



Discover Your Fountain of Youth

The six key factors to healthy aging

by Frank Sabatino, D.C., Ph.D.

So many people today are preoccupied, even obsessed, with aging and what they can do to slow down and modify the ravages of time. Unfortunately, too much of this concern is directed at medical procedures, injections, and chemical manipulations that primarily address short-sighted notions of superficial beauty. As a result, the relentless pursuit of cosmetic surgical interventions and cosmetic procedures has become the new addiction.

Rather than focusing on positive lifestyle choices and behaviors that can truly improve health and beauty from the inside out, our population continues to look for the risky quick fix while sinking more and more into the quicksand of disease and dysfunction. Drug therapies and medical interventions fool us into thinking that just living longer with disability and dysfunction is the only option; this is a valid testimony to the success of modern medicine. For so many, the quality of life is catastrophically fading with each passing day. It is so imperative that we add life to our years and not just years to our lives. So the question I pose to you is: “Are you living longer or are you just lasting longer?”

The maximum number of years that any species can live is typically referred to as the “maximum life span,” and for humans it is arguably about 120 years. But the actual average lifespan for a population is referred to as “mean lifespan” and is affected by a variety of factors, including how well the infants of that population survive the environments they are born into (infant mortality) and

the consequences of toxins, stresses, genetics, and lifestyle choices of the individuals.

The mean lifespan of humans living in threatening environments is significantly shorter than people in environments with better food supplies and sanitation, even though both groups of humans theoretically have the same maximum lifespan.



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Therefore, a “damage hypothesis” suggests that the damage individually created by your routine life choices can compromise the extent and quality of your life and make you functionally older than your chronological age. However, it also strongly suggests that if your choices

are healthier, less toxic, less stressful, and less debilitating, you can live longer and better.

Following are six key factors, supported by many years of scientific research, that can slow down the aging process, improve the quality of your life, and help you feel and look younger at any age.

1. Calorie Restriction

In all the years of aging research, calorie restriction is the only scientific manipulation that most significantly extends the lifespan of mammals. If you allow rats to eat as much as they want as they run around, play, nibble, reproduce, and do all of their rat-like things, and then

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reduce their typical daily calorie intake by 30 to 40% and feed it to another group of rats, the animals eating the reduced calories will live approximately

50% longer. Interestingly, even though these animals live so much longer, they have less heart, kidney, and joint disease (commonly seen in all mammals with age) than the control animals. Unfortunately, it is difficult to do calorie restriction studies in humans since we live so long. If you take a rat that typically lives two years and you get it to live three years, you have a great study and result.

Although it's never completely accurate to equate animal and human data, if you extrapolate the rat data to human experience, based on a typical recommendation of 2,500 calories per day for men and 2,000 calories per day for women, the benefits of human calorie restriction may be accomplished by consuming 1,500 calories per day and 1,000 calories per day, respectively, for men and women across their entire lives.

More importantly, it makes more sense to focus your eating habits on food that gives you the greatest opportunity for optimal nutritional quality while providing lower calories. This highlights one of the major benefits of a 100% plant-based diet. This diet—composed primarily of fruit, greens, and other veggies, as well as complex carbohydrates, including potatoes, grains, and beans—provides the greatest nutrient density (vitamins, minerals, phytonutrients, and antioxidants) for the smallest amount of calories (because it is lowest in fat and absent in refined sugar and processed food products). Fruits and veggies come in at 100 to 300 calories per pound while a standard Western diet loaded with animal and refined processed foods is hundreds to thousands of calories per pound. So a plant-based approach builds in the best benefits of age-defying calorie restriction while providing the greatest amount of life-enhancing nutrients.

2. Decrease Chronic Inflammation

The inflammatory process is the body's natural protective response against cell/tissue damage and infection. However, when you are exposed to the chronic wear and tear of ongoing toxicity, poor diet, and stress, inflammation can be chronically exaggerated and enhance disability, disease, tissue damage, and aging. Chronic inflammation and aging can be reduced by being attentive to the following factors:

Eat plant foods and avoid the excesses of the standard American diet (excessive animal protein, saturated and trans fats, and processed and refined sugar products).

