Dr. David Williams

Alternatives®

For the Health Conscious Individual

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Myelin: The Key to Neurological Repair

Years ago when I was still seeing patients, I began to get an unusually high number of paralysis patients. The influx started after I was able to help a high school baseball catcher. His left arm was paralyzed after a violent collision with another player sliding into home base. The young man's parents had spent almost two years taking him all over the country to see orthopedic surgeons, neurologists, therapists, and other specialists. Nothing worked. Everyone had given up. He just happened to accompany his buddy, who I was treating for a skiing injury, and that's when I noticed his arm hanging motionless at his side.

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After hearing what happened, I performed a few tests and told him I thought I might be able to help. Obviously he was skeptical, as were his parents when he told them later about our visit. His father was furious that I would dare give his son false hope. Fortunately his mother felt differently and brought him back to me. I treated him free of charge, not really knowing if I would be successful at restoring his flaccid arm.

It took several months, but he regained full use of his arm. He was able to play catcher again and even went on to college with a baseball scholarship. Thereafter, my office was flooded with paralysis patients of all types and ages. I think his mother hunted down every individual with paralysis she could find within a 200-mile radius and sent them my way. She also placed fresh flowers in my waiting room every week for years.

I tell you this story because it is a prime example of how even the best doctors often seem to forget that every tissue in the human body consists of living cells. **And living cells have the innate ability to heal themselves.**

In this case, a specific nerve had been crushed and needed help. It wasn't impinged or severed, nor did it require anti-inflammatory drugs, steroids, or surgery. And after two years of neglect, the nerve had begun to lose its myelin sheath (insulation) and was no longer able to function properly. It needed very specific nutrients and the proper circulation to deliver them. The muscles also needed to be kept alive until the nerve could start working again.

In many respects, this case is not unlike what we see in our society right now. We are experiencing more neurological problems than in any other time in history. Even without an overt injury, millions of people suffer from deterioration of the nervous system. I want to show you how to avoid that fate.

Finding Commonality

Worldwide, we're seeing a rise in mental illnesses such as schizophrenia, anxiety disorders, ADHD, and depression. Granted, much of the increase stems directly from the psychiatric community's diagnostic expansionism and the pathologizing of normal behavior.

I've talked about this recently. But if you have any doubts, here are a few great books that document modern psychiatry: *The Loss of Sadness: How Psychiatry Transformed Normal Sorrow into Depressive Disorder* by Jerome C. Wakefield and Allan V. Horwitz; *Anatomy of an Epidemic* by Robert Whitaker; and *Shyness: How Normal Behavior Became a Sickness* by Christopher Lane.

In addition, we're witnessing a dramatic rise in more concrete neurological problems, including autism, multiple sclerosis (MS), amyotrophic lateral

sclerosis (ALS), and Alzheimer's and Parkinson's diseases.

The Multiple Sclerosis International Federation reports that worldwide MS cases have increased more than 10 percent in just the five-year period from 2008 to 2013. MS has become the most common cause of neurological disability in young adults worldwide.

Whenever I see such a marked increase in symptoms and diseases, it seems very likely that it is being caused, or at the very least precipitated, by lifestyle habits. More often than not, these center around diet and exercise.

By looking at the more common symptoms (precursors to disease) and "syndromes" (early stages of disease), a pattern starts to develop. Oftentimes the importance of this pattern becomes even more evident when you compare it to the underlying cause of a group of diseases. A commonality starts to emerge.

With the current surge in neurological problems, that commonality is the myelin sheath. If you want to treat or avoid developing neurological conditions, it's important to understand they have one thing in common—degeneration of the nerve's myelin sheath.

Understanding the Basics of Myelin

Myelin consists of a mixture of protein and fat molecules (called lipids). Myelin wraps around nerve cells in the brain and around the long, wire-like axons of peripheral nerves. It acts much like the insulation on an electrical wire. It confines and allows electrical impulses to pass quickly along the nerve.

Unlike the insulation on wire, however, it is living tissue. In a number of serious neurological diseases, the sheath breaks down. Oftentimes the process is irreversible, first leading to a disruption in communication, then death of the nerve cells, and ultimately the death of the individual.

Myelin production is greatest during the first four years of life when our brains are so busy learning to control our muscles for crawling, walking, etc. Production then slows down. By the teenage years, the prefrontal cortex is one of the last neurological areas yet to be myelinated or "insulated."

