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FOR THE HEALTH-CONSCIOUS INDIVIDUAL
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The Roots of Health


Dr. David G. Williams

As I get older, it seems that many of my friends of similar age are starting to ask me the same question: What's the easiest and single most important thing they can do to stay healthy? It's a tough question, and I don't have a simple one- or two-line answer. To complicate matters further, my definition of "healthy" isn't the same as that of most of my friends.

Most people still consider themselves healthy even though they may be obese; have high blood pressure or diabetes; take half a dozen different medications; and suffer from constipation, headaches, arthritis, and a laundry list of other ailments. Survey results show time and again that people consider themselves healthy if all their conditions are "under control" and they can still travel, shop, cook, and play with their grandchildren. Although the pharmaceutical industry has convinced the public that the various health problems are nothing more than "inconveniences" that can be remedied with a pill, in reality we know they are symptoms of more serious underlying health issues.

There's no pill that will repair the damage caused by poor lifestyle habits, a bad diet, a lack of exercise or rest, or a destructive mental attitude. But I'm preaching to the choir again. I know you're aware of this fact, but, based on pharmaceutical sales in this country and worldwide, it's pretty obvious most people aren't.

Having said all that, three of the leading causes of death, disability, and illness in this country are cardiovascular disease, cancer, and musculoskeletal weakness. And a simple, and practically free, tool can help prevent these problems—or, at the very least, significantly reduce your risk of death, disability, or illness from them.

Cardiovascular disease is the number-one cause of death in the US, and accounts for 30 percent of all deaths worldwide. It's responsible for more than 800,000 deaths each year in the US alone. Millions more suffer from its related effects such as high blood pressure, heart attack, angina, peripheral arterial disease (PAD), stroke, kidney disease, fatigue, and shortness of breath.

And approximately a third of the US population is now affected by some form of musculoskeletal weakness. In a recent study of individuals who kept track of their daily health symptoms, musculoskeletal problems were the leading category. Like cardiovascular disease, the prevalence of musculoskeletal problems increases dramatically with age. A few problems that fall under this category include low back and/or joint pain; tendonitis; osteoarthritis; bursitis; contractures; fibromyalgia; limited range of joint motion; osteoporosis; fractures; and—the latest buzzword—sarcopenia (meaning "poverty of flesh" in Greek, which is simply loss of muscle mass).

Research has proven that regularly combining aerobic and resistance forms of exercise is a primary key in combatting both these problems. (*Clin Sci (Lond) 08;115:283–293*)

The Sugar Connection

There's been a lot of talk about the concept of insulin resistance lately, and we'll definitely be hearing even more in the future. When it comes to preventing everything

In This Issue

You will observe with concern how long a useful truth may be known, and exist, before it is generally received and practiced on. — Benjamin Franklin

from heart disease and diabetes to cancer, knowing exactly what insulin resistance is and how to prevent it is truly one technique that can save your life.

From what we now know, there is absolutely no doubt the development of insulin resistance will negatively affect the quality of your life in the short term and the length of your life in the longer term.

The primary job of insulin is to regulate levels of blood sugar (glucose). After we eat, our blood sugar levels rise, which in turn increases the secretion of insulin from the pancreas. Insulin does a couple of things. First, it facilitates the transport of glucose from the bloodstream into muscle and other cells, where the glucose is used as fuel for energy production. Additionally, it converts any stored glucose into glycogen, also used for energy production. The more sensitive your cells are to insulin, the more efficient this transfer becomes.

If your cells become insulin-resistant, the pancreas is required to produce higher amounts of insulin to accomplish the same effects. Energy production suffers, and, instead of being used for energy, the glucose is converted to fatty acids and stored as fat in the liver and throughout the body. If that weren't bad enough, excess fat tissue releases compounds called cytokines that increase insulin resistance *and* damage the inner lining of blood vessels, leading to vascular disease, heart attacks, and stroke. The latest research also shows that excess fat tissue acts as a reservoir for environmental toxins, increasing the risk of cancer and other problems.

The Toxic Connection

A considerable amount of research data now supports the idea that the increased incidence of diabetes is related to exposure to various chemicals. Toxins from our environment, food, and water supply like arsenic, pesticides, and herbicides are routinely found to be higher in individuals with both type 1 and type 2 diabetes. It's feared that these compounds impair and/or destroy the insulin-producing beta cells in the pancreas. It appears that certain drugs may have the same effect.

