THORNE

Healthy Aging Support Guide

The current healthy aging movement focuses much more on supporting heathy aging ***from the inside out***.

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Introduction

Although aging is a necessary part of life and hopefully brings with it some wisdom, your biological age does not need to keep up with your chronological age. While in the past, "anti-aging" techniques were primarily designed to conceal the signs of aging, the current healthy aging movement focuses much more on supporting healthy aging from the inside out.

By employing certain lifestyle techniques, you have it within your power to slow your body's aging processes. With Thorne's extensive catalog of healthy aging supplements and educational articles and podcasts, we are uniquely positioned to be your partner in the search for your personal fountain of youth.

Take a moment to view this short video for some inspiration before setting out on your journey.

Glossary of Terms

What is biological age versus chronological age?

With the increase in interest in aging healthfully, even among Gen Alphas (born in 2010 or later) as young as 14, the concept of biological age opposed to chronological age has become more clearly understood. Chronological age is measured in years – how old you turned on your last birthday. On the other hand, biological age is assessed by your physical and mental functions. Your biological age – also known as your physiological age – is influenced by various factors. And while genetics play a significant role, other factors that influence your biological age include:

- Diet and nutrition
- Exercise
- Stress
- Exposure to environmental and other toxins
- Chronic conditions

All of these factors will be addressed in this guide. You can read more about your biological vs. chronological age at ***Take 5 Daily***.

What is senescence?

One of the most significant biological processes of aging is cellular senescence, which literally means "the process of growing old." To maintain health, most cells in the body continually divide to replace old and damaged tissue. Eventually cells age, stop dividing, and die. When aging and damaged cells die, your immune system normally clears them from your body. It is estimated that in adult humans 100 billion cells die each day and are replaced by new cells.

Senescent cells, on the other hand, are malfunctioning cells that have stopped dividing but do not die and remain in the body. Damage to cells caused by disease or environmental factors, like cigarette smoke, can cause cells to become senescent.

These senescent cells can accumulate in your body, causing tissue damage and contributing to chronic health problems.

You can read more about cell senescence in this *Take 5 Daily* article from Mayo Clinic: Turning Back the Clock on Aging: Senescent Cells and Old Age.

What are sirtuins?

Sirtuins are protein enzymes that regulate numerous cellular functions, including aging, inflammation, detoxification, stress resistance, fat and glucose metabolism, circadian rhythms, and mitochondrial biogenesis.

In humans and other mammals, there are seven different sirtuins (SIRT-1 through SIRT-7) that are involved with different functions – and are either directly or indirectly related to longevity.

It's likely you know about the research that shows that restricting calorie intake can slow the aging process. This is in part because calorie restriction stimulates sirtuin activity – the discovery that started all the buzz about sirtuins.

Learn more about natural methods of stimulating sirtuin activity in this *Take 5 Daily* article, How These Little Known Proteins Impact Healthy Aging.

What is DNA methylation?

DNA methylation refers to the extent to which areas on your DNA contain methyl groups. Recent research points to the importance of DNA methylation in health and the aging process. Methylation has great significance in many processes in the body. Too much or too little methylation can affect many aspects of your daily health and life. In the last few years, researchers have found correlations between the aging of different bodily tissues and the extent of DNA methylation – known as "epigenetic clocks."

DNA methylation can be influenced not only by age, but by a wide range of environmental and biological factors, including your diet, your physical health, your microbiome, your mental/emotional health, and environmental factors like exposure to tobacco smoke and other pollutants.

You can read more about the importance of methylation in this *Take 5 Daily* article, What is Methylation and Why Is It Important?

What are telomeres?

Another age- and health-associated biomarker is telomere length. Telomeres are proteins on DNA found at the end of chromosomes; they are responsible for protecting DNA's structure and function. Shorter telomeres are associated with poorer health and older biological age. Although telomeres naturally degrade and shorten as one ages, research points to several factors that might speed up that process. Some factors – like genetics – are uncontrollable, but you can control other factors that adversely affect telomere shortening.

Read more about factors that affect telomere length in this *Take 5 Daily* article: What's Your Actual Age? Chronological vs Biological Age.