The prefrontal cortex is the area of the brain responsible in the decision-making process. It weaves past experiences with those in the present in order to help you make the best choices. It weighs actions with their possible consequences. This part of the brain continues to grow and develop until about the mid-20s. Before that growth and development is complete, behavior can be impulsive, risky, and irrational. If you're wondering why teenagers act the way they do, you can blame this (along with hormonal changes).

Damage to the prefrontal cortex from severe trauma or from even milder events, such as a prior concussion, can also result in unusual behavior and/or the inability to make rational decisions. We're seeing this in war veterans who have post-traumatic stress disorder.

Myelination and the intricate circuitry of the prefrontal cortex isn't complete until sometime in our 40s. In our 60s, the myelin covering can begin to break down and degenerate in areas. This results in cognitive decline and also helps to explain "senior moments" or, in more severe cases, senility.

Myelin Sheath Repair

Mainstream medicine has never really focused on methods to maintain or repair the myelin sheath. Its concentration has instead been on what happens at the nerve endings. In an effort to treat problems such as Parkinson's and Alzheimer's, drugs have been developed to manipulate neurotransmitters, the chemicals that transmit signals

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across synapses (the space between neurons). And it has been generally accepted that both learning and maintaining your cognitive ability are directly related to the number of neurotransmitter receptors, which can be increased by using the same pathway over and over. The role that myelin might play has been largely ignored. Some of the natural health pioneers knew otherwise, and research is now proving them correct.

Researchers have found that when you learn a new skill, hobby, language, etc., your body produces more myelin. Only lately have they been able to determine this, thanks to a new imaging technique called diffusion MRI.

Studies have shown that significant structural changes take place with the deposition of myelin when adults learn a new language, meditate, read, or take on a new skill such as juggling or playing the piano. And it was heartening to see that everyone who learned to juggle or attempted a new language showed an increase in myelin, regardless of how well they performed. **In other words, it's the learning process itself, not how well you learn the skill, that boosts myelin production.** (*J Neurosci 2013 Dec 11;33(50):19499–503*) (*Nature Neurosci 2009 Nov;12(11):1370–1*) (*J Cogn Neurosci 2012 Aug;24(8):1664–70*)

Cells called oligodendrocytes wrap myelin, composed of thin layers of fat, around the nerve fibers. The extra layers of myelin keep nerve impulses from "leaking" and causing miscommunications.

Myelin also speeds up the transmission of the nerve impulses, which appears to be one of the most important keys to learning. The speed at which impulses travel are in direct proportion to the diameter of the nerve fiber. (So the thicker the myelin, the faster the impulse.) Impulses are thought to travel along the surface of the nerve fiber and in large myelinated fibers. The speed can reach approximately 337 miles per hour, or 150 meters per second.

Other studies show that cognitive decline in older animals can be reversed by transfusing the blood of younger animals. University of Chicago professor Richard Kraig discovered that blood contains little fat vesicles that carry compounds that increase myelin formation in the brain. He and his team found these vesicles can be administered nasally, where they can safely cross into the brain and apparently be used to treat MS. (*Glia 2014 Feb;62(2):284–99*)

I know I've mentioned in the past that my brother-in-law passed away from ALS, a horrible disease distinguished by the death of nerves that control muscles. Until just recently, it has never been associated with myelin. But researchers at Johns Hopkins University have now found that the oligodendrocytes that produce myelin die prior to the nerves dying. Without the protective myelin, it's not a stretch to assume that the nerves would begin to degenerate and die. A loss of myelin may be one of the first steps of the disease, and targeting oligodendrocytes may offer a chance to stop the destruction of motor nerves. (*Nat Neurosci 2013 May;16(5):571–9*)

In the neurology classes I took years ago, we were taught about oligodendrocytes and how they produced the fatty, insulating sheath of nerves. These same cells also provide metabolic support to nerves by supplying nutrients—a fact that most doctors seem to have forgotten.

In the case of the young baseball player I mentioned earlier, no one addressed the issue of supplying the damaged nerves with the materials they needed for repair. This is probably because most doctors aren't taught how to do that. If a problem doesn't respond to drugs or surgery, there's not much else they can offer.

What Makes Up Myelin?

The field of chiropractic is based on the premise of restoring proper nerve supply to various tissues. Chiropractors routinely correct misalignments of the spine or other tissue that pinches on nerves. By relieving the pressure, circulation returns to the nerve, supplying it the nutrients it needs to survive.

One of the first steps I took with the baseball player was to give him an electrical muscle stimulator and very specific instructions on where to place the conductive pads so that the nerves involved could be stimulated several times a day. Although he couldn't make the nerves "fire," he could at least keep them and the muscles alive until they were able to work on their own.

