



Riordan
Clinic

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Riordan Clinic is a not-for-profit 501(c)(3), nutrition-based health facility in Wichita, Kansas co-founded in 1975 by Olive W. Garvey and Hugh D. Riordan. We have integrated lifestyle and nutrition to help you find the underlying causes of your illness. Since our inception in 1975, the mission has been clear and unwavering to "...stimulate an epidemic of health."

A New Model Of Aging



AUTHOR

Gael Wheeler, DO

OK, time for a pop quiz! What is the one thing that every single human being doing at this very moment? That's easy; we're all aging! Contrary to what popular media might portray, aging is not a disease process. However, it cannot be denied that there are special considerations associated with the aging process.

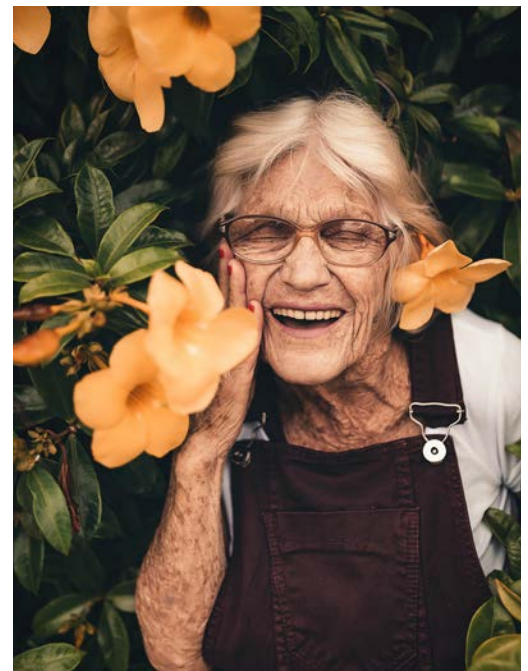
The goal of healthy aging involves moving from reactively responding to disease when it is expensive and difficult to treat, to proactively using strategies that prolong the healthspan of a person's life. When implemented and maintained, these strategies help decrease illness and suffering at the end of life.

In general, there are a few key strategies that apply to everyone. A healthy, antioxidant-rich diet with plenty of plant-based fiber, and proper hydration are critical. Physical activity that includes both aerobic and strength training, and adequate protein intake are vital for

healthy bones and muscles. Micronutrient optimization is crucial as we age, particularly if we are on pharmaceutical medications, many of which can contribute to nutrient deficiencies.

With an understanding of the processes that support healthy aging at the cellular and molecular level, we can design age-appropriate lifestyle and micronutrient protocols that limit the risk of developing age-related disease while promoting lifelong healthy functioning. By improving one's healthspan, we may also increase their lifespan.

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CONTRARY TO WHAT POPULAR MEDIA MIGHT PORTRAY, AGING IS NOT A DISEASE PROCESS.

Below are things to consider regarding key nutrients as we age:

VITAMIN C

Because of genetic variability, we each have unique needs for the amount of each micronutrient we require. As we age, we generally have special requirements for these essential nutrients. For example, studies have shown older adults have lower plasma levels of Vitamin C than younger adults given the same dose. This research suggests that the efficacy of the mechanisms for cellular uptake of Vitamin C decline with age. Maximizing the blood level of Vitamin C can provide important protection against oxidative damage to cells. Increased Vitamin C intake is particularly important for older adults who are at higher risk for chronic disease caused in part by oxidative damage, including heart disease and certain cancers.

VITAMIN B 12

Vitamin B12 plays an essential role in many physiological processes including folate metabolism and the citric acid cycle and generation of ATP (cellular energy). The preservation of DNA integrity is dependent in part on sufficient Vitamin B12 levels and deficiencies may be linked to some breast cancers and other pathologies. Vitamin B12 is also a co-factor in homocysteine metabolism. Elevated homocysteine levels are a risk factor for cardiovascular disease. The long term use of medications, such as inhibitors of stomach acid secretion, can impair Vitamin B12 absorption. Decreased levels of Vitamin B12 can lead to neurological disorders such as peripheral neuropathy and memory loss.

