUCH POTATO OLYMPICS SECTION 1: PEN CLICK-A-THON

OBJECTIVE:

To click the pen as many times as possible in 4, 30 second intervals keeping count of the number of clicks in order to measure a muscle's ability to perform an activity as it becomes fatigued.

To analyze the data following 4 attempts, explaining the results.

STANDARDS:

Identify the life processes of living things.

MATERIALS:

data page
pens
stop watch

PROCEDURE:

Explain the procedure to the class.

We will be doing an experiment to observe what happens to our muscle's ability to perform an activity as it becomes fatigued. You will be given a pen. You will hold this pen in the SAME hand for each trial and use the thumb only to click the pen. You may choose to rest your elbow on your knee as you sit on the floor. You will be given 30 seconds to click the pen as many times as you can. You and your partner will count the number of times the ink container clicks out of the pen case. Once 30 seconds is up, record the number. You will have 30 seconds between each interval so BE READY to begin again. The clock will not be stopped. We will do 4 intervals; 30 seconds of clicking, 30 seconds rest while you record, 30 seconds of clicking, 30 seconds rest while you record, and so on. Once group one has finished, we will switch partners and repeat the process with group two.

Start group one using a stop watch to keep time. During the resting 30 seconds, give them a count down from 10 so they are prepared to start again.

Once group one is finished, switch to group two. Give them a few moments to get ready.

Once each group has finished, have them take a minute or two to write an explanation for their results. They should find that each subsequent attempt had fewer clicks due to muscle fatigue.

Discuss results as a group, asking them **what they discovered**. Some may have not had fewer clicks as they went on. That's okay. Discuss **what might happen if they kept at it for another 4 intervals or for another ½ hour**.

IF TIME:

Ask if any of the students have ever experienced muscled fatigue (biking, running, swimming, etc.). Muscle fatigue is good for the muscles because it increases blood circulation to the muscles, keeping the muscles in shape. If muscles are not in shape or used often, they atrophy or waste away. If we were to do pen-clicking every day, our forearm muscles would be able to click a lot faster and longer.

SECTION 2: THE GRABBER

OBJECTIVE:

To determine reaction time of their muscles and the type of stimulus to which a student responds most quickly.

STANDARDS:

Describe how different parts of a living thing work together to provide what the organism needs.

MATERIALS:

Data page
pencil
ruler

PROCEDURE:

Explain the procedure to the class.

Our brain and muscles work together. Our brain sends impulses throughout the body to communicate to the muscles what to do. It takes time for our muscles to respond, this is called our reaction time. We will do an experiment to test our reaction time and also to determine the type of stimulus that you respond to most quickly: sight, sound, touch.

You will work with a partner on this activity. You will do 3 tests with each Stimulus and record your results.

For the first part, your partner will hold the ruler vertically with '0' at the bottom. You will have your thumb and index finger at '0' on the ruler, but not touching it. When you are ready, your partner will drop the ruler **NOT SAYING ANYTHING**. As soon as you see it drop, you will catch it between your thumb and finger. Note on the ruler where you were able to catch it, record your results

in the first column. Repeat two more times. Then you will switch with your partner. **DO NOT GO ON TO PART 2.**

Have students start. Go around making sure everyone is doing it correctly. Once each pair is finished, they should sit down to await instructions for part two.

For the second part, your partner will hold the ruler vertically with '0' at the bottom. You will have your thumb and index finger at '0' on the ruler, but not touching it. Next close your eyes. Your partner will then prepare to drop the ruler. They will say 'DROP' as soon as they release it (SAYING NOTHING). You will respond to their verbal command and catch the ruler. Note and record the distance it was caught. Switch with your partner. **Do NOT GO ON TO PART 3.**

Have students start. Go around making sure everyone is doing it correctly. Once each pair is finished, they should sit down to await instructions for part three.

For the third part, your partner will hold the ruler vertically with '0' at the bottom. You will have your thumb and index finger at '0' on the ruler, but not touching it. Next close your eyes. Your partner will then prepare to drop the ruler. They will TOUCH your hand as soon as they release it (SAYING NOTHING). You will respond to the touch and catch the ruler. Note and record the distance it was caught. Switch with your partner.

Once the students are finished with the experiment, have them complete the questions at the bottom of the page.

Have them share and discuss their results and ideas.

Couch Potato Olympics Data Page

Pen Click-A-Thon

Hypothesis: _____ # of clicks in 30 seconds

30 second intervals, 30 seconds rest

Attempt	Time	Number of clicks
1.	30 sec.	
2.	30 sec.	
3.	30 sec.	
4.	30 sec.	

How can you explain your results? Write one or two sentences. _____

The Grabber

Hypothesis: distance _____ (Quicker reaction= smaller distance)

Visual
(react when you see it dropped)

Attempt	Distance (cm)
1.	
2.	
3.	

Auditory
(react to a verbal command)

Attempt	Distance (cm)
1.	
2.	
3.	

Tactile
(react when partner touches hand)

Attempt	Distance (cm)
1.	
2.	
3.	

Which stimulus had the quickest reaction? _____

How can you improve your results? Write a sentence. _____

Explain how the brain and the muscles work together: _____
