

SciGirls Activity 4

Workin' Out!



Icebreaker: Chew on this sticky activity!

SciGirls Skill: Measuring

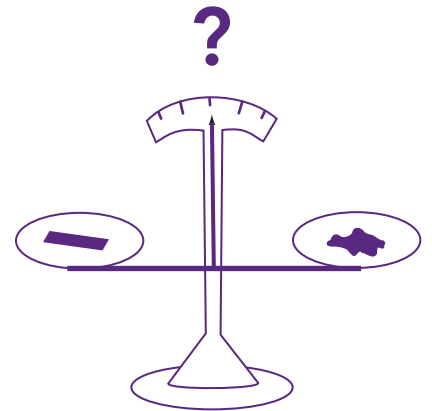


You'll need:

- a kitchen scale
- bubble gum

Guide your girls as they:

- 1) Unwrap two or three pieces of gum, and place them on the kitchen scale.
- 2) Write down the weight.
- 3) Now chew the gum for 5-10 minutes.
- 4) Now take the wad of gum out of your mouth and weigh it again. Is it heavier or lighter? Why? Do you get the same result with sugarless gum as with regular gum? Different brands?



SciGirls Suggestion: A stick of gum for everyone lets each girl participate in this icebreaker.



For more sticky science, go to pbskids.org/dragonflytv/superdoit/chew_gum.html

Investigation: Exercise and Memory

Find out what happens to your brain when you exercise.

We're Jada and Maurna. We heard that exercise can make our brains work better, but we wanted to know if that was true. Maybe it could be the answer to getting good grades at school! Our SciGirls question is: **Can exercise improve a person's memory?**



You'll need:

- 40+ household objects (e.g. bottle opener, chess piece, paper airplane, etc.)
- tray
- dish towel
- stopwatch
- paper and pencils
- board games



To learn more about this "memorable" investigation, visit pbskids.org/dragonflytv/show/exercisememory.html. Then surf to pbskids.org/dragonflytv/contact/index.html to tell us more about your own investigation!



Check out this investigation on
Tape 1, Segment 4.



SciGirls Want to Know: What effect does exercise have on your short term memory?

Guide your girls as they:

- 1) Set up the first memory test (performed to get a "baseline," or initial score for each test taker) by putting 20 objects on a tray, then covering them with a towel.
- 2) Get all test takers to gather around the tray with a paper and pencil. You'll need two teams, so at least eight girls should participate. Uncover the items on the tray, and give the test takers 60 seconds to look at the items and try to memorize them. After 60 seconds, cover the tray. The test takers have three minutes to write down as many things as they remember seeing. After three minutes, collect the papers. Count the number of correct items on each person's list, one point for each correct item. No points are subtracted for wrong answers. This is the person's baseline score.



SciGirls Secret:

Speaking of exercise, public health officials have identified childhood and adolescent obesity as a significant problem for many American girls. While you're helping your girls exercise their minds, incorporate some physical activities as well. Start each SciGirls session with some movement. Hand out jump ropes, spin some hula-hoops, or simply crank the music and dance for five minutes. Just get moving!

- 3) Take half of the test takers into an area where they participate in physical exercises for 10 minutes (jumping jacks, sit-ups, etc.). Take the other half of the test takers to an area where they engage in sedentary activities, like playing board games.
- 4) While the test takers are either exercising or resting, prepare a new tray with different objects.
- 5) After 10 minutes of resting or physical activity, re-gather the test takers for a second memory test. Reveal the newly-prepared tray for 60 seconds, and then cover it. Give the test takers three minutes to write down as many things as they remember from the new tray.
- 6) Score these new answer sheets the same as you did for the first test. Now look for changes in each person's score. Did they go up or down? For example, if Person A scored a 9 on the baseline test, and then scored a 12 on the second test, record a +3.





SciGirls Synthesize: Data and Analysis

Tabulate the changes in score for each person. Put the test takers in groups according to whether they were resting or physically active during the ten-minute period. Here's an example of how Jada and Murna did it:

Person	Resting or Active?	Change in score
#1	S	+1
#2	S	-2
#3	S	-3
#4	S	+2
Summary Score		-2

Person	Resting or Active?	Change in score
#5	A	0
#6	A	-1
#7	A	+2
#8	A	+3
Summary Score		+4

See Appendix A for a graphing example.

How did your group do? Did the exercisers have better memories, or the sedentary people? Why?

Keep Exploring!

What other abilities might exercise affect?

Try the same experiment, but instead of a memory test, try a number recognition test. Print up a grid of single digits, randomly arranged, that looks like this:

2	5	8	6	8	0	3	2	4	1
3	2	0	9	7	8	6	4	2	4
7	8	6	9	8	5	3	4	etc.	

Have at least 30 rows of digits. Do the same experiment as before, but have the people circle all the "6" digits they can find. Do they find more 6s after exercising?