In health, our blood and essential body fluids tend to be slightly alkaline. Plant foods are primarily alkaline while animal and refined foods are acidic due to the excessive acidity inherent in the amino acid and fatty acid building blocks that comprise their high-protein and fat content. Refined sugar also promotes an excessive inflammatory response. When you consume excessive animal and refined sugar products, you are disturbing the acid-alkaline balance of the body and promoting acid inflammatory change. Over time chronic acidic irritation and inflammation can damage blood vessel walls. In an attempt to heal and modify this damage, platelets, fat, and cholesterol will accumulate in the area of damage and promote plaque formation in the walls of blood vessels. Unfortunately, this plaque formation can cut off oxygen and blood supply to cells throughout the body and organs such as the heart, kidneys, brain, and genitals, promoting the breakdown and aging of the body in general. This creates the foundation for the major diseases of our culture, including heart disease, stroke, diabetes, and cancer.

Avoid junk food (French fries, fried baked goods, and sodas) containing trans-fatty acids.

Fats are composed of building blocks called "fatty acids," and come in two flavors: saturated and unsaturated. Saturated fats are solid at room temperature and are typically seen in the solid fats that marble the muscle meat that meat eaters consume. But saturated fats are also risky because they are solid at body temperature and can solidify into plaques that occlude blood vessels to the heart and brain, and play a major role in the pandemic of heart disease.

Unsaturated fatty acids are liquid at room temperature and are typically found in vegetable oils that exist as liquids on the shelves of your supermarkets. Furthermore, fats have a 3-dimensional structure with fatty acids either in a cis or trans form. Since unsaturated fatty acids in the cis form are more liquid and fluid, more than 90% of all fatty acids in the human body are arranged in a cis, unsaturated form. These fats are a major part of each cell's membrane. The fat allows the membrane to remain dynamic, youthful, and fluid so that essential nutrients and chemicals can travel smoothly in and out of cells.

However, when fats and oils are subjected to the high heat of cooking and barbecuing, the fatty acids are typically hydrogenated (solidified) and trans-formed. The problem is that trans-fatty acids look somewhat the same as cis fats to the body but don't function the same. So when trans fats are put into a cell membrane, the membrane becomes less fluid, more rigid, and aged. As a result, mem-



branes with more trans fats will allow things to enter cells that are normally blocked and may block things that normally would enter. Therefore, when trans fats are increased in

the diet, cells may be more prone to infection, inflammation, disease, and aging. In a study of 700 nurses, those that ate the most junk food with the highest trans fat content (French fries, fried baked goods, and sodas) had the highest levels of C-reactive protein (CRP), 73% more CRP than nurses that consumed the smallest amount of these products. CRP is a protein produced by the liver in response to inflammation and can be measured in a routine blood test as a marker for increased systemic inflammation.¹

Increase the consumption of foods with anti-inflammatory essential fatty acids and decrease your intake of foods with pro-inflammatory essential fatty acids.

There are basically two essential fatty acids (EFA) that the body is incapable of making and must be supplied by dietary intake. One is linoleic acid, which is the foundation of the family of omega-6 fatty acids, and alpha-linolenic acid, which is the foundation of the omega-3 family of fatty acids. EFAs play a major role in balancing the immune system by producing compounds called “prostaglandins” that control the body’s ability to produce fever and inflammation in response to infection and tissue injury / damage.

Linoleic acid is converted in the body into the polyunsaturated fatty acid, arachidonic acid, which is the main fatty acid in the membranes of all animal cells, including humans. Therefore, arachidonic acid is found primarily in foods derived from animals (milk, cheese, and meat). Unfortunately, arachidonic acid promotes the production of prostaglandins that increase inflammation. Refined sugar also promotes the production of the same prostaglandins that increase inflammation.

Alpha-linolenic acid produces two other unsaturated fatty acids called EPA and DHA, which produce prostaglandins that decrease inflammation and are found in a variety of plant foods, including sea vegetables such as algae.

To minimize inflammation, adopt the following dietary recommendations:

- Eat more foods containing omega-3 fatty acids, including deep greens and sea greens, whole grains, fermented and organic soy products, walnuts, avocados, and

hemp, chia and flax seeds.

- Decrease and /or eliminate animal foods, including milk, dairy products, meat, and eggs.
- Eliminate refined sugar products.
- Decrease the intake of caffeine and other acid-forming xanthines that are found in coffee, chocolate, and tea by opting for decaffeinated products whenever possible.

Decrease body weight and body fat.