Dr. Lisa Landymore-Lim, an English chemist, has linked the use of various prescription drugs to increased rates of diabetes.

Certain chemicals are known to bind tightly to the mineral zinc and render it unavailable. Zinc plays a crucial role in the synthesis, storage, and secretion of insulin. Without zinc, insulin cannot be produced. Dr. Landymore-Lim's research indicates certain drugs have these same zinc-binding characteristics and react with zinc in the insulin-producing beta cells of the pancreas. The reaction creates compounds foreign to the body and triggers an immune response to destroy these foreign substances, and in the process damages the pancreas and leads to diabetes.

Based on Dr. Landymore-Lim's work, certain drugs have the chemical characteristics that could result in the development of diabetes. These include certain antibiotics (penicillin, cephalosporin, erythromycin), tranquilizers (benzodiazepines [Valium], barbiturates), and acetaminophen (Tylenol). Her work needs more research to provide verification of the results. From what I've studied, however, it seems highly plausible, particularly when you look at the dramatic increase in use of these drugs.

Additionally, a higher level of insulin production on its own has recently been linked to an increase in the risk of dying from prostate, breast, and colorectal cancers. This groundbreaking research is just now being released.

The Cancer Connection

Researchers at McGill University in Montreal, Canada, and Harvard Medical School in Boston looked at the data of 2,546 men diagnosed with prostate cancer over a 24-year follow-up period. One of the purposes of the study was to determine the effects of being overweight, so they compared the 1,470 men who had a healthy weight at the time of diagnosis to the 1,076 who were overweight or obese. Compared to those men who were of normal weight, being overweight increased the risk of dying from prostate cancer by 50 percent, and being obese increased the risk by 170 percent.

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Although this study is important because it's one of the first to directly link obesity with an increased risk of death from prostate cancer, it was another finding that really caught my attention.

During their treatment and follow-up, many of these men were tested for their plasma level of C-peptide as a part of their routine bloodwork. (C-peptide shouldn't be confused with C-reactive protein [CRP], the indicator of inflammation.) The pancreas first makes what is called proinsulin, which is then split into equal amounts of insulin and C-peptide. When a lab reports your insulin levels, they are actually measuring your C-peptide levels, which give a more accurate picture. Elevated C-peptide levels indicate elevated insulin levels.

In the above study, researchers found that C-peptide level was a very accurate predictor of prostate cancer–specific death. When compared to individuals with the lowest levels, men with the highest C-peptide levels had 2.4 times the risk of death from prostate cancer. If they were also overweight or obese it translated into 4 times the risk. One of the lead investigators in the study, oncologist Dr. Michael Pollak, said, "If you were a prostate cancer patient it would be more important for your survival to have a normal insulin level and a normal weight than it would be to have access to the best chemotherapy… we cannot now improve survival by a factor of four, even with the very best chemotherapy."

This is first study I'm aware of that clearly demonstrates the direct connection between elevated insulin levels and death from prostate cancer. Dr. Pollak is one of the leading researchers in this area, and just last year he published studies showing links between higher insulin levels and lower cancer survival rates—not only in prostate cancer, but in all forms of breast cancer and colorectal cancer as well. I suspect that in the next few years, as the dots are connected, we'll discover just how dangerous high levels of insulin can be in practically all forms of cancer. (*Lancet Oncol 08;9:1039–1047*) (*Breast Cancer Res 08;10:R42*) (*Cancer Res 08;68:10238–10246*) (*J Clin Oncol 09;27:176–185*) (*Clin Cancer Res 08;14:8263–8269*) (*Nat Rev Cancer 08;8:915–928*)

Cancer Loves Sugar

Cancer cells have now been found to have insulin receptors, and we know that insulin and insulin-like growth factors (IGFs) regulate the energy metabolism and growth essential to the growth and survival of a tumor. Pharmaceutical companies see a potential gold mine in the development of anti-cancer drugs that address this mechanism. I see it as further proof of the great importance of changing our eating habits, especially to help control our blood sugar levels. The spike in glucose levels following sugar intake triggers a corresponding spike in insulin levels. The excess insulin from chronic spiking damages blood vessels and organs and feeds cancer. Simply by controlling blood sugar (minimizing or eliminating sugar and refined carbohydrates) we can reduce our risk of developing cancer and increase our chance of survival in the event it occurs.

