DAVID A. KEKICH

MAXIMUM LONGEVITY:

VOL.2

MOVE YOUR WAY TO SUPER LONGEVITY

Contents

"There is no drug in current or prospective use that holds as much promise for sustained health as a lifetime program of physical exercise."

—Journal of the American Medical Association

If Exercise Were a Drug, It Would Dominate the Headlines

We have identified 7 simple steps for you to take to thrive at 100... and beyond. www.MaxLife.org. Exercise, step number two, stands right behind diet on the most effective for healthy longevity list.

There was a time when physicians advised people to take it easy as they grew older. It has now been definitively shown that lack of activity at any age will torpedo your health. People who are inactive show many signs of accelerated aging including: bone loss, poor cardiovascular tone, decreased telomere length, and increased incidence of heart disease, cancer and diabetes as compared to physically active people. And according to one study, the odds of developing Alzheimer's were nearly quadrupled in people who were less active during their leisure time between the ages of twenty and sixty, compared with their more active peers.

Other studies suggest more than 400,000 Americans die each year from poor diet and inactivity. That accounts for 17% of all deaths! Only tobacco accounts for more fatalities, and just barely.

Also, research shows your muscle mass is the major factor in your longevity and in your quality of life. Recently, doctors in England compared the waist circumferences, biceps masses, and body mass indexes of 4,107 men ages sixty to seventy-nine. They found that men with both above average biceps and smaller than average waists were 64% less likely to die within six years than other men in the study.

Exercise reduces disease and death dramatically for *all* major progressive diseases. According to a study involving over 13,000 participants cited by Ray Kurzweil in *The Future of Aging*, the overall death rate for moderate exercisers was 60% less than the sedentary group—and the high fitness group scored much better. Yet some 70% of Americans do not participate in any type of physical activity.

Even Brief Exercise Gives More Life, Produces Genetic Changes and Treats Disease

Those 70% should read the August 17, 2011 issue of *The Herald*. It cited a study from the Institute of Population Science at the National Health Research Institutes in Zhunan, Taiwan published in *The Lancet*. That study found as little as 15 minutes of physical activity a day can reduce the risk of dying by 14% and increase lifespan by three years.

More exercise led to more life gains. Every additional 15 minutes of daily exercise further reduced all-cause death rates by 4%. This trend continued until a person was exercising for 100 minutes a day, after which no further benefit was seen.

More vigorous activity for shorter periods of time had the same effect as less intense exercise carried out for longer. After every session of intense exercise, you grow a little stronger, more alert, energetic, and joyful.

We've had this, and volumes of supporting evidence of the miraculous benefits of exercise for a very long time. However, most people are still uninformed, while some ignore the healthy life-extending data for one reason or another.

Research published in the journal *Cell Metabolism* shows that when healthy but inactive people exercise intensely, even if the exercise is brief, it produces an immediate positive change in their DNA. A genetic activation increases the production of fat-busting proteins and compounds that help stabilize your blood sugar.

Normalizing your glucose and insulin levels by optimizing insulin receptor sensitivity is perhaps *the most important factor for optimizing your overall health and preventing chronic disease*. At some research centers, participants were able to improve their insulin sensitivity an average of 24 percent with as little as three minutes of high intensity training (HIT) per week. (More on HIT later in this book).

Exercise can also treat serious diseases such as cancer. A new report issued by Macmillan Cancer Support argues that exercise should be part of standard

cancer care. It recommends all patients getting cancer treatment should be told to engage in moderate-intensity exercise for two and a half hours every week.

A previous study by Harvard Medical School researchers found that breast cancer patients who exercise moderately for three to five hours a week cut their odds of dying from cancer by about half. In fact, *any amount* of weekly exercise increased a patient's odds of surviving breast cancer. This benefit also remained constant regardless of whether women were diagnosed early on or after their cancer had spread. Finally, research has found that exercise reduces the risk of breast cancer recurrence by about 40%.

Research has also shown that exercise can reduce your risk of dying from prostate cancer by up to 30%.

Remember that even if you're chronically ill, exercise can be a potent ally. That said, if you have cancer or any other chronic disease, you will of course need to tailor your exercise routine to your individual scenario, taking into account your stamina and current health. For example, you may at times need to exercise at a lower intensity, or for shorter durations. But do make a concerted effort to keep yourself moving. As mentioned above, even cancer patients should aim for *a minimum* of 2.5 hours of exercise a week, at moderate intensity, to boost their chances of successful recovery.

Always listen to your body, and if you feel you need a break, take time to rest. But even exercising for just a few minutes a day is better than not exercising at all.