The Effects of Diet and Nutrition on Aging

Diet and nutritional status play major roles in overall health, particularly the way your health fares as you age. We've long known that diet quality and eating patterns can be modifiable risk factors for chronic diseases, such as cardiovascular disease, diabetes, and obesity. What food choices might you want to limit or avoid, and which ones can you rely on to fuel for the future?

Dietary choices that contribute to aging

Standard Western diet

The standard Western or American diet is characterized by large portions, fried and processed foods, and excessive sugar, sodium, and fat. It is limited in essential nutrients such as dietary fiber and antioxidant compounds often coming from fruits, vegetables, and whole grains. Fast food restaurants and convenience food choices saturate the food environment, making these options easy and accessible despite their typically lower nutrient values. Fast and convenience foods tend to be higher in added fats, sugars, and sodium as flavor enhancers and preservatives.[1,2] Sugar-sweetened beverages account for 47% of the added sugars in the American diet.[1]

The emphasis on less nutritious food in the standard Western diet contributes to an increased risk of overweight and obesity. Obesity is a known risk factor for preventable chronic diseases that affect half of all Americans, such as cardiovascular disease, type 2 diabetes, and certain cancers.[1] Adipose (fat) tissue secretes pro-inflammatory compounds called cytokines that further exacerbate oxidative stress in the body.[3] Low-grade inflammation is commonly seen with chronic diseases, leading to advanced cellular dysfunction and deterioration of aging cells.[3]

Processed foods

Processed foods are defined as foods that are changed from their natural state. While almost every food is processed in some form or another (milled, pasteurized, canned, ground, etc.), processed foods typically contain added ingredients that are not naturally present in the food. Often this means adding salt, sugar, oil, or preservatives to enhance the shelf life or eating experience.

Some foods are highly processed or ultra-processed and are likely to have many added components, such as artificial colors, flavors, preservatives, and stabilizers. Many foods in the Western diet are ultra-processed, with some examples being frozen meals, packaged baked goods and snacks, and smoked and processed meats like cold cuts or hot dogs. Ultra-processed foods make up over half of calories consumed in the average American diet.[4] Diets high in ultra-processed foods have been associated with overall higher calorie levels, weight gain, and increased risk of cardiovascular and cerebrovascular diseases.[4]

Fats and sugars

Saturated fats are commonly found in animal proteins and processed foods. Red meats like beef or pork typically have higher amounts of saturated fat and, when consumed in excess, increase the risk of cardiovascular diseases.

Many polyunsaturated fats found in seed oils can be problematic, particularly if used for cooking, because heating them can produce free radicals, the enemies of healthy aging.

Added sugars can contribute to inflammation by triggering the release of inflammatory cytokines that lead to oxidative stress and cellular damage.

Smoked and processed meats

The World Health Organization has classified processed and smoked meats as Group 1 carcinogens in humans. This means that there is sufficient evidence showing that these foods can cause cancer, particularly of the stomach and intestines.[5] Smoking meats or cooking at high temperatures gives a charred flavor and appearance, but these cooking methods also create harmful constituents in the food, like polycyclic aromatic hydrocarbons (PAHs) and heterocyclic amines (HCAs) that can lead to increased risk of cancers.[6]

Many processed meats including sausages, hot dogs, deli meats, and cured or smoked hams have nitrites added to improve flavor and color preservation. These nitrites can convert to nitrosamines, which have harmful effects on gut and bowel health and increase the risk of gastrointestinal cancers.[7]

Meat and dairy with added hormones

Hormone use in cows and sheep is approved by the FDA to increase animal growth and milk production. However, there is concern that residues of these hormones remain in the food supply and can disrupt hormone function in humans, including thyroid and reproductive hormones, as well as contribute to increased risk of cardiovascular disease and cancers.[8,9]

USDA certified organic meat and dairy labeling requires that animals are fed 100% organic feed and forage and are not administered antibiotics or hormones like growth hormone.[10] Choosing organic meat and dairy products helps to limit your exposure to hormone residues.

Read more about the pitfalls of a standard Western diet at this article at *Take 5 Daily*: Why We Should Rethink the Western Diet.

