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№5

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R. Alex Sokol
President and CEO

From a longer life span to a longer health span is a core tenet of AMC's mission and the theme of this new edition of Your Health magazine. Since its inception, AMC's goal has been to empower and inform its patients how to live healthier, promoting a better lifestyle (rather than treating symptoms), simplifying and personalizing health for you.

Maintaining good health does not need to be complicated. It should be easy, harmonic, and in balance with our daily lives. The first goal for all of us would be to keep our bodies humming along, in optimum health first, and for as many years as possible, to help reduce risk of disease and add healthy productive years to our lives.

AMC is proud to continue its commitment to care excellence with our clinic expansion, a re-designed AMC App, and the development of our AAG assistance physician network, providing advanced clinical peer review and complex medical case management. And there is so much more to come!

We genuinely hope you enjoy this our 5th edition of Your Health. As always, and most sincerely, we remain

Yours in Health,

asokol@amcenters.com



Buongiorno Milan!

Just off the elegant Corso Magenta in the heart of Milan, AMC Milan brings exceptional patient centered care to Milan. AMC Milan will provide 24/7 physician visits with an all English speaking staff, direct insurance billing to over 50+ providers, and full lab and functional diagnostics on site. AMC Milan kicks-off AMC's expansion in Italy with planned AMC clinics opening in 2026 and 2027.



Welcome AMC Tashkent

Introducing AMC Tashkent—AMC continues its health provider reach in Central Asia with the commissioning of its newest clinic in the upscale Mirabad district of Tashkent. With a soft opening planned in October, 2026, AMC Tashkent will set the gold standard of personalized outpatient and concierge care in Tashkent.



AMC's Insurance Redux

This fall we are proud to introduce AMC's network Insurance policy, the "AMC Health and Wellness Plan" re-designed for individual and family outpatient and urgent care coverage, covering both in-network (AMC) and out of network providers. For more information visit us at www.amcenters.com



Coming Soon: AMC Tirana!

Slated for a Q1, 2027 opening, AMC Tirana will be located in the beautiful and accessible Dry Lake area of Tirana, a beautifully new outpatient care and lifestyle model, serving Tirana residents with quality family and specialist care. For more information, visit us at www.amcenters.com



John Quinn
Chief Medical Advisor

Preventive medicine is one of the most powerful tools in healthcare. Good screening, vaccination, early diagnosis, health education, and chronic disease management can reduce avoidable illness, disability, and death. Whether we are talking about communicable diseases such as respiratory infections, gastrointestinal illness, or travel-related infections, or non-communicable diseases such as high blood pressure, diabetes, heart disease, asthma, or chronic lung disease, prevention helps patients stay healthier for longer.

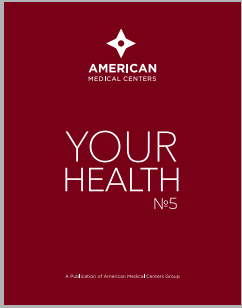
But even with the best prevention, people can still fall through the cracks. A person may become unwell while traveling, working abroad, studying overseas, or living far from their usual doctor. A minor illness can worsen. A chronic condition can suddenly become unstable. A child may develop a fever. A traveler may experience chest pain, severe abdominal pain, dehydration, injury, or an unexpected infection. Mental and behavioral health can be challenging. In these moments, patients need more than general advice. They need timely access to trusted urgent care, clear clinical decision-making, and a healthcare team that understands both local systems and international standards.

This is where urgent care plays a vital role. Urgent care helps bridge the gap between routine prevention and hospital emergency medicine. It allows patients to be assessed early, treated appropriately, and escalated quickly when needed.

As Chief Medical Advisor for American Medical Centers, my focus is on connecting these elements: prevention, early recognition, urgent access, and excellence in emergency care. These are not separate parts of medicine. They are one continuous safety net. Prevention reduces risk. Urgent care catches patients when something changes.

At American Medical Centers, the goal is to help patients before, during, and after illness. Prevention remains the foundation, but access to excellent urgent and emergency care ensures that when health problems arise unexpectedly, patients are not left navigating them.





YOUR HEALTH
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Anastasiya Sakalouskaya
Chief Editor & Group Designer

Longevity is having a moment — and not just in the cultural sense. The science around aging, and specifically around how we age, has moved faster in the last few years than in the previous few decades. This issue of “Your Health” felt like a natural next step.

Our focus this time: The Prevention and Management of Age-Related Diseases — a topic that sits at the intersection of cutting-edge research and something deeply personal: how we want to live as we get older.

We chased the ideas that genuinely excited us — the breakthroughs, the re-searchers behind them, the things that are quietly changing how medicine thinks about getting older.

We hope this one stays with you.

Anastasiya S.

PART 1

FOUNDATIONS OF
LONGEVITY



Europe's Daily Habits for **BRAIN HEALTH**

Why Europeans Don't Get
Alzheimer's at the Rate
Americans Do?

ABOUT FOOD, CONVERSATION, AND THE UNASSUMING RITUALS THAT QUIETLY PROTECT THE BRAIN.

As of 2026, over six million Americans are living with Alzheimer's, and that number is expected to double in the coming decades.

Meanwhile, in Mediterranean countries like Spain, Italy, and Greece rates of Alzheimer's and dementia remain significantly

lower. People live long lives, often well into their 80s and 90s, with remarkably intact cognitive function. Grandparents tell long stories. Elderly neighbors play cards in the square. Old men recite soccer trivia from decades ago. Grandmothers recall recipes by memory alone.

It's not just genetics. And it's not expensive therapy or high-tech innovation. It's something quiet and daily. **IT'S LUNCH.** Not the food itself — though that matters — but the way it's eaten, every single day, without interruption,

without multitasking, and almost always with other people. This ordinary Mediterranean habit is keeping minds sharp — and why Americans, in their search for advanced brain health solutions, may be overlooking the simplest, most powerful habit of all.

1. DIET plays a bigger role than genetics in Alzheimer's prevalence, and Mediterranean regions seem to have an edge. Their daily reliance on whole foods, olive oil, fish, and vegetables stands in stark contrast to the processed-heavy, sugar-rich American diet.

2. LIFESTYLE. Europeans walk significantly more in their daily lives compared to Americans, who often rely on cars even for short distances. Regular low-impact activity, combined with social interactions tied to mealtimes and community gatherings, may explain why cognitive decline progresses differently.

3. Cultural ATTITUDE toward aging itself. In Europe, especially Southern Europe, elderly people are often integrated into daily family life, dining and living alongside younger generations. In the U.S., seniors are more likely to live in isolation or retirement facilities, which some researchers believe accelerates mental decline.

4. LUNCH IS AN EVENT — NOT A GRAB-AND-GO PIT STOP

In Mediterranean Europe, lunch is the central ritual of the day. This daily pause gives the brain a structured rhythm. The mind steps out of "task mode" and into presence. And over years, that pattern of rest, routine, and digestion supports deeper neurological health.

5. PEOPLE TALK — AND TALK A LOT!

Europeans engage in multi-generational daily dialogue - the single most brain-protective activity you can't buy in a bottle. Lunch is not just about calories. It's about talking. Storytelling. Arguments. Laughter. Repetition. Vocabulary. Nuance.

For older people, this is critical. Daily conversation exercises working memory, language processing, and emotional response — all key functions that deteriorate with age in

Alzheimer's patients. Meals are cooked from memory, not from labels - and that is a cognitive exercise.

6. THERE'S NO MULTITASKING — JUST PRESENCE

In Mediterranean homes, lunch is singular. Phones are down. TVs are off (unless it's the news). This habit of single-tasking doesn't just improve digestion — it protects the brain from cognitive fragmentation. Over time, the ability to focus on one thing at a time helps preserve attention span, decision-making skills, and memory.

7. THE DIET ISN'T JUST MEDITERRANEAN

The Mediterranean diet is frequently cited in Alzheimer's research as a protective factor — rich in olive oil, fish, legumes, and seasonal produce. They don't chase novelty. They rely on muscle memory and tradition. This consistency reinforces cognitive pathways. Sensory familiarity — smell, taste, temperature — activates areas of the brain associated with nostalgia, safety, and routine.

8. OLDER PEOPLE STAY INTEGRATED — NOT ISOLATED

In many parts of the U.S., elderly people live apart from family. Meals may be taken alone. Conversation may be limited. In Mediterranean cultures, older people remain embedded in daily life. They help in the kitchen. They tell stories. This ongoing social role is critical. Neurologically, people need purpose. Social engagement slows decline.

9. THE MEAL IS FOLLOWED BY REST — NOT IMMEDIATE RE-ENTRY

Lunch is often followed by a pause. Sometimes a nap. Sometimes a walk. Sometimes nothing at all. This post-meal rest allows the brain to digest the experience, consolidate short-term memory, and recalibrate. This reduces stress, inflammation, and cognitive fatigue.



12 Simple Secrets to a Healthier Life



The following are Wellness Mantras, brought to you by doctors, therapists and authors - thoughts encapsulating core truths about physical and mental health. Wisdom packed into a few words that form principles of healthy living:

A balanced immune system knows when to respond — and when not to. A relaxed, calm immune response is the goal. Three things that support that are a healthy gut microbiome, exercise and stress reduction.

(Dr. Rita Kachru Section Chief of Clinical Immunology and Allergy at The UCLA David Geffen School Of Medicine)

The way to health is through the gut. The gut talks to the brain and to the immune system, the two most important organ systems for maintaining our health and preventing age-related diseases. It turns out that the gut is center stage.

(Dr. Eric Topol Founder and Director of Scripps Research Translational Institute)

Listen to your body. Then listen to your doctor. A patient's self-knowledge and a physician's expertise make for a powerful partnership. Don't neglect either.

