



**TOP** | **Anti-Aging**  
**10** | **Breakthroughs**  
**of 2018**

**Top 10  
Anti-Aging  
Breakthroughs  
of 2018**

# Top 10 Anti-Aging Breakthroughs of 2018

Published by Online Publishing & Marketing, LLC

A Publication from *Aging Defeated*

## **IMPORTANT CAUTION:**

By reading this special report you are demonstrating an interest in maintaining good and vigorous health. This report suggests ways you can do that, but - as with anything in medicine - there are no guarantees.

The author, editors and publishers of this report are not doctors or professional health caregivers. The information offered in the report is not meant to replace the attention or advice of physicians or other healthcare professionals. Nothing contained in this report is meant to be personal medical advice for any particular individual.

Every reader who needs treatment for a disease or health condition should first get the advice of a qualified health care professional.

The author, editors and publishers believe the information in the report is accurate, but its accuracy cannot be guaranteed. They are not responsible for any adverse effects or results from the use of any of the suggestions described in the report. As with any health treatment or lifestyle change, results of the treatments described in this report will vary from one person to another.

© Copyright 2018 by Online Publishing & Marketing, LLC, P.O. Box 1076, Lexington, VA 24450

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the copyright owner.

Printed in the United States of America

## **ABOUT THE AUTHOR**

**Lee Euler** has written about natural health options for more than 20 years. His books and articles have been read by millions. He is the Executive Producer of the acclaimed documentary series, *Awakening from Alzheimer's*, editor and publisher of 4 newsletters, *Cancer Defeated*, *Aging Defeated*, *Healthy Perspectives*, and *Brain Health Breakthroughs*, and the author of numerous books. He has contributed to the publications of many top doctors including Julian Whitaker, David Williams, and William Campbell Douglass, and others.

# Table Of Contents

Chapter 1	
<b>Using This Could Triple Your Chance of Living to 100</b> .....	page 1
Chapter 2	
<b>PLP For Hair and Skin</b> .....	page 3
Chapter 3	
<b>Simple Trick Makes Your Genes Ten Years Younger</b> .....	page 5
Chapter 4	
<b>This Natural Molecule Ranks High Above All Others for Adding Years to Life</b> .....	page 8
Chapter 5	
<b>Age-Old Wisdom Could Extend Your Life in the 21st Century</b> .....	page 10
Chapter 6	
<b>Why Fasting May Be the Key to a Long, Healthy Life</b> .....	page 12
Chapter 7	
<b>Whole Body Vibration Slows Down Aging</b> .....	page 14
Chapter 8	
<b>Are Lab-Grown Stem Cells The Future of Anti-Aging?</b> .....	page 16
Chapter 9	
<b>Regenerative Medicine: Don't Just Look Younger, Become Younger in Every Cell</b> .....	page 18
Chapter 10	
<b>Coffee Increases Longevity and Reduces Disease Risk</b> .....	page 20

# Chapter 1

## Using This Could Triple Your Chance of Living to 100

In Finland, almost every household has a sauna. Now sales are growing strongly in the US, where more than a million units have been sold to health-conscious Americans.

And who can blame them? Not only does this relaxing activity exercise the heart, give you more youthful looking skin and make you feel good, but a regular **sauna** reduces the risk of chronic disease and adds years to your life.

Here's the evidence. . .

### **Lowers death rate by 40%**

The body responds to the heat stress produced in the sauna room by increasing the heart rate, just as it would if you were engaged in moderate exercise.

This no-effort cardio workout dilates blood vessels, improves blood pressure, supports the health of the endothelium — the inner lining of blood vessels — and enhances peripheral circulation.<sup>1</sup>

In a study of more than 2000 middle-aged Finnish men conducted over a period of 20 years, researchers found those taking four to seven sauna sessions a week *halved* the risk of dying of heart disease and enjoyed a 40% reduced risk of dying from any cause, compared to those bathing for just one session a week. The authors concluded that “sauna bathing is a recommendable health habit.”<sup>2</sup>

### **Boosts heat shock proteins**

Heat stress not only benefits the cardiovascular system, it also activates genes that increase production of heat shock proteins. These molecules carry out essential functions inside the cell.

One of them is to maintain the structure (folding) of cellular proteins so they can carry out their normal activities. Faulty protein folding can lead to many disease processes.

Even worse, damage from free radicals cause these proteins to clump together and create further damage. This clustering of proteins has been linked to neurodegenerative diseases such as Alzheimer's, and contributes to aging.

Heat stress from regular saunas can repair proteins inside the cell, prevent clumping and lower health risks.<sup>3</sup>

Heat stress also activates FOXO3.

### **FOXO3 – the anti-aging master gene**

FOXO3 is a gene that's associated with human longevity. It regulates many other genes that help you withstand and recover from the kind of biological stresses that come with aging.

This master gene increases the expression of other genes that make DNA repair enzymes, thus preventing the kind of damage that could

lead to cancer. FOXO3 also increases the body's own production of antioxidants to fight free radicals, and improves the function of the immune system.

FOXO3 also increases the expression of genes that cause senescent cells to self-destruct.<sup>3</sup>

Senescent cells (also known as zombie cells) are damaged cells that no longer grow or carry out their functions. They spew out harmful chemicals that injure other cells, creating more zombies like themselves.

Eventually senescent cells accumulate, damaging organs and tissues. They're linked to heart disease, type 2 diabetes, osteoarthritis and cancer.

Extolling the virtues of saunas, Sara Gottfried, M.D., board-certified gynecologist and anti-aging author, states that with such huge benefits, "You won't be surprised to learn that when you make more FOXO3, you triple your chance of living to one hundred."<sup>4</sup>

If you'd like to be part of this growing health trend, there are many options to choose from: Steam or dry heat saunas (radiant heat), wood stove or electric, indoor or outdoor, infrared and far infrared. The latter don't achieve the same high temperatures as radiant heat varieties but their heat reportedly penetrates the body to a greater extent and confers more health benefits.