Dietary choices to support healthy aging

The Mediterranean Diet

The Mediterranean diet is one of the most widely studied eating patterns for its role in the prevention of chronic conditions. It is so called because it is the primary diet of individuals living in the countries surrounding the Mediterranean Sea. This diet focuses on whole grains, large amounts of colorful vegetables and fruits that provide antioxidant polyphenols and carotenoid nutrients, and healthy fats from olive oil, fish, and nuts, while limiting the intake of processed foods and red meats. Eating fish provides omega-3 fatty acids to decrease inflammation throughout the body. You can enjoy additional antioxidants in a glass of red wine and protective polyphenols in your morning cup of coffee or square of dark chocolate.

Many of the Mediterranean diet benefits have been attributed to the heavy use of olive oil. Olive oil is a monounsaturated fat, which means when it is lightly heated for cooking it does not produce free radicals like the seed oils previously discussed that are mostly polyunsaturated. Organic, extra-virgin olive oil is recommended and can be used cold in salads and other dishes or in light sautéing. It is best not to cook on high heat with olive oil because its essential health-providing nutrients can be destroyed.

The Mediterranean diet has been shown to decrease the risk of cardiovascular disease, metabolic syndrome, and cancer. Adherence to the diet has been associated in increased longevity and improvement of healthy aging biomarkers including telomere length and cell senescence.[11] For a review of these biomarkers, see Glossary of Terms above.

To read more about the Mediterranean diet and how Thorne has modified it to be even more health promoting, check out What is a Modified Mediterranean Diet at *Take 5 Daily*.

Enjoy some Mediterranean diet recipes:

- 9 Must Try Breakfast, Lunch, and Dinner Recipes for a Mediterranean Diet.
- Metabolic Syndrome Guide - found in the Wellness Guides at thorne.com

Plant-based or vegan diets

Eating a plant-based or vegan diet also provides cardiometabolic benefits that can contribute to health and vitality as you age. The fiber content of a rainbow of fruits and veggies, nuts, seeds, legumes, and beans not only supports healthy cholesterol and blood sugar levels, but also contributes to a healthy gut microbiome. These prebiotic fibers provide an optimal environment for microbial diversity and proliferation of beneficial bacterial metabolites.[12]

Intermittent fasting

Intermittent fasting or time-restrictive eating is associated with various potential health benefits, including decreased oxidative damage and an improved inflammatory response throughout the body.[13] While there are many different fasting types, the short-term intermittent fasting plan of 16:8 is most popular, and restricts eating to an eight-hour window during the day – for example, from 10 am to 6 pm. Calorie restriction has long been associated with longevity and this condensed eating window often results in fewer calories consumed throughout the day. Fasting is also linked to decreased feelings of fatigue, improved mood, and enhanced insulin sensitivity.[13]

It should be noted we are talking only about intermittent fasting. Long-term fasting with significant calorie restriction should be supervised by a qualified medical professional.

If you're interested in incorporating intermittent fasting into your eating plan, Intermittent Fasting: Five Tips for Success at *Take 5 Daily* is a must read.

Organic produce

When you're loading up on fruits and vegetables at the grocery store, you may be debating organic versus non-organic purchases. USDA certified organic produce is grown on soil that has had no prohibited substances applied for three years prior to harvest, including most synthetic fertilizers or pesticides.[10] Limiting pesticide exposure from food helps to protect against hormone disruption, toxicity in the brain and liver, respiratory concerns, and cancer development.

The Environmental Working Group's (EWG) annual Dirty Dozen summary provides a list of fruits and vegetables that have the highest measured pesticide residues. If shopping entirely organic isn't feasible for you, at least focusing on organic choices of the Dirty Dozen can help to minimize your exposure to pesticide residues.[14] On the other hand, each year a list is compiled of the 15 fruits or vegetables that are the most pest resistant and least likely to be contaminated with pesticides – called The Clean 15.[15]

The Clean 15 – 2025

1. Avocado
2. Pineapple
3. Sweet corn
4. Sweet onion
5. Papaya
6. Sweet pea
7. Asparagus
8. Honeydew melon
9. Kiwi
10. Cabbage
11. Mushrooms
12. Cantaloupe
13. Mango
14. Sweet potato
15. Watermelon

The Dirty Dozen – 2025

1. Strawberries
2. Spinach
3. Kale, collards, and mustard greens
4. Nectarines
5. Apples
6. Grapes
7. Bell peppers
8. Cherries
9. Peaches
10. Pears
11. Celery
12. Tomatoes