Exercise is critical to help dodge or reduce diabetes as well as most other diseases. According to the American Diabetes Association, exercising moderately for only thirty minutes a day coupled with a 5–10% reduction in body weight resulted in an astonishing 58% reduction in diabetes. They also report that 90% of all people with diabetes are overweight.

Any exercise that gets the heart pumping may even reduce the risk of dementia and slow the condition's progression once it starts, reported a Mayo Clinic study published in the September 2011 issue of *Mayo Clinic Proceedings*.

Eric Ahlskog, M.D., Ph.D., a neurologist at Mayo Clinic said: "We concluded that you can make a very compelling argument for exercise as a disease-

modifying strategy to prevent dementia and mild cognitive impairment, and for favorably modifying these processes once they have developed."

You Either Grow or Regress, Nothing Stands Still

Your cells constantly turn over. You are either growing or decaying. In fact, life's a cycle of growth and decay. Exercise is the master signaler to make growth outbalance decay. Lethargy accelerates decay and suppresses growth.

Exercise and mood share the same chemistry. Lifestyle and exercise signals send billions of growth messages to and from your brain to make you smarter, stronger, and sexier, even with advancing age. So instead of considering it as exercise, think of it as food for growth, agility, independence, looks and youthfulness.

It naturally follows that people who feel better perform better. Why do you think many companies are installing gyms for their employees?

Sure, exercise is tiring for 30-60 minutes if done properly. But then it energizes you the rest of the time. Inactivity may feel good at first, but it makes you tired all day, every day. Activity is in tune with nature. It promotes growth. Inactivity is counter to nature. It decays you. So, you can be lazy and tired and simply surviving—or active and energetic and alive. It's your choice.

And the best news? It takes much less effort to keep your gains than it did to achieve them. The brain can't always accept that, but it's the truth!

Your biochemistry responds negatively to overeating and being sedentary. Idleness signals the decay. Evolution designed you to be active. Don't be fooled by your airconditioned SUV. Genetically speaking, you are still a caveman—hard-wired to move seven days a week and to be fit enough to cope with your environment. Abundance and idleness are foreign to your genome. No matter what you think of exercise, you were still designed to hunt. It's hard-wired into your genome. Act counter to your genetic makeup, and you will decay. Act in harmony with it, and you will thrive.

The problem is our bodies don't know how to read our biggest killer—this new abundance. We lie around and eat ourselves to death. Your mind is not programmed for idleness. It's programmed to be alert to danger and to hunt and to gather.

But civilization, from the evolutionary standpoint, rapidly changed our lifestyle. So now we're suddenly soft, and our bodies rebel. The only reason we live longer is because of modern medicine, less environmental risk factors and low risks of famine. At the end though, we suffer from diseases our ancestors never had... diseases you can mostly avoid.

But you don't have to hunt and gather. Exercise can be fun. Your biochemistry only recognizes your activity. To keep it fun and interesting, and to maximize your results, do a variety of different exercises and intensities and cross-train. And when activity is fun, it becomes addictive. Besides, it's simply not an option if you want to be independent, well, pain-free, energetic and good looking.

So, train like a caveman. That's how you are designed. Why fight nature? Emulate hunting and gathering. Hunting was essentially high intensity interval training (HIIT). It builds muscle and alertness. Do HIIT 2-3 days a week. Gathering simulated activity, or long, slow exercise, burns fat and builds endurance. This could be anything that has you breathing hard while still being able to carry on a conversation for 45 minutes or less.

If you're at 60-65% of your maximum heart rate, you're in a good zone. This best life extending range may be vigorous exercise, but not exhausting for most of your training sessions. Make sure you break a sweat and breathe hard. If not, you're missing the biggest benefits.

Mother Nature programmed us to survive if we are fit and to exit the gene pool if we're not. Exercise was the primary difference among those studied, but your diet and supplements contribute to your muscle mass, too.

Youngsters can get away with lack of exercise more than adults. When you are young, your body is pretty forgiving, and it can take a little abuse. But we need exercise more as we get older because we start to break down. Some think the older you get, the harder it is to exercise. It really isn't though, and the rewards are over the top.

Other than some key stem cells in each organ or your heart, muscle and brain cells, your trillions of cells live for a few weeks or months on average, depending on each cell type. Then they die and are replaced by new cells. Your whole body

is practically replaced every three months. Only you choose whether that "new" body is stronger or weaker—younger or older.