In the back of my mind, I also can't help but wonder if the unprecedented increase in worldwide diabetes cases will translate into an increase in cancer as well. It's a scary thought, to say the least.

The latest research also tells us insulin resistance is "genetically mediated." In other words, there are underlying environmental factors (obesity, toxins, et cetera) that can lead to insulin resistance, but your degree of susceptibility to the problem is controlled by genetics. Not only does your genetic makeup make you either more or less susceptible to things like pain or immunity to various pathogens, for example, but it's also a determining factor as to whether you develop insulin resistance. But as I've explained in the past, just because you have a genetic weakness or susceptibility doesn't mean you'll develop the problem. In this particular case, *research has shown that aerobic exercise is the single most effective method to overcome this genetic trait.* (*Med Hypotheses 08;71:752–761*) (*Eur J Endocrinol 06;154:577–585*) (*Sports Med 97;24:321–336*)

The Underpublicized Benefits of Aerobic Exercise

Researchers at Yale University School of Medicine compared the effects of aerobic exercise on insulin resistance in two groups of adults. Participants in the first group had one or both parents with non–insulin-dependent diabetes; in the second group neither parent of the participant had diabetes. After only six weeks of exercise, both muscle glucose uptake and glycogen synthesis doubled. Those individuals who were genetically insulin-dependent became insulin-sensitive in just six weeks. (*N Engl J Med 96;335:1357–1362*)

The program utilized in this study consisted of exercising at 65 percent of maximal capacity for 15 minutes, three times a day, for three days each week.

(For a close approximation of your maximal exercise capacity, calculate your maximum heart rate. For men, this is simply your age subtracted from 220. So, for example, if you're 72 years old your maximum heart rate would be 220–72, or 148 beats per minute. The level of exercise in the above study was 65 percent of capacity, so your target heart rate would be 65 percent of 148, or 96. For women, add 4 to this final number. (The

addition is because women's hearts tend to beat a little faster.) Obviously, if you're too far out of shape you may need to work up to this level.

You can find heart rate monitors over the Internet or at any pharmacy or sporting goods store. Look for one that will fit around your wrist, so you can wear it while you exercise and keep track of your progress. A monitor with a GPS unit or a computer for setting exercise programs can cost hundreds of dollars, but a perfectly serviceable one should cost you no more than $30 or so. It's money well spent.)

To put these results into perspective, *this duration and frequency of aerobic exercise cut the risk level of developing diabetes, high blood pressure, and heart disease in genetically predisposed individuals to the same level as individuals without these risk factors*. Simple aerobic exercise totally negated the risk caused by a genetic weakness. This certainly qualifies as the "poor man's form of genetic therapy." We should be shouting about this from the rooftops. Can you imagine the news coverage a story like this would receive if someone were able to achieve these results using some gene-altering, high-tech (meaning outrageously expensive) therapy?

A moderately intensive aerobic exercise program may not have the "sex appeal" of something like genetic engineering or DNA replacement. However, when you consider that it's free, it's currently available to everyone on the planet, and it can prevent the number-one cause of death…it shouldn't need any more sex appeal.

Just Say "No"

Before I leave the topic of insulin resistance, I think it's important to remind you that drugs are not the answer to an insulin problem, contrary to the message you get from the ads on television and in magazines. The pharmaceutical industry has developed drugs that affect your insulin sensitivity, and they're working feverishly in an attempt to block the tumor-promoting effects of IGF.

There are already certain compounds that can safely and effectively increase insulin sensitivity. One of the most common is found in ordinary cinnamon powder. A group of flavonoids called Type A procyanidins have been shown to mimic the effects of insulin. These flavonoids not only help transport glucose into our cells, but they promote the synthesis of glycogen as well.

I add cinnamon to my morning protein shake every day. Research has shown that one to three grams of whole powder can reduce fasting glucose levels anywhere from 18 to 29 percent in type 2 diabetics. Interestingly, cinnamon maintains its positive effects on blood sugar for a least 12 hours. In one study when cinnamon was given to individuals up to 12 hours before a glucose tolerance test, levels of their blood glucose were 10 to 13 percent lower than in individuals given a placebo.