(Dr. Chidinma Nwakanma Associate Professor of Clinical Emergency Medicine at The University of Pennsylvania)

Make healthy behaviors your default. Healthy eating, exercise and sleep are foundational, like having air to breathe. There's proven data that doing the basics can prolong your life, so treat them like nonnegotiables.

(Dr. Latha Palaniappan Associate Dean for Research at Stanford University School of Medicine)

Food is medicine. Food is love. Enjoy it as both. What you eat connects you to your culture and the people you care about. So let loose a little when you have something to celebrate. The rest of the time, choose foods that nourish your body.

(Dr. Nate Wood Director of Culinary Medicine at Yale School of Medicine)

Sometimes you have to put sleep first. Work, screens, weekend plans, alcohol and caffeine — so much can get in the way of a good sleep routine. Control what you can control. To fix your sleep, you might have to make some trade-offs.

(Dr. Brienne Miner Geriatrician and Sleep Medicine Physician at Yale School of Medicine)

Happiness is not a factory setting. It's a skill you learn. The brain and the mind are trainable. There are evidence-based ways to cultivate calm, focus and patience.

(Dan Harris Host of the "10% Happier" Podcast)

Aging is a good thing. Getting older makes you wiser, more resilient, more accepting and happier. There will be changes and challenges. Focus on what you can do — not what you can't.

(Dr. Alison Moore Director of The Stein Institute for Research on Aging and Center for Healthy Aging)

Movement is life. If you want to stay healthy, you have to be physically active. It keeps your brain, heart, lungs, bones and joints healthy. It fights depression, lowers your risk of dementia, cancer, stroke, heart attack, depression — all medical conditions that are likely to shorten your life.

(Dr. Mary I. O'Connor Orthopedic Surgeon, Co-Founder and Chief Medical Officer, Vori Health)

Our relationships are our biosphere. It is in our interest to keep the biosphere healthy and happy, because we live inside of it. You have to operate like a team with the other members of your ecosystem. That means connecting with your own feelings and needs, and those of the people around you.

(Terry Real Therapist and Founder of Relational Life Institute)

Life is finite. Live with it. Once you acknowledge the limitations of being human, you can plunge your energy into what matters to you. Procrastination, distraction, impatience and all the rest of it are the consequences of trying to avoid reality.

(Oliver Burkeman Author of "Four Thousand Weeks" and "Meditations For Mortals")

Ultraprocessed foods aren't really food. They are designed to taste good. That misses the point of why we eat, which is nutrition.

(Andrew T. Chan Chief of The Clinical and Translational Epidemiology Unit at Massachusetts General Hospital)

The Best SPORTS for LONGEVITY

All forms of exercise help you live longer, but some activities come with extra benefits.

Regular exercise is one of the most effective ways to lengthen your life. Research consistently shows that physical activity is linked to healthy aging, lower risk of cancer, depression, dementia, Type 2 diabetes and cardiovascular disease. But the payoff starts much earlier: even four to five minutes of vigorous physical activity every day has been linked to longevity benefits.

THIS MIGHT BE THE BEST SPORT FOR A LONGER LIFE

But do some sports confer more longevity benefits than others?

"Some is good — more is better," said Steven Moore, a metabolic epidemiologist at the National Cancer Institute.

While staying active is critical, playing sports adds a social aspect and extra cognitive demands to exercising. And research suggests that some sports may offer a bigger longevity boost than others.

THE CASE FOR TENNIS

Walking may be a popular go-to activity, but several studies have highlighted the benefits of tennis or racquet sports for longevity. One study from Denmark found

that tennis players lived almost 10 years longer than their sedentary peers — and longer than soccer players, swimmers, and the other recreational athletes included in the analysis. Other research from Britain and the United States found that playing racket sports was linked to a lower risk of death during the follow-up period than any other sport or form of exercise studied.



It's possible, for example, that people who play racket sports tend to be healthier and wealthier than people who don't, although the researchers tried to account for those differences. Still, experts believe that tennis's unique blend of physical, cognitive and social challenges contribute to healthy aging.

For one, tennis offers a full-body workout. The game also demands quick changes in direction, which can help improve balance and reduce a person's risk of falls. Research suggests that playing regularly can also improve bone density, strengthening the body against fractures. In tennis, you also alternate between intense bursts of movement and brief periods of recovery — a structure that mimics interval training and can efficiently improve your fitness.

While tennis stands out in some studies, many other recreational sports are linked with longevity benefits. In a study of nearly 300,000 older adults in the

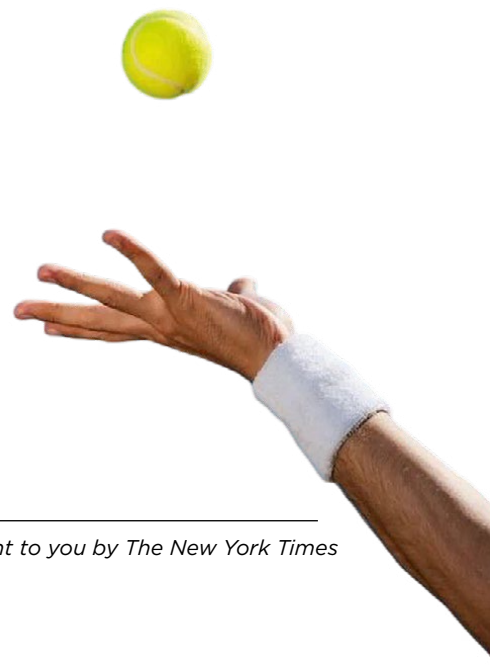
United States, for example, cycling was linked to 3 percent lower risk of dying over a 12-year period, swimming was linked to a 5 percent lower risk and golf was linked to a 7 percent lower risk, compared with those who did other activities, said Dr. Moore, who led the research.

Exercise your whole body. Cardio staples like running and cycling are great ways to stay active, Dr. Moore said. But pair them with upper-body work, including resistance training, so that you're getting a full-body workout and building muscle. Research suggests that people who do both aerobic exercise and strength training live the longest.

Aim for consistency. The benefits of exercise only stick if you keep doing it as you get older, Dr. Lee said.

While tennis is sometimes called a "lifetime sport," you don't need to stick with one activity forever. Mixing things up can keep exercise fresh and easier to sustain, especially as your body changes.

Ultimately, any and all physical activity improves longevity. Find something that works for you. The bottom line is to move more.



LONGEVITY VS QUALITY of LIFE

A new discovery that is promising to “Block the Aging Gene”, proves It is possible to be vibrant at 95, be physically and intellectually fit. Scientists all over the world are working on the new drug - a medication, that will block the **RAGE** gene, which causes cell aging.

KEY ASPECTS OF THE RAGE GENE:

- **Pathological Role:** RAGE activation is involved in chronic diseases such as diabetes, Alzheimer's, vascular diseases, cancer and chronic obstructive pulmonary disease (COPD).
- **Recent Developments:** Research is currently exploring RAGE as a target for anti-aging therapies, with reports that blocking the receptor could potentially slow cellular aging.

GLYCATION is considered a fundamental form and driver of cel-

lular and physiological aging. It is a non-enzymatic reaction where sugar molecules bind to proteins, lipids, or nucleic acids, forming harmful compounds known as Advanced Glycation End products (AGEs). This process is often referred to as a silent, invisible driver of aging, acting as a “sticky glue” that causes long-lived proteins like collagen and elastin to become stiff, brittle, and dysfunctional.

HOW GLYCATION CAUSES CELL AGING

- **Irreversible Protein Damage:** Unlike other molecular modifications, glycation is mostly IRRE-

VERSIBLE. Once AGEs form, they accumulate in tissues, especially on long-lived proteins like collagen (skin) and elastin (arteries), leading to stiffness, wrinkles, and reduced elasticity (often called “sugar sag”).

The **AGE-RAGE** Axis: AGEs bind to specific cell receptors called RAGE (Receptor for Advanced Glycation End products). This interaction triggers cellular inflammation and produces Reactive Oxygen Species (ROS), leading to chronic oxidative stress and accelerating cell damage.

- **Tissue Stiffness:** Glycation creates cross-links between collagen fibers, reducing the skin's flexibility and structural support.

- **Impaired Repair Mechanisms:** Increased levels of AGEs in the skin slow down cell repair, hindering wound healing and increasing pigmentation issues.

- **Intracellular dysfunction:** Glycation also affects intracellular molecules, impairing mitochondrial function and reducing the ability of fibroblasts to produce new, healthy collagen.

GLYCATION VS AGING

While glycation is a natural part of aging, it is accelerated by high sugar intake, high-heat cooking methods (frying, grilling), UV radiation, and smoking. Glycation is considered a major mechanism of aging alongside oxidative stress and inflammation.

EVIDENCE-BASED STRATEGIES TO SLOW GLYCATION

Dietary Adjustments:

- Reducing intake of refined sugars and high-fructose corn syrup.
- Choosing cooking methods like steaming, poaching, slow-cooking or boiling over frying - that alone reduces AGE formation by 50%.
- Add acidic marinades (lemon juice, vinegar) before cooking - reduces AGE formation by 50%.
- Avoid ultra-processed foods, which are loaded with pre-

formed AGEs.

- **Antioxidants:** Incorporating foods rich in antioxidants (vitamins C and E, polyphenols) to combat glycation-induced oxidation stress.