VITAMIN D3 + K2

Bone strength is dependent on several factors, including hormone levels, degree of weight-bearing exercise, and Vitamins D3 and K2 levels, among others. As we age, hormone levels and activity tend to decrease, putting us at risk for fractures. Vitamin D is critical for our ability to absorb calcium from our diet, and Vitamin K2 deposits that calcium in the bones and teeth where we need it. Vitamin D is also an essential player in the proper functioning of the immune system and can regulate hundreds of genes involved in many biological functions. Observational studies have reported associations between poor Vitamin D status and increased risk of developing colorectal and breast cancers, types 1 and 2 diabetes, and development of autoimmune disorders such as MS, rheumatoid arthritis, and lupus.

VITAMIN A

One of the first changes we may notice as we age is a decrease in visual acuity. Vitamin A is essential for the proper function of the retina of the eye. Inadequate Vitamin A can lead to impaired vision, particularly in low light. Vitamin A is also essential for the proper functioning of the immune system and may help prevent autoimmune conditions. Additionally, it is an important co-factor in the proper functioning of the thyroid gland. Thyroid dysfunction is common in older adults. Because Vitamin A is a fat-soluble vitamin, impaired pancreatic or biliary secretion, common in older adults, can result in a deficiency. Cholesterol-lowering medications like

Cholestyramine, colestipol, and Orlistat interfere with the absorption of fats, and absorption of fat-soluble vitamins, including Vitamin A.

Dosing Vitamin A must be done carefully, as toxicity can occur at lower doses in older adults. A maximum of 2500 IU Vitamin A palmitate plus no more than 2500 additional IU beta-Carotene is recommended for older individuals. Levels of Vitamin A palmitate of 5000 IU are linked to an increased risk of hip fracture. Large doses of Vitamin A may impair the absorption of Vitamin K2, a vitamin critical for transporting calcium to bone tissue. In this case, if a little is good, more is not necessarily better.



VITAMIN B6

A Vitamin B6 level of at least 3mg/dl is linked to lower homocysteine levels. Adequate B6 levels might help reduce the risk of late-life depression, as it plays a vital role in the synthesis of two major neurotransmitters, serotonin, and dopamine. Growing evidence shows that prolonged systemic inflammation underlying most chronic diseases may impair Vitamin B6 absorption, and chronic disease is more common in older adults. Levels of Vitamin B6 must be monitored when supplementing, as too much can cause peripheral neuropathy, which may irreversible even with decreased dosage.

VITAMIN B2

Vitamin B2 (Riboflavin) deficiency has been linked to an increased risk for ischemic stroke and increased bone fracture risk. Doses of 1.6 to 2.2 mg a day may decrease the risk of developing cataracts. Emerging evidence demonstrates a protective role for Vitamin B2 against hypertension in individuals with the MTHFR 677TT genotype. Iron deficiency anemia is often found in older individuals. Vitamin B2 deficiency alters iron metabolism, and improving Vitamin B2 status has been found to increase hemoglobin levels.

As you can see, assuring optimal nutrient levels as we age is essential for lifelong peak functioning.

Micronutrient testing every few years over the age of fifty is a tool we can use to ensure each individual has what they uniquely need to navigate a healthy path through the aging process.

Microgreens Can Boost Your Food

AUTHOR

Loralie Tangen



Good Health. If you have it, you might take it for granted. If you don't, it may become one of your highest priorities. We know that proper nutrition is a foundation of good health. Still, different opinions abound as to what exactly comprises "good nutrition." One particular food group seems to enjoy widespread approval across various diet trends. As you may have guessed, that group is vegetables.

I've always been told to eat more leafy greens and cruciferous vegetables like broccoli, kale, cabbage, etc. Translating this knowledge from my head onto my plate can be a challenge. Our culture is one of convenience, and preparing vegetables and salads is more work than grabbing a sandwich or a pizza. Also, I have to confess that I'm not too fond of the taste of most vegetables. I want to like kale. I know it is super nutritious, but I find it tough and bitter. Friends say I should massage it with olive oil first. That's not going to happen in my kitchen!