Exercise for Healthy Aging

Benefits

Exercise is associated with many healthy aging benefits, including:[1]

- Reduced risk of cardiovascular events
- Reduced risk of diabetes and blood sugar imbalances
- Maintenance of lean muscle mass and reduced risk of frailty
- Lower rates of depression
- Improved blood pressure and cholesterol profile
- Increased bone density
- Fewer rates of cancer (particularly breast and bowel cancer)

General recommendations

For optimal health, adults should engage in at least 150 minutes of moderate or 75 minutes of vigorous intensity exercise each week, as well as muscle strengthening exercises at least two days a week.[2] Although weight bearing exercises are particularly important for improving bone density, it is important to integrate a variety of workouts that focus on building endurance, strength, balance, and flexibility.[3]

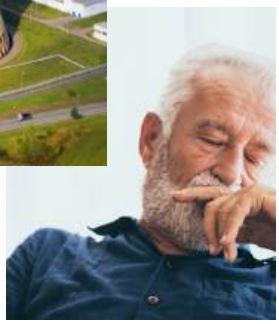
The benefits of moderate- and low-intensity exercise help maintain optimal mobility and cardiorespiratory fitness throughout the aging process. Endurance exercises are particularly beneficial for cardiovascular health, and low intensity exercise is invaluable for enhancing balance, coordination, and flexibility, which the American College of Sports Medicine reports are essential types of exercise for older adults, in particular.[3]

High intensity interval training (HIIT)

While it is not appropriate for everyone, HIIT might be particularly beneficial for healthy aging as it has been found to upregulate proteins involved in the metabolism of NAD+, which is arguably one of the most important cellular co-factors for improving the health and function of the mitochondria – a key indicator of how well we are aging.[4] Evidence indicates that HIIT, which features short repetitions of exercise performed at >75% of maximum heart rate (like sprinting), followed by periods of rest, can provide the equivalent benefit of moderate intensity continuous training (MICT) – usually performed at 65-70% of maximal heart rate – in about half the time.[5]

Although HIIT may not be the fountain of youth for everyone, a Mayo Clinic study has shown that it does slow and reverse some age-related changes at the cellular level.[6] You can read more about it in this article from Mayo Clinic at *Take 5 Daily*: This Specific Form of Exercise May Slow Aging.

Environmental Effects



The environment plays a crucial role in shaping health and well-being. From the air we breathe, to the neighborhoods we inhabit, various environmental factors influence the aging process. Let's look at the different ways in which environmental factors affect healthy aging.

Air pollution

Airborne pollutants, like smoke, can accumulate and damage the delicate tissues of the lungs and throughout the body. While the impact of air quality on lung health might seem obvious, exposure to air pollution has also been found to increase the risk of cardiovascular disease, type 2 diabetes, certain cancers, and is associated with a reduced life expectancy overall.[1]

The 25th annual "State of the Air" report released by the American Lung Association indicates that 131 million Americans are currently living in areas with unhealthy levels of air pollution.[2] This means that nearly four out of every 10 people in the United States are breathing air with dangerous levels of pollutants, according to the new standards finalized in February, 2024, by the United States Environmental Protection Agency (EPA).[2]

Although some level of exposure is inevitable, small actions collectively make a significant impact on air quality and overall health. The good news is there are ways to support your body's detoxification and immune responses. For starters, since air pollution exposes you to increased oxidative stress, consuming adequate intake of antioxidants can help support your redox balance – which is the delicate balance of pro-oxidative factors versus antioxidants in the body. Consuming a variety of colorful fruits, vegetables, herbs, and spices will increase your intake of plant polyphenols that provide antioxidant benefits.

For more information, check out How Air Quality and Pollution Affect Your Health at *Take 5 Daily*.

Effects of pollution on your skin

The skin serves as a remarkable protective barrier against environmental threats. The outermost layer, known as the skin barrier, defends the body from harmful events while also maintaining critical water balance.[3] UV rays from the sun, blue light (such as that emitted by screens), and air pollution can all cause oxidative damage to the skin, leading to collagen breakdown, wrinkles, and skin discolorations.[4] This barrier function is essential for shielding you from mechanical, chemical, and microbial harm.[5]

While you can't completely protect the skin, you can shield your skin as much as possible from pollution and the effects they can trigger.