References:

1 - <https://www.ncbi.nlm.nih.gov/pubmed/21951023>

2 - <http://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2130724>

3 - <https://www.foundmyfitness.com/reports/sauna-longevity.pdf>

4 - Younger by Dr Sara Gottfried, Vermilion, March, 2017

# Chapter 2

## PLP For Hair and Skin

### Treatment Re-Grows Hair, Eliminates Wrinkles and Speeds Up Recovery from Injuries

Rafael Nadal, Tiger Woods, Fred Couples and many other high profile athletes have benefited from an unusual therapy that reduces pain and speeds up healing.

Whether it's a sprained knee, pulled hamstring or chronic tendon injury, it's a way of harnessing the body's own healing power to allow sports stars to return to competition more quickly.

But its use isn't limited to pain and injury. It's producing remarkable results in the regrowing thin hair and restoring youthfulness to aging skin.

Angelina Jolie reportedly used the treatment to boost collagen and smooth out wrinkles.

It's called **Platelet Rich Plasma Therapy (PLP)**.

Platelets, which help blood to clot, are one of the four main components of blood, along with red cells, white cells and plasma. But in addition to clotting factors, platelets also contain large numbers of proteins called **growth factors**. These are important for tissue repair and regeneration and are the cornerstone of PLP therapy.

PLP involves drawing blood from a patient and separating the platelets from the rest of the blood components by spinning the blood in a centrifuge. This more concentrated solution of platelets is suspended in the plasma (the liquid portion of blood) and injected back into the patient at the desired location.

### PLP helps to Regrow Hair

Eleven patients who achieved poor results taking the hair growth drugs minoxidil (Rogaine) and finasteride (Proscar) received four PLP injections into the scalp over a period of eight weeks.

As a result, they saw hair thickness increase by 31%. At the start of the study, ten hairs fell loose when the researchers pulled gently on the scalp. By the end of the study nine participants out of the eleven lost no hairs on the pull test.<sup>1</sup>

But can PLP really count on getting similar results? That's the question a group of researchers from Finland and Spain asked.

To find out, they looked at six previous medical studies involving 177 patients with androgenetic alopecia, the most common form of hair loss in men and women. Overall, the results of these human trials showed a significantly greater number of hairs on the



scalp and increased hair thickness.<sup>2</sup>

Canadian researchers also carried out their own investigation looking at 13 trials. Again, they confirmed an improvement and described PLP therapy as “promising.”<sup>3</sup>

## Smooths Wrinkles, Too

When Kim Kardashian posted pictures of her own PLP treatment, some wit nicknamed it “the vampire facial,” apparently because it involves numerous small injections in the face that create unattractive wounds for a short time.

The platelet injections are designed to stimulate the growth of collagen and elastin fibers to make the skin look smoother and clearer.

Researchers from Turkey tested the procedure on ten volunteers, concluding it to be “an effective procedure for facial skin rejuvenation.”<sup>4</sup>

A research group from Egypt published their findings on a single injection of PLP on wrinkles in March, 2017.

Twenty people with different types of wrinkles were included. They were assessed before and again two months after the treatment. A wrinkle measurement scale showed an improvement of more than one-fourth.

The most pronounced benefits were seen in the nasolabial folds (smile lines) that run between the sides of the nose to the corners of the mouth. They concluded that PRP is “capable of rejuvenating the face and producing a significant correction of wrinkles...”<sup>5</sup>

Not only is PLP becoming more widely used as a non-surgical way to relieve pain and to treat a variety of acute and chronic injuries, but cosmetic procedures have also grown in popularity with plastic surgeons.

As more celebrities reveal they’ve tried it, no doubt it will grow even more strongly with the public too.

**If you want to know more, here are some resources for finding and evaluating a PRP doctor:**

<http://www.prptreatments.org/directory/>

<http://regenorthoclinic.com/choose-best-doctor-perform-prp-injections/>

<http://www.bennettorthosportsmed.com/prp/cost/>

### References:

- 1 - <https://www.ncbi.nlm.nih.gov/pubmed/25136212>
- 2 - <https://www.ncbi.nlm.nih.gov/pubmed/28296142>
- 3 - <https://www.ncbi.nlm.nih.gov/pubmed/27152474>
- 4 - <https://www.ncbi.nlm.nih.gov/pubmed/25065381>
- 5 - <https://www.ncbi.nlm.nih.gov/pubmed/27474688>

# Chapter 3

## Simple Trick Makes Your Genes Ten Years Younger

When it comes to aging, there's a lot you can do to create healthy tissue systems that will add years to your life. Withering into old age is NOT inevitable.

In fact, there's one simple thing you can do that turns back the clock on aging genes and dying cells – and even stops the frequency of those brain blips known as “senior moments.”

It all starts with putting this one thing on your body... With it you can stave off old age and stay young—and youthful looking—for years.

The number one thing to put on your body to reverse aging is **muscle mass**.

**Sarcopenia** refers to the loss of skeletal muscle mass and function that happens naturally as we age. In the later stages it's usually referred to as **frailty**.

A variety of factors bring on frailty, including decreasing hormone levels and nutritional deficiencies. Frailty is also one of the most prominent causes of disease and loss of independence in older adults.<sup>1</sup> And it's dangerous, leading to hip fractures that most people don't survive by more than a year.

This means that the key to staying young is to combat the loss of muscle mass with strength training (aka weight lifting or resistance training). If you keep a high level of muscle mass on your body, you directly increase your

resistance to disease, restore your genes and keep your brain young.

### Resistance to disease

The amino acids in protein are the building blocks of life. All your vital organs and tissue rely on protein synthesis to regenerate after damage and also to create the antibodies that fight off infection and disease.

