



## Grade 8 Sample Lesson Plan: Body Systems – Ignite Your Brain

### SOLs

- 8.1 A
- 8.2 B
- 8.1 I

### Objectives/Goals

- Students will understand the impact of fitness on academic performance.
- Students will be able to describe the relationship between exercise and cognitive performance.
- Students will understand how physical activity maintains brain and nervous system health.

### Materials

- 1 – PowerPoint – Brain & Exercise
- 2 – Handout - Pre-Assessment
- 3 – Handout - Post-Assessment
- 4 – Handout – Brain & Exercise Evaluation Rubric
- 5 – Handout – Brain and Exercise Exit Ticket
- 6 – Handout - Ted Talk Reflection
- 7 – Articles on the Brain & Exercise (feel free to choose other articles as well)
  - *A neuroscientist says there is a powerful benefit to exercise that is rarely discussed*
  - *Regular exercise changes the brain to improve memory*
  - *Why kids shouldn't sit still in class*
  - *Making room for movement and play in upper grades*

### Procedure

#### Step 1

- A – This lesson can be taught in 1-4 lessons depending how much time you have to devote to the learning outcomes. If done over the course of a few weeks or more (broken up into 4 lessons) it can be used to assess student growth.
- B – Begin by showing the PowerPoint – Brain & Exercise. When you get to slide #2, give students the Pre-Assessment handout. It will ask two things:
  - Explain the relationship between physical activity/exercise and academic performance. In other words, how does fitness impact learning when it comes to

your brain? Support your answer with facts, stats, and/or other valid information. (Try to give at least 3 specific examples).

- On a scale of 1-10 (1 being “little to no knowledge” and 10 being “very knowledgeable”) where would you rate yourself when it comes to your understanding of how exercise impacts the brain? Explain why you put this number.

### *Step 2*

- A – After about 10-15 mins for students to write responses, begin the Jigsaw activity.
- B – For the Jigsaw activity, divide students into four groups. Each group will read 1 of the 4 articles on the brain and exercise (make enough copies of each article so that every student in each group has their own copy). Assign a different article for each group.
- C – Distribute the articles and have students read silently allowing enough time to finish the articles. Students should highlight and/or take notes about key takeaways in the article.
- D – Have each group then discuss their findings and have them come up with a list of the most important things the other group should know.
- E – Have each group member number off. If there are 6 members to each group, there should be a 1, 2, 3, 4, 5, and 6 in each group.
- F – Now, have all the corresponding numbers from each group come together to teach each other what they learned about each article. In other words, all the 1’s come together and take turns sharing the key takeaways from their articles. All the other numbers should do the same thing. Allow enough time as you see fit.
- G – Option – Instead of having students sit in groups to share key takeaways, have them do a “Walk & Talk” (see slide 5 in the PowerPoint).
- H – Finally, have students complete the Handout – Brain & Exercise Exit Ticket for a formative assessment. Or, you could have students write a reflection, turn in their “notes” or possibly do a Kahoot on important facts that came from the articles to check for understanding.

### *Step 3*

- A – Depending on the time of your class periods, this is probably a lesson for another day. Review some of the key takeaways from the prior lesson. To put theory into practice (promoting blood flow to the brain), have students begin the class by playing a game of human Rock, Paper, Scissors (slides 7 and 8). Student will play for a few minutes and challenge students in this classic game, but instead of using their hands, they should use their whole body to mimic the three actions. You can have them try and win, or lose, and keep track of how many times they were successful. Keep challenging different students until time is called.
  - Rock = squat down into a ball
  - Paper = Arms and Legs out like a jumping jack
  - Scissors = Big arm movements mimicking a scissor

- B – Next, show the [Health Rap on the “Brain & Exercise”](#) (slide 9 PowerPoint). Have students do a Think, Pair, Share and discuss anything that struck them about the song. The song is based on the book called *Spark* by Dr. John Ratey.
- C – Proceed by going over slides 10-29. Here in lies some vocabulary words and key concepts such as *neurogenesis*, *brain-derived neurotrophic factor (BDNF)*, *endorphins*, parts of the brain impacted for memory such as the *hippocampus*. Sleep is also discussed on the last slide in its role to assist with cognitive performance (learning, memory, etc.)

#### Step 4

A – This could be the “next lesson” in your teaching progression or could be included with Step 3 if class time permits.