UV protection – daily application of sun protection is essential. Mineral sunscreens that contain titanium dioxide or zinc oxide physically block UV rays and are generally preferred by dermatologists.

Essential nutrients – antioxidants like vitamins C and E and carotenoids are vital for skin health. They reduce DNA damage from UV light, stimulate collagen production, and improve hydration.*[6]

For a deeper dive check out How Sunlight and Pollution Cause Skin to Age and Protect Fragile Skin as You Age – both from Mayo Clinic at *Take 5 Daily*.

For more information on sunscreens check out The Pros and Cons of Different Types of Sunscreens, also at *Take 5 Daily*.

Heavy metals

Multiple heavy metals are present in the earth's crust, and numerous human activities result in virtually everyone being exposed to these elements in the air, water, and food supply. When these metals accumulate in the body, they render the brain susceptible to neurotoxic insults.[7] Here are some steps you can take to protect yourself from heavy metal toxicity:

Mineral intake

Minerals such as zinc and selenium are essential cofactors to support the body's ability to safely clear heavy metals.*

Vitamin intake

Vitamins like C and E support the body's reaction to oxidative stress when ingesting heavy metals. Vitamin C can also reduce the deposition of heavy metals in tissues.*

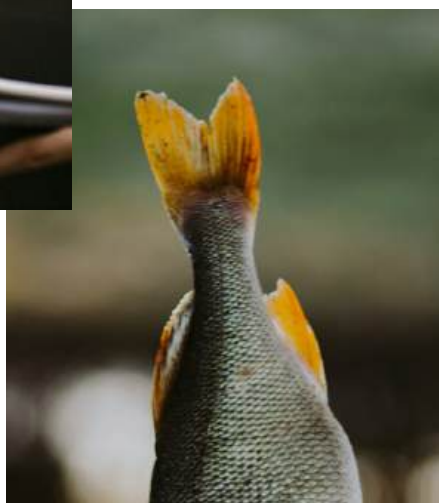
Know your seafood

Although seafood can be a great source of protein and omega-3 fatty acids, fish intake can increase the risk of elevated heavy metal levels, mercury in particular. Fish like swordfish and tuna tend to have higher levels of mercury, catfish and pollock are lower in mercury, and scallops have extremely low levels.

Test your water

Certain areas of the United States have been shown to have levels of heavy metals above what has been deemed safe for long-term consumption. So, if you are moving somewhere new, or rely heavily on tap water, then it makes sense to understand what you ingest daily. If the levels are elevated, then water filtration options are available.

For more information, check out The Impacts of Heavy Metal Toxicity at *Take 5 Daily*.



How Stress Affects the Aging Process

Stress is a normal part of everyday life, and in small doses our bodies are equipped to handle it. However, long-term and chronic stress can have serious health consequences that can affect multiple bodily systems.

There are numerous biomarkers associated with stress including:

- **Neuroendocrine**: cortisol, epinephrine, and dopamine
- **Immune/inflammatory**: CRP and IL-6
- **Cardiovascular**: systolic and diastolic blood pressure, heart rate
- **Respiratory**: respiratory rate, peak expiratory flow
- **Anthropometric**: BMI and waist-to-hip ratio

Stress, especially chronic, long-term stress, can speed up the biological aging process by increasing systemic inflammation and shortening telomeres. Prolonged stress has been associated with increased morbidity and mortality, including earlier onset of chronic diseases like cardiovascular disease, hypertension, diabetes, and cognitive decline.[1]

For those finding themselves in a pattern of prolonged stress, let's dive into a few tips and tricks for reducing stress.