Next, we supplied the damaged nerves with the proper nutrients and raw materials needed for healing. There were obviously some other, more complicated, procedures involved, but these two steps were crucial in curing his paralysis. And these same two steps are also

crucial if you want to avoid developing neurological problems.

Myelin is a unique type of membrane. In addition to water, myelin consists of anywhere from 70–85 percent fat and 15–30 percent protein. Most other membranes in the human body consist of more protein than fat.

The lipids in myelin are varied, but the most prominent ones are cholesterol, lecithin, and cerebroside. A closer look at each of these will explain the uptick in neurological disorders.

Cholesterol

Cholesterol is a major constituent of cell membranes. It helps separate the water inside the cell from the water outside the cell, and still allows the controlled passage of molecules between the two. Without cholesterol, we would be a puddle of water and fat. Keep in mind that, although the brain comprises only 2 percent of the body's total weight, it contains almost 25 percent of the total cholesterol in the body.

I'm not going to cover the fallacy that cholesterol and saturated fat cause cardiovascular disease. It has repeatedly been shown to be untrue. Finally, even the mainstream media has been reporting the truth. What the media hasn't covered, however, is the connection between cholesterol-lowering drugs (statins) and Alzheimer's, ALS, and MS.

So far, the pharmaceutical industry has been able to hide this. In fact, it has even implied that high cholesterol can cause Alzheimer's and statins can help prevent it. But it doesn't take a genius to connect the dots.

The pharmaceutical industry freely admits that statins are effective at interfering with cholesterol production in the brain and liver. But when you disrupt cholesterol production in the brain, it disrupts the integrity of the myelin insulation. Not surprisingly, memory dysfunction is one the most common symptoms of statin use *and* the onset of Alzheimer's.

A statin/ALS connection is also starting to come to light. It is well-documented that statins can cause life-threatening and permanent muscle damage. Dozens of statin studies refer to "ALS-like conditions." (*Drug Saf 2009;32(8):649–61*) (*Neurology 2002 May 14;58(9):1333–7*)

And when it comes to MS, researchers from Montreal's McGill University published one of the more telling studies on the link between statin use and this disease. They seemed to be more forthcoming since Canadians have one of the highest rates of MS in the world.

MS is an autoimmune disease where immune cells attack the myelin sheath of the central nervous system and the oligodendrocytes that produce myelin. As the insulating myelin is destroyed, nerve impulses are disrupted throughout the nervous system, nerves die, and muscles deteriorate.

Researchers found that statin use has a "deleterious effect on myelin under non-pathological conditions," but it was even worse when there was myelin damage, as is the case with MS. Statins inhibited the repair of damage in the central nervous system by blocking the oligodendrocytes from making more myelin. (*Am J Pathol 2009 May;174(5):1880–90*)

In simple terms: Under normal conditions, statins lead to the breakdown of myelin in the brain. And when damage already exists, the drugs stop repair by inhibiting myelin production—because a key component of myelin is cholesterol.

Lecithin

Lecithin contains a mixture of compounds such as choline, phosphatidylcholine, and phosphatidylinositol—all key components of myelin. The body also uses choline to make acetylcholine, a key neurotransmitter that passes messages from one nerve to another.

In the past, lecithin was used therapeutically to treat memory loss, with mixed results. I'm not sure it would be that effective on its own, but I feel it is one of the best and most cost-effective ways to ensure you're getting enough raw material for myelin and neurotransmitter production. Additionally, it provides cardiovascular benefits and liver support.

Eggs (from poultry and fish) are some of the richest sources of lecithin. Others include fatty beef, grains, wheat germ, fish, legumes, yeast, and peanuts. I suggest taking one or two tablespoons of sunflower lecithin granules daily. (It's one of the many things I put in my protein shake each morning.)

Cerebrosides

Cerebrosides are the one component in myelin that most people have never heard about. Although it's an over-simplification, a cerebroside can be thought of as a group of complex fats. They mainly consist of saturated and monounsaturated

fatty acids. This is one area where most people in this country tend to fall short in their diet.

Since saturated fat was demonized decades ago, most everyone seems to choose fat-free foods, lean cuts of meat, and skinless chicken breasts. Even worse, a large portion of the population bought into the propaganda hook, line, and sinker and started using margarine and vegetable cooking oils.

For the record, saturated fats don't cause high cholesterol or cancer, don't deplete antioxidants, and don't clog arteries, nor do they contribute to heart disease. They do, however, provide satiety, long-term energy, and structural integrity to membranes and the myelin sheath.

