## Dr. David Williams

For the Health Conscious Individual

Alternatives

VOLUME 20 • No. 5 • MAY 2017

# The Real Secret to Longevity

y goal each month is to give you actionable information. Although I enjoy reading about potential and futuristic breakthroughs in the health field as much as anyone, my focus has always been on techniques that can be used today.



This is one of the reasons I haven't written a great deal about antiaging. It's not that the topic doesn't interest me, because it does. I want to live the longest,

Dr. David William

healthiest life possible, just like everyone else.

The problem is, even though there have been great discoveries in this area, most haven't lived up

# 

to all the hype when ultimately tested on humans. Even so, scientists are starting to unlock many of the secrets needed to slow the aging process.

Human aging is a complex and irreversible process that is genetically determined and influenced by our habits and environment. But by following certain habits and making changes to our environment, new research shows that we can slow the process of aging.

Keep in mind we're talking about biological aging, not chronological age. If you're 70 years old, then you're 70 years old and there's nothing anyone can do to change that. We're not at the point where we can replace our bodies and start over.

Biological age, however, is your "functional" age. It is an estimate of the functional status of an individual compared to others of the same chronological age. For example, you may be 70 years old but have the health, organ function, mobility, and mental capabilities of a healthy 50-year-old.

I'm of the opinion that slowing or reversing the biological aging process is a worthy goal. I certainly don't believe we should just sit around on our duffs trying to survive in the hopes that miracles of science will rescue us from all our past indiscretions. But there are some proven tools and techniques we can implement right now that can increase longevity.

## **Muscle Really Matters**

I've discussed the importance of managing blood sugar, reducing chronic inflammation, and taking vitamins and antioxidants, and these are areas that we hear a lot about. But building muscle mass gets only scant attention, even though it's one of the simplest and cheapest things you can do to protect your health and lengthen your life. In fact, one recent study found that two of the strongest predictors of longevity were strength and muscle mass in the lower body. (Eur J Clin Nutr 2017;71:64-9)

This particular study involved 81 elderly patients. Thirty-two percent (26 people) died over the 4-year study period. Researchers found that lower thigh muscle mass was associated with allcause and cardiovascular mortality but, rather surprisingly, there was no such association with the amount of thigh fat, abdominal muscle, or overall fat mass levels. (Each additional 0.1 cm<sup>2</sup>/kg increase in thigh muscle translated to a 22 percent lower risk of death from all causes and a 30 percent

VOLUME 20 • No. 5 • MAY 2017

#### Alternatives

reduced risk of cardiovascular disease.)

It might seem implausible that the mass and strength of your thigh muscles could have any bearing on whether you die from conditions like cardiovascular disease, cancer, or diabetes. But keep mind that the muscles in your thigh region are the largest and some of the strongest in the body. When you exercise the biggest muscles in your body, several things happen.

First, your muscles' demand for glucose increases, making them more receptive to insulin. With better insulin sensitivity, you have more efficient burning of blood sugar and more food being stored as glycogen in muscles instead of as fat. Your body also becomes more efficient in its ability to access and burn fat, particularly the belly fat associated with diabetes and heart disease. Resistance training is an effective method to both prevent and treat diabetes. Many type 2 diabetes patients cure their condition with the proper diet and exercise program.

Second, exercising these large muscles immediately increases your metabolic rate, resulting in more calories burned. Bodybuilders and weightlifters often talk about "after burn." This refers to the body burning more calories after a weightlifting session, when it is recovering, than it does during the actual workout.

Resistance training has been shown to increase the amount of calories burned by an extra 100 in the hour after a workout. And since muscle cells, unlike fat cells, continually burn calories while at rest, the more lean muscle you build, the higher your metabolic rate and fatburning capabilities will be.

When it comes to weight and fat loss, this approach is far better than going on a low-calorie diet. A low-calorie diet will allow you to experience temporary weight loss, but at the expense of lean muscle tissue. In the end, the loss of muscle ends up decreasing your resting metabolic rate.

