

The Benefits of Brain Games: They Do Work

Jean Kiernan¹, Georgetown Kentucky¹ and Panayiotis Zavos^{2*}

¹Associate Professor, Georgetown College

²Professor, University of Kentucky & Director & Chief of Andrology, Andrology Institute of America Lexington, Kentucky USA

***Corresponding Author:** Panayiotis Zavos, Professor, University of Kentucky & Director & Chief of Andrology, Andrology Institute of America Lexington, Kentucky USA.

Received: May 11, 2018; **Published:** July 06, 2018

Volume 2 Issue 4 July 2018

© All Copy Rights are Reserved by Panayiotis Zavos., *et al.*

Introduction

There are many brain games for anyone to discover. Do these games really help you keep your brain healthy? Will the games prevent cognitive decline, or will they slow the effects of Alzheimer's disease? When people keep their minds active, their thinking skills are less likely to decline, medical research shows (Fields, R. Douglas, 2010). Brain games and other types of brain training may help slow memory loss and other mental problems.

A computerized brain training program cut the risk of dementia among healthy people by 48 percent shown by an analysis of the results of a 10-year study. The preliminary findings of this study, are the first to show that any kind of intervention could delay the development of dementia in normal, healthy adults (Heid, Markham, 2017).

Research is finally indicating that our brains do better in the long term if they are exposed to new activities including brain games and logic puzzles. What are the expected benefits of brain games? Based on recent research here are some of the associated benefits of brain games: (CBS New, 2016):

- Boosts brain activity
- Provides emotional satisfaction and sense of accomplishment
- Enhances memory and processing speed
- Helps slow the decline and reduce the risk for dementia
- Improves concentration
- Reduces boredom

Brain based games are based on clear evidence that living in an environment with lots of mental stimulation produces positive brain changes. There is a huge potential for tapping into your own neuroplasticity (that is, the brain's ability to change itself by remodeling nerve cell connections after experience) to enrich mental fitness and prevent age-related memory decline. Furthermore, numerous neuroscientists have, in recent years, served as the designers of these brain-based games.

Citation: Panayiotis Zavos., *et al.* "The Benefits of Brain Games: They Do Work". *Current Opinions in Neurological Science* 2.4 (2018): 511-514.

Neuroscience behind Brain Games

One of the most exciting science developments of recent years is the discovery of the plasticity of the brain. Neuroplasticity is the process of the brain modifying its pathways as it learns new things. Before the introduction of neuroplasticity, scientists believed that the brain stopped developing during childhood. Researchers now know that the brain continues to make connections between neurons throughout our lives. American neuropsychiatrist Eric Kandel won the 2000 Nobel Prize in neuroscience for this discovery, which is behind many medical advances, including changing the way we treat learning abilities, mental illness, stroke victims and mental degeneration in diseases such as Alzheimer's. Gradually neuroplasticity exercises are becoming available to improve brain functioning.

Many people are aware of the phrase, "use it or lose it" and how it applies to the brain. This refers to the brain neuroplasticity, or the ability of the brain to change as you age and go through life. As we learn new things, the brain gains neuroplasticity. Often time when a person ages, he/she ceases to learn new things and instead of gaining plasticity, the brain begins to lose it.

Another important factor in maintaining brain function is the white matter. White matter is composed of neurons covered in myelin sheaths that help it communicate with the grey matter of the brain. Dysfunction in the white matter can contribute to dementia. Learning new things increase myelination of axons in the brain and quicken processes in the brain. Going back on the "use it or lose it" statement, when a person does not use parts of their brain myelination has no reason to occur. As people age, this myelin naturally begins to deteriorate and allows toxic fibrils to move in which may lead to Alzheimer's. What changes take place in the brain in response to brain exercises? A straightforward change that has been studied for years is the idea that similar to a muscle growing with exercise, 'grey matter' in the brain also increases in volume with mental exercise. This grey matter is where the primary cells of the brain (neurons) reside. Much like muscle increase not being the creation of new muscle, increases in the size of grey matter are likely to be related to more complicated changes such as increases in cellular size or enlargement of blood vessels the area (Lazar, S. W., Kerr, C. E., Wasserman, R. H., Gray, J. R., Greve, D. N., Treadway, M. T. & Fischl, B., 2005).