ANTI-GLYCATION FOODS:

- Berries (blueberries, strawberries) - anthocyanins inhibit glycation directly
- Herbs & spices: cinnamon, turmeric, rosemary, thyme - potent AGE inhibitors
- Green tea — EGCG blocks the Maillard reaction and RAGE signaling
- Cruciferous vegetables — sulforafane activates Nrf2, countering RAGE-driven inflammation
- Olive oil — oleocanthal suppresses RAGE pathway signaling

LIFESTYLE:

- Regular physical exercise helps improve glycemic control and boosts antioxidant defenses
- Sleep — poor sleep elevates cortisol - raises blood glucose - accelerates glycation
- Stress reduction — chronic cortisol is a direct glycation accelerator
- Time-restricted eating (16:8) reduces glycation exposure windows
- Post meal walks (even 10 min) — dramatically blunts glucose spikes

CONSISTENCY OVER TIME IS WHAT MATTERS MOST

a sugar molecule binds to collagen



collagen becomes brittle and less elastic, causing the skin to age



KEY SUPPLEMENTS WITH EVIDENCE AND HERBAL RAGE BLOCKERS:

- Chlorogenic acid: from green coffee
- Carnosine: found in meat, which should not be cooked at high temperatures
- Hydroxyproline: the key aminoacid in collagen
- Centella asiatica / gotu kola extract: also taken as tea
- Benfotiamine (fat-soluble B1)
- Carnosine
- Alpha-lipoic acid
- Pyridoxine (B6)
- Quercetin
- Resveratrol
- Berberine
- Gymnema Sylvestre — reduces intestinal glucose absorption
- Ginkgo Biloba — shown to reduce RAGE expression in vascular tissue
- Milk Thistle (silymarin) — hepatoprotective + reduces AGE accumulation in liver



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PART 2

NUTRITION &
METABOLIC HEALTH



The Ancient Fountain of Youth OLIVE OIL

“I’ve never had but one wrinkle, and I’m sitting on it,” Jeanne Louise Calment famously quipped.

Jeanne Louise Calment was a French super-centenarian who had the longest confirmed human life span in history, living to the age of 122 years and 164 days. Jeanne Louise rubbed Olive Oil into her skin on a daily basis and credited Olive Oil with her youthful appearance and longevity.

Olive trees are famous for their longevity and are amongst the oldest living things in the world. A grove of sixteen olive trees in Lebanon known as “The Sisters” or

“The Sisters Olive Trees of Noah” are estimated to be between 5,000 to 6,000 years old and still produce fruit and Olive Oil to this day.

Ancient civilizations revered the Olive for its longevity, life sustaining powers and skin regenerating properties. They believed that the qualities inherent in Olive trees, that allowed them to live for thousands of years, were contained in the fruit and oil of the tree. And that these qualities could be passed on to the peoples of the Earth who consumed Olives and their precious oil.

When the people of Athens asked the famous Greek philosopher Democritus, legendary for having lived more than one century himself, how to preserve one’s health and live a long life, he responded, “Let us bathe our insides in honey, and

our exteriors in olive oil.”

The skin rejuvenating powers of Olive Oil were well known to the great physicians of antiquity. Hippocrates, Diocles and Galen all praised Olive Oil and utilized it in their medical practices:

- Hippocrates, known as “The Father of Medicine”, used Olive Oil based ointments as a topical treatment for skin traumas, diseases, and wounds. The Hippocratic Corpus (a collection of medical works associated with Hippocrates) records over 60 medicinal uses for Olive Oil, with the most common references pertaining to the healing of a wide variety of dermatological conditions.

- Diocles recommends Olive Oil be used for hygienic purposes in his epic work, Archidamos. The Greeks and

Romans embraced the idea and used Olive Oil, along with the strigil, to clean, exfoliate and care for their skin.

- Galen, the Roman physician of Greek origin, is credited with the invention of cold cream. He used Olive Oil, Beeswax and Rosewater in the 2nd century AD as a moisturizer.

Today, modern research and evidence based medicine have not only confirmed Democritus, Hippocrates, Diocles and Galen’s recommendations and prescriptions for longevity and youthful radiant skin, they have explained the properties of Olive Oil that contribute to its tremendous ability to enhance and repair our skin.

Olive Oil is rich in vital antioxidants, essential amino acids, squalene, flavonoids, polyphenols (including a substance known as Oleocanthal which has anti-inflammatory properties). Skin aging, as well as general body aging, seems to be closely tied to the inflammatory process. Olive Oil also contains Omega components such as Omega 9, Vitamin A, Vitamin K, traces of Vitamin C and Vitamin E which is, in and of itself, another antioxidant. These are all powerful anti-aging agents that when used regularly, can slow down the aging process and help to maintain a healthy vibrant glowing skin, and health from within.

HOW TO MAINTAIN HEALTHY RADIANT SKIN WITH OLIVE OIL:

1 IN HYGIENE

The easiest way to benefit from Olive Oil (while extremely messy!!!) is to bathe in it daily.

It should come as no surprise that the world’s first and most famous soaps were made with Olive Oil.

2 AS A MOISTURIZER

1. You can rub Olive Oil into your skin on a daily basis.
2. Use Olive Oil in therapeutic massage.
3. Make your own Galen’s Cold Cream at home. Here’s how:
 - A. Tablespoon (~40 gm) Olive Oil
 - B. Teaspoon (~10 gm) Grated Beeswax
 - C. Tablespoons (~40 gm) Rosewater
 Optional - 10 drops of Rose Essential Oil.

- Gently melt the beeswax in a small bowl in a baking tray of hot water (or a double boiler)
- Gently heat the Rosewater in a second small bowl alongside the melting beeswax (or a double boiler)
- Add the Olive Oil to the melted beeswax stirring or beating constantly until thoroughly mixed.
- Add the Rosewater drop by drop to the Olive Oil/beeswax mixture stirring or beating constantly until thoroughly mixed.
- Remove from heat stirring or beating constantly until cool
- Then (optionally) add the Rose Essential Oil drop by drop stirring or beating constantly until thoroughly mixed.
- Pour into a glass jar and put a lid on the jar once the cream is quite cool.

3 IN YOUR DIET

Of course one of the best ways (which is surprisingly overlooked by many) to maintain a youthful, radiant complexion is to eat a healthy diet. The Mediterranean Diet, with its emphasis on Olive Oil, has endless benefits for good skin care and general health and longevity.

OLIVE OIL 101

Olive trees have been grown in the Mediterranean basin since the 8th century BCE, and olive oil has been a valuable commodity - used in everything from cosmetics and food to fuel and pharmaceuticals - since the days of the Roman Empire.

“Along with grapes and wheat, olive oil is one of three core Italian food products, and the country is now the world’s second-largest producer”.

Olive groves in Italy tend to be on small, independent farms with low-density planting. Many trees are planted in geographically challenging places, so harvesting is arduous and quantities small, accounting for the high prices. Italy retains a great deal of biodiversity in its cultivars: around 350 varieties, and each is characterized by its own specific flavor.

The best oils are made from hand-picked olives, which are often ground with stone mills and gently pressed between cotton mats. The best olive oil is referred to as *Olivo d'olive extra-vergine* (extra-virgin olive oil), EVOO. The classification for this is principally a chemical analysis, where the oleic acid content must be less than 1% - lower acid usually means more flavor and aroma. To be called extra-virgin olive oil, the oil is also required to be mechanically (as opposed to chemically) extracted.

The quality of olive oil depends on the region in which the olives are grown, their variety, their ripeness when picked, and the speed and method by which they are crushed. Filtration can clear a cloudy oil, but often removes the mouth-feel of a wonderful oil. The

most sought-after oil is often that which runs free when olive paste is spread on stacked mats, before any pressure is applied. This free-run oil is usually more viscous, pungent and finer-tasting than the oil that comes later. Olives harvested earlier in the season produce a greener oil, as there is more chlorophyll in the fresher fruit; those harvested later will produce a more golden oil. Likewise, green olives deliver bitter, fruitier oils, while riper olives tend to yield sweeter, milder oils.

BUYING GUIDE

To some extent, the “best” olive oils will depend on your own taste preferences. Single-estate oils from Tuscany are among the finest, and their taste reflects the care that goes into their production. Exceptional oil is not the sole preserve of Tuscany, though. Great oils can also be found around Lake Garda, in Liguria, near Spoleto in Umbria, around Andria in Puglia and in Sicily.

Olive oils are pressed in late autumn and early winter (November to December), and this is the best time to buy them. Use your oil up quickly - some say within two months of opening - as it doesn't age well. In fact, exposure to light hastens oxidation and increases acidity, which is why most olive oils are sold in dark-green bottles.

IN NUMBERS

- Italy produces around **400,000** tons of olive oil per year
- Only **40%** of Italian extra-virgin olive oil is exported in the 18 Italian regions where olive trees grow, there are roughly **902,000** farms, **179 million** olive trees and **4,500** pressing mills (*frantoio*)
- Italy produces **42** DOP-protected oils and one IGP-protected oil.





Get The Best EXTRA VIRGIN OLIVE OIL

Here's how to tell when it's truly excellent.

RECOGNIZE QUALITY THROUGH THE SENSES

Advice from Marcello Scoccia, President of Onaoo, the National Organization of Olive Oil Tasters.

APPEARANCE The color can vary from deep green to golden yellow, depending on the production area, the variety and the ripeness of the olives, but it does not

determine the quality: in official tests the oils are tasted in small dark glasses.

SMELL The aromas range from fruity notes to those of freshly picked olives; aromas reminiscent of cut grass, artichoke, or tomato are common. Hints of almond, apple, or pine nut may also be detected. It should not have any musty or rancid overtones.

TOUCH It can have a thick, enveloping consistency and may cause a tingling sensation in the throat when

freshly squeezed.

TASTE Harmonious with fruity, bitter and spicy sensations.

HOW IT IS STORED

Its enemies are air, light, and heat. It's best to use small, dark glass bottles, hermetically sealed, and kept away from kitchen burners. The shelf life depends on the starting quality: an excellent oil, with pronounced fruity and vegetal notes and hints of bitterness and spiciness, will have a longer shelf life.