It's Never Too Late

Despite your body beginning to wear out as you age, there is still much you can do to slow and reverse the trend. As part of a long-term study to determine how post-middle age changes in physical activity affect mortality rates, 2,205 Swedish men were initially surveyed from 1970 to 1973 at the age of 50. Each participant was categorized into one of four groups according to their level of physical activity: sedentary, low, medium, or high. Researchers followed up as they turned 60, 70, 77 and 82.

The study team found what you would expect: exercising more translated into lower mortality rates in all exercising groups. But the study also revealed some surprising findings. Those who raised their level of physical activity between the ages of 50 and 60 experienced the same mortality rates as those men who had always maintained high levels of physical activity.

The results were so pronounced that the study team compared the reduction in mortality to people who stop smoking. "Increased physical activity in middle age is eventually followed by a reduction in mortality to the same level as seen among men with constantly high physical activity. This reduction is comparable with that associated with smoking cessation," writes the study team. However, the researchers found that in order for low-level exercisers to "catch up," they would need to maintain regular physical activity for at least five years.

The study, which was recently published in the *British Medical Journal,* has an important underlying message: It is never too late to start exercising, even when you have reached or passed middle age. The study confirms we can reverse some of the damage done in earlier years and become as healthy as people who have maintained a healthy lifestyle for most of their lives.

In fact, researchers at the University of Pittsburgh finally answered the question, "Is physical frailty inevitable as we grow older?" That question preoccupies scientists and the middle-aged, particularly when they become the same people. Until recently, the evidence was disheartening.

A large number of studies in the past few years showed that after age 40, people typically lose 8 percent or more of their muscle mass each decade. Then the process accelerates significantly after age 70. Less muscle mass generally means less strength, mobility and among the elderly, independence. It also has been linked with premature mortality. But a growing body of newer science suggests that such decline may not be inexorable. A study published in *The Physician and Sportsmedicine* gives us new hope.

The new thinking goes like this: Exercise, and you might be able to rewrite the future for your muscles. Researchers found there was little evidence of deterioration in the older athletes' musculature. The athletes in their 70s and 80s had almost as much thigh muscle mass as the athletes in their 40s, with minor, if any fat infiltration. The athletes also remained strong. There was a drop-off in leg muscle strength around age 60 in both men and women. They weren't as strong as the 50-year-olds, but the differential was not huge, and little additional decline followed.

That means the 70 and 80-year-old athletes were about as strong as those in their 60s. So, people don't have to lose muscle mass and function as they grow older. The changes we've assumed were due to aging, and therefore unstoppable, seem actually to be caused by inactivity. And that can be changed.

So, Start Moving Now

You are designed to move. When you exercise, your body signals your cells to grow. These growth signals cause a ripple effect, spreading the growth process to every cell in your body, making you functionally younger. Sedentary muscles trickle chemicals, signaling every cell to wither away. It's simple. You can spend the rest of your life in a powerful healthy body, or you can opt for the lazy way to decay. It's your choice, and by moving regularly, you choose health and power.

Sedentary people who get fit cut their heart attack risk by 75–80% over five years. That's impressive, since heart disease is our single biggest killer. According to the *Harvard Alumni Health Study,* you need vigorous activity to significantly lower your risk from coronary heart disease.

If you're not exercising now, you can double your strength in three months and maybe double it again in three more months. It doesn't matter if you're twenty-five or eighty-five. In fact, muscle growth in the elderly was statistically equivalent to youngsters doing the same amount of training.

Why do you think the elderly lose most of their mobility and flexibility? Normal consequences of aging, right? Not at all. In most cases, it's simply a lack of activity. Many people in their sixties, seventies, and older exercise their way to being in better shape than the average thirty-five-year-old.

So, you're never too old to add strength and flexibility. Researchers also found that percentage of body fat and aerobic capacity was related more to training than to age.

Regular exercise also seems to maintain the levels of hormones that typically decline with age. This is great for your appearance, attitude, and your sex drive. (Did you know sex sends longevity signals to your cells that may postpone senescence and death?) Regular exercise helps to increase DHEA and reduce cortisol, the stress hormone. Some of the other general effects of exercise include increased metabolism and increased lymph flow.

One concern over exercise used to be that it produces bursts of free radicals. This is due to the increased use of oxygen by cells in the body in response to greater exertion. As your metabolic rate goes up, you produce greater amounts of free radicals.

In the short-term this has been shown to be detrimental. But in the long-term, people who practice a regular exercise routine for twenty minutes or more three to seven times per week, have a much greater capacity to eliminate free radicals than someone who does not exercise regularly. This greater ability to handle oxidative stress extends to all other potential free radical producing activities such as: disease, stress, dietary and environmentally source of free radicals. If you'd like to protect yourself from increasing free radicals during exercise, take antioxidants before working out.