B – Have students view the TED Talk [The Brain-Changing Benefits of Exercise](#) by Wendy Suzuki (13 mins). Have students complete the Handout called Ted Talk Reflection. This self-reflection is modeled after the three key criteria that comprise Ted Talks (Novel, Memorable, Emotion). Students are asked to reflect on something new they learned, something that touched their emotions (how it made them feel) and something they thought was memorable.

C – If time permits, or for the next class session on this topic, literally put theory into practice and go on a class walk/jog. Have about four stopping points along a one-mile path. At each stopping point, review some of the key takeaways from discussions in prior classes. Purposefully build in repetition to reinforce concepts, but also do it while the students’ brains are at their ideal learning state. You could possibly introduce some new material here to scaffold and build upon what they already know.

D – Finally, have students complete the Brain & Exercise Post Assessment to determine what they know now compared to when they started. Use the rubric to score student responses.

#### Assessment Idea

Brain & Exercise Pre-Assessment  
Brain & Exercise Post-Assessment

TED Talk Reflection  
Brain & Exercise Exit Ticket

#### References

- *Spark* (book) by Dr. John Ratey
- TED Talk by Wendy Suzuki – [The Brain Changing Benefits of Exercise](#)
- [Brain & Exercise Rap](#) – Andy Horne

#### Handout

The next page includes a handout for the lesson. The handout is designed for print use only.

## **Brain & Exercise Pre-Assessment**

Explain the relationship between physical activity/exercise and academic performance. In other words, how does fitness impact learning when it comes to your brain? Support your answer with facts, stats, and/or other valid information. (Give at least 3 specific examples).

On a scale of 1-10 (1 being “little to no knowledge” and 10 being “very knowledgeable”) where would you rate yourself now when it comes to your understanding of how exercise impacts the brain? Explain why you put this number.

## **Brain & Exercise Post-Assessment**

Explain the relationship between physical activity/exercise and academic performance. In other words, how does fitness impact learning when it comes to your brain? Support your answer with facts, stats, and/or other valid information. (Give at least 3 specific examples).

On a scale of 1-10 (1 being “little to no knowledge” and 10 being “very knowledgeable”) where would you rate yourself now when it comes to your understanding of how exercise impacts the brain? Explain why you put this number.

## Brain & Exercise Evaluation Rubric

Score	Classification	Description
6	Exceptional	Demonstrates exceptional understanding by giving more than three specific examples with appropriate information and/or knowledge. Answer has sufficient detail and specific information with no errors.
5	Experienced	Demonstrates proficient understanding by giving three specific examples with appropriate information and/or knowledge. Answer has sufficient detail and specific information with no errors.
4	Adequate	Demonstrates adequate understanding by giving one or two specific examples with appropriate information and/or knowledge. Answer has sufficient detail and specific information with minimal errors.
3	Developing	Has some knowledge about importance of fitness as it relates to academic performance. Answer has some detail and specific information, but could be developed further. Answer may contain some incorrect information.
2	Emerging	Has little knowledge about importance of fitness as it relates to academic performance. Answer is somewhat vague and/or incorrect.
1	Inadequate	Has no knowledge and describes no specific facts about importance of fitness as it relates to academic performance. Answer is vague and/or incorrect.

## TED Talk Reflection

TED talks are hugely successful because they each have three very powerful, and scientifically proven qualities. After viewing the TED Talk today, please complete the following reflection.

**1. Emotion: Ideas that spread will touch our hearts.**

In order for persuasion to occur, you must touch a person's heart before reaching their head. The presenters are passionate about their subject.

**2. Novelty: Ideas that spread will teach us something new.**

Novelty is the single most effective way to capture a person's attention.

**3. Memorable: Ideas that spread will be easy to recall.**

TED talks are short, engaging, don't rely on text-heavy slides, and keep the message simple.



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How did this talk affect you emotionally? Refer to the specific content area.



What new ideas were presented to you in this talk? Refer to the specific content area.



What was the most memorable take-away from this talk? Refer to the specific content area.

## Brain & Exercise Exit Ticket

@ \_\_\_\_\_ (name) # \_\_\_\_\_

Three key takeaways or facts from my article # \_\_\_\_\_ about the Brain & Exercise are...

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Something I learned new today that was not in my original article is...

One thing I might do differently in the future knowing more about exercise's impact on the brain is...