I believe that food is powerful for good health, so I am working on incorporating more vegetables into my family's diet. When I learned that microgreens had higher levels of nutrients ounce for ounce than fully grown vegetables, I knew I wanted to try them (1).



So what are microgreens?

Microgreens are very young (usually 7 to 10 days of growth from seed), vegetable greens. They are grown longer than sprouts, and only the stem and leaf are consumed (unlike sprouts where the seed, root, stem, and immature leaf are eaten). Because they are harvested after a week or so, many seeds are grown close together in a container. Common varieties are broccoli, kale, kohlrabi, sunflower, pea shoots, red cabbage, arugula, radish, and mixes of multiple

varieties. One mix might give you six different vegetables at once! The taste is usually mild compared to the full-grown vegetable, but some, like radish, do have a little kick.

WHEN I LEARNED THAT MICROGREENS HAD HIGHER LEVELS OF NUTRIENTS OUNCE FOR OUNCE THAN FULLY GROWN VEGETABLES, I KNEW I WANTED TO TRY THEM

An added benefit of microgreens is versatility. You can add them to salads (or they can be a salad on their own), sandwiches, wraps, stir fry, smoothies, omelets, tacos, burgers, crackers with goat cheese and pizza. They serve as a great topping to fish, soups, bowls, or any entrée. Adding microgreens to whatever you are eating instantly makes that dish more nutritious. If you are trying to get your kids to eat more vegetables, you can entice them with smaller servings since

microgreens are so nutrient-dense. Plus, they are easier to sneak into meals since they don't look like grown-up vegetables!



In my area, microgreens were not available in any grocery store, so I started growing, selling, and educating at a local farmer's market. They are becoming more available in grocery stores. Your best bet is to check the local farmer's market or grow your own since you can grow them in a petite space year-round.

Loralie Tangen has been an avid gardener forever. She has been a food educator through the Master Food Volunteer program with K-State Extension since 2010. Food Life Joy began as a blog to share information about gardening, health, and food while saving money on both. Loralie is especially interested in unusual food varieties and passionate about local food and nutrition. After studying microgreens and trying them at her own family's table, she decided that she wanted more people to know about and experience this new superfood. What started as a hobby several years ago has now led to a business.

LEARN MORE AT WWW.FOODLIFEJOY.COM

Contact the Editor

Please send any comments or suggestions to

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Thank you for reading.



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Editor

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Health Hunters Newsletter

Join our mailing list to receive this monthly newsletter FREE.

To sign up, go to
riordanclinic.org or email us
at information@riordanclinic.org

How Well are You Aging?

The first step to aging well is knowing how well you're aging. You may be 50 years old, but your PhysioAge could be 40 — or well over 60!

Take control of aging with PhysioAge®.

Created by a consortium of scientists, physicians and programmers, PhysioAge measures how well you're aging. Depending on lifestyle, genetics and many other factors, your physiological age may be significantly higher or lower than your chronological age.



PHYSIOAGE®

By comparing your body's indicators with those of healthy peers, PhysioAge can help you determine what therapies may help slow or sometimes even reverse the aging process. Over time, it shows how well these therapies are working.

PhysioAge is based on years of solid scientific research. And is at the cutting edge of the growing medical subspecialty of anti-aging. Designed in accordance with the American Academy of Anti-Aging Medicine objectives, PhysioAge helps patients and their healthcare providers optimize the human aging process. So you can live healthier at every age.



The Next-Generation Physical Exam.

PhysioAge begins with a sophisticated physical exam performed by your healthcare provider with specialized high-tech equipment. It includes up to 15 test suites—many of which are newly-developed or perfected tests you may not have had before.

The results give your physiological age in six important systems in your body - heart, skin, lungs, brain, DNA and immune system - as well as report card on lab values and many other important measures of health.

Unlike traditional sick-based medicine, the PhysioAge next-generation physical is proactive. It not only shows where disease is now but also where there is potential for it to develop in the



future. You'll find out now while you have time to do something.

