

Maintaining a Healthy Brain

written by Tim Jennings, M.D. | February 9, 2008



Everywhere I travel I am asked what people can do to keep their brains healthy and specifically what they can do to help reduce the risk of developing Alzheimer's dementia. The following are suggestions for maintaining brain health and reducing the risk of dementia.

1. Regular exercise: Regular exercise not only keeps the heart healthy, but keeps the brain healthy as well. When we exercise the brain produces proteins which help keep our brain cells healthy and expands capillary networks so blood flow improves. Exercise also causes the brain to produce chemicals which improve mood. Additionally, recent research has shown that the pathways primarily responsible for physical movement play a key role in helping our thoughts flow in a fluid and organized way. Thus, physical exercise improves our ability to think clearly and efficiently.

2. Omega-3 fatty acids: Omega-3 fatty acids are nutrients that our brain and body require, but cannot make. If we don't get this nutrient in our diet then we don't have it and our body muddles through without it. In the body, omega-3 fatty acids raise good cholesterol and lower bad cholesterol and, thereby, reduce the risk of heart attacks and strokes caused by blocked blood vessels. But they do more, omega-3 fatty acids are powerful free radical scavengers. Free radicals are by-products of metabolism which damage cells throughout the body. Certain medical conditions such as Diabetes Mellitus (DM) cause a marked increase in the production of free radicals. People with DM often experience damage to

their organs, i.e. retinal damage with loss of vision, kidney damage, and peripheral nerve damage causing neuropathies (painful conditions of burning sensation in the extremities). Recent evidence has demonstrated that omega-3 fatty acids, by scavenging up free radicals, reduce the risk of such damage in diabetic patients.

These are all great things the omega-3 fatty acids are doing in the body, but more importantly, as a psychiatrist, I value the impact they have on the brain. Each individual brain cell has a membrane primarily constructed of a combination of omega-3 and omega-6 fatty acids. When we don't get omega-3 fatty acids in our diet, the brain doesn't have them so the brain cell membranes are constructed without them. This causes the membranes to be more rigid and stiff, less elastic and pliable and is associated with an increased risk of mood disorders, such as depression, bipolar disorder and post-partum depression. Additionally, without the free radical scavenging impact from the omega-3 fatty acids, the brain cells are more vulnerable to damage and evidence has indicated that individuals low in omega-3 fatty acids have greater risk for dementia.

Omega-3 fatty acids can be obtained in flaxseeds, chia, black walnuts and wild (not farm raised) cold water fatty fish such as salmon or mackerel. Typically 2000 - 4000mg per day is sufficient. Omega-3 fatty acids can have a blood thinning effect so anyone taking a high dose of omega-3 fatty acids or taking a blood thinner, such as Coumadin (warfarin), should check with his or her doctor prior to taking.

3. Natural Vitamin E: Vitamin E is also a free radical scavenger and is beneficial in protecting the brain. However, studies have revealed that this benefit is only obtained when Vitamin E is obtained in food. In fact, some studies have indicated that supplements of Vitamin E actually cause harm. This is believed to be due to the fact there are multiple forms of Vitamin E in nature and the supplements do not contain all of these forms, whereas Vitamin E in food is balanced appropriately. Vitamin E can be found in wheat germ oil, almonds, sunflower seeds, peanut butter and hazelnuts.

4. Folic acid and Vitamins B6 and B12: During normal metabolism a by-product is produced called homocysteine. Homocysteine is damaging to the linings of blood vessels and to neurons (brain cells). Imagine pulling a piece of barbwire through a soft rubber hose. What happens inside the hose? Homocysteine damages the linings of blood vessels in a similar way. The body has two pathways to get rid of this toxic waste product. One pathway is dependent on Vitamin B6 and the other pathway is dependent on both B12 and folic acid. When we are deficient in these nutrients then homocysteine builds up and increases the risk of heart attack and dementia. Vegans and lacto vegetarians are at higher risk of elevations of homocysteine due to lower levels of these nutrients. Additionally, supplementation with these nutrients has been demonstrated to improve cognition, as well as mood.

5. Pomegranate juice: A recent study done on lab animals at Loma Linda University demonstrated pomegranate may be beneficial in reducing the risk of Alzheimer's dementia. In the study researchers took lab animals bred to have high amounts of amyloid protein in their brains (this is the toxic protein believed to cause Alzheimer's). They randomized the animals into two groups and fed them the exact same diet, except one group had the addition of the human equivalent of eight ounces of pomegranate juice per day. They biopsied the brains before and after the study and the animals without the pomegranate juice had a higher amount of amyloid in their brains at the end of the study than the beginning, but remarkably those receiving the pomegranate juice had 50% less amyloid in their brains by the end of the study.

6. Continued mental activity: The brain, like every other organ and system of your body, is strengthened with exercise. The more one engages in mentally challenging tasks, the more the brain is stimulated and responds by producing growth factors and expanding and strengthening the neural network. Individuals more mentally active throughout life are more resistant to developing dementia.

7. Healthy spirituality: Studies have revealed that those with a healthy intrinsic spirituality also have reduced risk of dementia. This is theorized to be due to lower levels of stress and stress hormones and, thereby, less oxidative stress on the brain throughout life. Additional factors include the added mental stimulation of thinking in spiritual ways which expands the neural network. Bible study is particularly helpful as it requires expanded mental activity in the contemplation of eternal and divine themes.

8. Altruism, giving and beneficence: Multiple studies have now demonstrated that those who engage in acts of kindness, those who live their lives with a giving heart, those interested in helping others have better health throughout life and suffer less illness. This may be due to less activation of the anxiety centers of the brain with subsequent decreased stress hormones and, thereby, less oxidative stress on the body and brain. For those of us who believe God is our designer this is no surprise, for such living is in harmony with God's original specifications for mankind and would logically result in better health. Thus, the Bible says, "A cheerful heart is good medicine, but a crushed spirit dries up the bones." Proverbs 17:22.

These eight interventions are obviously not an exhaustive review of activities that are healthy for the brain. But they are simple actions that each of us can take to keep our brains as healthy as possible. And the healthier the brain, the sharper the mind and ultimately the greater our