The variety of olives used also plays a significant role: more structured oils, with amount of fruity, bitter, and intense notes and a greater spicy polyphenols, keep better.

MONOCULTIVATE VS BLEND

Mono-varietal oils, that is, by pressing only one variety of olive (cultivar), enhance the characteristics of the cultivar and the area of origin. Blended extra virgin olive oils born from the assembly of several varieties, they have a balanced aroma and flavor and a consistent taste.

WHY IS IT THE BEST?

Extra virgin olive oil, is rich in polyphenols, vitamins and fats.

Monounsaturated fats are beneficial to health and a true elixir of long life. Unlike most commercially available vegetable oils, it is obtained exclusively through mechanical and physical processes that preserve its organoleptic and nutritional qualities.



Bread and oil
Matching works best: a delicate-tasting bread pairs better with a sweet-tasting oil, while a savory bread pairs better with a full-bodied oil.

EVEN IN COCKTAILS

It's an ingredient

It changes both the flavor and texture of cocktails, making them more consistent and smooth on the palate. Among the classics that can be revisited with the addition of extra virgin olive oil are the Martini, the Bloody Mary, and the Gin Sour.





HERBS & Spices

Generally, we think of herbs as plants used by cooks for their flavor and aroma. The word **HERB** derives from the Latin herba, meaning grass or, by extension, green crop: it was originally applied to a wide range of leaf vegetables in addition to the plants we now call herbs. Most of the culinary herbs we use grow in temperate climates. Spices, on the other hand, are products of tropical plants: aromatic roots, bark, seeds, buds, and fruits, usually used in dry form, whether whole or ground. The word derives from Latin, where species meant specific kind but, in later use, goods or merchandise - spices being an important commodity at the time of Romans.

HEALTH BENEFITS OF HERBS AND SPICES

The early use of herbs and spices was medicinal, and in many regions where they grow they are still valued for their medicinal properties. Often their use in cooking owed as much to their perceived ability to promote health, combat flatulence or help digest fatty foods as to their appetizing fragrances. Fresh herbs and spices provided mineral salts and vitamins long before our need for

these was understood. In tropical countries, the vitamin C contained in chillies remains just as important to the diet as the lift that the chills give to it.

Most countries recognize the importance of providing a balance in food. **INDIAN** cooking follows Ayurvedic principles in using herbs and spices to provide flavor and to create physical and emotional well-being. In **CHINA**, nutrition and medicine have long been integrated. Chinese cooking is based on a theory that well-being is brought about by careful balancing of five flavors - sweet, salty, bitter, sour and pungent - with the texture and color of the food. **YIN** herbs such as mint and parsley slow down the metabolism, whereas **YANG** spices such as chili and ginger activate it. Similar principles are followed in **IRAN**, where the cook strives to maintain a balance between ingredients classed as hot and cold. In the **WEST**, herbs and spices add flavor to low-salt and low-fat foods, and some studies suggest that garlic may help lower cholesterol.

Herbs and spices are also known for their preservative properties. All around the world, traditional flavor combinations, using

local ingredients, have come to characterize the foods of those regions. Saffron, pimentos, garlic and nuts dominate in **SPAIN**; wine and herbs in **FRANCE**; basil, garlic, olive oil, anchovy in **ITALY**. In **BRITAIN**, it is parsley, thyme, sage, and mustard; in **EASTERN EUROPE** sour cream, dill, and caraway. The **MIDDLE EAST** uses lemon, parsley, and cinnamon. In northern **INDIA** ginger, garlic, and cumin are the most important spices; in the south it is mustard seed, coconut, chili, and tamarind. **THAILAND** has fish sauce, lemon grass, galangal, and chili; **CHINA** uses soy sauce, ginger, and Sichuan pepper. **MEXICO** remains faithful to its chillies, coriander, and cinnamon.

Herbs and spices stimulate all the senses through their aroma, flavor, texture and visual appeal, but not used in excess. Too much can ruin the dish. Experiment with combinations that appeal to you, and you will find that herbs and spices bring subtlety, harmony, and "spice" to your quality of life.





Thinking **In** The Box. THE PERFECT PACKED LUNCH

Treat yourself every day to... A LUNCH BOX.

One day its contents might include filet mignon with coriander and lime sauce, fresh salsa, fire-roasted corn and tortilla chips. Another day, baked salmon and sushi rice, tomato cucumber and mozzarella salad, dragon fruit and half an avocado.

The lunch box culture has become an inspiration and a motivating force for many. Preparing a lunchbox can help you eat healthier, more balanced meals and actually save money.

Main ideas are: vegetable-forward dishes, chicken, sprouts, red pepper salads, beans, seeds, herbs, dried fruits such as cranberries or chopped apricots and crumbled feta as garnishes.

The **FORMULA** includes something sustainable (usually proteins), crunchy (like carrots or radishes), creamy (hummus, whipped-feta dip, guacamole/feta mix), and sweet (chocolate or a protein bar). Immune

boosting soups in winter are amazing and having a stash of nuts, seeds, oils and maybe an avocado for “jazzing up” store-bought salads are a perfect topping. Another popular novelty is “Jalads” or salads in jars. These are made by pouring dressing into the bottom of a jar, then robust vegetables and working your way up to more delicate ingredients such as herbs and leaves. Tip, toss, and eat.

Ingredients may be tightly packed to reduce the air in the box and keep food fresh for longer. But the snug arrangement also provides visual pleasure, “like an edible puzzle or game of colorful Tetris”. Another Japanese take on “eating the rainbow” might result in rice (white), seaweed (black or dark brown), beans (green), beetroot (red) and sweet potato (yellow) alongside other elements such as protein. “Once you

notice how great you feel after a home cooked meal compared with processed food eaten out, it makes it easier to stay motivated and make lunchboxes every day”, says the author of “Bento Lunch Box”.



(American stay-at-home dad Tyler Yan / @tyler.yant / with 510K followers)

“Lunchbox Salads” by Naomi Twigg and Anna Pinder

“Real Healthy” by Melissa Hemsley, with a lunchbox **FORMULA**

“Bento Lunch Box” by Sara Kiyo Popowa

“100” Weight Loss **BOWLS**” by Heather Whinney

“The 5-Minute Salad Lunchbox” by Alexander Hart

“Bowls of Goodness” by Nina Olsson



Brought to you by HTSI



RECIPES PLATE TALK

INGREDIENTS

200g quinoa
sea salt & black pepper
1 tsp olive oil
140g courgette, chopped
¼ red onion, chopped
zest of 1 lemon

½ garlic clove, chopped
pinch paprika
50g feta, cubed
50g cantaloupe, cubed
100g sugar snap peas, sliced
black sesame seeds
handful rocket
basil leaves (optional)
lemon wedge

DRESSING

1 tsp olive oil
1 tsp cider vinegar
½ tsp Dijon mustard

METHOD

1. Cook quinoa in salted water for 15–20 mins until tender.
2. Sauté courgette, then add onion, garlic, paprika and half the lemon zest. Stir into quinoa.
3. Mix feta, melon and remaining lemon zest.
4. Whisk dressing ingredients and toss with sugar snap peas and sesame seeds.
5. Layer quinoa, peas, feta mixture and rocket. Finish with basil and a squeeze of lemon.



QUINOA, MELON & FETA with mustard dressing

INGREDIENTS

250g puy or beluga lentils
1 tbsp olive or coconut oil
5–7 shallots, chopped
4 garlic cloves, crushed
1½ tsp cumin
1 tsp turmeric
1 tsp cinnamon
1 tsp paprika

1 tsp coriander
1 red pepper, chopped
1–2 red chillies, chopped
2 tomatoes, chopped
400g cooked butternut squash
400ml coconut milk
1 tbsp tahini
1 tbsp honey or agave
juice of 1 lime
3 tbsp soy sauce
2 tbsp olive oil
½ cucumber, shaved
4 tbsp rice vinegar
salt & black pepper

DRESSING

200g yogurt
1 tsp honey or agave
drizzle olive oil

METHOD

1. Cook lentils. Fry shallots, then garlic, spices, pepper, chilli and tomatoes.
2. Add lentils, squash, tahini, honey and coconut milk. Simmer 5 mins.
3. Stir in lime juice and soy sauce. Season to taste.
4. Mix yogurt sauce and cucumber salad.
5. Serve chilli with yogurt, cucumber, coriander, rice, hot sauce and lime.



The **LOYAL LENTIL CHILLI**



RECIPES



**AVOCADO,
CORIANDER, and
LIME TABBOULEH**

INGREDIENTS

175g bulgur wheat
salt & black pepper
2 tomatoes, diced
1 avocado, diced
1 small red pepper, diced
60g red onion, diced
handful coriander, chopped
125ml lime juice
2 tbsp extra virgin olive oil

METHOD

1. Cover bulgur with boiling salted water and soak for 30 mins.
2. Drain, then mix with tomatoes, avocado, pepper, onion and coriander.
3. Add lime juice and olive oil. Season, toss well and chill for 20 mins before serving.



**GREEN LENTIL salad
with FETA & PICKLED
RED ONION**

INGREDIENTS

100g cooked green lentils
2 tomatoes, chopped
a few basil leaves
sea salt & black pepper
¼ red onion, thinly sliced

1 tsp rice vinegar
1 tsp chopped dill
75g feta, cubed
handful pea shoots
1 tbsp pomegranate seeds

DRESSING

2 tsp Greek yogurt
juice of ½ lemon

METHOD

1. Mix lentils, tomatoes and chopped basil. Season with salt and black pepper.
2. Toss the sliced red onion with rice vinegar and dill. Leave to lightly pickle.
3. Stir together the Greek yogurt and lemon juice. Season to taste.
4. Layer the lentil mixture in a serving bowl. Top with the pickled onion, feta, pea shoots and pomegranate seeds.
5. Spoon over the yogurt dressing and finish with the remaining basil leaves.