If you are over forty years of age, have a chronic disease or any of the following conditions below, check with a doctor before beginning your exercise program.

- any new, undiagnosed symptom
- chest pain
- irregular, rapid, or fluttery heartbeat
- severe shortness of breath
- Undiagnosed significant, ongoing weight loss
- infections, such as pneumonia, accompanied by a fever
- fever itself, which can cause dehydration and rapid heartbeat
- acute deep-vein thrombosis (blood clot)
- a hernia that is causing symptoms
- foot or ankle sores that will not heal
- joint swelling
- persistent pain or a disturbance in walking after you have fallen (you might have a fracture and not know it, and exercise could cause further injury)

- certain eye conditions, such as bleeding in the retina or detached retina (before you exercise after a cataract or lens implant, or after laser treatment or other eye surgery, check with your physician)
- artificial joints

You may consider getting a personal fitness trainer to tailor an exercise program for your specific needs and to keep you motivated and on track. Hire a knowledgeable trainer for at least your first few sessions and periodic tune-ups. He or she will guide you into easing into training if you are not in shape. Training builds muscles quickly, but joints take more time to become strong enough to support your stronger muscles.

The best way to stay on track is to decide what kind of activities or sports you enjoy most. Then mimic the basic movements pertaining to those activities and incorporate those into your routine. Not only will you enjoy training more, but your sports performance should improve as well. Weight training wakes up your neural connections too. This is one reason it improves your performance in your favorite sports. Not only are you stronger and more agile... but you become better coordinated.

Exercise can be generally categorized as either strength training (anaerobic training) or cardio training (aerobic).

Strength Training

Aging cripples us through bone and muscle cell loss, ligaments and tendons drying out and neural degeneration. Strength training prevents and even reverses much of that damage and avoids the suffering that results from the damage. Simply put, weight training makes you look and feel good.

In addition to giving you greater ability to handle oxidative stress, exercise has positive effects on your bone density and tendon, ligament, and joint strength. Resistance training (weightlifting) has been shown to have dramatic effects in preventing osteoporosis and connective tissue damage in both men and women of all ages. This effect is enhanced by hormone supplementation in men and especially in women who experience a faster rate of hormonal decline than men.

Strength training is the most effective way of slowing down and even reversing the aging process, claim William J. Evans and Irwin H. Rosenburg in their book *Biomarkers.* They cover ten key physiological measures of the aging process and go on to say all ten can be improved by strength training alone.

And strength training reduces fat and increases flexibility. In fact, Olympic weightlifters are second only to gymnasts when it comes to flexibility.

It also reverses age-associated change in the gene expression profile of skeletal muscles in aged humans—halfway back toward the young adult profile. Inactivity changes gene expression signatures from young to old. In other words, if done properly, weight training can make you younger. Laziness will prematurely age you.

And finally, many published papers show resistance training is better than aerobic training for insulin resistance. As soon as you exercise a muscle, you increase its insulin sensitivity. Simple exercise increases the blood flow to that muscle. And one of the factors that determine insulin sensitivity is how blood can get there. It has been shown conclusively that resistance training increases insulin sensitivity.

How to Weight Train

Your best benefits do not come from doing a tremendous number of exercises. They come from the intensity of the sets you are doing. In other words, work to your peak performance. Quality, not quantity, of your exercises is what will give you the most out of your workouts. Work up to muscle failure if possible. Your last repetition is your most productive one.

In fact, you can DOUBLE your results this way. In other words, your last repetition, if performed to complete muscle failure, is worth as much as the total of all the preceding reps in your set. So, if your routine includes twenty sets, and if each repetition lasts five seconds, you can double the effectiveness of your training session by adding a little more than a minute and a half to it.

For those who want to maximize results, including cardio health, get a copy of *Body by Science*. Authors are two authorities, bodybuilding powerhouse John Little and fitness medicine expert Dr. Doug McGuff. They present a scientifically proven formula for maximizing muscle development in just 12 minutes a week. It's a weekly high-intensity program for increasing strength, revving metabolism, and building muscle for a total fitness experience. And it's backed by rigorous research with thousands of subjects. They prescribe deliberate single set routines for each body part, with each set lasting 60-90 seconds until complete muscle failure... then moving right on to the next set.