Monounsaturated fats, such as those found in olive and coconut oils, are also necessary components of a healthy myelin sheath. Avocados, olives, peanuts, macadamia nuts, and hazelnuts are other excellent sources of monounsaturated fats. I personally incorporate all of these into my diet.

Over the past 50-plus years, since we started to consume more and more processed foods and particularly altered fats, we've seen a corresponding spike in neurological diseases that were once very rare.

Olive, palm, and coconut oil have been used for cooking and in food preparation for over 5,000 years. Only lately have other oils been introduced into our food supply—peanut oil (100–120 years), corn oil (80 years), soybean oil (60–65 years), sunflower oil (50 years), and canola oil (35 years).

These new oils are used almost exclusively in commercial breads, baked goods, snacks, and thousands of other processed foods. They've been chemically altered to increase shelf life and avoid detection, by taste or smell, when they go rancid. Through hydrogenation, these oils can be converted to a solid at room temperature.

Consuming these highly processed oils reminds me of the phrase used by computer programmers: "Garbage in, garbage out." When you consume questionable fats that have only been in the food chain for a few decades, that's what the body has to work with when it needs to repair the myelin sheath.

After decades of consuming a highly processed diet, it's no wonder the myelin sheath starts to break down. When I said earlier it begins to degenerate around the age of 60, that is only partly due to aging. It is also due to the body not getting adequate amounts of high-quality building blocks (fatty acids) to produce myelin.

Other Important Myelin-Building Nutrients

When we talk about maintaining or restoring the health of the myelin sheath, there are a few other components that are essential.

Vitamin D

Vitamin D3 has repeatedly been shown to improve myelination and recovery after nerve injury. (*PLoS One 2013 May 31;8(5):e65034*) (*Biol Aujourdhui 2014;208(1):69–75*)

But thanks to our newfound fear of sunlight, in addition to poor diet, 41.6 percent of all adults in this country are deficient in D.

One of the best all-around foods I can recommend for helping to keep the myelin sheath intact is sardines. They happen to be an excellent source of vitamin D as well as B12, niacin, selenium, omega-3 fats, phosphorus, protein, choline, iodine, and other trace minerals.

But one of the primary reasons that sardines can be so instrumental in preserving and restoring myelin is that they are one of the richest sources of nucleotides. Others include anchovies, tripe (stomach lining), and the yeast extract spread called Marmite (in England) and Vegemite (in Australia). Nucleotides are necessary components for DNA repair and RNA creation, both of which are essential in the prevention and treatment of degenerative diseases.

Vitamin E

Vitamin E is also crucial. Thanks to the standard American diet, getting adequate amounts of E can be difficult without a daily supplement. Even with supplementation, someone with poor fat digestion or intestinal problems can easily be deficient.

Vitamin E is essential for the myelination process. This is well understood by many researchers trying to find a better treatment for MS. Although almost all of the current treatments for MS are aimed at inflammation, they realize that anything that can stimulate remyelination of the nerves would be a major advance in treatment.

Based on the positive results seen with vitamin E, researchers are testing a new synthetic molecule called TFA-12, a derivative of vitamin E. Early results indicate it promotes the regeneration of oligodendrocytes and remyelination. If anything, this just stresses the need for getting adequate amounts of quality vitamin

E in our diet *before* we have symptoms or develop MS. (*Glia 2004 Jan 1;45(1):54–8*) (*J Neurosci 2013 Jul 10;33(28):11633–42*)

When I was dealing with paralysis cases, in addition to a quality multivitamin/mineral supplement that supplied vitamin E as d-alpha tocopherol, I found the product Cataplex E from Standard Process Laboratories (standardprocess.com) indispensible.

The vitamin E content of Cataplex E is only 5 IU per serving (two tablets), which seems extremely low. However, it is extracted from pea vine juice and contains the complete vitamin E complex along with selenium, just as it occurs in nature. I honestly can't tell you exactly why it is so helpful at such low doses, but obviously in this case, more is not always better.

B Vitamins

When you look at physiological steps involved in myelin production, at almost every step the B vitamins are involved. Throughout history, specific B vitamins have been used to treat/cure a long list of neurological problems.

B1 (thiamine) has routinely been part of the treatment regime for myasthenia gravis and MS. A deficiency of B2 (riboflavin) causes peripheral nerve demyelination in animals. B6 (pyridoxine) can be effective for carpal tunnel syndrome.