Meditation

Meditation is defined as a group of self-regulating techniques focused on maintaining attention and awareness of oneself, with the primary goal of achieving a better sense of well-being, increased concentration, and promoting calmness. In other words, it is a nonjudgemental observation of both your internal and external world.[2]

Meditation can promote mindfulness and the ability to process thoughts and feelings that are happening beyond an initial emotional response. It can also promote feelings of calmness and practicality, which in the long-term can reduce the effect of negative thoughts and emotions stemming from stressful periods of time and events.[2]

A reduction in the effect of stress on your mind supports more focused and productive thoughts, leading to improved cognitive function throughout the aging process – likely due to the ability to self-reflect and gain greater coping skills.[2]

Tai chi

Tai chi is a mild aerobic exercise that combines slow but specific movements with breathing and meditation. In addition to its potential for stress reduction, tai chi is of particular interest among aging populations because of its benefits for supporting balance and decreasing the risk of falls. Clinical studies have shown some additional, perhaps surprising, benefits. One study of 120 people performing tai chi for three months and 120 others engaging in regular aerobic exercise, found tai chi improved blood lipids and depression better than standard aerobic exercise.[3]

Yoga

Yoga is a series of physical postures, breathing techniques, and meditation that can have a spiritual aspect. Yoga is typically considered a meditative movement practice, along with tai chi and qigong, where each practice has physical movement patterns and meditative aspects.[4]

Yoga has been associated with improving general wellness by reducing stress, improving mental and emotional health, helping to manage anxiety and depression, promoting healthy eating and lifestyle habits, and helping those with chronic disease to manage their symptoms more effectively. A 2020 review of 12 studies found most types of yoga had positive overall effects on stress reduction in healthy populations.[5]

Another systematic review found physical benefits including lower cortisol, decreased inflammation, and increased release of nitric oxide (which helps blood vessels relax for better blood flow and decreased blood pressure).[6]

Social contact

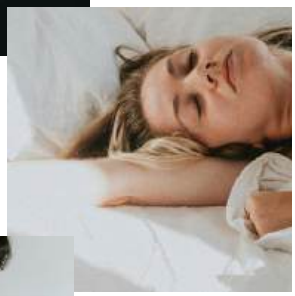
Social support can mean interaction with individual friends, groups of friends, or with the larger community. Without adequate socialization, the risk of mortality and morbidity can increase by up to 50%. It's theorized that a lack of social contact decreases our resilience to stress.[7]

Higher levels of social support have been shown to protect against the full impact of both psychological and physical illnesses. This has been observed in numerous populations including college students, unemployed workers, new mothers, widows, and parents of children with serious medical conditions.[7]

Maintaining social connections throughout adulthood can play an important role in healthy aging. Socially skilled/experienced older adults experience fewer disease risk factors, including hypertension and obesity.[8] And when it comes to socialization and friendships, quality over quantity is what is most important.[7]

If you are looking for additional insights on dealing with stress in specific situations, *Take 5 Daily* has you covered with several dozen options.

Importance of Sleep for Healthy Aging



Many people view sleep as just "down time" when their brains shut off and their bodies can rest. But sleep is a time for many vital tasks that help you stay healthy and function at your best. Adequate sleep is as essential to our health as food and water.

Sleep supports healthy aging

During sleep, the brain is busy clearing toxins, restoring and repairing cell networks, and forming new pathways of learning and memory. Restful sleep also helps improve attention, concentration, decision-making, and creativity. Getting more rest before a challenging task can help you perform better and improve your problem-solving skills too. Restful sleep can even improve your mood and reduce the risk of depression.

Beyond the brain, during sleep, your body engages in many critical processes too: muscle building, tissue repair, and growth hormone production and release, for example. Your heart rate also slows down and blood pressure lowers to give your heart and vessels a much-needed rest to support healthy cardiovascular function.

Lack of sleep affects the aging process

Not getting enough sleep doesn't just mean feeling groggy the next day – it can have serious health consequences. Poor and reduced sleep is associated with a host of challenges associated with aging. Age is correlated with less sleep and poorer sleep quality and is a risk factor for insomnia, restless legs syndrome, and sleep apnea.[1] Long-term insufficient sleep is associated with increased risk for declining cognitive function (poor memory, brain fog, etc.), depression, obesity, infections, poor cardiovascular health, and earlier death.[2]

Tips for better sleep[3]