Aside from the typical problems with obesity and weight gain, fat cells also release chemicals that promote inflammation. Fat cells synthesize a class of proteins called “cytokines,” unique chemical messengers that influence and modulate the function of the immune system. Several of these fat-generated cytokines—including tumor necrosis factor-alpha and interleukins, along with macrophage colony stimulation factor—can stimulate the immune system and increase inflammation.²

3. Decrease Free Radical Damage and Increase Antioxidants

Oxygen is a double-edged sword. In the presence of oxygen our cells are capable of generating 18 times more energy than if oxygen is not present. However, oxygen is also an unstable element (lacking two atomic particles: electrons) that seeks, shares, and steals these electrons in a variety of chemical reactions in the body in its quest for chemical stability. As a result of these reactions, there are a variety of chemicals created with unpaired electrons, referred to as “oxidants” (reactive oxygen species) or “free radicals.”

Free radical damage is involved in a wide variety of diseases and dysfunctions in the body. A devastating and classic example of free radical production occurs when fats and oils are subjected to high heat. These fats are exposed to oxygen and undergo the process of oxidation or, more specifically, lipid peroxidation. In the process of lipid peroxidation there is the creation of, arguably, the most dangerous oxidant and free radical known to man: the lipid peroxy radical. Free radical damage and lipid peroxidation are part of a well-accepted hypothesis of aging. The barbecuing of meat, with its extremely high heat, may be the worst producer of lipid peroxy radicals and free radical damage.

Any chemical that eliminates free radicals is referred to as an “antioxidant” and can potentially prevent or retard the aging



process. Plant-based foods, especially beans, berries, and many fresh fruits and vegetables, have the greatest concentration of antioxidants, and the greatest potential and capability to absorb and minimize the damaging effects of free radicals. The longest lived cultures on planet earth—the Okinawans from Japan, the Icarians from Greece, and the Sardinians—all consume diets naturally high in antioxidants.

To minimize free radical damage:

- Eat an abundance of fresh fruits and vegetables, including berries and beans.
- Avoid cooking with oil of any kind. You can sauté vegetables if necessary in sodium-free, organic vegetable broth.
- Avoid cooking or barbecuing higher fat foods, such as meat and dairy.

4. Reduce the Glycation of Protein

Sugar in our blood is also a double-edged sword. Sugar in the form of glucose provides the raw material for the energy needs of the body. But when sugar stays chronically elevated it can promote devastating breakdowns, disease, and aging. A classic example of this potential risk is seen in diabetes as elevated blood sugar, which promotes heart disease, kidney disease, nerve damage, and the loss of eyesight. It is now well known that sugar can also interact with proteins in the body to produce chemicals that promote aging.

Proteins in the body are complex molecules that are made up of multiple strings of amino acids wound together like the strands of a rope. Protein is not a static molecule. The protein strands are in a constant state of motion,



vibrating at unique frequencies like the strings of a guitar. So that the healthy function of all proteins (hormones, digestive enzymes, structural proteins in our muscles, skin, and eyes) relies on unrestricted,

dynamic mobility and oscillation.

When sugar is elevated over time, sugar molecules can crosslink the strands of protein and restrict their vibration and motion. Sugar molecules can interact with the amino acids of proteins in a process called “glycation” (or glycosylation) of protein to eventually produce specific chemical by-products called “Advanced Glycosylation End-products” that promote tissue breakdown and aging, and are

aply named by the acronym (AGE).

These end-products decrease hormone and enzyme function, and promote collagen damage to skin, blood vessels, and the lens of the eyes, all leading to flaccid, aged skin, plaque formation in the blood vessel walls, and the formation of cataracts. They also contribute to beta amyloid plaques in the brain and the neurofibrillary tangles in the brain found in people having Alzheimer’s disease.

To minimize the potential damage and aging associated with AGE production:

- Decrease or eliminate the consumption of refined sugar, especially high-fructose corn syrup, which provokes glycation 10 times greater than glucose.
- Eat primarily low-glycemic-impact fruits and vegetables (raw, steamed or boiled).
- Decrease the use of processed foods and foods that have been browned by cooking or aging. Decrease the caramelization and browning of food, especially carbohydrate and protein foods, which includes toasting of breads, excessive browning of potatoes, and barbecuing of meats.
- Cook any foods containing animal fat and protein more slowly over low heat.