PLATE TALK

INGREDIENTS (HARISSA)

5 red chillies
1 red pepper
1 tbsp chipotle paste
½ tsp chilli flakes
½ tsp toasted ground cumin
½ tsp toasted ground dill seeds
2 garlic cloves, crushed

1½ tsp red wine vinegar
3 tbsp olive oil
pinch sea salt
½ tsp black lime powder

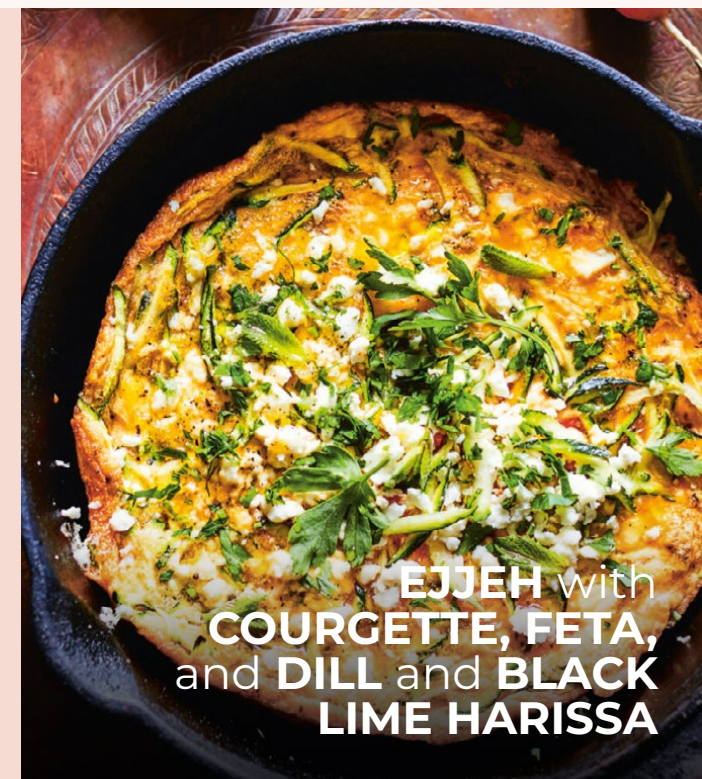
OMELETTE

1 tbsp olive oil
1 grated courgette
parsley, chopped
mint, chopped

1 tbsp harissa
200g feta, roughly
chopped
4 eggs, beaten
sea salt & black pepper

METHOD

1. Roast the chillies and pepper until charred. Steam, peel, deseed and chop.
2. Blend with the remaining harissa ingredients until smooth.
3. Sauté the courgette, then add the herbs, harissa and feta.
4. Pour in the eggs, cook until set, then finish under the grill.
5. Serve with pitta bread and a radish-green salad.



**EJJEH with
COURGETTE, FETA,
and DILL and BLACK
LIME HARISSA**

INGREDIENTS

600g soft baked ricotta
(or fresh ricotta)
4 coloured carrots
2 red peppers
2 courgettes
2 beetroot
6 shallots

2 garlic cloves
1 bunch mixed herbs (rosemary,
sage, thyme and parsley)
1 tsp ground turmeric
Extra virgin olive oil
Salt
Freshly ground black pepper

METHOD

1. Wash and chop the vegetables into even-sized pieces. Quarter the shallots, slice one garlic clove, crush the other and finely chop the herbs.
2. Toss the vegetables with the shallots, sliced garlic, olive oil, salt and turmeric. Roast at 180°C (350°F) for 20 mins.
3. Slice the ricotta into four pieces. Mix olive oil with the crushed garlic, salt and black pepper, then brush over the ricotta. Place on the vegetables and grill for 5 mins until lightly golden.
4. Drizzle the remaining garlic oil over the vegetables and finish with the chopped herbs.



**BAKED RICOTTA
with GARDEN
VEGETABLES**

All you Need to Know About VITAMIN D

You've probably heard about vitamin D from your doctor or a friend — and how your body produces it when you spend time outside on a sunny day. But why does vitamin D matter so much for your health? Vitamin D is like a superhero for your body. It's a nutrient that helps your bones stay strong, your immune system fight off germs and even boosts your mood.

WHAT IS VITAMIN D AND WHY SHOULD YOU CARE?

There are a few types of vitamin D, but the one you really need to know about is vitamin D3 (cholecalciferol). Your skin makes vitamin D3 when sunlight hits it, and it's found in supplement form. There's also vitamin D2

(ergocalciferol), which comes from plants, including yeast and mushrooms exposed to ultraviolet (UV) light, making it a popular option for vegetarians and vegans.

However, vitamin D3 is significantly more effective than D2 at raising blood vitamin D levels. The active version your body uses is calcitriol, which helps control things like calcium levels and regulates gene expression, influencing many cellular processes, including cell growth and differentiation, immune function and inflammation.

Why should you care? Because without enough vitamin D, your body can't work at its best. It's

key for strong bones, fighting colds and even lowering your risk of serious diseases.

HOW DOES VITAMIN D WORK IN YOUR BODY?

Your body uses vitamin D in two primary ways, and both are important for your health.

1 Keeping your bones strong — This is the job of your endocrine system. When you have enough vitamin D, it turns into calcitriol in your kidneys. This helps your gut pull calcium from food to build strong bones. Without it, children get rickets (soft bones) and adults develop osteomalacia, or weak, painful bones. Vitamin D gives your skeleton the tools it needs to stay tough.

2 Boosting your immune system and more — Other cells — like your immune cells — use vitamin D differently. These are called peripheral target cells. They need vitamin D3 directly to make calcitriol inside themselves. This powers up your immune system to fight off viruses, keeps your heart healthy and even helps your brain stay sharp. Here's the catch: these two systems need enough vitamin D3 to do their jobs. If you're low, your bones might weaken and you could get sick more often. So, how do you make sure you're getting enough?

WHAT'S THE BEST WAY TO GET VITAMIN D?

You've got two main options to keep your vitamin D levels up: sunlight and supplements. Sunlight is the best option for optimizing your vitamin D levels. Let's break it down.

● Sunlight is nature's vitamin D factory — When sunlight hits your skin, it turns a substance in your body into vitamin D3. Here's how to get sun exposure safely: How much sun? Expose your bare skin to direct sunlight daily. To gauge safe sun exposure, perform a simple "sunburn test." Pay close attention to your skin as you're in the sun. You're aiming to stay just below the point where your skin starts to turn even slightly pink. Any redness at all is a signal to get out of the direct sun, so avoid getting a sunburn — that's a sign of damage, not benefit.

Eliminate seed oils before peak-hour sun exposure — Seed oils, rampant in processed and fast food, are packed with linoleic acid (LA). When LA accumulated in your skin interacts with the sun's UV rays, it triggers inflammation and DNA damage.

Fun fact — Your body stops making vitamin D when you've got enough, so you can't overdo it from sunlight alone. However, if you have darker skin, you'll need to spend more time in the sun to produce the same amount of vitamin D as someone with lighter skin. However, sunlight isn't always reliable. If you live far north (like in Canada or Scandinavia), it's difficult to get enough sun exposure during

the winter months. Even in the summer, many people spend most of their time indoors, missing out on valuable sun exposure. That's where supplements come in.

● Vitamin D3 supplements are a backup plan — Vitamin D3 supplements are inexpensive and easy to find. If you can't get enough vitamin D from sun exposure, here's what you need to know about vitamin D supplementation:

How much vitamin D3? Your goal is to reach and maintain optimal vitamin D levels, ideally between 60 and 80 ng/mL (150 to 200 nmol/L). The best way to know if you're in this range is to get your vitamin D levels tested. We recommend doing this twice a year. Based on your test results, adjust your sun exposure or your supplement dose. Regular monitoring is key to keeping your vitamin D level in that sweet spot.

Vitamin D3 supplement tip — Take vitamin D3 with a meal that has some healthy fat, like grass fed butter or tallow, to help your body absorb it.

WHAT ARE THE BENEFITS OF OPTIMAL VITAMIN D LEVELS?

Keeping your vitamin D level in the optimal range does wonders for your health. Here's what you gain:

- 1 Stronger bones — Vitamin D helps prevent rickets in children, osteomalacia in adults and osteoporosis as you get older.
- 2 Better Immunity — Ever notice you get fewer colds when you're out in the sun? Vitamin D helps your immune system fight viruses like the flu or even COVID-19.

ARE YOU AT RISK FOR LOW VITAMIN D?

So, sun or supplements — or both — keep your vitamin D on track. But how do you know if you're low? Some people have a tougher time getting enough vitamin D. You might be at risk of vitamin D deficiency if:

- You have darker skin — More melanin means you need more sun to make vitamin D.
- You're older — As you age, your skin doesn't produce it as well.
- You live far north — Weak winter sun makes it challenging to get enough vitamin D from sunlight, especially in the winter.
- You cover up or stay indoors — Clothes and sunscreen block sunlight, so you miss out on vitamin D. Likewise if you don't spend much time outdoors.
- You have certain conditions — Obesity and gut issues make it harder to use vitamin D.

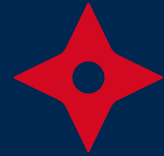
3 Lower chronic disease risk — Studies link optimal vitamin D levels to less heart disease, diabetes and cancer. It's like a shield for your body, helping to ward off chronic disease.

4 Fewer autoimmune problems — Conditions like multiple sclerosis, psoriasis and rheumatoid arthritis are also less likely when you have enough vitamin D3

5 Happier mood — Feeling down? Some research says vitamin D helps lift your spirits and ease anxiety and depression. To get these perks, you need steady levels — not just a random dose here and there. Aim for 60 and 80 ng/mL of vitamin D in your blood, and stick with it year-round.