Third, building up your thigh muscles improves levels of other hormones besides insulin. For instance, testosterone levels stabilize or rise, and inflammatory cortisol levels fall. (The opposite typically happens when you follow a calorierestricted diet.)

Finally, strengthening these muscles can also increase bone density in the hip and thigh bones.

It's hard to over-stress the importance of maintaining bone density when hip fractures have become the number-one reason for nursing home admissions, and falls remain the leading cause of death in older Americans. (Med Sci Sports Exerc 1999 Jan;31(1):25–30)

Thanks to the fact that our society is largely sedentary, mobility and stability issues are no longer a problem among just the elderly. If you've been to the mall or grocery store, you've probably noticed just how many middle-aged shoppers use the motorized scooters.

#### The Best Exercise to Do

So how do you beef up your leg muscles and at the same time improve your longevity? Squats! It's the absolute best exercise for strengthening the muscles in your thighs and buttocks and around your hip and knee joints.

In addition, implementing squats in your exercise routine will improve your stability and bone density, help you stand up from a seated position, and help you climb stairs better. Even more important, strengthening your thigh muscles with squats can reduce your risk of injury and premature death from practically all causes.

To safely and properly squat (especially if you're new to the exercise), use a chair as a "safety net." Stand in front of the chair with your feet spread shoulder-width apart. Keep your back straight and your arms extended in front of you. Slowly and steadily bend your knees and lower yourself, as

#### Alternatives Author: Dr. David Williams; Editor: Larissa Long

ISSN# 0893-5025. Published monthly for \$69.99/yr. by Mountain Home Publishing at 6710-A Rockledge Dr. Ste. 500, Bethesda, MD 20817. Editorial Office: 6710-A Rockledge Dr. Ste. 500, Bethesda, MD 20817. Periodicals postage paid at Bethesda, MD and at additional mailing offices. Postmaster: Send address changes to *Alternatives*, PO Box 11, Montoursville, PA 17754. Copyright © Healthy Directions, LLC All rights reserved. Photocopying or reproduction is strictly prohibited without permission from the publisher.

The approaches described in this newsletter are not offered as cures, prescriptions, diagnoses, or a means of diagnoses to different conditions. The author and publisher assume no responsibility in the correct or incorrect use of this information, and no attempt should be made to use any of this information as a form of treatment without the approval and guidance of your doctor.

Dr. Williams works with Healthy Directions, LLC to develop his unique formulations that supply many of the hard-to-find nutrients he recommends. Dr. Williams is compensated on the sales of these nutritional supplements and health products, which allows him to continue devoting his life to worldwide research and the development of innovative, effective health solutions.

though you are going to sit in the chair, but stop just short of touching the chair. Hold that position for a couple of seconds (longer as you progress) and then slowly come back to a stand. (How close you can actually get to the seat of the chair will depend on the initial strength of your thighs.) Do this 10 times and work up to three sets. To make it more challenging, use something lower than a chair, like a short stool or ottoman.

If you have good balance, you can also strengthen your calves and ankles by lifting up on the balls of your feet when you stand and holding that position for a couple of seconds. If your balance isn't so good, then do this calf exercise separately while holding on to the back of the chair.

## Telomeres: The Secret to Living Forever?

There are numerous theories on exactly what causes aging, and one of the most popular has to do with telomere length. The relationship between aging and telomeres can be a little confusing, but I'll do my best to summarize and explain the high points.

Telomeres are protective little caps at the end of double-stranded molecules of DNA called chromosomes. They have been compared to the plastic tips on shoelaces. (Just in case you happen to find yourself on the game show Jeopardy, those little plastic tips are called aglets.) Telomeres protect the ends of chromosomes from fraying and sticking to each other.

Every time a cell divides, the telomeres get shorter. When they get too short, the cell can no longer divide, and it becomes inactive

. . . . . . . . . . . . . . . .

# **Do You Know Your Lobster Facts?**

While researching the immortality of lobsters, I came across some fascinating facts.