**Muscles are your protein warehouses**, so the more muscle you have the more protein your body has to repair and maintain itself. When your muscle mass deteriorates, as in sarcopenia, it leaves you vulnerable to chronic illnesses and pathological conditions.<sup>2</sup>

Research published in the *British Medical Journal* studied 8,762 men aged 20-80 for just under 19 years. The researchers found that **men with more muscle mass lived longer and had a lower rate of cancer than men with less muscle**. This held true even after the states were adjusted for cardiovascular health, age, body mass index, lifestyle and other factors.<sup>3</sup>

### Longevity genes and strength training

Contrary to popular belief, genes are not destiny. Genes are more like knobs and switches that are influenced by your lifestyle.

A study by Melov et al. found that **strength training reversed the gene expression in 179 genes to a youthful level.**<sup>4</sup> The workouts actually made these genes about ten years younger.

That's a remarkable finding, and one we should all take advantage of for longer life.

Another study found strength training lengthened telomeres, which also reverses aging at the genetic level.<sup>5</sup>

## **More muscle mass means a younger brain**

Strength training keeps your brain matter as well as your body robust.

Like the muscles in your arms and legs, brain matter ages and weakens over time. By late middle age, the brain develops lesions in the white matter, affecting how parts of the brain can send and receive necessary information. The result can be cognitive decline and dementia.

A study published in the *Journal of the American Geriatric Society* showed resistance training twice a week **reduced the progression of these brain lesions.**<sup>6</sup>

## **What about cardio?**

Resistance training provides the some of the same benefits as cardio workouts, such as stronger heart and lungs and increased bone density.

You don't have to stop short bouts of cardio exercise like running or jogging if you enjoy them. But they aren't effective at building muscle, so you'll want to add in resistance training as well.

## **How to build muscle to stay young**

If you've never been to a gym or you think weight lifting is only for "meatheads," don't worry. You don't have to be a bodybuilder to get the benefits of muscle mass.

It's a myth that you have to work out ten or twelve hours a week to get results.

It's unnecessary, and even harmful, to strength train for more than an hour at a time. Aim for 20 to 60 minutes of strength training three to four times a week. That's it. Most strength trainers recommend working out every other day.

The idea that women will get "bulky" if they lift weights is also untrue. Unless you're bench pressing 200+ pounds, your muscles will not become huge. They'll just be strong and youthful.

Below are some ways to start strength training so you can keep your body and mind young:

- If you have any medical conditions be sure to discuss a new exercise regimen with your doctor.
- Always use good form when lifting weights. Get yourself a trainer, at least at the beginning when you're learning.
- Begin with bodyweight exercises like push-ups, pull-ups, lunges and squats to begin building muscle. Be sure your weekly routine engages all the muscle groups.
- You can also start with 3-5 pound weights, weighted ankle cuffs and vest, or resistance bands.
- As you gain strength, increase the weight and duration of your training sessions.

- If you don't have access to a gym, check out some of the workout videos on YouTube.

Add functional moves, like getting up from the floor. This helps with flexibility and strengthens muscles you need every day.

One final point: Good nutrition accounts for about 80% of youthful cells and tissue. Strength training will help leverage the existing benefits of a healthy diet.

So in addition to exercise, eat whole foods, drink a lot of water, avoid sugar in all forms and consume alcohol in moderation. The best nutritional science these days calls for a low-carb, high-protein and high-fat diet (yes, fats are good for you – especially those in coconut oil, avocado, nuts and eggs).

#### References:

- 1 - Sarcopenia in older adults. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4066461/>
- 2 - The underappreciated role of muscle in health and disease. <https://www.ncbi.nlm.nih.gov/pubmed/16960159>
- 3 - Association between muscular strength and mortality in men: Prospective cohort study. <http://www.bmj.com/content/337/bmj.a439>
- 4 - Resistance exercise reverses aging in human skeletal muscle. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0000465>
- 5 - Strength training and the biomarkers of aging. [https://www.youtube.com/watch?feature=player\\_embedded&v=NFswpRSXxjA](https://www.youtube.com/watch?feature=player_embedded&v=NFswpRSXxjA)
- 6 - Resistance training and white matter lesion progression in older women: Exploratory analysis of a 12-month randomized controlled trial. <http://www.ncbi.nlm.nih.gov/pubmed/26456233>

# Chapter 4

## This Natural Molecule Ranks High Above All Others for Adding Years to Life

The close relationship between depressed levels of this natural peptide and the progression of aging could hardly be more convincing.

As a potent antioxidant and detoxifier, with key roles in the immune system and reliable links to longevity, this may be the one, single factor we need more than any other.

It's called Glutathione (gloo-ta-thigh-own), and is often called the "Vital Force" of our bodies because the lack of this critical molecule speeds up aging.

### Levels fall in all organs after age 45

Glutathione is made from three amino acids - glycine, glutamic acid and cysteine. It is found in all cells.

Although the body is able to manufacture glutathione, its ability to do so drops sharply after the age of 45. Our glutathione counts fall in all organs including the brain, heart, lungs, liver and eyes.

This means it is less able to carry out essential functions which protect us from degenerative diseases and aging.

As the body's main antioxidant, glutathione prevents a surfeit of the free radicals (oxidative stress) that have been linked to 80 degenerative diseases. Not only does

glutathione pack its own antioxidant punch, but it also recycles other better known antioxidants like vitamin C and E so they can be used again and again.

In the immune system it's needed for T and B lymphocytes to function fully, as well as activating T cells.

Glutathione is also at the cornerstone of the detoxification process. The most important organ for this purpose - the liver - both stores and sends it to other areas of the body as needed.

### Extends the life of insects and animals

Raising glutathione by 50 to 100% in mosquitoes extended their life by 30% to 38%.<sup>1</sup> Elevated levels also increased the lifespan of hamsters and rats.

