

Science Lesson Plan

Brain Power!

Quick summary: Students will explore the benefits of physical activity, focusing on how physical activity affects the processing speed of the brain

How long will it take: 45 minutes

What do I need:

- Stopwatches/timers, one per pair of students
- Area to perform physical activity for 10 minutes
- Stroop Test 1 and 2 cards (printed in color), 1 set per group
- *Does Exercise Make You Smarter* worksheets

Notes:

- Inform students ahead of this lesson that they will need to dress for physical activity.
- Students can complete the Stroop test online if you have access to laptops or tablets and the internet. The Stroop test is available online under Lesson 1: A Difference of Mind: Attention Station at http://science.education.nih.gov/supplements/nih4/self/activities/desktop_strp-508.htm

How does it work:

The teacher will introduce the concept that physical activity benefits the body physically (improves how the systems of the body function), psychologically (mental benefits), and socially.

Have students find a partner and give them five minutes to brainstorm different benefits of physical activity, placing them into the three categories above. Have one student from each group record their ideas on the whiteboard or poster paper.

Explain that the students are going to conduct an experiment to see if exercise helps them think and perform tasks better. Explain that research studies have shown that physical activity increases how quickly our brain can process and respond to information.

Physical activity releases endorphins, or “feel-good” hormones, and helps you feel happier, more alert, and helps your brain process information more quickly. When people are physically active at moderate to vigorous intensities, they have better attention spans and are less likely to go off-task.

Explain that the class is going to test this theory by using the Stroop test and demonstrate how the test works.

Common Core Standards

CCSS.ELA-LITERACY.RST.6-8.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

CCSS.ELA-LITERACY.RST.6-8.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

CCSS.ELA-LITERACY.RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

Give students the *Does Exercise Make You Smarter* worksheet, *Stroop Test One* and *Two* cards and one stopwatch for every pair of students. Students will complete tests 1 & 2 and record their times on their worksheet. Students will then complete 10 minutes of physical activity before re-doing the tests.

After the second set of tests are completed, ask students to answer the questions on the worksheet. When students have completed the questions, discuss their results as a class.

Did everyone perform better after exercising? Did everyone perform more slowly on test 2? Remind students if they are struggling with homework, feeling tired or unmotivated to complete an assigned task, just 10 minutes of physical activity can be enough to help them feel better and refocus their mind.

If time permits, collate the class data into a bar graph, detailing each student's test 2 results from before and after exercise.

Extension:

Have students create a study and exercise schedule, with exercise placed before they plan to do their studying. Students will make a list of 10 activities they can complete to give for a “brain break” when studying or working at home.

Tools for Science Lesson Plan

Stroop Test Cards

STROOP TEST ONE

RED	BLUE	GREEN	ORANGE
YELLOW	BLUE	PURPLE	GREEN
ORANGE	PURPLE	RED	RED
GREEN	YELLOW	ORANGE	BLUE

STROOP TEST TWO

RED	BLUE	GREEN	ORANGE
YELLOW	BLUE	PURPLE	GREEN
ORANGE	PURPLE	RED	RED
GREEN	YELLOW	ORANGE	BLUE

Worksheet for Science Lesson Plan

Does Exercise Make You Smarter?

Student Name: _____

Class Period: _____ Date: _____

Research studies have shown that exercise provides many brain benefits. Today you are going to test this research yourself by performing two simple tests, both before and after physical activity.

Directions:

1. You are going to take two tests. For each test, say the NAME OF THE COLOR OF THE WORDS. DO NOT READ THE WORDS! For example, when you see BLUE say red. Do the test as quickly as you can.
2. When you are ready to start, have your partner start the stopwatch. Your partner will stop the watch when you finish. Record your results for tests 1 & 2 in the table.
3. Complete 10 minutes of exercise.
4. Immediately after the 10 minutes of exercise you will re-do both tests. Record your results in the table.

	Test 1 (seconds)	Test 2 (seconds)
Before Exercise		
After Exercise		

Questions:

1. What difference did you observe between the time it took to complete test 1 and 2 before you exercised? Why do you think you observed this difference?
2. What difference did you observe between the time it took to complete test 2 *before* exercise and test 2 *after* exercise? Why do you think you observed this difference?
3. How did you feel after completing 10 minutes of exercise? (e.g. sleepy/ awake/ refreshed, etc.)
4. How can you use this information to help you plan your homework time or plan a revision schedule for a test?