- Lobsters' teeth are located in their stomachs. The grinding/chewing structure is called a gastric mill.
- Lobsters use chemosensory hairs on their legs and feet to taste food.
- Lobster blood is clear and an adult lobster's brain is no larger than the tip of a ballpoint pen.
- Lobster shells are used to make biodegradable golf balls, designed for golfing on cruise ships.
- Lobsters were once considered to be "tasteless" and were so plentiful and inexpensive they were a pauper's food.
- In 2009, a Maine fisherman caught a lobster that was estimated to be 80–140 years old. Named George, he was kept as a pet in a restaurant tank for 14 days. After dozens of pictures with the restaurant's clientele, he was released back into the wild.

and dies. Telomere shortening is a sign of aging and has also been associated with oxidative damage, insulin resistance, diabetes, heart attacks, stroke, vascular dementia, obesity, osteoporosis, some forms of cancer, and an overall increased risk of death.

Telomerase is an enzyme that helps rebuild and maintain telomere length. This enzyme is active in germ and stem cells when our bodies are growing, but production shuts down in adults. Many researchers believe if we could control and increase telomerase production, telomeres wouldn't shorten, cells could continue to divide indefinitely, and we would live forever.

The idea isn't as far-fetched as some might think since that's exactly what happens in lobsters. Lobsters (and some flat worms) produce telomerase continuously. So instead of their telomeres shortening with age, they constantly rejuvenate. Rather than getting weaker and more vulnerable with age, lobsters become stronger and more fertile each time they shed their shells. Lobsters are unique in that they don't die as a result of aging. In that sense, they are biologically immortal. They die because they are eaten, injured, poisoned, or exposed to disease. See the box above for additional facts about lobsters that you probably never knew! (*FEBS Lett 1998 Nov* 13;439(1-2)143-6)

There's a caveat, however, when it comes to influencing telomerase production. Human cancer cells produce telomerase, and that's one of the reasons cancer is so difficult to fight. Their ability to produce telomerase makes cancer cells close to immortal. So the problem lies in whether we can increase the amount of telomerase that can undo and protect our telomeres without increasing the risk of cancer. (*Int J Oncol 2000 Nov*;17(5):981–9)

Although no one has figured out the steps humans need to take to become immortal, researchers

#### Alternatives

continue to show there's a link between telomere length and mortality.

One recent study involved 608 patients with coronary heart disease. Telomere lengths were determined at the beginning and during the study, and again at five years. Telomere change was classified as shortened, maintained, or lengthened.

During the study period, 149 participants died. Mortality occurred in 39 percent of those who experienced telomere shortening, 22 percent of those whose telomere length was maintained, and 12 percent of those who experienced telomere lengthening. And those who experienced telomere lengthening were actually 56 percent less likely to die. (*PLoS One 2016 Oct;11(10):e0160748*)

Another study found that, by observing changes in telomere length, researchers were able predict cancer in patients up to 13 years before any symptoms developed. This was the first study to progressively monitor telomere changes over a long period of time. It showed that there's a unique pattern in telomere length that is reliable enough to predict which patients would go on to develop the disease.

In this study, 792 seemingly healthy patients were followed from 1999 to 2012. By the end of that period, 135 individuals were diagnosed with a wide range of cancers, including leukemia, lung, prostate, and skin. Looking back at the data, researchers could predict who would develop cancer based on the pattern of changes in blood cell telomere length. (Blood cell telomere length is already considered an accurate marker of biological age.)

The telomeres of those who would develop cancer shrank more rapidly than those who didn't get the disease. The telomeres of future cancer patients looked as much as 15 years older than the telomeres of the other patients.

There was another very interesting finding from this study, as well. The accelerated telomere aging that was taking place in those who developed cancer actually stopped three to four years before the cancer was diagnosed. This suggests that the cancer may only be able to hijack the process once the telomeres become so short. This would help explain why our risk of cancer increases so dramatically as we age. And the risk isn't necessarily linked to our chronological age as much as it is to our biological age, which is directly reflected in telomere length. (EBioMedicine 2015 Apr 13;2(6):591-6)

## How to Keep Your Telomeres Long

Up until a few years ago, hardly anyone was talking about telomeres except for a few of us health geeks and anti-aging researchers. But now, I suspect the pharmaceutical companies are swarming all over this area. I'm sure they're in a mad dash to see who can develop the first anti-aging drug that maintains or lengthens telomeres. But that's not an easy task. Drugs are highly refined chemicals that force very specific actions in the body to take place without regard for what's happening elsewhere. The results are often side effects that can be

more damaging or dangerous than the original problem.