Scientists at Montreal General Hospital Research Institute demonstrated a remarkable 30% increase in the life of mice. The mice eating a special diet designed to boost their increased glutathione lived to what would correspond to 80 human years compared to mice fed a standard diet that lived the equivalent of 55 years.<sup>2</sup>

Exciting results in the lab can sometimes prove disappointing when tested in humans. But not when it comes to glutathione.

## Better health and longer life

Long-time glutathione researcher Calvin Lang from the University of Michigan measured the amount of glutathione in the blood of 33 people aged 60 to 79. Those with higher levels had fewer illnesses, reduced cholesterol, lower body mass index and blood pressure, and better physical health than those with lower levels.<sup>3</sup>

Dr. Lang followed this up with a five-year study of 87 healthy women aged 60 to 103. His conclusion was that "high blood glutathione concentrations and excellent physical and mental health are characteristics of long-lived women."<sup>4</sup>

Researchers from Odense University, Denmark compared glutathione levels in 41 people aged 100 - 105 to those of 52 people aged between 60 and 79. Glutathione proved to be higher in the centenarians than in the younger group, with the highest amounts found in the most active among the group.<sup>7</sup>

A team from the University of Naples, Italy, carried out a similar study. Serum glutathione measurements were compared in three age groups of healthy people - under 50, 70 to 99, and 100-plus.

As expected, the youngest had greater concentrations than those in the next age group up. However, the centenarians had *higher* levels than those aged 70 to 99.

The researchers concluded that oxidative stress – free radical damage – was lower in the centenarians because of elevated antioxidants.<sup>5</sup>

Commenting on this study, cardiologist and author Thomas E Levy, M.D., wrote, "This evidence further suggests that the higher glutathione levels in the oldest group may actually explain their longevity."<sup>6</sup>

## How to increase your levels

Glutathione can be obtained from food, with the best source being undenatured whey protein. Other good sources are cruciferous vegetables such as Brussels sprouts, broccoli, cabbage and kale. These foods do not actually contain glutathione, but contain its precursors – the amino acid building blocks the body needs to make glutathione itself.

Glutathione production can also be raised by taking supplements. The most reliable nutrient to achieve this is N-acetyl cysteine (NAC).

It's generally considered ineffective to take the complete glutathione molecule because the digestive system breaks it down. That's why nutritional experts advise taking the precursors.

However, two forms of glutathione supplement have been developed that are proven to increase body levels. One is called liposomal – tiny spheres made from phospholipids. The other is called Setria, manufactured through a proprietary fermentation process.

You can read a full report on Glutathione from our sister company, [Green Valley Natural Solutions](#). They offer a glutathione-boosting supplement that contains a clinical dose of NAC plus a group of other nutrients that can add years to your life.

Click the link below to learn more:

<https://greenvalleynaturalsolutions.com>

References:

- 1 - <https://www.ncbi.nlm.nih.gov/pubmed/3797424>
- 2 - <https://www.ncbi.nlm.nih.gov/pubmed/2692897>
- 3 - <https://www.ncbi.nlm.nih.gov/pubmed/7730904>
- 4 - <https://www.ncbi.nlm.nih.gov/pubmed/12486409>
- 5 - <https://www.ncbi.nlm.nih.gov/pubmed/9670869>
- 6 - GSH Master Defender by Thomas E Levy MD
- 7 - <https://www.ncbi.nlm.nih.gov/pubmed/12675104>

## Chapter 5

# Age-Old Wisdom Could Extend Your Life in the 21st Century

The ancient Chinese must have been very smart.

Described in Shen Nong's Classic of Materia Medica sometime around 110 BC, a plant called Huang Qi was said to have anti-aging functions.

And now, over 2000 years later, cutting edge science is showing they were right. It really does seem to have the ability to roll back the years.

In the West, this Chinese herb is best known as **astragalus**.

### A Popular Herb With Huge Health Benefits

Used in traditional Chinese medicine for thousands of years, the dry root of *astragalus membranaceus* has become one of the world's most popular herbal remedies.

After aging for four to seven years, the roots are ground up and made into extracts, tonics and teas.

More than a hundred different compounds with potential health benefits have been discovered in the whole root such as amino acids, trace elements, polysaccharides, saponins, flavonoids and phenolic acids.

The list of health properties found by researchers is considerable and includes abilities to:

- boost immunity
- promote wound healing
- protect brain cells
- stimulate metabolism
- improve insulin sensitivity
- reduce inflammation
- act as an antioxidant
- act against viruses
- protect the liver
- inhibit cancer cells
- protect the cardiovascular system

With such a list of rewards, the potential ability of astragalus to hold back the ticking clock of aging should come as no surprise.

### Shorter Telomeres Linked to Disease and Aging

Many scientists today believe the best way to ascertain healthy aging is by looking at the length of telomeres – the caps that protect the ends of chromosomes which shorten when cells divide.

The length of telomeres varies with each person. Those with shorter telomeres are thought more likely to suffer chronic diseases and to age faster.

For instance, the DNA telomere length of white blood cells (LTL) was shown to shorten with aging in 3037 people aged 79 and above, particularly in men.

LTL shortening is correlated with decreased life expectancy, dementia, and other age-associated diseases.<sup>1</sup>

## **A Potent Telomerase Activator**

Fortunately, there is a solution. Telomeres can be lengthened by activating the enzyme telomerase.

And that's where astragalus comes in.

The herb is able to extend telomeres because it contains a group of compounds called astragalosides, one member of which is called cycloastragenol. This was found by two separate research groups to be “a potent telomerase activator” in rodent studies.<sup>2,3</sup>

Other extracts of the dried root slowed down the shortening rate of telomeres in human lung cells by reducing DNA damage and improving the cells' ability to repair themselves.<sup>4</sup>

A different extract purified from astragalus root was capable of “increasing average telomere length and decreasing the percentage of critically short telomeres and of DNA damage” in connective tissue cells of mice.