5. Increase Physical Activity

Exercise that includes endurance, strength, and flexibility training has a significant impact on aging, and can promote healthy, youthful changes that will improve the quality of life at any age. As people age there is a typical loss of muscle mass called “sarcopenia.” Since muscles store energy and provide structural support and strength, when muscle mass declines there can be significantly more fatigue, weakness, and a dangerous loss of balance that can result in more falls and potential broken bones. At the University of Pittsburgh, 120 people 55 to 80 years of age that walked 40 minutes a day, three times a week



for a year, compared to a group that just did stretching and weight training, had a significant increase in the mass of the hippocampus, a memory center in the brain. Elderly men and women that walked on a treadmill or rode a sta-

tionary bike 30 to 40 minutes a day, 4 to 6 days a week for 12 weeks increased their thigh muscle (quadriceps) growth and mitochondrial energy factories of their muscles by 50%.

Physical activity:

- Decreases insulin resistance, promoting better blood sugar regulation and less potential glycation.
- Decreases body fat and reduces inflammation.
- Increases muscle mass and counters the dangerous sarcopenia that typically occurs as you get older.
- Promotes an increase in cellular antioxidants (catalase and SOD).
- Promotes an increase in nerve growth factor, supporting the challenging idea that we are capable of sprouting new growth in the structure of the brain even when we get older.

As a simple, effective program that you can do at almost any age, walk on land, on a treadmill, or in water for 30 minutes at least 5 times a week, do resistance weight training activity 2 to 3 times a week involving the 8 major muscle groups of the body (chest, shoulders, back, arms front and back, legs front and back, and buttocks) plus your core, and do some lengthening / flexibility work daily.

6. Decrease Stress and Increase Psychological Poise

Chronic stress has a profound impact on aging, and can promote biological aging and damage that far exceeds your chronological age. These aging changes manifest at the deepest level of cellular function: in the structure and function of our genes.

At the ends of chromosomes there are repeating units of DNA (telomeres) that stabilize chromosomes and genes as cells divide and grow. When cells divide, the telomeres also have to maintain their length and the enzyme telomerase is the catalyst for the lengthening of telomeres during the growth and repair of cells. But as cells age, the enzyme



telomerase typically declines as telomeres get shorter and worn away by the effects of repeated cell division.

Chronic stress promotes cellular aging by directly shortening telomeres and reducing the amount of telomerase in body cells. Telomere length and telomerase activity were measured in the white blood cells of mothers taking care of healthy children and chronically stressed mothers taking care of chronically ill children. The longer a woman took care of a sick child the more stressed out she was and the shorter her telomeres were. Based on the length of telomeres and telomerase activity, the most stressed out women aged 10 years more than the least stressed women of similar chronological age.³


Chronic stress:

- Increases the adrenal stress hormone cortisol, which increases belly fat and inflammation and decreases the length of telomeres.
- Increases sleep deficiency, which also increases cortisol and oxidative stress.
- Increases insulin resistance, increasing blood sugar and potential glycation, and the production of age-producing AGE.

To counter the effects of chronic stress:

- Perform stress management relaxation techniques daily, including meditation and breathing awareness activities. Breathing is our most primal function. Following and being aware of the pattern of your breath in a relaxed state is a simple and profound way to engender a deeper sense of relaxation, internal awareness, and psychological poise. Even short periods of meditation (12 minutes a day) have been shown to significantly increase telomerase activity in over-stressed caregivers.⁴
- Get involved in activities that cultivate an awareness of your inner world and true self, including yoga, tai-chi, and qi gong.
- Spend more time outdoors away from excessive electronic environments and devices by going to parks, mountains, and beaches.
- Make an effort to get at least 6 to 8 hours of sleep a night.
- Discharge and release chronic negative emotions, including anger, fear, and depression, which promote disability, inflammation, and chronic stress.
- Even if it means reinventing yourself, explore creative outlets and activities that challenge you mentally and

help you express your greatest interest and passion. Discover and adopt behaviors that give you great pleasure, pique your interest, and make you timeless. People who participate in passionate interests typically age better.

- Maintain supportive social contacts and socialization with family, friends, and loved ones on a regular basis.
- Make love and participate in intimate sensual, sexual activity as often as possible. There is no reason to surrender your interest in intimacy and sexual behavior at any age. The joy and release of neurotransmitters, including dopamine and oxytocin, from sexual activity promote a sense of well-being and connection. 

References

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