Drugs are nothing like complex natural compounds found in foods and herbs, which can have more of a balancing effect among different systems in the body. Creating a synthetic drug that promotes telomerase and telomere lengthening without promoting cancer and other problems will be a challenge.

Fortunately, we don't have to wait for some pharmaceutical pill. The very latest research has uncovered numerous natural compounds and lifestyle habits that maintain and restore telomere length.

#### **Multivitamins**

Researchers at the University of Utah found that multivitamin use was associated with longer telomeres. Their study involved 586 women between the ages of 35 and 74. Once-a-day multivitamin users on average had 5.1 percent longer telomeres than nonusers. This supports other research indicating that higher intakes of vitamins C and E from food are associated with longer telomeres. (It would be interesting to see the potential difference in telomere length if a more comprehensive multivitamin had been used. The multi used in this study was Centrum, which, in my opinion, has rather low levels of most vitamins and minerals and also contains sugar and quite a few chemical additives.) (Am J Clin Nutr 2009 Jun;89(6):1857-63)

#### Curcumin

Curcumin, the pigment that makes the spice turmeric yellow, can help prevent telomere

shortening and possibly even elongate telomeres.

I've been consuming turmeric and curcumin products for as long as I can remember. It's undoubtedly one of the most beneficial (and well-researched) spices we have. India is the world's largest producer and consumer of turmeric. The smell and taste seems to be everywhere, and not just in food. It's used as a paste for skin lesions, infections, and burns, a poultice for joint pain, and as face paint (to name just a few).

Research has shown that curcumin can lead to longer telomeres in normal cells and it also has the capacity to turn off telomerase production and shorten telomeres in cancer cells, which helps kill them. (J Cell Biochem 2013 Jun;114(6):1257–70)

#### Glutathione

Known as the "master antioxidant," glutathione regulates telomerase activity.

I can remember how excited I was when I first started seriously researching glutathione decades ago. I was trying to find out if there was any common thread among centenarians (people who live to be 100).

I've been fortunate to be able to visit many areas of the world and speak, often with a translator, to some of these individuals. There seems to be areas of the world where the concentration or number of centenarians is greater, including Japan (particularly Okinawa) and Sardinia, Italy.

In search of a common denominator, I found that most of these people remained active and involved with nature. They typically

. . . . . . . . . . . . . . .

followed a diet native to their culture and geographical area, which provided a wide range of antioxidants and, most often, fermented foods. There wasn't one single food that was common to them all.

It was later, when I learned about glutathione, that things really started coming together. The various foods being consumed by these centenarians happened to be rich in this antioxidant.

Glutathione levels have been closely associated with increased telomere length, reduced susceptibility to the diseases of aging, and longevity in centenarians.

More than 20 years ago, I wrote an article titled, "Reversing a Major Biochemical Cause of Aging." I explained how elevated levels of glutathione slowed aging and were an accurate predictor of longevity. I also discussed how reduced levels of glutathione were linked to a shortened life expectancy and degenerative diseases such as AIDS, Alzheimer's, COPD, osteoarthritis, cardiovascular disease, macular degeneration, and cataracts.

Glutathione eliminates oxidative stress, which promotes cellular functions like telomerase activity, increasing the length of telomeres.

One of the primary reasons I drink a whey protein shake each morning is to get more glutathione. You can take glutathione supplements, but they're expensive. Or you can take the precursor to glutathione, N-acetylcysteine, which is far less expensive. Studies show that 600 mg of N-acetylcysteine daily can raise glutathione levels by 38 percent.