Researchers also found that dietary supplementation improved indicators of glucose tolerance, osteoporosis, and skin fitness.<sup>5</sup>

Another lab study which looked at the polysaccharide component of astragalus concluded that it had “significant antioxidant and anti-aging effects.”<sup>6</sup>

As a powerful telomerase activator, and with its well-known and researched health benefits, astragalus holds out great hope that it can have rejuvenating effects in humans, just as the ancient Chinese believed.

[Genesis](#), the telomere-boosting formula created by our sister company, Green Valley Natural Solutions, contains a clinical dose of the astragalus root, standardized to contain 5% cycloastragenol — along with 7 other anti-aging ingredients. You can [read more about it here...](#)

References:

<https://www.ncbi.nlm.nih.gov/pubmed/26239175>

<https://www.ncbi.nlm.nih.gov/pubmed/27412909>

<https://www.ncbi.nlm.nih.gov/pubmed/25095809>

<https://www.ncbi.nlm.nih.gov/pubmed/19839736>

<https://www.ncbi.nlm.nih.gov/pubmed/21426483>

<https://www.cabdirect.org/cabdirect/abstract/20103148474>



# Chapter 6

## Why Fasting May Be the Key to a Long, Healthy Life

It's no secret that cutting back on calories is great for your waistline, but now anti-aging researchers are finding that consuming less food on a regular basis may be a highly effective strategy to live longer and stay healthier.

The practice is known as intermittent fasting. What it means is that you fast or eat very little on a few days each week, and then eat normally during the remaining days. One such program involves eating only 500 calories on two days each week.

You can reap a multitude of anti-aging benefits when you practice intermittent fasting. The most impressive one in terms of longevity appears to be an increase in telomere length. If you're new to this concept, telomeres are a protective coating or cap at the end of each chromosomal DNA strand found in your cells.

These protective caps help to preserve your DNA by preventing DNA strands from fraying or clumping together, which can lead to cellular damage, the precursor to disease and accelerated aging.

There's another reason telomeres, and specifically their length, are so important to your longevity.

Your body is continually replacing old and damaged cells with healthy new ones at a rate of millions per second. This process is known

as replication, and each time a cell makes a new copy of itself, its DNA telomeres become a little bit shorter. Eventually, the telomeres become too short to do the job of protecting your cellular DNA. What follows is cell damage, disease, and aging.

This is where exciting studies on fasting and telomere length come into play. . .

### **Animal studies show 20% increase in lifespan**

For instance, Spanish researchers studied the effects of reducing caloric intake of mice by 40% from the time they were three months old until the end of their lifecycle. The researchers found that a calorie-restricted diet lowered the telomere shortening rate when compared to mice fed a normal diet, which led to a 20% increase in lifespan.

In addition, these calorie-restricted mice experienced a healthier life, with a reduction in the incidences of chromosome abnormalities, cancer, osteoporosis, and elevated glucose levels.

Dr. Richard Weindruch, an expert on calorie restriction and longevity, found that when mice are fed half their normal number of calories, they survive to either an extended lifespan of 32 to 45 months or — better yet — a maximal lifespan of 40 to 53 months.

As in the previously mentioned mouse study, the calorie-restricted mice experienced better overall health, with, for example, a tumor incidence rate of 38% vs. 78% in mice allowed to eat all they wanted. Improved immunity, healthier liver enzyme production, and superior memory and learning ability were also observed.

## Works for monkeys, too

Building on the mouse study, Dr. Weindruch began an experiment to test whether a calorie-restricted diet would produce similar impressive results in rhesus monkeys. The answer was a resounding yes.

After an 11-year span, the calorie-restricted monkeys had lower triglyceride and insulin levels compared to the free-feeding controls. They also showed better neuronal activity, higher energy levels, and reduced body fat.

In 2009, a full 19 years after the experiment began, the control animals began dying from age-related diseases, with a death rate of 37%. The calorie-restricted monkeys, on the other hand, had a death rate of 13%. For reference, rhesus monkeys typically live from 27 to 40 years.

Do these results carry over to humans?

Many doctors support intermittent fasting in humans as a way to extend telomere length, reduce body fat, improve brain health, and lessen oxidative (free radical) damage to healthy cells.

But it's important to remember that health isn't all about food. Unhealthy lifestyle factors like smoking, substance abuse, lack of exercise, and chronic stress play a significant role in your health and longevity. Intermittent

fasting will only go so far if you are living an unhealthy lifestyle.

Dr. Elizabeth Blackburn is a Nobel Prize winner for her discovery of the role of telomeres and telomerase on the aging process, and the author of *The Telomere Effect: A Revolutionary Approach to Living Younger, Healthier, Longer*. Her research and that of her colleagues show that sleep quality, exercise, dietary choices, and even exposure to certain chemicals profoundly affect your telomeres in either a positive or negative way.

What's more, according to Dr. Blackburn, chronic stress, negative thoughts, strained relationships, and even living in an unhealthy neighborhood can eat away at your telomeres.

So here's the takeaway message: Intermittent fasting may be great way for you to naturally attain longevity with fewer health problems along the way. Before you begin, consult your healthcare provider to discuss your health and fitness level and make sure you're well enough to fast.

References:

<http://hplusmagazine.com/2015/03/30/fasting-might-make-our-cells-more-resilient-to-stress/>

<http://www.prweb.com/releases/2015/06/prweb12809773.htm>

<https://www.tasciences.com/what-is-a-telomere/>

<http://www.sciencemuseum.org.uk/whoami/findoutmore/yourbody/whatdoyourcellsdo/howoftenareyourcellsreplaced>

<https://www.sciencedaily.com/releases/2013/01/130123133852.htm>

<http://www.promegaconnections.com/calorie-restriction-the-fountain-of-youth/>

<https://www.amazon.com/Telomere-Effect-Revolutionary-Approach-Healthier/dp/1455587974>

# Chapter 7

## Whole Body Vibration Slows Down Aging

### Standing in the Right Place Fights Aging

If you think that to slow down aging you have to engage in a complicated program of strenuous exercise custom-designed to fit your age and abilities, think again.