Your PhysioAge is a weighted average of these biomarkers of aging:



CardioAge® – Arterial Stiffness Evaluates cardiovascular risk by measuring blood pressure at the heart to determine the suppleness of your arteries



NeuroAge® – Brain Function Assesses brain aging through a series of computerized tests focused on age-sensitive aspects of cognitive function.



CutoAge® – Skin Elasticity Assesses the elasticity, firmness, and resistance of the skin with the same instrument used in numerous clinical trials for skin care products.



TelomerAge® – Telomere Length Measures telomere lengths – caps at the ends of your DNA that shorten with every cell division – to indicate how fast your cells are aging.



PulmoAge® – Lung Function Measures lung function, which is linked to many fatal diseases, not just lung disease.



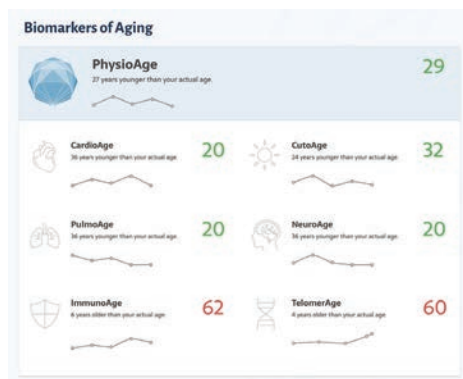
ImmunoAge® – Immune Function Uses an advanced blood test to measure the strength of your immune system.

What's your PhysioAge?

Your PhysioAge is an average of six biomarkers that can reliably and accurately measure the human body's aging process. A higher number means you're aging faster than your healthy peers. A lower number means you're aging better.

YOUR PERSONAL DASHBOARD.

Traditional physicals often fail to deliver contextual data about your aging. PhysioAge includes a web-based dashboard that consolidates biomarkers, labs and other results in one place to help you and your provider better understand your health and track it over time. You can browse your results, review treatment recommendations and download a full PDF report in your secure Patient Portal from any device.



YOUR UNIQUE AGING PLAN.

With the results of your PhysioAge analysis in hand, you and your provider can develop your own personal aging plan and focus on the precise organ systems that are most at risk. It could be your arteries that need preventive therapy to maintain their suppleness. Or your lung function may indicate the need for cardiovascular exercise. Your provider will advise you on the treatments most appropriate for you based on your individual results, including hormone therapy, nutritional supplements, lifestyle changes and more.

ONGOING MONITORING.

Your provider may recommend periodic PhysioAge exams so you can monitor your aging process more effectively and determine the appropriate actions to take. Our online dashboard makes it easy to see your progress by tracking all of your results over time in one place.

YOU'LL FEEL BETTER.

The best thing about PhysioAge: you'll feel better. A proactive approach to health and aging will have obvious benefits. You will be fighting against future disease and enjoying a healthier aging process.

Program Cost

The PhysioAge Program includes the full range of tests and metrics listed above as well as the first follow-up appointment to review results. Call for full details. Total PhysioAge Program Price is \$3,510 for men and \$3,440 for women.

Questions?

Throughout the week our doctors host 30-minute conference calls for potential patients in order to answer general questions about the clinic, explain the approaches of nutritional medicine (also referred to as holistic, alternative, integrative, etc), their backgrounds, and areas of expertise.

Mike Shaw, PA-C, our resident PhysioAge provider, is available to call and speak with on Mondays at 1pm CST. You can find the full information on how to call at riordanclinic.org/doctor-call-times.

The Miracle Molecule



AUTHOR

*Michael Shaw,
PA-C, ABAHP*

The chemical properties of Nitric Oxide were first characterized in 1772. Ferid Murad first described nitric oxide as a vasodilator and elucidated the mechanism of action of organic nitrates such as nitroglycerin in 1977. In 1980 Robert Furchgott discovered that our endothelial cells make a vasodilator substance. He termed his discovery Endothelial Derived Relaxing Factor EDRF. Then in 1987 both Salvador Moncada and Louis Ignarro discovered that EDRF described by Furchgott is Nitric Oxide. It was named Molecule of the year in 1992 and these 3 scientists were awarded the Noble Prize in Physiology and Medicine in 1998.