Your healthier, happier self is just a sunny day away.





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AMC INSURANCE



PART 3

WOMEN'S HEALTH &
HORMONAL BALANCE





By **Dr. Maya Kipiyani**, MD, PhD.
Gynecologist-Endocrinologist,
Preventage specialist at AMC

FEMALE Health

Hormones are among the most active substances in our bodies. They transmit signals from the “control center” to the target organs, where they are used. Hormones control our growth and aging, metabolism, reproduction, mood, and mental functions, and they contribute to the formation of habits and behavior patterns—in other words, they govern our entire physiology.

BIO-IDENTICAL HORMONE REPLACEMENT THERAPY IS A POWERFUL, NATURAL, AND PRECISE TOOL FOR MANAGING VIRTUALLY ALL PHYSIOLOGICAL PROCESSES INVOLVING OUR HORMONES.

But this is especially true for conditions in which their natural production declines due to physiological or disease-related causes. The former, in particular, include aging, menopause and andropause, and the postpartum period, occurs against the background of natural suppression of ovarian function due to breastfeeding. The second group includes conditions following ovarian surgery, IVF and chemotherapy programs, depression and insomnia, chronic fatigue syndrome, sexual dysfunction, infertility, metabolic syndrome, obesity, and much more.

Natural hormonal supplements can help intensify metabolic processes, increase productivity and resilience to physical and emotional stress, achieve greater results in sports and diets, enhance sexuality, improve memory, mood, and stabilize sleep.

For hormonal therapy to support the body’s normal functioning as naturally as possible, it is crucial that the chemical structure of

natural hormones in therapeutic products be precisely recreated. They must be completely identical to those produced by our bodies—in other words, bio-identical.

The source of all endogenous steroid hormones (including sex hormones) in the human body is cholesterol, which comes from food or is produced by the body’s own cells. Each hormone has its own receptor in the human body, through which it functions. If the body lacks its own endogenous hormones, this receptor will happily cooperate with any other molecules identical in structure. The source of the hormone, as well as its ancestry, are irrelevant to the receptor.

Plants do not produce cholesterol, but they do have related chemicals known as plant sterols. Through laboratory enzymatic processing, these can be converted into products of exogenous (externally acquired) steroid hormones, which will be recognized by the receptors of endogenous (internal) hormones in the human body as native, bio-identical hormones. Bio-identical hormones are those that are structurally and chemically identical to the

hormones produced by the human body. The implication is that the body’s response to such hormones will mirror the physiological response to its own endogenous hormones.

It’s important to remember that it is the chemical structure of the molecule, not the source, that determines whether a hormone is bio-identical.

Bio-identical hormones can be synthesized from plant (soy, yams) or animal (animal biological fluids and tissues) sources, or obtained entirely chemically. It’s important to understand that bio-identical hormonal preparations, which are of plant origin and considered natural, also undergo chemical modification in the lab.

Phytoestrogens are a separate topic. Some plants contain non-steroidal hormone-like compounds (isoflavones, coumestans, lignans), structurally similar to (but not identical to) human hormones and capable of binding to corresponding receptors in the human body. Such herbal preparations are widely used to relieve menopausal symptoms, especially in cases where systemic therapy with real hormones is contraindicated.

The potency of phytoestrogens is significantly lower than that of steroid hormones, but sufficient to have some effect. All hormones used in modern endocrine gynecology can be either bio-identical or non bio-identical, meaning they contain substances that are not found in the human body.

For example, the components of hormonal contraceptives are not bio-identical. Combined oral contraceptives (COCs) typically contain a synthetic analogue of the female hormone estrogen (ethinyl estradiol) and progesterone (one of many progestins). These substances are capable of binding to receptors in the woman’s body, but their effect will differ from that of the woman’s own hormones, as the purpose of these substances is to prevent pregnancy, i.e., to alter the physiological effects of endogenous hormones.

When the body experiences a hormone deficiency, bio-identical preparations are the optimal method of compensation. In the case of female sex steroids, these are estrogens and progesterone. Bio-identical estrogens for menopausal or hormone replacement therapy are typically derived from plant sources and, chemically, are 17-β-estradiol or estradiol valerate. These can be tablets, patches, gels, creams, injections, or depot forms such as implants. All of them have the same mechanism of action in the human body, but may differ in bioavailability and

pharmacokinetics (the rate of absorption, distribution, metabolism, and elimination of the drug).

Bio-identical progesterone is micronized progesterone. Its synthetic analogue, “dydrogesterone”, widely used in HRT and elsewhere, is also derived from plant materials. However, its chemical structure is a stereoisomer of progesterone (retroprogesterone), making it highly effective when taken orally (regular progesterone is very finicky in this regard), well-tolerated, and free of unwanted side effects.

Ultimately, it doesn’t matter how the drug is produced—whether by processing natural raw materials or completely synthesized in a lab setting. The final form, the structure of the active ingredient, the degree of purification, the

physicochemical and biopharmaceutical properties, and the ability to bind cleanly to the corresponding receptors in the human body (selectivity) are of fundamental importance. All these factors ensure the efficacy and safety of the drug. The efficacy and safety profile of each new drug is studied for years.

POTENTIAL BENEFITS OF BIOIDENTICAL HORMONES

- **Identical Structure:** The molecules of bioidentical hormones are identical to those produced by the body, which implies a more physiological response.
- **Potential to Reduce Side Effects:** When properly selected, bio-identical hormones are believed to have fewer side effects than some synthetic analogues.
- **Improved Quality of Life:** Some patients report significant improvements in quality of life, including rejuvenation, energy, sleep and improved sexual function.



MENOPAUSE

About half the world’s population is in the midst of menopause, but comparatively little attention is paid to this transition — or how to effectively treat it. Many women don’t seek help for menopausal symptoms, and those that do often find themselves in a disjointed medical system that positions pharmaceuticals as the answer to treat each symptom.

Menopausal symptoms are often blamed on low estrogen, but research suggests menopause is not a condition of estrogen deficiency, but rather excess. Menopause marks the end of menstruation. Technically, a woman enters menopause 12 months after her last period, but peri-menopause begins years

earlier, bringing with it a range of symptoms unique to each woman.

“Many women feel unsupported as they transition to menopause.” There’s even debate over whether menopause needs to be “treated” at all.

Peri-menopause, or the

menopausal transition, may begin around the ages of 45 to 55, lasting an average of seven years, but sometimes spanning a decade or more. This is a natural process that doesn’t require medical intervention, but which can sometimes benefit from it.



Each woman’s journey is different, as during peri-menopause production of the hormones estrogen and progesterone, which are produced by the ovaries, varies. As estrogen levels decrease, it can lead to a variety of symptoms.

According to the National Institute on Aging: “The menopausal transition affects each woman uniquely and in various ways. The body begins to use energy differently, fat

cells change, and women may gain weight more easily. You may experience changes in your bone or heart health, your body shape and composition, or your physical function.”

Sometime during the mid-40s, shifting hormone levels typically begin, as egg cells, which are surrounded by granulosa cells that produce hormones, are reduced in numbers. During this time, eggs are released less frequently, leading to irregular menstrual cycles.

Because perimenopause and menopause are complex and unique to the individual, working with a holistic health care practitioner can help you develop a comprehensive health care plan to address your symptoms, which can include not only hot flashes and night sweats but also trouble sleeping, along with:

Fatigue Breast tenderness **Brain fog** Dry skin

Mood swings Hair loss/texture changes

Headaches and/or migraines Heart palpitations

Joint pain **Weight gain** Low libido Urinary leaks and urgency

Forgetfulness Impaired short-term memory **Inability to focus**

Inattentiveness Poor word retrieval **Anxiety**

Difficulty concentrating **Feeling not like yourself** Impatience

Irritability Low motivation or energy **Tearfulness**

● Physical ● Cognitive ● Emotional

“Most Women Go Through Menopause Without Getting Help”

“Mood Changes and Depression Are also common in Menopause”

Research has shown a four-fold increase in risk of depressive symptoms, and a two-and-a-half-fold increase in the diagnosis of major depressive disorder — risks greatest in women with vasomotor symptoms. Also, the rate of

antidepressant use for women has been shown to double after age. As one paper in Scientific Reports notes, “... human menopause is a dynamic neurological transition that significantly impacts brain structure, connectivity and metabolic profile during midlife endocrine aging of the female brain.”

Besides the physiological challenges of menopause, women in this age group also may experience greater stress during midlife as they are caring for elderly parents, raising children and often juggling a career, which

can contribute to depression. Further, women with a history of depression are up to five times more likely to be diagnosed with major depressive disorder during menopause.