Yes, some sort of physical activity like daily walking is a good idea for staying younger, but researchers have found there's a pretty simple way to merely stand in place – in the right place – and engage in a powerful anti-aging process.

Not many people take advantage of this discovery, but maybe we should.

Where is the right place to stand?

On a vibrating platform.

The activity is called whole-body vibration. It usually involves standing on a vibrating platform for about 20 minutes a day. Some of these vibrating machines also allow you to sit or lie down while you vibrate. The vibrations penetrate your muscles, which then tighten and relax many times every second. And some people report that at the end of a vibrating session they feel as though they had exercised.

The secret to whole-body vibration's anti-aging benefits, say researchers, is the way it affects your inner physiology – increasing bone

strength and toning muscles while influencing (in a good way) blood sugar levels and body fat.

Lab tests at the Medical College of Georgia at Augusta show that 20 minutes a day of vibrating may shrink your waistline and reduce the harmful inflammation that results from the substances released by belly fat. It can also limit fat deposits in the liver. All those changes can lead to a body that functions at a younger, healthier capacity.

### Stimulates Release Of a Youth Hormone

The researchers note that one of the biggest benefits offered by whole-body vibration is the fact that it stimulates the release of extra amounts of the hormone osteocalcin from the skeletal system. This hormone is a protein manufactured by bone cells called osteoblasts.

Along with making bones stronger, osteocalcin (which we wrote an article about [here](#)) also possesses important anti-aging properties. It strengthens muscles and helps to keep blood sugar from getting too high. In the brain, it can shore up your memory and learning abilities as you get older.

## You Got to Keep on Movin'

The Georgia researchers have been surprised to learn that simple movement, especially the kind of rapid movement produced by vibrating the body, seems to be the key to making the cells in our body healthier. In their investigations, they found that merely shaking muscle and bone cells in a petri dish made them produce increased amounts of health-boosting natural chemicals.

Aside from your muscles and bones, research shows that whole-body vibration does good things for the pancreas, the organ that makes insulin and plays a key part in controlling blood sugar. The vibrations make the pancreas more sensitive to sugar levels in the body and help it to adjust insulin levels more closely matched to the body's needs.

Other benefits of whole-body vibration include:

- Improving the health of people who are pre-diabetic or diabetic. A daily vibrating session may lower inflammation, improve insulin sensitivity and even reduce problems with frequent urination when you are pre-diabetic or diabetic.
- Helping people who have had strokes walk better. When combined with a walking program, whole-body vibration helps stroke victims regain their walking abilities faster.
- Possibly aiding senior citizens in being able to keep their balance better and avoid falls.
- Reducing pain and depression in people with fibromyalgia.

All of the research that now shows great benefits for whole-body vibration also fits well with the evidence that sitting down for long periods of time ages the body and is a serious health hazard. The separate findings look like flip sides of the same coin.

When you sit still for too long, you're depriving your cells of the shaking and moving around they need to keep their physiological functions operating at their peak. Too much time in a chair encourages senility in the body's organs.

A great thing about whole-body vibration is that you can get started fairly cheaply – vibrating platforms can be bought for as little as a hundred dollars. And just about no matter what physical shape you're in, you can start using a vibrating platform immediately. They appear to be safe for nearly everyone, but if you have balance problems or you're unsteady on your feet or prone to fainting, caution is advised.

References:

<https://www.ncbi.nlm.nih.gov/pubmed/28323991>

<https://www.ncbi.nlm.nih.gov/pubmed/28323991>

<https://www.ncbi.nlm.nih.gov/pubmed/29031023>

<https://www.ncbi.nlm.nih.gov/pubmed/28938021>

<https://www.ncbi.nlm.nih.gov/pubmed/29019274>

<https://www.ncbi.nlm.nih.gov/pubmed/28779930>

## Chapter 8

# Are Lab-Grown Stem Cells The Future of Anti-Aging?

### Stem Cells Are Now Being Grown in Labs Are Lab-Grown Stem Cells the Future of Anti-Aging?

Doctors in the the field of regenerative medicine inject undifferentiated **stem cells** into their patients to regenerate fresh cells, which in turn creates more robust tissue and organ systems in the body. These new cells can help reduce the symptoms of aging such as memory loss, aches and pains, wrinkled skin and degenerative diseases like cancer and dementia.

Up until recently, the primary treatment method has been to extract stem cells from a patient's own adipose tissue (body fat) and inject them into the patient's aging cells. This process is called **autologous stem cell therapy**.

The stem cells found in body fat are also sometimes taken from placentas and umbilical cords... But on the frontiers of stem cell research, scientists are discovering new ways to access stem cells without using embryonic cells.

There are two kinds of stem cells in the human body: Somatic cells **that** replenish damaged tissue to heal torn skin or repair organs after disease or infection and embryonic stem cells

(ESCs), which are pluripotent, meaning they can divide into any kind of cell depending on the signals they receive.

ESCs are the kind of stem cells needed to turn back the “aging clock” inside each cell to achieve the desired anti-aging effect. Originally, ESCs were isolated from the structures that become human embryos, which caused a lot of controversy when people first heard about it.

### Induced Pluripotent Stem Cells, The Future of Regenerative Medicine

But now, evolving technology allows scientists to create **induced pluripotent stem cells (iPS)** in labs across the country. To put it simply, iPS technology creates cells similar to embryonic cells (ESCs) without a human embryo.(1)

Researchers have been making strides in this field for some time, but only recently have they discovered how to create iPS blood stem cells. Having a healthy population of blood stem cells, which naturally deplete over time, can help to keep the immune system strong, maintain bone marrow health and decrease the risk of myeloid diseases (cancers of blood, bone or plasma).(2)

## Two Breakthrough Studies

A team of researchers at Boston Children's Hospital in Massachusetts started with adult cells and reprogrammed them into iPS cells. They then modified these new stem cells with seven genetic transcription factors, which control the genes in the cells.