Ordinary cinnamon powder, just like you can buy in bulk at your local supermarket, is by far one of the easiest and least expensive methods to help control your blood sugar levels. (I'm aware that there's been some controversy over the fact that what you buy in the grocery isn't true cinnamon, but instead the bark of a plant called cassia. In fact, all the research showing benefits for blood sugar has been done using cassia.) (*Diabetes Care 03;26:3215–3218*) (*Eur J Clin Invest 06;36:340–344*)

A more expensive compound that increases insulin sensitivity is the anti-aging miracle resveratrol (rez-veer-ah-troll), found in grapes.

Resveratrol activates and increases the production of the protein called SIRT-1, which is necessary for proper insulin function. This is only one of the highly beneficial functions of the SIRT-1 protein. It also helps regulate DNA repair and endothelial cell function.

It now appears that a 165-pound individual would need to take roughly 140 to 150 mg a day of resveratrol to achieve results similar to those seen in most studies.

When it comes to IGF and cancer, the polyphenols in green tea have been shown to inhibit both the development and progression of prostate cancer in mice. Researchers have found that during phases of prostate cancer progression, levels of IGF increased significantly. By continually infusing green tea polyphenols, researchers were able to lower IGF levels and stop the progression of the cancer. (*Cancer Res 04;64:8715–8722*)

The polyphenols in green tea clear from the blood rapidly, so if you're drinking green tea you need to have several cups throughout the day to maintain therapeutic levels in your blood.

On a related note, researchers in India found that lycopene was particularly potent in both stopping the proliferation of prostate cancer cells and in causing their destruction. (*J Cancer Res Clin Oncol 07;133:351–359*)

And there has been a considerable amount of work done with saw palmetto extract when it comes to prostate problems. It is one of the more common alternative therapies for treating benign prostatic hyperplasia (BPH). It has also been shown that saw palmetto inhibits signaling from IGF and, in doing so, blocks the proliferation and causes the death of prostate cancer cells. (*Endocrinology 04;145:3205–3214*)

The Underpublicized Benefits of Resistance Exercise

Getting back to the subject of exercise, any exercise program should also include some type of resistance or weight-bearing activity.

Although I may be talking about a form of weight-lifting, I'm definitely not talking about pumping heavy iron or stripping your body fat until you're sporting six-pack abs. In one of the most ground-breaking research studies to date, participants achieved almost biblical results even though their average age exceeded 87 years. (*N Engl J Med 94;330:1769–1775*)

The training program involved 63 women and 37 men who were residents of a long-term care facility for the elderly. The whole study took place in just 10 weeks. The details of the program were as follows.

- Only two muscle groups in the body were trained: the hip and knee extensors. A seated leg-extension machine was used to strengthen the knee extensors and for the hip extensors either a wall-mounted cable-pulley system or leg press machine was used. (You can achieve the same results at home, however, without any machines, as I'll explain later.)
- The amount of weight used was 80 percent of the one-repetition maximum (the maximum weight that could be lifted one time only). The weight was increased each training session if possible, and the one-repetition maximum was re-established every two weeks.
- Training sessions lasted approximately 45 minutes for three days a week with a day of rest between sessions. Each session consisted of three sets of eight lifts using each device, plus time to warm up beforehand and cool down afterward. Each lift lasted six to nine seconds with one to two seconds of rest between each lift and two minutes of rest between each set.

After the 10 weeks, for the 94 percent who completed the program:

- muscle strength increased by 113 percent,
- gait velocity (walking speed) increased by 11.8 percent,
- stair-climbing power improved by 28.4 percent, and
- cross-sectional thigh-muscle area increased 2.7 percent.

Participants could also walk farther and were significantly more stable on their feet. In fact, 35 to 40 percent of those who were chairbound prior to the study improved to the point that they could climb stairs.

If you're still wondering if you're fit enough to undertake an exercise program like the one above, or you think it might be too difficult, take a look at a few more of the characteristics of the participants in this study.

Thirty-eight percent of these individuals were 90 years old or older. Eighty-three percent required a cane, walker, or wheelchair at the start of the study, and 66 percent had fallen during the previous year. The most prevalent chronic conditions were arthritis (in 50 percent of the individuals), pulmonary disease (in 44 percent), osteoporotic fracture (in 44 percent), hypertension (in 35 percent), and cancer (in 24 percent).

About the only things that disqualified someone from participating in this study were a terminal illness, severe cognitive impairment, insulin-dependent diabetes, or a leg fracture within the six months prior to the start of the study.