This saves you lots of time while attaining maximum results. It's not for the timid though. Doing it properly demands discipline. It's tough. I know, I did it for almost a year until I realized I gradually backed off on intensity. Now I reverted to two to three sessions a week, using more time to get similar results. As with any exercise program with maximum intensity in mind, gradually work up to it, and under professional supervision if you are just getting started or have been inactive for any extended period.

Don't work the same body part to failure more than every two or three days. Muscles need rest to grow. So, don't overdo it! You have 168 hours in your week. Devoting just three of those hours vastly improves the other 165.

Gradually work up to a good fitness level. Do your routine two to three times a week, stretch for flexibility at the end, and include a variety of exercises—or cross training. Cross training is a good idea for cardio exercise as well. You might integrate yoga or Pilates into your exercise program. They are great for energy, stamina, and flexibility, and they help you avoid injuries. Or you might want to try the Tibetan Rites of Rejuvenation. These are 2500-year-old physical movements that some people say make you grow younger. You can see a demonstration by Ellen Wood of the correct way to perform them at www.howtogrowyounger.com/p/tror.html.

Follow these general guidelines for basic strength training:

- Do strength exercises for all your major muscle groups at least twice a week, but not for the same muscle group any two days in a row.
- Gradually increasing the amount of weight you use is the most important part of strength training.
- Start with a low amount of weight (or no weight) and increase it gradually.
- When you are ready to progress, first increase the number of times you do the exercise (repetitions or "reps"), then increase the weight at a later session.
- Do 8 to 15 reps (a "set"). Rest for a minute and do another set or two.
- Take 2 to 3 seconds to lift and 3 seconds to lower weights. Never jerk weights into position.
- If you can't do more than 8 reps, the weight is too heavy for non-advanced training. If you can do more than 15 reps, it's too light.
- When bending forward, always keep back and shoulders straight to ensure that you bend from the hips, not the waist.

Build Muscle, Not Size

Contrary to popular belief, strength training actually makes you smaller, not bigger. How's that? Because a pound of muscle is five times denser than a pound of fat, and therefore is five times smaller. This means a 150-pound woman with only 25 pounds of fat will easily fit into clothes that a 135-pound woman with 50 pounds of fat cannot. Since one pound of muscle takes as much space as five pounds of fat, resistance training can let you enjoy optimal health and make you look fantastic without losing weight—or even by gaining weight.

Would you be willing to swap thirty minutes a day to lose ten pounds of sloppy body fat for three pounds of lean, strong calorie-burning muscle? Then move more and eat less.

If you're serious about becoming super fit in minimum time, if you want to maximize your training results, or if you are a competitive athlete, I strongly recommend you get a copy of *Ready, Set, GO! Synergy Fitness* by Phil Campbell.

I met Phil at Greta Blackburn's FitCamp in Malibu, Calif. Also, on staff were two of the top personal trainers in the country. In fact, one of the world's biggest fitness equipment companies hired them to represent the company. They were secure with their abilities, and it was well-deserved confidence. Then they met Phil. They said it was a humbling experience and that they knew about twenty-five percent of what Phil knew.

If you're serious about fitness, get his book. Better yet, get to know him. His book taught me tons. His personal instruction taught me the world about training.

Cardio Training

Aerobic training's benefits are endless: improved breathing, more energy, improved heart health and cardiac output, lower blood pressure, decreased serum cholesterol, reduced stress, better sleep, improved mood and mental functioning, improved digestion and bowel function, and more.

Increasing the health of your cardiovascular system comes primarily from aerobic exercise, and this has extremely beneficial effects on overall lifespan. If you recall from the above information, heart disease is the number one killer in the United States. Help avoid it with aerobic, or cardio, training.

A report from the Copenhagen City Heart study shows exciting longevity results from aerobic exercise. Between one and two-and-a-half hours of jogging per week at a 'slow or average' pace increases the life expectancy of men by 6.2 years and women by 5.6 years.

Your aerobic exercise should include activities such as running/jogging, bicycling, elliptical machines, stair-steppers, treadmills, brisk walking, or swimming. It must significantly raise your heart rate for at least twenty minutes to get the maximal effect.

Note that extremely long periods of aerobic activity do not result in greatly enhanced cardiovascular health. In fact, even though you work up a good sweat and fatigue yourself, you may actually be depleting muscle and not fat. Interval training, like the *Sprint 8* that Phil Campbell teaches, is your key to maximum cardio health, muscle tone, speed, endurance, and overall health.

We're not saying you should quit long-distance running if you enjoy it. It's just not necessary for excellent health and may be counterproductive. Any intense sustained exercise for over forty-five minutes could be detrimental, even if you want maximum growth. After about forty-five minutes of strenuous exercise, your body tends to cannibalize itself by using muscle tissue as an energy source. Also, long duration exercise causes your body to store fat rather than to burn fat.

