

# HEALTH

# Education

## The Relationship Between Exercise and Brainpower

When people think of exercise, they usually think of the physical benefits that it brings. Over the last decade, however, there has been an increasing amount of research focusing on the relationship between exercise and brainpower. Studies continue to show that different types of exercise have positive influences on memory, learning, and cognitive function. Scientists are still studying the ways by which exercise improves the brain.

A University of British Columbia study monitored the blood flow of three groups of people; a group that stood still, a group that walked, and a group that ran. The study found that those who ran had the largest increase in blood flow, while those who stood still had the smallest increase. While an increase in blood flow seems unimportant and common, it actually has multiple health benefits. In fact, an increase in blood flow helps create new brain cells and strengthens the production of BDNF (brain-derived neurotrophic factor), which helps repair and protect brain cells from degeneration. This is an important physiological benefit for part of the brain that is responsible for memory, the hippocampus. If the brain cells are not protected, the hippocampus loses about 1% of its mass each year once an individual is about 30 years of age. Studies have found that BDNF not only slows that degeneration, but can actually reverse the aging of the brain. The brain, like muscles and organs, is made up of tissue that needs stimulation to stay healthy. The study also found that although running saw the biggest increase in blood flow, walking allowed sufficient blood flow to spur the same positive responses to the body.

This study proves that even small amounts of activity have many benefits. Increased blood flow is not the only achievable benefit from physical activity. Another common benefit from almost any type of activity is an immediate boost in mood. This is triggered by the release of hormones and chemicals, such as endorphins, that are known to improve brain health.

Now that you have this knowledge, what should you do with it? If you are not currently active, start exercising! Scientists are still studying what type of exercise is most beneficial for the brain, though most studies have focused on aerobic exercise, such as walking and running. The assumption is made that other forms of exercise with similar increases in heart rate will likely yield the same results.

Want to experience how your brain is affected by exercise? Try the activity on the back! This activity is derived from the Profile of Mood States (POMS) assessment, a physiological rating scale that has been adapted to assess distinct mood states before and after exercise. There are six components to the mood profile: anger, confusion, depression, fatigue, tension, and vigor. Vigor is described as the feeling of having energy, whether it comes from a physical aspect (i.e. working out) or psychological aspect (i.e. completing an assignment).

Before your workout, fill out your mood profile based on how you are feeling at that given moment. Choosing a 1 would indicate you do not feel that particular mood at all. Whereas, choosing a 10 would mean that the mood is overpowering. The type of physical exercise that



you complete can be very basic. Try walking around your building, walking up and down the stairwell a couple times, or walking across the street to your favorite lunch spot. Keep in mind, you will want to cover the “*Before Exercise*” mood profile in order to keep the scale accurate to your current mood. Once the basic workout is complete, fill out the “*After Exercise*” mood profile without looking at the first section. After both sections are completed, compare each side to see how exercise has influenced your mood!

## Profile of Mood States (POMS) Abbreviated Self-Assessment

### *Before Exercise:*

### *After Exercise:*

#### Anger

1 2 3 4 5 6 7 8 9 10

#### Anger

1 2 3 4 5 6 7 8 9 10

#### Confusion

1 2 3 4 5 6 7 8 9 10

#### Confusion

1 2 3 4 5 6 7 8 9 10

#### Depression

1 2 3 4 5 6 7 8 9 10

#### Depression

1 2 3 4 5 6 7 8 9 10

#### Fatigue

1 2 3 4 5 6 7 8 9 10

#### Fatigue

1 2 3 4 5 6 7 8 9 10

#### Tension

1 2 3 4 5 6 7 8 9 10

#### Tension

1 2 3 4 5 6 7 8 9 10

#### Vigor

1 2 3 4 5 6 7 8 9 10

#### Vigor

1 2 3 4 5 6 7 8 9 10

### References:

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From Corporate Fitness Works Team Leader, Bryce Holliday