- **Avoid strenuous exercise before bed**. Exercising earlier in the day can provide increased daytime energy and more restful sleep overnight.
- **Limit bright light**. Artificial light indoors and blue light emitted from TV screens, computers, and cell phones have the effect of tricking the body into thinking it's still daytime long after the sun has gone down. This can decrease the body's natural secretion of melatonin, which is stimulated by darkness.
- **Avoid substances known to have a negative influence on sleep**. Caffeine, nicotine, alcohol and some over-the-counter medications interfere with the body's production of melatonin, interrupting the sleep-wake cycle and preventing deep, restorative sleep.
- **Establish a schedule**. Go to bed and wake up at the same time, even on weekends. This helps your circadian rhythm stay in a consistent sleep-wake cycle, making falling asleep easier and promoting restorative sleep.
- **Wind down**. Use the hour before bedtime to de-stress, enjoy relaxing activities, and prepare your body and mind for sleep. Managing cortisol levels, one of the "fight-or-flight" hormones associated with stress, can help to promote restful sleep.
- **Keep your bedroom cool, dark, and quiet**. Using black-out curtains, eye masks, earplugs, or white noise machines can help to reduce disturbances to create an optimal environment for good sleep.

And for additional light bedtime reading, check out our extensive library of sleep support articles here at *Take 5 Daily*.

Additional Resources from Thorne

Articles

Mayo Clinic: How to Slow Aging with These 7 Habits

Healthy Aging Redefined: Welcome to the New Era of Aging

Healthy Aging Tips for Women

How to Support Healthy Ovarian Aging

The 4 Best Thorne Supplements to Support Healthy Aging

A Greens Solution: Your Recipe for Healthy Aging

Mayo Clinic: Aging, Energy Loss, and Ways to Reclaim Your Vigor

Mayo Clinic: How Antioxidants Protect Your Skin from Sun-Induced Aging

2024 Fear of Aging Report: New Insights Show Common Ground Across Generations

Mayo Clinic: The Connection Between Aging and a Reduced Level of NAD+ in the Body

Podcasts

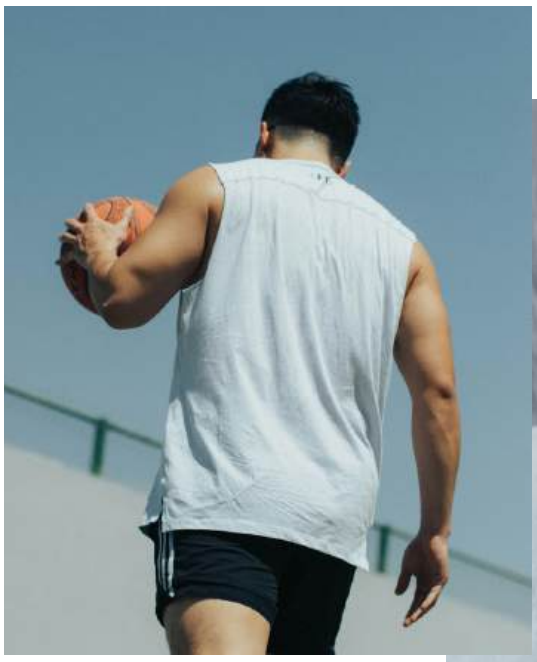
How to Achieve Healthy Aging

The Hallmarks of Aging: With Dr. Robert Rountree

Understanding the Aging Process

Exploring the Science of Healthy Aging

The Secrets to Healthy Skin



Appendix I:
Thorne Products to Support Healthy Aging

Foundational Products for Healthy Aging

Women's Multi 50+

- A comprehensive women's daily multi that supports a healthy, active lifestyle, with added nutrients for bone and cardiovascular support.*

Men's Multi 50+

- A comprehensive men's daily multi that supports a healthy, active lifestyle, with added nutrients for prostate support.*

Advanced Nutrients

- A powerhouse multi that supports health and well-being with added antioxidants from well-studied nutrients and botanicals that contribute to healthy aging.*

Super EPA

- Essential omega-3 fatty acids EPA and DHA that support a healthy heart and brain, help maintain a healthy inflammatory response in muscles and joints, enhance mood, and promote healthy skin.*

Advanced DHA

- Cognitive support for the aging brain.* Contains DHA with EPA to benefit brain and nerve health, cognitive function, positive mood, eye health, and healthy heart and blood vessels.*

Omega-3 with CoQ10

- Combines heart healthy essential fatty acids with the antioxidant and cellular energy production capabilities of CoQ10 – all the benefits of two great products in one easy-to-take gelcap.*