Doing your aerobic exercise first thing in the morning on an empty stomach is an effective way to burn fat. Your body is already depleted of its energy stores from the night before, so it must reach into its reserves (fat) to fuel aerobic activity. So, if you are looking to lose a few pounds, work out first thing in the morning.

If you happen to be a die-hard weight trainer and don't enjoy any of the above activities, you can still get some benefit of aerobic training by lowering the rest time between each of your sets to sixty seconds or less. This will keep your heart rate high enough to get some of the same effects as aerobic exercise.

Resistance training with heavy weight and long rest periods between sets will only give you strength and bone density benefits and not the cardiovascular benefits. In fact, there is some evidence that weight training without aerobic activity can increase your chances of a heart attack or a stroke. So, if you prefer weight training, make sure you get some aerobic activity too.

Okay, so what types of cardio and weight exercise should you do to get these benefits, and when should you do them?

Ideally, you should exercise six to seven days a week for 20 to 45 minutes a session. If you train hard, take one or two days a week off for maximum benefits. A good mix of strength training and aerobic activity will provide the best combination of all the aforementioned health enhancements. You can exercise any time of the day you want, before eating, two hours or more after a meal and two hours or more before bedtime. Strenuous exercise will interfere with your sleep if you do it late at night.

Let's Get Started

Always begin your exercise session with at least five minutes of a warm-up exercise, which will bring your heart rate up to 50% of your maximum (see target heart rate in the next illustration). At the end of your workout, make sure you cool down by walking or continuing to perform your activity at a reduced rate for five to ten minutes. Tapering down speeds recovery, helps rid your muscles of waste and may be good for your heart.

Build up your endurance gradually, starting out with as little as five minutes of endurance activities at a time if you need to. Starting out at a lower level of effort and working your way up gradually is especially important if you have been inactive for a long time. It may take months to go from a very long-standing sedentary lifestyle to doing some of the activities suggested in this volume.

Your plan is to work your way up, eventually to a moderate-to-vigorous level that increases your breathing and heart rate. It should feel somewhat hard to you (level 13 on the Borg scale).

When you are ready to progress, build up the amount of time you spend doing endurance activities first; then build up the difficulty of your activities later. Example: First, gradually increase your time to thirty minutes over several days to weeks (or even months depending on your condition) by walking longer distances, then start walking up steeper hills or walking faster.

The more exertion, the greater the benefits. Be sure to warm up and cool down with a light activity, such as easy walking. And your activities shouldn't make you breathe so hard you can't talk unless you are doing interval training. They shouldn't cause dizziness or chest pain.

Finally, stretch for five to ten minutes at the end of your workout when your muscles, ligaments and tendons are warm and lubricated. There are many reasons to be flexible. If you can't move well, all daily activities, fitness endeavors, athletic performance, strength training and general health can be

compromised. Stretching, especially yoga, improves every other aspect of fitness and preserves your youth as much as anything.

Here's the conventional stretching technique: Breathe deeply, hold your stretch for twenty seconds minimum, and increase your stretch slightly on your exhale. Never stretch too hard. Only go to the point where you feel a mild pull. And do not bounce.

However, an increasingly popular technique is called active isolated stretching (AIS). It's supposed to be a breakthrough that helps you bolster your flexibility, improve flexibility faster and retain the gains you've made. In AIS, you hold a stretch for 1.5 to 2 seconds instead of 10 to 30 seconds as you would in traditional stretching and do 6 to 8 repetitions.

The perfect environment to stretch a muscle is when it's *relaxed*. AIS stretching avoids maximum effort, because overloading the stretch can cause microtears to a target muscle. The creator's research concluded when a stretch is held for longer than two seconds, a protective mechanism called "myotatic stretch reflex" is triggered. This reflex happens in your body under many normal circumstances. However, in elite performance, injury rehabilitation or the desire to instill lasting changes in the body, this reflex is undesirable.

By using repetitions, great amounts of lymph are moved through your body. This improves wound and injury healing as well as detoxification. Additionally, AIS is touted to result in an enhanced immune system and a reduction of aches and pains among other benefits.

Learn more about AIS at www.stretchingUSA.com.

One training aspect most people overlook is balance. Spend a few minutes a day improving it. One way to start is to hold onto a table or chair with one hand, and stand on one foot, then on the other. Then use one finger, then no hands. If you are steady on your feet, progress to no hands, and finally, to doing it with your eyes closed. You also might progress to doing one-legged squats if you are strong and supple.