“Menopausal Women Have Normal Estrogen Levels in Tissues”

“Low Progesterone — Not Low Estrogen — Drives Night Sweats”

HOT FLASHES

Vasomotor symptoms, more often known as hot flashes and night sweats (hot flashes that occur at night), affect 50% to 75% of women during the menopausal transition. What exactly are hot flashes — the characteristic sign of menopause? The North American Menopause Society (NAMS) explains:

“Although their exact cause still isn’t fully understood, hot flashes are thought to be the result of changes in the hypothalamus, the part of the brain that regulates the body’s temperature. If the hypothalamus senses that a woman is too warm, it starts a chain of events to cool her down. Blood vessels near the surface of the skin begin

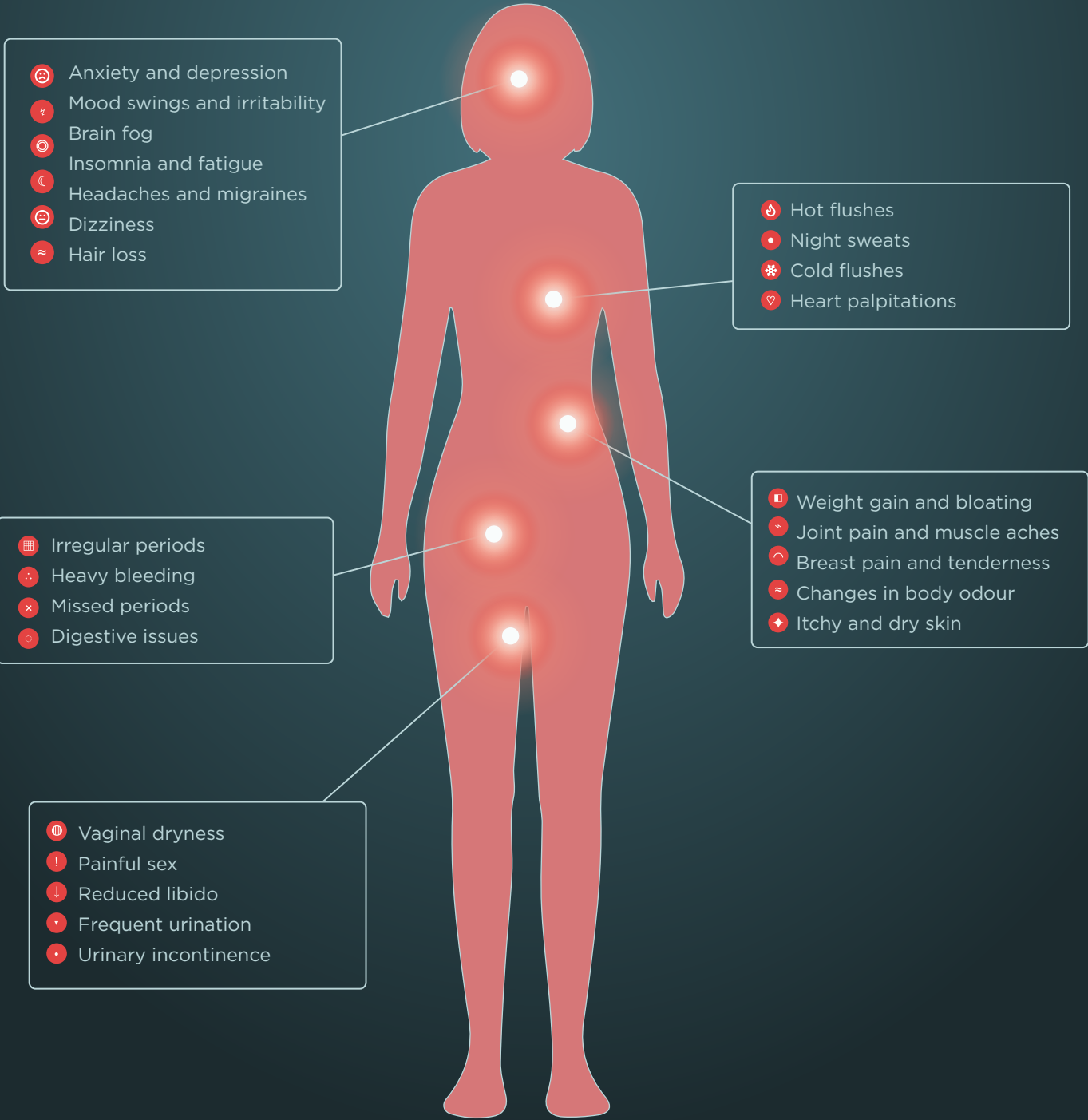
to dilate (enlarge), increasing blood flow to the surface in an attempt to dissipate body heat. This produces a red, flushed look to the face and neck in light-skinned women. It may also make a woman perspire to cool the body down. Women may sense their hearts beating faster. A cold chill often follows a hot flash. A few women experience only the chill ...

Most women experience hot flashes and/ or night sweats for 6 months to 2 years, although some reports suggest that they last considerably longer — as long as 10 years, depending on when they began. For a small proportion of women, they may never go away.”

Research, in fact, shows that it’s low progesterone — not low estrogen — that’s linked with night sweats. In the study, progesterone supplementation significantly improved night sweats and sleep quality among perimenopausal women. Further, blocking estrogen and/or taking dehydroepiandrosterone (DHEA) prevents many menopausal symptoms and related conditions, including obesity and insulin resistance, thus is called an “anti-estrogen”. For a further individual approach, refer to your health practitioner.



HOW MENOPAUSE AFFECTS THE BODY





PREVENTION of ESTROGEN DOMINANCE in Menopause

Contrary to conventional belief,

RESEARCH SHOWS MENOPAUSAL WOMEN OFTEN EXPERIENCE ESTROGEN DOMINANCE RATHER THAN DEFICIENCY,

with high estrogen levels in tissues despite lower blood measurements.

A 2024 study revealed hormone replacement therapy (HRT) dramatically increases estrogen in fat tissues, creating a hormonal

environment heavily skewed toward estrogen relative to androgens. Optimal hormonal health depends on the ratio between progesterone and estrogen, with many menopausal women showing ratios indicative of estrogen dominance even without HRT. Estrogen has a dual nature: essential for many bodily functions but problematic when in excess.

Managing menopause naturally involves tracking prolactin levels, eliminating seed oils, avoiding estrogen-mimicking chemicals in everyday products and considering natural progesterone supplementation.

For countless women, the word “menopause” is associated with the phrase “low estrogen.” This is the narrative many have been told, the explanation offered when hot flashes strike, sleep becomes elusive or moods swing unpredictable. Conventional medicine largely operates on this premise, with hormone replacement therapy (HRT) frequently prescribed to replenish what is believed to be lost — estrogen.

But this long-accepted understanding of menopause isn’t the complete picture. Studies indicate that estrogen levels in menopausal women

aren’t plummeting across the board. In fact, levels are often surprisingly high in certain tissues, even as circulating blood levels suggest otherwise.

This challenges the assumption that simply replacing “lost” estrogen through HRT is an appropriate solution. Indeed, boosting estrogen further, when it’s already abundant in tissues, creates imbalances.

“MENOPAUSE OFTEN INVOLVES ESTROGEN DOMINANCE, NOT DEFICIENCY”.

Menopause should not be seen as an estrogen-deficient state — This observation challenges the foundational idea that menopause is fundamentally a condition of estrogen scarcity. Further, hormonal balance isn’t just about the quantity of individual hormones, but about their ratios to one another. In the case of female hormones, the progesterone-to-estrogen ratio is a key indicator of endocrine health. For optimal health, this ratio should ideally be quite high, in the range of 200 to 500 — A ratio below 100 is typically considered indicative of estrogen dominance, a state associated with various health problems, including increased risk of hormone-sensitive cancers.

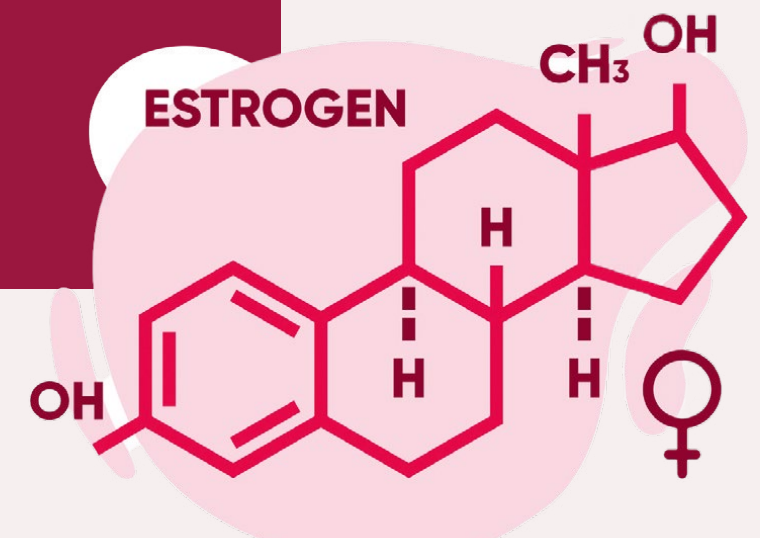
Estrogen has a dual nature that’s both necessary for numerous bodily functions and, paradoxically, a driver of disease when its levels are out of balance. In fact, estrogen is far more than just a sex hormone; it’s a key player in overall health and well-being, with effects that span far beyond reproduction.

- Estrogen supports critical body systems but is also disease-linked — Estrogen is involved in maintaining glucose and lipid balance, supporting a robust immune system, ensuring bone strength, promoting cardiovascular health and facilitating healthy brain function. However, the very same estrogen is also implicated in numerous diseases, ranging from infections and autoimmune disorders to metabolic disturbances and degenerative conditions.

- It increases intracellular calcium levels and decreases mitochondrial function — This contradictory nature of estrogen — both life-supporting and harmful — is what is called the “necessary evil” aspect. The point is that both too little and too much estrogen leads to chronic and acute health problems.

Reconsider estrogen-based therapies and contraceptives — Carefully evaluate your use of estrogens in HRT and birth control pills, as they contribute to estrogen dominance. Explore therapies and contraceptive methods that prioritize your body’s natural hormonal equilibrium. Remember, bioidentical estrogen, while often marketed as natural, is still an external estrogen source that contributes to your estrogen load.

Consider natural progesterone to counter estrogen — For those reaching perimenopause and menopause, natural progesterone is a particularly helpful consideration. Progesterone acts as a natural antagonist to estrogen, helping to balance its effects. Given the tendency toward estrogen dominance, incorporating natural progesterone helps restore a more balanced hormonal ratio.





