

Keep Your Brain in Shape!

Early Intervention Program
Nova Scotia Teachers Union

Brain Health

Did you know:

- *It's a myth that we use only 10% of our brains?*
- *The weight of the human brain is about 3 lbs?*
- *The brain is made up of about 75% water?*

As important as keeping our bodies physically active and in shape, it is equally important to consider our brain health as we age. It was once believed that we were born with all of our brain cells and that we would lose them daily from birth with no ability to generate or replace the lost cells. Similarly, it was believed that when our bodies stopped developing (usually around our early 20's), the brain also stopped making any new neural connections and our memory declined. Researchers now understand that new brain cells are being created in the adult brain in the areas of hippocampus and olfactory bulb, as well as possibly the cerebellum, throughout life. Furthermore, with training and the normal healing process, the brain can continue to "re-organize" itself throughout our life span, such that new areas of the brain can "take over" for those that may have been subject to disease, injury or axonal death. This means that the brain activity associated with a certain function can become more efficient or relocate, to continue to be able to perform a task. The more active a brain cell is, the more connections it will make with its neighbouring neurons.

What can you do to keep your brain in shape?

Physical Exercise

There is strong evidence that heart health is linked to brain health; our brains have one of the body's richest networks of blood vessels and with every heartbeat, 20-25% of your blood is pumped to your head where brain cells use at least 20% of the food and oxygen that your blood carries. Physical

exercise increases the blood flow throughout your body including your brain, further enriching this area. As well, physical exercise increases the fitness of the heart, thus maximizing its effectiveness in sending blood to the brain. This causes an increase in the secretion of nerve growth factor, which

promotes the development of new neural connections and helps the neurons to grow and remain healthy. Evidence shows that fit people have sharper brains. It is also important to note, however, that people who are out of shape, but then get into shape, can sharpen their brains.





“The more we think, the better our brains function - regardless of age!”

Mental Stimulation

Although there has been some controversy regarding the effectiveness of cognitive games such as Nintendo DS Brain Age, or other brain training games, research has shown that performing

activities that stimulate and challenge the brain also fosters neural development and new pathways, increasing its flexibility and agility. The more we think, the better our brains function - regardless

of age. Without something to keep us mentally charged, our brains, like unused muscles, can atrophy, leading to a decline in cognitive abilities.

Stimulation may take various forms. Some ideas include:

- Learning a new language, sport, or taking a course
- Working on cognitive puzzles such as crosswords, sudoku, word finds, and word problems
- Travel, going to museums
- Performing regular activities in a different way, such as brushing your teeth with your non-dominant hand, changing your route to work, or listen to music while smelling flowers
- Dancing, playing music
- Crafts
- Volunteering
- Reading



Stress

Although some stimulation is key to maintaining a healthy brain, too much stimulation can wreak havoc. Chronic stress can have serious negative impacts on a person’s physical and mental health. When the body perceives stress, it releases cortisol, a hormone that prepares the body for

“fight or flight”. Increased levels of cortisol within the body can lead to shrinkage or damage to the hippocampus, which has many cortisol receptors and thus is more susceptible to stress. The hippocampus is thought to be responsible for episodic, spatial, and contextual memory. As stress is

part of our daily lives and impossible to get rid of, it is important to recognize ways to reduce stressors. Meditation, exercise, reducing stimulation (such as a noisy environment), taking breaks, getting a massage, and seeing the humor or positive in a situation, all may act to help reduce stress.

Socialization

Engaging with others both activates the brain and makes us think. It also may work to help prevent depression, which works against our memory and cognitive processes. One study done in the U.S. found that talking to another person for 10

minutes a day improved memory and test scores and was just as effective as more traditional kinds of mental exercise in boosting memory and intellectual performance. They also found that the higher the level of social interaction, the better the

cognitive functioning. Social interaction included getting together or having phone chats with relatives or friends. You could also engage in healthy debates to increase our ability to think quickly and apply intelligence to verbal situations.



Sleep

Aside from being crucial to brain development and growth, sleep appears to be the platform that helps us consolidate our new learning and memories. Different stages of sleep have been linked to different forms of memory;

declarative memories (those for facts, names, and dates) appear to be stored during the slow-wave period of sleep while REM (rapid eye movement) sleep is beneficial for procedural memories (such as bike

riding, or learning music). Animal studies have shown that sleep loss leads to a reduction in new brain cell growth; therefore without sufficient sleep, neuronal repair may not be completed leading to malfunction during the day.

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Food

Eating vegetables, drinking red wine, and ensuring you have eat a healthy breakfast can improve your brain functioning and longevity. Cruciferous and green leafy vegetables including cauliflower, spinach, kale, broccoli, cabbage, brussell sprouts and collards appear to be the

most beneficial likely because they contain healthy amounts of vitamin E, an antioxidant that is believed to help fight chemicals produced by the body that can damage cells. Red wine (or grape juice), blueberries, and cold water fish such as tuna, mackerel, and salmon all contain nutrients

that can enhance, protect or directly influence communication between brain cells. Research with children and adults demonstrated that those who ate a healthy breakfast performed better on tests of reaction time, memory, concentration, learning ability and mood.

Memory Strategy Quick Tips:

- Organization
- Repetition
- Avoid overload
- Visualize concepts
- Focus your attention



An interesting note to keep in mind, the ability of our brains to continue to form new pathways and grow new cells can sometimes be a detriment. As the connections between cells get used more and more, the faster the signals between cells, much like skiing down a freshly powered mountain – the more runs down, the faster the trail gets. With things like fears, the more we

“practice” or react to fears, the stronger the connection between brain cells and the more likely it will become automatic. The same is true for negative thinking, i.e. the more often we think this way, the more automatic negative thinking can occur. The other problem with our brains is that they are hardwired to look for danger and pay more attention to the

unpleasant than the pleasant. So if you were to receive 10 compliments and 1 critical/negative statement, you are more likely to remember the negative statement and ruminate about this. By potentially ruminating on these things, you are “practicing”, and thus reinforcing the neural connections making them automatic.

Cognitive On-line Games:

<http://www.web-games-online.com>

<http://www.positscience.com/games-teasers>

www.luminosity.com

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