NITRIC OXIDE (N-O) IS A GAS COMPOSED OF ONE ATOM OF NITROGEN BONDED TO ONE ATOM OF OXYGEN. IT SERVES AS A CRITICAL SIGNALING MOLECULE IN THE CARDIOVASCULAR AND CIRCULATORY SYSTEMS. IT AFFECTS ABSOLUTELY EVERY FUNCTION IN OUR BODIES.



Nitric Oxide (N-O) is a gas composed of one atom of nitrogen bonded to one atom of oxygen. It serves as a critical signaling molecule in the cardiovascular and circulatory systems. As such, it affects absolutely every function in our bodies. It is the foundational core. Without circulation, none of our body's organ systems can work as intended. As a permeable gas, Nitric Oxide can pass through the endothelial lining into the vascular smooth muscle of the arterial wall, relaxing and dilating the artery, improving blood flow, lowering blood pressure, and enhancing perfusion of all tissues and organ systems of the body. Perfusion provides oxygen, nutrients, and removal of toxins.

Another NO critical function is the delivery of oxygen off of hemoglobin in the microcirculation. When oxygen-rich blood is circulated from the lungs to the periphery, the oxygen is bound to the iron center of hemoglobin. It is nitric oxide that tells the hemoglobin to release oxygen during the arterial/venous transit. Without nitric oxide, hemoglobin cannot release oxygen and without oxygen, cells become dysfunctional and eventually die.

Nitric Oxide levels decline with physiological aging. On average men by age 40 have about 50% of the Nitric oxide they had in their 20's and women by age 50 have about 35% of the Nitric Oxide they had in their 30's.

There are two pathways of Nitric Oxide production in the body. The first is an enzymatic reaction using L-arginine and the enzyme Nitric Oxide Synthase NOS. This enzyme is found throughout the body but primarily in the cells that line all blood vessels. L-arginine is a semi-essential amino acid, meaning that your body makes

it through normal metabolism in the urea cycle and is also found in many proteins we eat. Unless you have an extremely rare inborn error in metabolism, your body will always make enough L-arginine to produce NO. For this pathway to work NOS must be active and functional. The older we get the less nitric oxide we make through L-arginine. This is because NOS becomes dysfunctional and no longer converts L-arginine to nitric oxide. This is called endothelial dysfunction. Regular daily exercise has been shown to enhance and maintain better levels of NOS with aging.

The second pathway is through the metabolism of inorganic nitrate found in green leafy vegetables like spinach, arugula, kale, cabbage, and some root vegetables like beets which are an excellent source of nitrates. Nitrate is absorbed in the gut and concentrated in our salivary glands. There are nitrate-reducing bacteria that live in the crypts of our tongue that convert nitrate to nitrite and nitric oxide. Our saliva then becomes high in nitrite and when we swallow our saliva, we get nitric oxide produced in the lumen of the stomach provided there is stomach acid. For this pathway to work, you must consume sufficient nitrate from your diet (300-400mg), must have the right oral bacteria and sufficient stomach acid production! Unfortunately, the typical American diet only contains 150 mg of nitrate a day. We



need at least 300 mg of nitrate per serving to lead to any appreciable production of nitric oxide, providing the individual has the right oral bacteria and stomach acid production.

Unfortunately, over 200 million Americans use an antiseptic mouthwash every morning and over 100 million scripts are written every year for proton pump inhibitors and even more for antacid products, now available over the counter. Collectively the majority of Americans become nitric oxide deficient based on their diet and hygienic practices.