Deficiencies of B12 (cobalamin) in this country are very common, particularly among those age 50 and older. The widespread use of antacids and diabetes medication such as metformin are only making the problem worse. Metformin depletes B12 reserves and stomach acid is required to liberate B12 from food. (*Diabetes Care 2012 Feb;35(2):327–33*)

It's largely unknown to the public, but even the Centers for Disease Control and Prevention recommends that "all people 51 years of age or older should get most of their daily vitamin B12 through supplements containing vitamin B12 or foods fortified with vitamin B12."

Among other functions, B12 is a coenzyme in the reaction necessary for myelin synthesis. If it's unavailable, abnormal fatty acids are incorporated into the lipids that comprise part of the myelin. As a result, the myelin sheath becomes fragile and breaks down easily, causing everything from psychiatric problems and dementia to nerve pain and cardiovascular disease.

Vitamin B3 (niacin) is also extremely crucial for nerve health. Studies have shown that niacin deficiency reduces the synthesis of cerebrosides. This can lead to significant decreases in the amount of myelin produced. (*J Nutr Sci Vitaminol 1982 Oct;28(5):491–500*)

The niacin skin flush test is used as a simple, noninvasive method to help diagnose schizophrenia, a neurological condition associated with abnormalities in myelination. Patients who fail to flush with niacin routinely have been shown to have significantly reduced levels of two fatty acids normally present in nerve membranes—docosahexaenoic acid (DHA) and arachidonic acid (AA). When patients who continued to take niacin later started flushing, it just happened to coincide with an increase in these fatty acids, and their symptoms also improved. (*Biol Psychiatry 2013 Sep 15;74(6):451–7*) (*Prostaglandins Leukot Essent Fatty Acids 1996 Aug;55(1–2):9–15*) (*Psychiatr Danub 2010 Mar;22(1):14–27*)

Niacin is not only involved in the formation of myelin, it dilates blood vessels and enhances circulation to an area, which allows more nutrients to reach the cells in muscles and nerves.

Repeated dilation works like a pump, moving in necessary nutrients and removing waste material. This is obviously one of the reasons exercise is so beneficial. Unfortunately, for many people with advanced neurological conditions, exercise is either very limited or next to impossible. That's why I used an electric muscle stimulator to "exercise" the arm of the young baseball player. Niacin flushing could probably be considered a passive form of exercising, when it comes to the blood supply aspect.

You may recall my writing on several occasions about the work of Dr. William Kaufman. Dr. Kaufman used the other form of B3 called niacinamide extensively with his patients. Niacinamide doesn't elicit a flush like niacin and seems to improve blood flow to deeper tissues. He performed extensive testing and documented hundreds of cases where he successfully used niacinamide. I suspect a significant part of his success was due to improvements in the myelin sheath. I would definitely suggest rereading the details of Dr. Kaufman's work if you or someone you know is suffering from Alzheimer's or some other neurological condition.

(Check the February 2009 issue, Vol. 12, No. 20.)

Decades ago, physicians routinely used niacin flushing as one of the therapies to treat conditions such as MS. The recommended program involved taking 100 mg–3 g about 30 minutes before meals, at bedtime, and also during the night if awake. The dosage was determined by what amount caused a strong flush.

Some MS patients initially failed to flush but were instructed to continue taking the niacin. In those patients, it just required a longer time to achieve positive results.

I keep a bottle of 100 mg niacin tablets next to all the daily vitamins I take. At least once or twice a week, I take one for the beneficial effects of the niacin flush.

Blood Pressure Linked to Demyelination

Even if you're getting all the proper nutrients necessary for myelin repair, it's still possible to experience neurological issues if your circulation is impaired to the point it can't deliver those nutrients to your myelin sheath.

Research has confirmed that impaired circulation results in nerve tissue death in the brain when the myelin sheath doesn't receive enough oxygen from the blood. We see this demyelination repeatedly occur in acute conditions such as heart attack, drug overdose, suffocation, and carbon monoxide poisoning. (*Brain 2014 May;137(Pt 5):1524–32*) (*Brain Pathol 2014 Jul;24(4):334–43*)

The medical community has overlooked the fact that overaggressive treatment of blood pressure in the elderly contributes to the destruction of the myelin sheath, triggering various neurological diseases.

Over the past several decades, there have been some very successful marketing campaigns focused on the treatment of high blood pressure. During this same period, we've seen a sharp increase in Alzheimer's and Parkinson's diseases, MS, and other neurological conditions.