I personally think whey protein shakes in the morning are the way to go. Not only do they raise glutathione levels, they help stabilize my blood sugar throughout the morning and give me a tasty way to add any other bulk supplements I'm taking.

You can also boost glutathione levels by eating cruciferous vegetables—either raw, steamed, or fermented. These include Brussels sprouts, cauliflower, broccoli, cabbage, kale, bok choy, cress, mustard, horseradish, turnips, rutabagas, and kohlrabi.

#### **Other Nutrients**

Other nutrients, herbs, and compounds that work as telomerase regulators (increasing telomerase in normal cells and turning it off in unhealthy cells) include vitamin E, fish oil (DHA and EPA), vitamin D3, folic acid, zinc, magnesium, resveratrol, green tea extract, betacarotene, selenium, ashwagandha, ginseng, ginger root, rhodiola, spirulina, and alpha lipoic acid.

Along with turmeric, I take each of these every day and have included all of them in my daily multivitamin/mineral formulation.

#### Exercise

Not surprisingly, many of the healthy habits that prevent disease and improve longevity also happen to regulate telomerase. Take exercise, for example.

One study out of the United Kingdom involved 2,401 twins (2,152 women and 249 men). Their current and past activity levels

# **Build Your Own Air Filter**

This time of year, many people suffer from airborne allergies. Often, when pollen and allergen levels are high, the best relief comes from staying indoors. Being able to retreat to and sleep in a pollen-free area can be a godsend for allergy sufferers.

I've been able to test and use numerous types of air-filtration equipment over the years. Unfortunately, most don't come cheap, and if you're on a tight budget, that can be a problem.

For about \$25–30, though, you can very easily make your own filter system. I did it several times when I had to stay for extended periods in Third World countries with heavy air pollution. The necessary materials weren't always easy to source in those areas, but in this country it's a breeze.

All you need is a 20" box fan, a roll of duct tape, and a 20"  $\times$  20"  $\times$  1" pleated air filter. All of these items can be purchased online or at one of the big-box stores like Wal-Mart, Home Depot, and Lowe's.

I just recently purchased the 20" Lasko box fan at Wal-Mart for less than \$20. Make sure the one you buy has both the fan control and the electrical cord that exit around the perimeter of the fan instead of the back of the fan.

As for the pleated air filter, I suggest buying one with a MERV 11 rating. The MERV rating, which ranges from 1 to 16, determines how effective the filter is at removing air particles. An 11 rating works great for removing pollen, dust mites, mold spores, pet dander, and other allergens. MERV 13–16 filters are typically found in hospital and general surgery settings and would be more expensive and overkill for this purpose. The higher filtration can also dramatically cut back on the air flow.

Once you have everything, simply run a strip of tape all around the filter and attach it to the intake side of the fan. Make sure the filter is placed correctly for the air flow as well. There are generally arrows on the filter to indicate air flow direction.

You can move this system from room to room initially and/or just place it in the allergy sufferer's bedroom. It's quick, easy, works like a charm, and the filter should easily last you all season before it needs to be replaced.

were assessed and then compared to their telomere lengths.

The difference in telomere length of those who were most active (averaging 199 minutes of physical activity per week) compared to those who were least active (16 minutes of physical activity per week) was 200 nucleotides. This equates to the most active subjects having telomeres the same length as sedentary individuals 10 years younger. Those exercising about 30 minutes a day were biologically 10 years younger than those who were more sedentary. (Arch Intern Med 2008 Jan 28;168(2):154–8)

In another study, researchers in Germany compared the blood cell telomere length in 32 runners (aged 20) on the German national track and field team to those of 50-yearold runners who had run since their youth. The telomeres of the older runners were almost identical to those of younger runners. And when the telomere length of the older runners was compared to healthy non-smokers of the same age, they were over 40 percent longer. (*Circulation 2009 Dec* 15;120(24):2438–47)

In another study, researchers in California followed 35 men with localized, early-stage prostate cancer for five years. Ten of those men underwent lifestyle changes which included a plant-based diet low in fat and refined carbohydrates, moderate exercise (walking 30 minutes a day, six days a week), and stress reduction techniques that involved stretching, breathing, and meditation. They also participated in a weekly support group.