When I started researching the hundreds of companies that produce nitric oxide products, the goal was to find a company that produces a product that works. Most of these companies do not invest in clinical research nor do they conduct clinical trials. I decided on a company that to date has conducted 11 clinical trials using a randomized, double-blinded, and placebo-controlled methodology. The company, Human N, has a proprietary product Neo40 that comes in a professional-grade, available to clinics and providers, and a supplement grade available in health food stores and online. The Neo40 dosing schedule is two tablets daily the first month, then one tablet daily. **Neo40 Professional is available at Riordan Clinic by provider recommendation.**



Riordan Clinic has a specialized diagnostic instrument that measures arterial stiffness and the physiological age of the vascular system, called SphygmoCor.

This test is available to patients upon request to determine their need for enhanced youthful levels of Nitric Oxide and as a gauge of replacement therapy.

Call 800-447-7276 for more information.

Optimal Aging Lab Profile

The goal of healthy aging is to have your healthspan (the period of your life that you are healthy and vital) meet your lifespan. Riordan Clinic's Optimal Aging Profile is an essential tool in a proactive approach to meeting this goal.

This profile includes tests vital to maintaining good health as we age, such as:

APOE GENE, which provides instructions for making a protein called apolipoprotein E. This protein combines with lipids to make lipoproteins which package cholesterol and other fats and transport them around the body. Different versions (alleles) of the ApoE gene can have implications for everything from heart health to macular degeneration and dementia.

C-REACTIVE PROTEIN (CRP) is a protein made by the liver in response to inflammation. This test can be used as an indicator of elevated levels of inflammation in the body, leading to cardiovascular disease and impairing brain health.

INSULIN, which must be neither too high nor too low. Low insulin causes diabetes type one and elevated insulin has been linked to obesity, heart disease, and cancer. Elevated insulin can cause cells to become more insulin resistant, leading to diabetes type two.

HOMOCYSTEINE elevation is a risk factor for cardiovascular disease. Elevated homocysteine is associated with low vitamin B6, vitamin B 12, folate, and renal disease.

HORMONES are potent messengers and can impact everything from proteins synthesis and tissue health, to mood, level of inflammation throughout the body, heart, and brain health. Hormones must be in a healthy balance for optimal health.

Riordan Clinic's Optimal Aging Profile evaluates these factors, along with other important values such as coenzyme Q 10, vitamin D, complete blood count, and metabolic profile. This panel provides a comprehensive view of important considerations in healthy aging.

Learn more and schedule your profile at
riordanclinic.org/lab_tests/optimal-aging-profile

NOW AVAILABLE AT ALL THREE RIORDAN CLINIC LOCATIONS

COVID Antibodies Test (SARS-CoV-2 IgG Assay)



NOTE: This test **WILL NOT** detect **active** COVID-19 virus cells. If you believe you may have been infected with the COVID-19 virus, please call your primary healthcare provider or your local health department to obtain access to the appropriate test or services.

TEST COST
\$79



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THE PUBLIC



NO AGE
RESTRICTIONS



THIS IS A
BLOOD TEST

Call 800 - 447 - 7276 x 1385 to schedule your test

The SARS-CoV-2 IgG assay was developed by Abbott Laboratories, Inc. The Riordan Clinic reports the test results without reading or interpreting the results (which can be either “positive” or “negative”). Any questions regarding the test should be directed to Abbott Laboratories. **For more information, go to riordanclinic.org/lab_tests/covid-antibodies-test**

IVC NOW FOR IMMUNITY SUPPORT

Supercharge Your Immunity
with IVC NOW!

- Your White Blood Cells (WBC's) are the soldiers of your immune system.
- Research shows that WBCs can concentrate vitamin C up to 8000% greater than the blood level.
- When under attack by an infection, your WBC's use this high concentration of C to make hydrogen peroxide to use against pathogens.
- Virus-infected cells are identified and attacked by your WBC's and a killing dose of hydrogen peroxide is injected into the infected cell.
- Without the “ammunition” of high reserves of vitamin C, your WBC's will be less effective.
- For the last 35 years, the Riordan Clinic has administered vitamin C intravenously as a safe and effective way to maximize immune responsiveness.

Wichita **316-682-3100** Hays **785-628-3215** Overland Park **913-745-4757**

No walk-in appointments will be accepted.