The next step was to inject the modified cells into mouse host and wait 12 weeks. After that time the researchers discovered the iPS cells had transformed into progenitor cells, which are like stem cells in that they can become several kinds of cells.

The difference is that progenitor cells are already on a path to becoming a specific kind of cell. In this case, the progenitors cells are capable of becoming both blood and immune cells.(3)

Another group of researchers, who published their findings in the April 2017 issue of the journal *Nature*, took a more direct approach to creating iPS cells by omitting the first step of generating the iPS cells from adult cells.

Instead, they extracted blood stem cells from the endothelium (blood vessel lining) of mature mice and inserted four transcription factors directly into the cells. The researchers then put these modified cells in an environment designed to mimic human blood vessels, which encouraged the blood stem cells to multiply.(4)

Then, they injected these new blood stem cells into mice whose immune systems and blood cell count had been severely reduced by radiation. The stem cells continued to multiply in the mice and they received from their depleted states, going on to live another year in the lab.(5)

The places technology can take us are astounding, aren't they?

It's important to remember that, while these breakthroughs are quickly changing the face of regenerative medicine and anti-aging fields, it will be a while before these kinds of cells are approved for use in humans.

But, at the rate technology moves, it may not be long before we can enjoy stem cell treatments that restore skin texture, energy levels and immune systems to fight off the cumulative effects of long living.

### References:

- 1 - Induction of pluripotent stem cells from adult human fibroblasts by defined factors. [http://www.cell.com/cell/abstract/S0092-8674\(07\)01471-7?\\_returnURL=http%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0092867407014717%3Fshowall%3Dtrue](http://www.cell.com/cell/abstract/S0092-8674(07)01471-7?_returnURL=http%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0092867407014717%3Fshowall%3Dtrue)
- 2 - The epigenetic basis of hematopoietic stem cell aging. [http://www.seminhematol.org/article/S0037-1963\(16\)30071-3/fulltext](http://www.seminhematol.org/article/S0037-1963(16)30071-3/fulltext)
- 3 - Haematopoietic stem and progenitor cells from human pluripotent stem cells. <https://www.nature.com/nature/journal/v545/n7655/full/nature22370.html>
- 4 - Conversion of adult endothelium to immunocompetent haematopoietic stem cells. <https://www.nature.com/nature/journal/v545/n7655/full/nature22326.html>
- 5 - Lab-Grown Blood Stem Cells Produced at Last. [https://www.scientificamerican.com/article/lab-grown-blood-stem-cells-produced-at-last/?WT.mc\\_id=SA\\_FB\\_HLTH\\_NEWS](https://www.scientificamerican.com/article/lab-grown-blood-stem-cells-produced-at-last/?WT.mc_id=SA_FB_HLTH_NEWS)

# Chapter 9

## Regenerative Medicine: Don't Just Look Younger, Become Younger in Every Cell

### Don't Just Look Younger, Become Younger in Every Cell

Everyone undergoes the aging process, known as “senescence” or biological aging. As time goes by, our cells lose their ability to divide and grow, and so bones and tissues begin to deteriorate....

Leading to wrinkled skin, poor concentration and “senior moments,” pain, fatigue, a weakened heart, reduced sex drive, degenerative diseases and all the other conditions we associate with old age.

But science has uncovered ways we can turn back time inside our cells and reduce the accumulated effects of aging.

Read on to discover how you can put them to work for yourself...

The branch of medicine concerned with turning back aging is known as **regenerative medicine**.

Professionals in this field are discovering ways to use **stem cells** to regenerate fresh cells, thereby reversing the aging process on a cellular level. Stem cells are undifferentiated cells, meaning they are the building block of all other cells. In mammals there are two kinds of stem cells:

- **Embryonic stem cells (ESCs)** are isolated from the structures that become embryos. ESCs are **pluripotent**, they can become any kind of cell depending on the signals they receive. They divide again and again to create complex tissues and organs.
- **Somatic or adult stem cells** are undifferentiated cells that divide and multiply to replenish damaged tissue. These are responsible for things like healing skin wounds or repairing organs after disease or infection.

As we age, the body produces fewer stem cells, thereby speeding up the aging process.

### Rejuvenating Old Tissue With Stem Cells

For use in anti-aging treatments, stem cells are isolated and injected into the patient's cells. The presence of stem cells transports old cells back to an embryonic state. Once in this state they regain the ability to differentiate into fresh tissue cells, essentially “rewinding the clock of development” inside the cells.<sup>1</sup>

The words “stem cells” may seem controversial because early attempts at stem cell research and therapy involved human embryos. But technological advances now allow us to

- Use other sources for anti-aging stem cell treatments and
- Generate embryonic stem cells in a lab

Let's take a look at two examples of stem-cell treatments.

## Mesenchymal-Derived Stem Cells (MSC)

MSC are found in placentas, umbilical cords, adipose tissue (body fat), lungs, bone marrow, blood and teeth.

Among all the sources for MSC, research suggests that MSC from umbilical cords are the most effective because they have the highest rate of cell proliferation and clonality (being genetically identical, important so that your body doesn't reject them).<sup>2</sup>

However, other studies show adipose-derived stem cells are also effective at reversing aging.<sup>3</sup>

In many cases, doctors will take a patient's own stem cells from these sources and inject them into the patient's own aging cells. This is called **autologous stem cell therapy**.