Ask someone to watch you the first few times in case you lose your balance.

Another way to improve your balance is through “anytime, anywhere” balance exercises. For example, balance on one foot, then the other, while standing during the day.

Intervals – Another Longevity Path

Rather than a long, steady low to medium intensity effort, consider interval training for twenty minutes or more. Interval training can burn up to nine times as much fat than sustained medium intensity exercise. Studies also show it promotes much greater cardiac fitness.

Interval training maximizes fat loss in minimum time, while reshaping your body with lean muscle. It burns up to 50% more calories, not just while you train, but for hours afterwards. For every pound of muscle you gain, you can burn 35–50 calories more per day with zero added effort. So, if you add just one pound of muscle, you will burn up to 18,000 extra calories every year. That means you burn more calories—while you eat, sleep, and relax. Adding four pounds of muscle burns as much calories as running two miles every day. How much fat does a pound of body fat burn per year? Only 700. Muscle also helps prevent diabetes, while making you look great twenty-four hours a day.

Warm-up first for at least five minutes. Then do one to two-minute sprints at 80–90% of your capacity. Then go through a recovery of one to two minutes at 40–50% of your capacity and continue this cycle for twenty minutes. Do this routine three to six days per week. If you prefer longer drawn-out aerobic exercises, by all means do those. The important thing is, get moving.

High intensity exercise though, is the gold standard for fitness... and longevity. It was endorsed by the European Society of Cardiology. A study conducted among cyclists in Copenhagen, Denmark showed it is the relative intensity, and not the duration of cycling, which is most important in relation to all-cause mortality. It's even more pronounced for coronary heart disease mortality. The study concluded that men with fast intensity cycling survived 5.3 years longer, and men with average intensity 2.9 years longer than men with slow cycling intensity. For women, the figures were 3.9 and 2.2 years longer, respectively.

This study suggests a greater part of the daily physical activity in leisure time should be vigorous, based on the individuals own perception of intensity.

In nature, arteries don't wear out, harden, clog or explode. It's inactivity that makes cardiovascular disease is our #1 killer. Then throw in modern diets—and you create a perfect storm.

You now know the risk of developing cardiovascular disease, and type 2 diabetes is greatly reduced through regular physical activity. However, I'll bet you know people who feel they simply don't have time to follow the kind of training guidelines I suggest.

Enter Professor James Timmons and his research team at Heriot-Watt University Edinburgh, Scotland. They studied brief periods of high-intensity interval training (HIIT). Using sixteen sedentary male volunteers, they found doing a few intense exercises, each lasting only about 30 seconds, dramatically improves your metabolism in just two weeks.

The low volume, high intensity training utilized in their study substantially improved both insulin action and glucose clearance in otherwise sedentary young males. The volunteers exercised on stationary bikes, and the concept applies to most forms of exercise.

This is not as good as longer duration sessions, but it's *much* better than nothing. In fact, by doing just *three minutes* of High Intensity Training (HIT) a week for four weeks, you could see significant changes in important health indices.

So, tell your friends to get off their butts, if only for a few minutes a day. Research shows that relatively short bursts of intense exercise—even if done only a total of a few minutes each *week* —can deliver many of the health and fitness benefits you get from doing hours of conventional exercise.

While it's theoretically possible to reap valuable results with as little as three minutes once a week, it's more beneficial doing them two or three times a week for a total of four minutes of intense exertion per session, especially if you are not doing strength training. Doing it more frequently than three times a week can be counterproductive, as your body needs to recover between sessions.

Focus on making sure you're really pushing yourself as hard as you can during your two or three weekly sessions, rather than increasing the frequency. Intensity is the key for reaping all the benefits interval training can offer.

Lack of time is the number one reason people give for not exercising regularly. And lack of results, once they do start exercising, isn't far behind. Interval training every other day is a great solution for both of these common complaints.

In wrapping up, build up to all exercises and activities gradually, especially if you have been inactive for a long time. And if you have to stop exercising for more than a few weeks, start at half the effort when you resume, then build back up to where you were.

Measuring Your Activity

To gauge if you are getting the correct level of activity, there are two common scales currently in use. Target heart rate (THR) is the rate at 50–85% of your maximum ability. This range is where the maximum aerobic advantage is gained from the exercise. The chart below lists the desired target rates for different age groups for well-conditioned individuals who can work at 70–85% of their THR. A simple way to calculate your target heart rate is to subtract your age from 220, and multiply by the desired percentage.