The criteria for inclusion into the study were being over age 70 and being able to walk a distance of 6 meters (20 feet).

An At-Home Strength Program

For some reason, many people are intimidated or turned off by the idea of resistance or weight-training exercises. Don't be. It's easy, and, as I mentioned earlier, it doesn't necessarily require any special equipment. If you have access to a gym, that's great. If not, here's exactly what you can do instead.

For each of these activities, you may find them easier to do at the beginning if you perform them while standing next to a table or a sturdy chair that you can use for support and balance. In fact, I recommend doing so if you feel at all unsteady during the exercise.

Lunges

This exercise strengthens the muscles in your upper and lower legs, knees, and lower back.

1. Stand with your feet together, then take a long step forward with one foot. Be sure that your toes are pointing straight forward on both feet.
2. Lower your body slowly by bending your knees, until the knee on the front leg is just over the ankle on that leg. Don't go any further down than that.
3. Slowly return to an upright position by pushing with the heel of your front foot.
4. Do five of these, resting for a couple seconds between each repetition, then return to a standing position with your feet together.
5. Repeat, stepping forward with the other foot this time. Do five of these.

Five lunges with your left foot forward and five with your right foot forward makes one set. Eventually work your way up to doing three sets, resting for a minute or two between sets.

Be sure to keep your torso upright (don't hunch over) as you perform each lunge. It helps if you keep looking straight ahead as you move down.

As you feel more confident with this exercise you can increase the benefit in two ways. First, take a longer step at the start. Second, add weight by holding dumbbells in each hand.

Squats

The squat is undoubtedly the best exercise for the muscles of the lower body. It will strengthen the muscles in your legs, knees, and buttocks.

1. Stand in front of a chair with your feet spread shoulder-width apart. Keep your back straight, and your arms extended in front of you.
2. Slowly and steadily lower yourself until you're almost sitting in the chair, hold that position for a couple of seconds (longer as you progress), and then slowly come to the upright position again.

Do this exercise for 10 repetitions, with a couple seconds between each repetition. Work your way up to three sets of repetitions, with a minute or two of rest between sets.

As you squat down, be sure your knees bend straight ahead in line with your toes. Letting them spread to the outside can cause unnecessary strain.

If you find this exercise difficult to do at first, you can make things a little easier by using a wall for help. Stand with your back against the wall, then move your feet about 12 to 18 inches forward. Do the squats as described above, keeping your back flat against the wall the whole time. (I've even heard of someone placing their grandson's skateboard behind their back to make it easier to move against the wall, but I don't think this is necessary.) You can also place a small stool between your feet and the wall to provide support if needed.

You can increase the benefit of this exercise in two ways. First, use something lower than a chair, such as a foot stool or an ottoman (or even go into a full squat, where your butt touches your ankles). Second, roll up onto the balls of your feet as you return to the standing position and hold there for a few seconds. This latter move will help strengthen your calves and ankles. If your balance isn't so good, then just wait and do this exercise separately while holding on to the back of the chair.

Leg extensions

This exercise strengthens the muscles in your thighs.

1. Sit on a chair or bench that has a firm seat. The seat should be high enough that your bottom is at least as high as your knees when sitting.
2. Slowly straighten your leg, then lower it back to the floor.

I'd suggest doing just one leg at a time. Commercial exercise machines have handles attached to the seat to keep you stable as you lift both legs. You can grip your seat if you wish, but you'll get just as much benefit by working the legs separately.

Pause a moment or two between each lift. Five lifts with each leg make up one set. Work up to three sets, with a minute or two of rest between each set.

As you progress, increase the resistance. Wear heavy boots or shoes; run a bungee cord around your ankle and the chair leg; or add weights. You can find strap-on ankle weights of various sizes at a sporting goods store, or you can make your own. Strap or tie a milk jug to your leg just above the ankle. As you get stronger, you can fill the jug with increasing amounts of water (or sand, if you have it available) to increase the weight. A full gallon of water will weigh a little over eight pounds.

You can increase the benefits of this exercise in two ways. First, hold your leg out straight for a few seconds at the top of the movement. Second, you can change which muscles you work by turning your toes in or out as you lift. You don't have to rotate them all the way, just about half as far as they can move.

