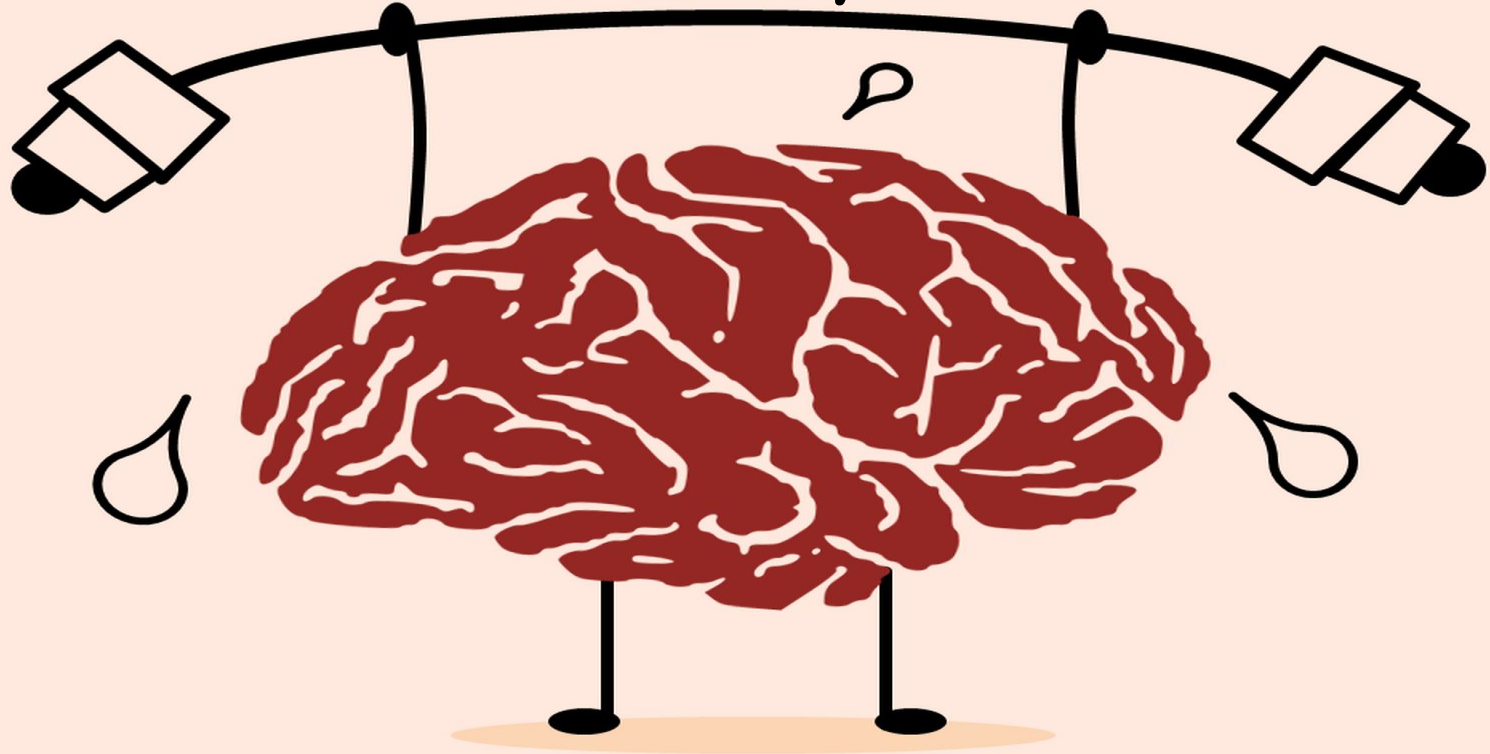


# The Brain-Body Connection



Can exercise really make our brains work better?

# OBJECTIVE

"Use it or lose it!" Sure, we all know physical exercise is important to keeping our bodies fit. But...

- how important is physical exercise to your brain?
- is there any connection between an active body and increased brain power?

The goal of this project is to determine the effect of exercise on a critical brain function: **memory**.

## STEP ONE: include this information in your presentation.

To do this project, you should do research that enables you to understand the following terms and concepts. **Define these concepts:**

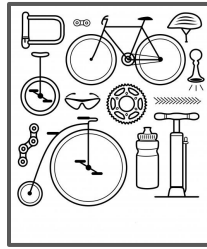
- Exercise
- Sedentary lifestyles
- Memory
- Brain cortex
- Neurotrophic factors



**Add answers to these questions** for more advanced background research:

- How does exercise affect memory?
- What are some chemical changes that occur in the brain/body during exercise?
- What are the effects of exercise on mood, decision making, or reaction times?
- How does exercise influence the aging process?

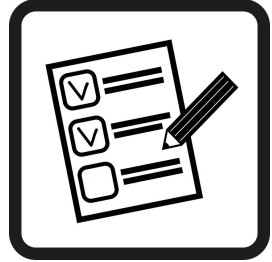
# STEP TWO: GET YOUR MATERIAL READY!



To do this experiment you will need the following **materials and equipment**. **Include them in your presentation.**

- Minimum eight volunteers
- 50 small household items for a memory test (25 items for the practice test and 25 for the real test).
- Table to put the items on
- Towel to cover up the items
- Physical activity: running around the block, do jumping jacks, skip rope etc
- 1 Board game
- Tables and chairs
- Paper or notepad
- Pencils or pens
- Watch or timer

## STEP THREE: EXPERIMENTAL PROCEDURE (keep record in your presentation!)



1. Ask your volunteers to do the **physical activity for ten minutes**.
2. Place the items for the each memory test on a table and cover each set with a towel.
3. Let's start with the **memory game**:
  - a. Remove the towel and let the volunteers study the table for **one minute**.
  - b. Cover the items again and ask each volunteer to write down as many of the items as they can remember in three minutes.
  - c. Collect the answer sheets so you can tell the correct scores for each volunteer.
4. Assign each volunteer to one of two experimental groups: one exercise group, and one board games group. Each group should perform their assigned activity for **ten minutes**. Be sure to record the start and stop times.
5. **Have the groups quickly gather and repeat the memory test** with the second set of household items.
6. **Collect the answer sheets and total the number of correct items on each sheet to record scores** for each person in the first and second memory tests.



## STEP FOUR: analyze your data in your presentation.

1. **Make a table** to show how each volunteer's score may have changed before and after their activity.

Volunteer #	Group	Test 1 Score	Test 2 Score	Total Score Difference
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2. **Make bar graphs** showing the individual participant's scores as well as each group's average.
3. **Questions to consider:**
  - a. Do you see any differences in scores before and after each person did their assigned activity for ten minutes?
  - b. Do the group averages indicate that exercise may have an effect on memory scores?
  - c. Does the age of the volunteer or gender make any difference?