The other method of judging the effectiveness of your workout is a subjective scale, known as the Borg Scale. Using this method, you would determine the amount of work you are doing by the effort you feel from performing the exercise. For aerobic exercise, you should be in the moderate difficulty range or in the high difficulty range for your sprints if you do interval training. For strength training you should feel the exercise is in the high difficulty range. In order to grow stronger from exercise, your intensity has to be greater than your body is used to.

Target Heart Rates (70–85%) **Borg Scale**

Target Heart Rates (70–85%)

Age	Desired Range for Heart Rate During Endurance Exercise *(beats per minute)*
40	126–153
50	119–145
60	112–136
70	105–128
80	98–119
90	91–111
100	84–102

Borg Scale

(Source: *Exercise: A Guide by the National Institute on Aging*)

Physical fitness doesn't have to be overly difficult. All you really need are basic strength and aerobic exercises to be in great shape. You don't need any fancy equipment—a good set of dumbbells can do wonders, but good equipment can make it easier and more fun. There are many excellent books on physical fitness if you need some suggestions on setting up a routine.

Find and do exercises that you enjoy. And never stop learning about fitness. The more you know about the positive benefits exercise gives you, the more naturally you will gravitate towards physical activity. The more you do, the better you will look, feel, and function. Your energy level will shoot through the roof. Exercise will stop being something you know you ought to do and quickly become something you want to do.

This applies to diet and all seven steps in this series. Once you internalize this information and start looking for more, a healthy lifestyle will become a part of who you are. You will naturally gravitate toward health and away from obesity, faded looks, and disease. When you exercise, everything works better. If you're not biologically 15–20 years younger than your chronological age, you are not all you can and should be. And you are cutting into your odds of capturing extreme health and open-ended longevity.

Find the best way to determine your biological age at https://bioviva-science.com/.

You can slow your aging down more than you think. Maximum Life Foundation has determined that diet and exercise alone could increase the average lifespan to over 90 years. Simply taking care of your life and your body might add over fifteen years to your lifespan if you start early enough in life. But it's never too late to start. Starting later still adds quality years.

So, diet and exercise are the two most important things for you to master if your goal is optimal health, longevity, and appearance. For maximum overall results, eat high-quality food within forty-five minutes of training.

How many people do you know whose plan is to get fat, out-of-shape and unhealthy and to shorten their lives? None, right? Yet how many run out and buy the biggest clearest television they can find? Then they buy the softest, plushest sofa or recliner they will fit into. Now they're on their way to

accomplishing the exact opposite of what you know will keep them healthy. Why? Because rather than doing something active, they have figured out a comfortable way to spend their time. Also, people who watch television eat more food. And one more thing, watching TV downgrades their brain's cognitive function. But that's good, right? After all, if they turn themselves and their children into zombies, they'll be fat, happy, and just won't care—at least not until their first heart attack.

If you know such a person, especially one who is important to you, wouldn't you want to share some of this information with him or her? The best expression of love could be to help another reach optimal health. So, share what you have learned in this book and the other six volumes with others. In fact, the best way to learn is to teach. By teaching health and wellbeing, you will gradually internalize this life-saving information until it becomes a part of who you are. Then you're on autopilot to a very long, happy and adventurous life.

Much of your fitness success stems from your attitude toward exercise. I have a separate volume devoted to attitude, but for now here are some mindset tips to help you meet your fitness goals:

- Think about exercise.
- See yourself as healthy and fit.
- Think of exercise as fun.
- Envision the negative effects of your bad habits.
- Celebrate small gains and victories.

Don't Forget Your Brain

Exercising your muscles also improves your brain function by making your neurons more robust while improving blood flow, oxygen, and nutrients to your brain. But consciously exercising your brain is just as important as your body. Your brain atrophies through disuse, just like your muscles. Continue learning new things; play chess or other challenging games; do crossword puzzles; read and participate in problem solving. If you're right-handed, practice doing things with your left hand, and vice versa. Your rewards will be more vitality, greater alertness, enhanced thinking power, better retention, clarity of mind and insurance against dementia.

Here are five simple ways to maximize your brain power:

1. Fuel your body with good nutrition including targeted brain nutrition.
2. Exercise your body regularly.
3. Exercise your brain regularly.
4. Balance your hormones.
5. Reduce and manage stress in your life.

Now read *Volume 3 – Nutritional Supplements that Increase Your Health Span* to see what else you can do to pave your road to open-ended youthfulness. And remember to subscribe to our weekly newsletter, *Longevity News Alert,* for breaking longevity news and advice.

Maximum Life Foundation: www.MaxLife.org