## Induced pluripotent stem cells (iPS)

Induced pluripotent stem cells (iPSs) are a hot field of study — the most cutting-edge development in regenerative medicine.

iPS technology is the equivalent of cloning embryonic cells (ESCs), but without the use of a human embryo. **Working in a lab, scientists can generate pluripotent stem cells that are similar to ESCs from somatic cells.**<sup>4</sup>

This advancement removes at least some of the ethical concerns surrounding stem cell sources.

## Where to find stem-cell treatments for age management

Stem cell treatments are not available in the United States. Currently, Americans must go abroad to receive treatment.

Clinics practicing regenerative medicine claim that stem-cell anti-aging procedures can essentially reset the aging clock by 10 to 15 years, reversing many of the conditions mentioned above.

However, please be very careful when choosing a regeneration facility and do your research to ensure you select a reputable clinic with licensed and professional medical staff who follow approved treatment protocols for these procedures.

### References:

1 - Immortal stem cells for anti-aging therapies. <http://www.lifeextension.com/magazine/2010/6/immortal-stem-cells-for-anti-aging-therapies/Page-01>

2 - Comparative analysis of human mesenchymal stem cells from bone marrow, adipose tissue, and umbilical cord blood as sources of cell therapy. <https://www.ncbi.nlm.nih.gov/pubmed/24005862>

3 - Stem cells collected from fat may have use in anti-aging treatments. <https://www.sciencedaily.com/releases/2017/02/170217095947.htm>

4 - Induction of pluripotent stem cells from adult human fibroblasts by defined factors. [http://www.cell.com/cell/abstract/S0092-8674\(07\)01471-7?returnURL=http%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0092867407014717%3Fshowall%3Dtrue](http://www.cell.com/cell/abstract/S0092-8674(07)01471-7?returnURL=http%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0092867407014717%3Fshowall%3Dtrue)



# Chapter 10

## Coffee Increases Longevity and Reduces Disease Risk

### America's Favorite Hot Beverage Could Add Years to Your Life

Several decades ago medical research linked coffee to higher rates of heart disease and cancer.

But these findings were later shown to be flawed.

In 180-degree turnaround, the most recent research suggests that coffee has many positive health attributes and could have life extension properties.

In 2015 a group of researchers from the National Cancer Center in Tokyo recruited 90,914 healthy Japanese people aged 40 – 69 and followed them for over 18 years. During this period there were 12,874 deaths. The findings were published in the *American Journal of Clinical Nutrition*.

They were pretty dramatic.

### 3-4 Cups a Day Reduces Risk of Death By Nearly One-Fourth

The researchers found the more coffee people drank (up to a maximum of four cups), the lower their risk of death. Compared to non-drinkers, those who drank less than one cup a day had an eight percent reduced risk.

One or two cups lowered the risk by 15%, and three or four cups saw a 24% reduction in risk. Above that level, the benefits start to diminish. For those drinking more than five cups a day the risk decreased by only 15%. So apparently there is such a thing as too much.

The researchers concluded that “the habitual intake of coffee is associated with lower risk of total mortality and three leading causes of death [heart disease, cerebrovascular disease, and respiratory disease] in Japan.”

### One Study After Another Finds It's True

Other research tends to confirm the Japanese findings. In August this year, two major studies were published in the *Annals of Internal Medicine*.

In the first, several research teams led by the University of Southern California tracked five ethnic groups totaling 186,000 Americans aged 45 – 75. The study lasted 16 years.

Compared to non-drinkers — and irrespective of ethnicity — those drinking a single cup of coffee a day had a 12% reduced risk of death while those drinking three cups a day lowered their risk by 18%.

And this is interesting: The results held for coffee with or without caffeine.

Study leader Dr. Veronica Setiawan said, “We found that coffee drinkers had a reduced risk of death from heart disease, from cancer, from stroke, respiratory disease, diabetes and kidney disease.”

## Same Conclusion Holds in Europe

In the second study, a multinational group of researchers followed 520,000 people aged 35 or more from ten European countries. Like the previous group, this one was studied for a 16-year period.

The scientists found that men drinking three cups of coffee a day had an 18% reduced risk of death. For women the figure was 8%.

According to lead researcher Dr. Marc Gunter, “We found higher coffee consumption was associated with a lower risk of death from any cause, and specifically for circulatory diseases, and digestive diseases.

“Drinking more coffee was associated with a more favorable liver function profile and immune response.

“This [study], along with the consistency of the results with other studies in the US and Japan gives us greater confidence that coffee may have beneficial health effects.”

## Death Rate Cut By Nearly Two-Thirds in The Middle Aged

In another recent study presented at the European Society of Cardiology conference in August, 19,896 participants with an average age of 37.7 were followed up for ten years. During this period there were 337 deaths.

The researchers found those that drank at least four cups of coffee a day had a 64% lower risk

of dying from any cause compared to those who never or hardly ever drank coffee.

Cardiologist and lead author Dr. Adela Navarro believes that antioxidants in the form of anti-inflammatory polyphenols are most likely responsible for the effect.

These population studies cannot absolutely prove that coffee can add years to your life. But the consistent results sure make it look that way.

At this point the scientists are unable to point to what particular compounds are responsible for the “elixir effect.” But more than likely these details will be cleared up.

As a cautionary note, I’ll mention that years ago a similar “longitudinal study” involving a large population, and lasting many years, seemed to prove that coffee increased cancer risk. But then it turned out that coffee drinkers simply tended to smoke more. (This is an old study and smoking was far more common at the time.)

References:

<https://www.ncbi.nlm.nih.gov/pubmed/25762807>

<https://www.ncbi.nlm.nih.gov/pubmed/28693036>

<https://www.ncbi.nlm.nih.gov/pubmed/28693038>

<http://www.dailymail.co.uk/health/article-4683366/How-three-cups-coffee-day-extend-life.html>

<https://www.escardio.org/The-ESC/Press-Office/Press-releases/higher-coffee-consumption-associated-with-lower-risk-of-death>