Earlier, I mentioned range of motion. This refers to your ability to move a joint through its entire natural arc. A limited range of motion can restrict your ability to perform such simple actions as bending over to tie your shoes or reaching up to take something out of a kitchen cabinet. Performing the exercises I recommended here will go a long way toward maintaining your range of motion. Some years ago in *Alternatives* I wrote about an exercise program that will actually help you improve your range of motion. For your convenience, I've placed a copy of that October 2006 issue in the Subscriber Center of the *Alternatives* Web site, *www.drdavidwilliams.com*, along with additional guidance on how to perform those activities safely and effectively. For directions for using the Subscriber Center, see the article that begins on the back page.

With these simple exercise routines, we're not talking about trying to find your six-pack (and it's not in the refrigerator, by the way), or body-building, or running marathons. We're just getting slightly more aggressive than long, leisurely walks. It's a simple method to stop the decline in muscle strength and mass, associated with aging, that leads to physical frailty, falls, functional decline, and impaired mobility. These are the very things that can rob you of your ability to remain independent and continue to enjoy life to your highest potential. And, most

importantly, the one thing these studies show is that it's never too late to start exercising.

Big Brain Benefit

As I mentioned in the previous article about diabetes, remaining independent takes effort. Muscle strength alone is not enough for total independence, however. You need to remain fully functional mentally as well. I've written in the past about the need to maintain a "cognitive reserve," which helps individuals respond to challenges of all sorts, including injury or damage to the brain. [*Editor's note: See the Subscriber Center of the* Alternatives *Web site,* www.drdavidwilliams.com, *for more information about cognitive reserve.*]

Research over the past few years has shown that one significant predictor of mental function is change in brain size.

Your body doesn't stop changing in adulthood. Some body parts continue to grow: for example, the nose and ears (and, unfortunately, often the gut). Some parts shrink: intravertebral disks and the thymus gland, for example. One's brain also tends to shrink, at a rate of at least one half of one percent per year. This shrinkage occurs throughout the brain, and begins by age 30.

There's a solid connection between this shrinkage and a decline in cognitive abilities; in patients with only mild cognitive impairment the rate of shrinkage can be closer to two percent per year. No matter what size an individual's brain is to begin with, as it shrinks one begins to see declines in memory, concentration, and other measures of cognitive function. (*Neurology 08;70:1836–1841*) (*Radiology 08;248:590–598*)

This decline in brain size isn't inevitable. Evidence points to nutritional deficiencies and inactivity as the primary causes. Fortunately, it appears that it is possible to halt the process, and even to reverse any brain shrinkage that has occurred.

Build Your Body, Build Your Brain

A recent review of several studies has confirmed the connection between physical activity and cognitive function. That is, the more physically fit a person is, the better their brain function is likely to be. Further, improving cardiovascular fitness was shown to improve cognitive skills. The benefits apply across various areas of function, including motor skills, attention, and processing speed. The reviewers questioned whether an aerobic type of activity was necessary, or whether the participants could see the same kinds of gains with any physical activity. (*Cochrane Database Syst Rev 08 Jul 16;(3):CD005381*)

Researchers from the University of Illinois appear to have provided an explanation. In a series of trials, they found that not only did brain volume relate directly to cardiovascular fitness level, but that aerobic activity could increase the volume of all parts of the brain—while other types of physical activity did not. (*J Gerontol A Biol Sci Med Sci 03;58:M176–M180*) (*J Gerontol A Biol Sci Med Sci 06;61:1166–1170*)

In this study of 59 patients, one group met three times a week for 30 to 45 minutes of aerobic activity, such as walking, swimming, or cycling. The other group was also physically active, spending their time on stretching and toning activities.

Vitamin B12 for Your Brain

Nutrition also obviously plays a role in brain health. Excessive blood levels of glucose can cause the classic "brain fog." Low levels of necessary nutrients can create the same effect. A recent study may help explain how this happens.

Researchers at Oxford University in England have found that low levels of vitamin B12 were associated with advanced brain shrinkage. In the study, 107 adults without any cognitive impairment were followed for five years. Annually during that period, each subject had their blood tested to assess the level of B12, and received an MRI to measure any change in brain volume. Those in the lowest third of B12 level were six times as likely to have accelerated brain shrinkage as those in the highest third. (*Neurology 08;71:826–832*)

One of the authors of this study, Anna Vogiatzoglou, is currently conducting follow-up research to find out whether taking supplemental B12 can halt or reverse brain shrinkage. Results of this research should be available later this year. Given the results of the first study, my guess is that B12 will definitely help.