At the end of the study, those in the lifestyle change group had an increase in telomere length of about 10 percent. The other 25 men who didn't make these lifestyle changes had telomeres that shrank by nearly 3 percent. Since the researchers looked at telomeres in the blood and not prostate tissue, they felt their findings could be applied to the general population and not just prostate cancer patients. (Lancet Oncol 2013 Oct;14(11):1112-20)

#### Sleep

A lack of sleep can shorten telomeres, so getting plenty of shut-eye is crucial for longevity.

Harvard researchers evaluated the sleep duration of 4,117 women from the Nurses' Health Study. When they compared those getting nine hours of sleep to those getting the least amount of sleep (six hours or less), there was a huge difference in telomere length. The women getting six hours or less had a 12 percent decrease in their telomere length, which was equivalent to nine years of cellular aging. (*PLoS One 2011;6(8):e23462*)

And, it's not just the amount of sleep you get. Sleep quality matters, too.

Another study of 245 healthy women aged 49 to 66 found that those with chronic poor sleep quality had shorter telomeres, as well. (*J Aging Res 2011;2011:721390*)

I've covered the importance of sleep many times, and one of the biggest points I've made is just how crucial it is to sleep in a completely darkened room (or to wear a sleep mask to block out light).

One of the primary reasons you want to always sleep in a dark room is to ensure you have adequate melatonin production. This hormone is produced by the pineal gland in response to darkness. Very little melatonin is produced during daylight hours. In fact, it's almost undetectable in the bloodstream until we are exposed to darkness.

Melatonin isn't just a well-known antioxidant, it also happens to stimulate telomerase activity. You could say that both sleep and the melatonin produced during sleep are essential and key components when it comes to preventing premature aging.

If you talk a lot on a mobile phone, maintaining your melatonin production is even more crucial. Researchers have demonstrated that chronic exposure to microwave radiation from mobile phones causes significant oxidative stress in the brain. In animal studies, they found that treatment with melatonin could prevent the oxidative damage. (J Radiat Res 2008 Nov;49(6):579–86)

Although supplemental melatonin is relatively inexpensive and readily available (at least for now), not everyone needs to take it. For the longest time, it was speculated that melatonin production decreases with age. That idea is now being questioned. It's possible that with age, though, we become less sensitive to its effects.

Also, another important factor that is being overlooked is the everincreasing use of prescription drugs in our society, especially among the elderly. Antidepressants, calcium channel and beta-blocker drugs used to treat blood pressure, and anti-inflammatories are some of the most widely used drugs, and all either deplete melatonin or reduce its production. When you factor in drug use, it's no wonder so many people have a hard time sleeping. Caffeine, tobacco, and alcohol also diminish melatonin levels.

One alternative to supplementing with melatonin is to add melatoninrich foods to your diet. Pineapples can boost melatonin levels by as much as 255 percent, bananas by 180 percent, and oranges by 47 percent.

Drinking tart Montmorency cherry juice (*Prunus cerasus*) can also raise melatonin levels and improve sleep quality. One study found that after drinking tart cherry juice concentrate daily for seven days, test subjects fell asleep more quickly and sleep duration increased by an average of 34 minutes a night. (*Eur J Nutr 2012 Dec;51(8):909–16*)

Other foods that naturally boost melatonin levels, although more moderately than those mentioned above, include barley, ginger, mangosteen, oats, rice, and tomatoes.

# How to Stop Telomere Shortening

Understanding what can be done to increase telomerase and telomere length is only half the equation. It's just as important to understand what habits reduce the enzyme telomerase and shorten telomeres. It should be pretty clear by now that these are habits that directly lead to premature aging and disease.

I've already mentioned pervasive drug use. While some drugs can be life-saving, overuse and over-prescribing are rampant. The detrimental effect many of these drugs have on telomere length is just another reason why treating the cause of a health problem with natural means, rather than treating symptoms with drugs, should be an overriding priority.