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

Specific Healthy Aging Support Nutrients

NiaCel®400

- Nicotinamide riboside (NR) supports healthy NAD+ levels to benefit cellular energy production, athletic performance, lean body composition, ultimately supporting how your body handles its chronological age.*

ResveraCel®

- Features nicotinamide riboside with a supporting cast of three complementary ingredients that support your body's natural aging process and cellular metabolism.*

PolyResveratrol-SR®

- Contains a synergistic blend of five antioxidant nutrients, high in polyphenol and flavonoid content, that provides nutritional support for a modern lifestyle and graceful aging.*

Daily Greens Plus

- Containing 28 powerhouse ingredients that promote physical endurance, cognitive performance, and cellular energy production, while also providing antioxidants, for vibrance today and for years to come.*

CoQ10

- Delivering 100 mg of a proprietary, well-absorbed form of CoQ10 – an essential nutrient for cellular energy production. CoQ10 promotes optimal heart, brain, and immune function, in addition to providing antioxidant support.*

Structural Support

Collagen Plus

- Collagen peptides, NR, and unique botanicals to promote glowing, hydrated skin and reduce fine lines and wrinkles to help combat the visible signs of aging.*

Collagen Fit

- Unflavored collagen for supporting the strength and health of joints, tendons, bones and ligaments – with nicotinamide riboside for healthy aging*

Joint Support Nutrients

- Beyond simple glucosamine supplementation with the addition of botanicals for a balanced inflammatory response to provide relief from occasional soreness and stiffness.*

Advanced Bone Support

- Calcium, plus magnesium and vitamin D for calcium metabolism, and B vitamins for calcium absorption and deposition, B vitamins for healthy methylation, and boron – all to support bone health.*

Amino Complex

- Easily assimilated essential and branched-chain amino acids for muscle support.*

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

Hormone Related

Meta-Balance™

- Natural support from chaste tree, wild yam, and black cohosh to help moderate changes in female hormone production, along with research-backed Pycnogenol® to promote skin elasticity and benefit symptoms related to menopause.*

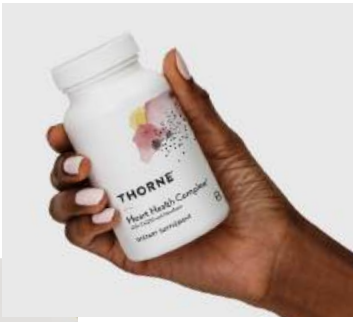
Advanced Testosterone Support

- Support men's natural production of testosterone to maintain sexual health and healthy body composition.*

Hormone Advantage

- Support healthy estrogen levels in women and men with well-researched extracts from broccoli and pomegranate, to decrease breast swelling and tenderness, improve mood, and benefit other signs of hormone imbalance.*

Cardio-Metabolic



Metabolic Health

- Well-absorbed curcumin and bergamot phytosomes help to optimize a healthy weight, support fat metabolism in the liver, and maintain optimal cholesterol and blood sugar levels.*

Heart Health Complex

- Combines CoQ10, hawthorn *(Crataegus oxycantha)*, potassium, taurine, and magnesium to provide the heart muscle and blood vessels with nutrients for healthy functioning; helps maintain healthy blood pressure.*

Berberine (dual action)

- Berberine phytosome and berberine HCl – two forms of this powerful botanical for heart health, metabolic support, blood sugar and lipid balance, and GI support*

L-Arginine Plus

- L-arginine plus nutrient cofactors to support blood flow to the extremities to benefit exercise capacity, cardiovascular health, and sexual wellness, with added antioxidant support for healthy aging.*

Diabenil®

- Contains botanicals and nutrients that offer comprehensive support for healthy blood sugar levels. They also help protect nerves, blood vessels, eyes, and kidneys.*

Brain Health

Brain Factors

- Supports healthy brain aging; optimizes brain health by promoting BDNF, a substance produced by the body that promotes growth of brain and nerve cells, and increasing NAD+, which enhances cellular energy production.*

Memoractiv™

- This unique formula supports cognition, productivity, creativity, and mental focus, while promoting a feeling of well-being and helping the eyes filter light from blue screens.*

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

Appendix II: References

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