Thanks to aggressive monitoring and changes in the criteria of what constitutes treatable high blood pressure, it's estimated that 30 percent of the adults in this country now have high blood pressure and 74 percent of those are taking medication to control it. Every single doctor's office in the country routinely takes blood pressure readings in all patients. And, more often than not, blood pressure medication is prescribed like candy at the first abnormal reading. This can be particularly problematic in older adults.

Studies have shown that strict blood pressure control can impair cognition in elderly patients by reducing blood flow to the brain. In one recent study, researchers recorded mental test scores and blood pressures of 172 individuals with an average age of 79. The same tests were performed six to 18 months later. During that time period, mental function declined in the entire group and disability increased.

The fact that these cognitive changes are permanent strongly suggests that the poor circulation is causing irreversible damage to the myelin sheath and underlying nerves. Those with the lowest systolic blood pressures (at or below 128 mmHg) experienced the fastest mental decline when compared to those with intermediate (129–144 mmHg) and highest pressures (at or over 145 mmHg). (*JAMA Intern Med 2015 Apr 1;175(4):578–85*)

Target blood pressure, even for the elderly, is typically considered to be 120/80 mmHg. However, the ideal blood pressure for those over 65 is unknown. At this point, we do know that getting the blood pressure down to the current target of 120/80 mmHg in the elderly hasn't reduced their risk of dying prematurely. At least some doctors recognize this and have raised that target to 140/90 mmHg, 150/80 mmHg, or 150/85 mmHg.

Whenever nerves are deprived of oxygen due to reduced circulation, their protective myelin sheath begins to disintegrate, then atrophy or die. Everyone seems to understand the importance of increasing blood flow in the elderly through exercise and supplements like niacin, but on the other hand, feel it totally acceptable to drastically reduce blood flow with blood pressure medication.

The ideal blood pressure for the elderly isn't the same as that of 20-year-olds. It *should* be higher. As we age, it becomes harder and harder to maintain optimal circulation. The elderly have to deal with varying degrees of atherosclerosis, rigid blood vessels, and many other factors, which are

only complicated by a reduction of activity and exercise.

Prevention Is Easier Than Treatment

I'm constantly stressing the importance of prevention when it comes to all kinds of diseases. But with neurological problems, prevention takes on an even greater importance. It can be a matter of life or death.

Many diseases can be reversed, but with nerve deterioration, repair and reversal can sometimes be an extremely long and difficult process. Therapy and treatments can drag on before there is any noticeable improvement. One doctor I spoke with felt that even with the right nutrition and proper circulation, it requires two years of treatment and repair for every year the disease has existed. And if nerves have actually demyelinated and died, it can be impossible to correct.

ALS, Alzheimer's, MS, and other neurological diseases certainly have multiple causes and triggers that can range from pesticides and toxins to diet and faulty genes. The causes may vary, but the destruction of the myelin sheath is the one thing they have in common.

Once you understand this and take steps to prevent it, you can lessen your chances of developing these problems. And, if you do find yourself or a loved one with neurological problems, you'll be able to concentrate on eliminating the cause instead of just the symptoms.

After properly feeding and caring for your myelin sheath and nervous system, you need to use it. (Although neurological problems are widespread, when you listen to the news each day, it seems like we have an even greater epidemic of people who no longer use their brain—"intellectual stupidity syndrome.")

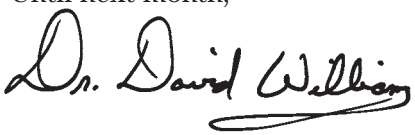
I've always been skeptical of "brain exercises" that are promoted as a way to prevent cognitive decline. If the myelin sheath and nerves are deteriorating and wasting away, crossword puzzles aren't going to save the day. However, if you keep the nervous system healthy and intact, exercises that challenge the brain can build new synaptic pathways and strengthen older ones. Science actually shows we can build up a "brain reserve." (*Biol Psychiatry 2012 May 1;71(9):783–91*)

If you have access to the Internet, you can learn everything from juggling to trick roping by watching short videos on YouTube. My 11-year-old son, Kade, recently discovered yo-yos. He thought he'd surprise me with his new (retro) discovery when he brought one home the other day.

His real surprise (and mine too) came when I asked to try it and was able to do an "around the world" right off the bat. I now have my own yo-yo and I'm working to relearn some of the tricks I used to do when I was his age. And I'm getting ready to introduce him to spinning tops—if I can find one.

By all means, learn a new language, take up a new hobby or skill, or relearn an old one, like I'm doing. It will serve you well in countless ways.

Until next month,



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