Regularly eating processed meat has been linked to telomere shortening, as has drinking sugarsweetened sodas. However, no association has been found between telomere length and artificially sweetened diet sodas or noncarbonated sugar-sweetened beverages. Consumption of 100-percent fruit juice is marginally associated with longer telomeres.

This large study involved 5,309 men and women between the ages of 20 and 65. The average sugarsweetened soda consumption for the study participants was 12 ounces daily. However, 21 percent of those in the study reported drinking at least 20 ounces per day, which coincides with the latest nationwide figures I've seen. The researchers calculated that the

### Alternatives

daily consumption of a 20-ounce soda was equivalent to an average of 4.6 years of aging—which is comparable to the effect of smoking. (Am J Public Health 2014 Dec;104(12):2425–31)

Chronic stress is another huge factor. A recent study involved 58 women who were mothers of either a healthy child or a chronically ill child. The number of years the mothers were caregivers to chronically ill children ranged from one to 12 years. All of the women were given standardized tests to evaluate their levels of stress. The participants with the highest levels of stress had telomeres that were typical of those normally found in women 10 years older. (Proc Natl Acad Sci USA 2004 Dec 7;101(49):17312-5)

Stress is not always easy to remedy. Anti-anxiety medication or antidepressants don't eliminate stress. They may allow you to cope with the stress, but the drugs themselves can shorten life by shortening telomeres.

Research has shown, however, that meditation and exercise can counteract the telomere-shortening effects of stress.

A 12-week Canadian study involved 88 women with an average age of 55. All had survived breast cancer at least two years prior, but were still feeling emotional stress. The women were divided into three groups. The first group went to weekly 90-minute meetings to learn meditation and mindful awareness, and they were to practice yoga every day for 45 minutes. The second group met for 90 minutes each week to discuss their feelings, both positive and negative. The control group only participated in one 6-hour workshop covering stress reduction.

At the end of the study, those who learned and practiced meditation and mindful awareness maintained their telomere length. The other two groups had shorter telomeres. (*Cancer 2015 Feb* 1;121(3):476-84)

Another study has shown that exercise can "buffer" the effect of chronic stress on telomere length. It involved 63 women, some of whom were caregivers to elderly dementia patients. Researchers compared changes in telomere length, along with exercise routines and other factors. They found that 40 minutes of vigorous activity three days a week was enough to buffer the telomere shortening effects of chronic stress. (*PLoS One* 2010 May 26;5(5):e10837)

Not to keep harping on exercise, but it's one of the most important ways to fight biological aging. Please don't discount its importance, or the beneficial effects of all the nutrients and lifestyle factors I've discussed here. It's never too late to reduce your biological age. Begin by taking a high-quality multi every day, if you don't already, then add in N-acetylcysteine and curcumin, if the budget allows. And get moving in your own living room by squatting while watching TV, and increase your activity as you become more fit. Start protecting your telomeres now and reap the benefits for years to come!

Until next month!

Dr. David Will

# **This Month Online**

Visit my website at drwilliams. com. where

you'll find information and recommendations for many of your top health conditions, including:

9)111111(<u>8</u>

- Strengthening Immunity
- Hiatal Hernia, GERD, and other Digestive Concerns
- Cognition and Brain Health
- Weight Loss

Stay in touch between newsletter issues by signing up for my weekly Health E-News. Simply visit **drwilliams.com** and submit your email address.

You can also read my blog, which covers a variety of topics. Here are just a few of the most recent additions:

- Should You Eat Like a Caveman?
- Six Nutrients to Help Control Blood Sugar

Remember, you can read current and past issues of *Alternatives* when you create or access your account at drwilliams.com.

# **Contact Us Here**

- To submit a Mailbox question, suggest an article topic, or make a comment about this month's issue, email feedback@ drdavidwilliams.com.
- For customer service matters such as address changes, subscription renewals, or to order back issues or reports, call 800-527-3044 (Monday through Friday, 9:00 am– 5:00 pm EST) or email custsvc@drdavidwilliams.com.

MAY 2017