Beyond age 50 or so, individuals are less able to assimilate the vitamin B12 that they take in through their diets. This reduction is due primarily to the conditions necessary for good digestion of B12. The first condition is an adequate supply of hydrochloric acid. The second necessary condition is an adequate supply of a compound known as intrinsic factor, which is secreted by cells lining the stomach and transports B12 through the wall of the small intestine into the bloodstream.

When a B12 deficiency advances far enough, it creates a condition known as pernicious anemia. Outright symptoms include fatigue, shortness of breath, and pins-and-needles sensations in the hands and feet. A deficiency in B12 is also known to cause dementia, and the

neurological changes can appear long before other signs. While pernicious anemia occurs in only two to three percent of the population, the incidence of B12 deficiency among older adults may be as high as 30 percent. (*Arch Neurol 90;47:1008–1012*)

Correcting a deficiency in vitamin B12 is a straightforward matter. If you're having trouble making use of the B12 that you do get from your diet, then you need to find a way to bypass the digestive system and get the vitamin directly into your bloodstream.

For years, I recommended getting monthly injections of B12 from a knowledgeable doctor. Using this method, the vitamin is able to pass directly from muscle tissue into the bloodstream. I still believe that this method is effective, but it does require an initial visit to the doctor then monthly visits thereafter.

Another solution is sublingual B12. In this formulation, you just place the tablet directly under your tongue. As it dissolves, the B12 passes into the bloodstream through the mucous membranes of your gums. Sublingual vitamin B12 is available anywhere other vitamins are sold. Look for a product that provides 1,000 mcg daily.

Smaller Body, Bigger Brain

Finally, recent research out of Kent State University in Ohio points to a connection between body size and brain size. Their study compared body mass index and brain volume in 201 healthy people between the ages of 17 and 79. They found that, regardless of age or other characteristics, the more overweight a person was, the smaller their brain tended to be. (*Int J Neurosci 08;118:1582–1593*)

The clinical term for maintaining your independence is "community-dwelling." This just means that you're able to care for yourself. Obviously, you want to maintain that independence for as long as you can. By using the simple techniques and therapies that I've described in this article and the one before it this month, you'll be able to continue the life you want, at the pace you want, for as long as you want.

More for My Readers

As *Alternatives* continues to grow and develop, I'm constantly looking for ways to provide more services to you. With the continued growth of the Internet, the Web is the reasonable place to go. (Don't worry, though. The paper version of your newsletter will continue to be the main way in which I send information to you every month.) The *Alternatives* Web site, *www.drdavidwillliams.com*, has a Subscriber Center section set aside just for you.

There are some recent additions that I believe you'll find useful. First, there's a comprehensive index, to help you locate everything that I've written about in *Alternatives* over the years. Second, I've greatly expanded the number of back issues that you can get access to electronically—going back to 2003. Finally, you'll find many more Health Hints and Mailbox questions from your fellow readers. You'll still find the "More *Alternatives*" section, which contains a deeper explanation of some point found in the current month's letter.

Access to the Subscriber Center is easy. Go to the *Alternatives* Web site. At the left side you'll see windows that ask you for a user name and password. At the bottom of that panel, click the button that says "Sign Up!" Follow the directions on the next screen, confirm your access, and you're all set. Beginning right away you'll be able to use all the features of the Subscriber Center. You will need an e-mail address to sign up, but that's a simple matter as well. They're available for free from Internet services such as Yahoo and MSN Hotmail.

Even if you're not a regular user of a computer, all the materials are still available to you. Ask about getting on line at your local library or senior center; there's sure to be a staff member there who can help you get set up.

I hope you'll visit soon to take advantage of all the resources there.

Take care,

If you have questions or comments for Dr. Williams, please send them to the mail or e-mail addresses listed to the right. Of course, practical and ethical constraints prevent him from answering personal medical questions by mail or e-mail, but he'll answer as many as he can in the Mailbox section of *Alternatives*. For our part, we'll do our best to direct you to his issues, reports, and products related to the subject of your interest.

Here's how you can reach us:

- For Customer Service matters such as address changes, call **800-527-3044** or write to **custsvc@drdavidwilliams.com**.
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