

BRAIN PLASTICITY

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Brain plasticity, also referred to as “neuroplasticity” describes the changing of neurons by creating or enhancing new neural networks and usually improving brain function. This is not a new finding, because as far back as 1890 this idea was proposed by William James in the principle of Psychology. Plasticity can include the adding of new cells, improving the strength of connections between neurons and glial cells, or by adding to and removing existing connections.

Most people in their 50’s and 60’s or older, worry about the possibility of losing part of their mental function, and this is always being reinforced by forgetting a name or phone number – which we all do to one extent or another. It is always more convenient to look for a simple “fix” to prevent mental decline, and there are multiple vitamins, herbs, and medication enhancements which have been said to improve mental function. However, the body and the brain have a well established mechanism for correction of failing neurological pathways.

We do know that by using, and ‘reworking’, your existing brain pathways that clear thinking and better memory can be achieved. If you look at a system like the Cogmed Memory Training Program to improve cognition, mental focus and problem solving, you will see ample evidence that this is indeed effective if you put some effort into self discipline and repetitive exposure to mental training. Controlled research has shown conclusively that improved brain function and modified connection between neurons via neurogenesis can occur. In other words, like physical exercise can improve muscle function and strength, mental exercises can help improve your cognitive function.

What does this information mean to us on an everyday basis? In other words, can we continue to enjoy the same or even better mental function as we age by an approach to modify our lifestyle choices? It is clear that nutrition, physical exercise, caffeine intake, some herbs, some medications, and some mental exercises can keep us on the right path to growing older and perhaps even a little wiser. There are, of course, diseases or deterioration of the brain cells caused by your genetic codes, nutrition, viruses or bacterial infection, stroke, trauma, alcohol or other toxic causes for decline in mental function. It is this category of choices that probably offer us the most chance to change our destiny.

I have discussed nutrition in past articles of Tidewater Women, making the point that elimination of all hydrogenated fat, all trans fat, and a majority of ingested sugar would go a long way to preserve brain health. It is also been noted that eating a nutrient rich, low glycemic diet keeps both the body and brain in best working order.

Reducing alcohol to a minimum of one or two glasses a day of red wine nurtures the brain by furnishing polyphenols, which are good nutrients. Too much alcohol causes a reduction in muscle mass which corresponds to the amount which is taken in. This translates to less energy and muscle function which effectively reduces mental function. Even low doses of alcohol interfere with memory and impair judgment and critical based motor skills. In some cases it releases aggressive tendencies, inducing inappropriate behavior and even physical violence.

Evaluation of a brain which has undergone more excessive stimulation has shown in multiple studies that true plasticity can occur in areas of the brain. A 2005 study of the brain images of medical students studying for final exams showed that gray matter increased a significant degree. This is accomplished by growth of small interconnectivity fibers which increase in number by stimulation of those pathways. After stroke, loss of vision, or traumatic loss of part of the brain, other areas can 'take over' function and enhance the ability of a person to use the cortical resources which remained available but became more active by neural plasticity.

Interestingly, 'brain games' have had a lot of appeal for people throughout the years. They can also improve mental function, especially in areas of recall, memory and problem solving as well as adding words to your vocabulary. A good example of this is the crossword puzzle, invented in 1890 in Italy and commanding huge multi-millions of people who now daily strive to 'improve' their brains by working these puzzles. There are many different types of crossword puzzles in different countries each with their own peculiar characteristics. In addition, the number puzzles such as Sudoku, are quite a cerebral stimulant as well; and this has become a national pastime in Japan!

I could go on for pages about the variety of ways that the brain develops and exercises neural plasticity, but it is well to summarize with some general principles. First, by keeping the body fit, the brain will be able to function better. Diet, supplements, avoidance of excessive alcohol consumption or sedative drugs would be of high importance. If you feel the need for intense brain and memory growth, try systems which involve coaching and accountability such as the Cogmed Memory Training Program or Fast For Words. Stay involved in reading new types of material and listening to different music, and return to the language training of your school or college days. By doing these things, you can keep your mind as fit as your body, and know that you are exercising extensive control over the aging process.