Brain games strive to keep the brains plasticity and reduce the deterioration of the myelin sheaths on the axons. By learning new skills and challenging oneself, the individual is repeatedly stressing the brain and keeps its' plasticity. Also, if one is using the axons and sending those signals between the white and grey matter, it is keeping the myelin sheaths active which slows down the process of deteriorating (Van Turenout, M., Bielamowicz, L., & Martin, A., 2003).

How Brain Games Work

Brain Games was suggested in the 1984 book *Clinical Management of Memory Problems* as an effective device for memory retraining exercises. Noted for having a variety of games, patients would be faced with auditory and visual cues that may improve spatial reasoning (Weiss, Brett, 2007).

Brain games are games are created to make you think in different ways. The games consist of different simple task that are often timed. There are many different mind games to choose from. The games often incorporate different skill sets such as hand eye coordination, cognitive thinking and problem solving/logical thinking. There are many different websites and apps where you can play mind games and they are often free. Some websites such as Sheppard Software Brain Games will give you options of what kind of brain games you want to play. Some of the options are as followed: Logic Games, Strategy games, Action Puzzle Games, Word Games, etc.

On mindgames.com you can find many different brain games as well. On this sight the game Brain Trainer gives you different challenges to try and complete. There are memory challenges where you must say if the shape being shown was the same or different than the shape before, but you want to be quick because you're being times and want to get as many as possible. Next there is often a reaction challenge where arrows go across the screen and you needed to click in the direction that the arrow is pointing.

Alternatives to Brain Games

There are some different alternatives that work to enhance the brain similar to brain games. Physical exercise is probably the most common positive alternative. During aerobic exercise the brain releases an “exercise hormone” called Irisin that has been linked to improve health and cognitive function (<https://www.scientificamerican.com>, 2011). Another alternative to brain games is reading. Reading has been shown to slow down the declining of cognition that happens in aging adults. Reading has also shown to slow down the decline rate of memory and other mental capacities. Social activity is also an alternative to brain games. It has been shown that people with high amounts of social activities in their lives have the slowest rates of memory decline. Social activities could include seeing friends, being part of a club or volunteering.

Conclusive Points

Research on aging has shown that the human brain is malleable throughout life. Studying the human life span, researchers have found that those who participate in cognitively active, socially connected lives and maintain healthy lifestyles are less likely to suffer debilitating illness and early cognitive decline in later life than their sedentary, cognitively and socially detached counterparts. The primary aim of research on the usefulness of computer-based cognitive games must continue to provide more experimental evidence to further support the notion that brain games are what they claim. Some of the initial results are promising and make further research highly needed.

References

1. CBS News, 2016.
2. Fields R Douglas. “Change in the Brain’s White Matter: The Role of the Brain’s White Matter in Active Learning and Memory May Be Underestimated”. *Science* 530.6005 (2010): 768–769.
3. Filley CM. “White matter dementia”. *Therapeutic Advances in Neurological Disorders* 5.5 (2012): 267–277.
4. <http://www.sheppardsoftware.com/braingames/braingames.htm>
5. <https://www.mindgames.com/game/Brain+Trainer>
6. <https://www.psychologytoday.com/blog/the-athletes-way/201404/physical-activity-improves-cognitive-function>
7. <https://www.ncu.edu/blog/reading-improves-memory-concentration-and-stress#gref>
8. <https://www.helpguide.org/articles/healthy-living/how-to-improve-your-memory.htm>
9. Lazar SW, *et al.* “Meditation experience is associated with increased cortical thickness”. *NeuroReport* 16.17 (2005): 1893-1897.
10. Markham Heid and Markham. New Research Finds THIS Brain Game Can Guard Against Dementia. *Prevention* (2017).
11. Olesen PJ, *et al.* “Increased prefrontal and parietal activity after training of working memory”. *Nature Neuroscience* 7.1 (2003): 75-79.
12. Van Turenout, M., *et al.* “Modulation of neural activity during object naming: effects of time and practice”. *Cerebral Cortex* 13.4 (2003): 381-391.
13. UCLA. “Breakdown of Myelin Implicated in Alzheimer’s”. *Science Daily* (2007).
14. Weiss Brett. *Classic Home Video Games, 1972-1984: A Complete Reference Guide.* (2007).

Submit your next manuscript to Scientia Ricerca Open Access and benefit from:

- Prompt and fair double blinded peer review from experts
- Fast and efficient online submission
- Timely updates about your manuscript status
- Sharing Option: Social Networking Enabled
- Open access: articles available free online
- Global attainment for your research

Submit your manuscript at:

<https://scintiaricerca.com/submit-manuscript.php>