How **WORRYING** about **GETTING OLD** is making you **AGE FASTER**

Thinking about aging accelerates the aging process — women who worry more about aging show faster signs of biological aging at the cellular level, a study has shown.

Scientists analyzed blood samples from over 700 women and found that chronic stress and anxiety accelerate the shortening of telomeres — the protective regions at the ends of chromosomes, a hallmark of aging and associated with an increased risk of age-related diseases.

THREE MAIN MECHANISMS OF INFLUENCE HAVE BEEN IDENTIFIED:

- psychological — negative expectations about aging;
- behavioral — less attention to health and prevention;
- physiological — chronic stress and elevated

However, studies also show a reverse correlation: a positive attitude toward aging is associated with a lower risk of dementia and cardiovascular disease.

In other words, attitudes toward age can influence not only mood but also biological processes in the body.

Women are
often *ignored*.
Data isn't.



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PART 4

MEN'S HEALTH &
AGING



5 THINGS Doctors Wish MEN KNEW About SEXUAL HEALTH

Urologists speak about what questions their patients are too afraid to ask.

Sexual health problems are common among men, even if they don't want to admit it. And while many conditions are preventable or treatable, experts say men are often too embarrassed to bring them up with friends, family or even physicians.

No one wants to seem weak or less virile. As a result, doctors say, many men resort to the internet, only to find misinformation — like the supposed benefits of semen

retention or horny goat weed.

"I wish more young men would take the time to speak to their primary care physician about health questions rather than get their advice from A.I. or social media," said Dr. Tony Chen, a urologist at Stanford Medicine in California.

Erectile dysfunction can be a sign of chronic disease. Around 50 percent of men over 40 will suffer from erectile dysfunction at some point, and the issue can represent broader problems with circulation. Good blood flow is essential for achieving and maintaining an

erection, and that is only possible with a healthy heart. A 2008 Dutch study of 1,248 men ages 50 to 75 found that those who said they had erectile dysfunction were at least 60 percent more likely to have a heart attack or stroke in the six years after the study concluded.

"Think of the penis as a barometer of somebody's overall cardiovascular health," said Dr. Matthew Ziegelmann, a urologist at the Mayo Clinic in Minnesota.

Difficulties with physical arousal may be a sign of Type 2 diabetes or high cholesterol, for instance,

both of which damage the lining of arteries and elevate the risk of a stroke or heart attack. Ignoring erectile dysfunction means you are missing a really valuable opportunity to prevent cardiovascular disease.

Pay attention to your pelvic floor. The pelvic floor muscles in both men and women lie above the perineum, the area between the anus and genitals, and act as a hammock to support the bladder, bowel and sexual organs.

Strengthening these muscles can improve bladder control, which is why Kegel exercises, done correctly, are often recommended to women during pregnancy and after childbirth. They can also help some men suffering from incontinence after prostate surgery and reduce premature ejaculation. But more often men suffer from the opposite problem: The muscles are too tense, which can cause pain during intercourse, erectile dysfunction or difficulty emptying the bladder or bowel.

"They rhythmically contract at certain points during the sexual cycle," Dr. Ziegelmann explained. "And if they're already tense and tight, it's a cramped muscle that you're then trying to move really fast, which can be painful."

Gently stretching your hips, glutes and hamstrings can help relax those muscles — as can diaphragmatic breathing. If you are experiencing serious long-term symptoms, however, Dr. Ziegelmann suggests seeking a pelvic floor physical therapist who can advise the best ways to loosen up.

Your age can influence sperm quality ... Multiple experts said they wished more men knew how age could affect sperm quality.

"There's a misconception that if you can get an erection and ejaculate, you're fertile," said Dr.

Michael Carroll, a reproductive scientist at Manchester Metropolitan University in England.

Sperm quality tends to deteriorate with age, affecting how well they swim, damaging the DNA they carry and even increasing the chances of complications during pregnancy, Dr. Chen said. There's no clear cutoff age, since DNA damage accumulates throughout a man's life. One study found that the risk of miscarriage was 43 percent higher when the father was older than 45, compared to someone in their late 20s. Urologists urged men to consider their age when planning a family, much as many women already do.

"Fertility is a team sport," Dr. Chen said. "And men have increasingly more to do with outcomes than what we previously thought."

... and so can other lifestyle factors. Smoking, alcohol consumption and nutrition also play a large role in sexual function. A high-fat, high-sugar diet results in an increase in certain chemicals — known as reactive oxygen species — that cause wear and tear on cells, including those within the testes. Dr. Carroll pointed out that the Mediterranean diet, which includes foods with higher levels of antioxidants, was associated with healthier sperm.

Obesity is another important risk factor. Fat cells produce an enzyme called aromatase, which converts testosterone to estrogen. Lower testosterone makes it harder to maintain an erection and slows sperm production. Every inch increase in a man's waistline has been associated with an approximately 3 percent drop in sperm concentration, according to a study from the Harvard T.H. Chan School of Public Health. Numerous studies

have shown that weight loss programs can raise sperm count in obese people.

Experts also said to avoid testosterone therapy unless you have a medical test confirming that you have a deficiency.

"It's marketed to younger men as, 'If you want big muscles, if you want erections that will last forever, if you want to look like a real man, then take testosterone,'" Dr. Modgil said.

Yet few are aware that it can also interrupt sperm production and potentially reduce fertility.

One common reason some men avoid screening is the size or shape of their penis, experts said. These worries can contribute to anxiety, depression and sexual dysfunction. In extreme cases, they can become a form of body dysmorphia that significantly impairs daily life.

Pornography can set unrealistic standards that leave many people feeling inadequate. It often reassures men, Dr. Carroll says, to know the average erect length is smaller than many assume: around 5.2 inches. He also warned against treatments claiming to enhance penis size and said simply trimming pubic hair could leave some men feeling more confident.

Remember that your urologist has seen it all before, Dr. Ziegelmann said. And a frank conversation can go a long way to assuaging fears.



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12 Surprising Health Benefits of Sex After 50

A quick romp in the hay doesn't just feel good. It turns out that sex has advantages that go way beyond simple pleasure. In fact, sexual activity is linked to some impressive, research-backed health benefits, and it's not just for young people.

Sex can be hugely beneficial for people as they get older, not only for the reported medical health benefits but for our psychological and emotional health. It can strengthen our relationships, promote self-esteem and improve our sense of identity.

1 BOOSTS IMMUNITY

Sex on a regular basis may help boost your immune system and protect you from getting sick, studies show, probably because sex increases blood flow, helping to distribute antibodies throughout the body.

2 IMPROVES HEART HEALTH

A large study published in The American Journal of Cardiology found that men who had sex at least twice a week were 50 percent less likely to die of heart disease compared with men who had it once a month. Researchers believe the protective effects stem from a variety of factors, including lower stress levels, improved sleep and the stronger connection to your partner that has been linked to sex.

3 STRENGTHENS THE PELVIC FLOOR

A study published in International Urogynecology Journal found that sexually active women were significantly more likely to have

a strong pelvic floor compared with those who were not sexually active.

When you're aroused, muscle tension in the pelvic region naturally increases. Then, during orgasm, all the muscles contract, just as they would during a Kegel exercise.

Having strong pelvic floor muscles gives you control over your bladder and helps prevent incontinence. In men, a weak pelvic floor can contribute to erectile dysfunction. As a bonus, researchers say, it may make sex even more pleasurable.

4 RELIEVES HEADACHES AND OTHER PAIN

Experts credit the release of feel-good hormones including endorphins, the body's natural pain reliever.

5 HELPS WITH SYMPTOMS OF MENOPAUSE

Regular sexual activity can help counteract the physical changes, such as vaginal dryness and atrophy, that come with menopause. Researchers found that menopausal women who engaged in regular intimacy reported less fatigue and fewer mood swings, along with better sexual function – improved

arousal, lubrication and orgasm.

Sex stimulates blood flow and helps keep vaginal tissues healthy, toned and stretchy. In fact, studies show the more you have sex, the healthier your tissues will be. Any organ that you bring more blood supply to, you keep it more youthful.

6 REDUCES THE RISK OF PROSTATE CANCER

For men, several studies have revealed a link between frequent orgasm and a lower risk of prostate cancer. The prostate holds some of the fluid that is released at ejaculation.

One Harvard study of almost 32,000 men found that the more a man ejaculated, the lower his risk of the cancer.

Experts believe that frequent turnover of the fluids in your prostate is likely good for you. Our system is designed to be flowing and replacing itself.

7 BOOSTS MENTAL HEALTH

A large body of research has found that sexual activity and intimacy are linked to lower rates of depression, anxiety

and feelings of isolation, and that regular sexual activity can boost happiness and mood.

8 REDUCES STRESS

One of the top benefits of sex, particularly in the acutely stressful world in which we're living these days, is its ability to immediately melt away built-up stress. When you're stressed, your body releases a hormone called cortisol. Intimacy with a partner, reduces elevated cortisol levels in both men and women.

In addition, when you have sex, your body releases a cocktail of hormones and neurotransmitters that help calm us down and make us feel safe and secure in the world.

9 BURNS CALORIES

While sex isn't going to replace a session on the treadmill, it

does count as physical activity. The latest research on physical activity reveals that getting your heart rate up even for just a few minutes conveys health benefits.

10 ENHANCES BRAIN HEALTH

Several studies suggest that frequent sexual activity may have a beneficial effect on the brain, particularly in older adults. It is also linked to more neuron growth in the brain.

11 HELPS YOU SLEEP

If you tend to doze off after sex, there's a scientific explanation for that. During sex, the body releases hormones such as oxytocin and prolactin that induce pleasant and relaxing feelings. Sex also reduces cortisol, which is a stress hormone.

12 EXTENDS YOUR LIFE

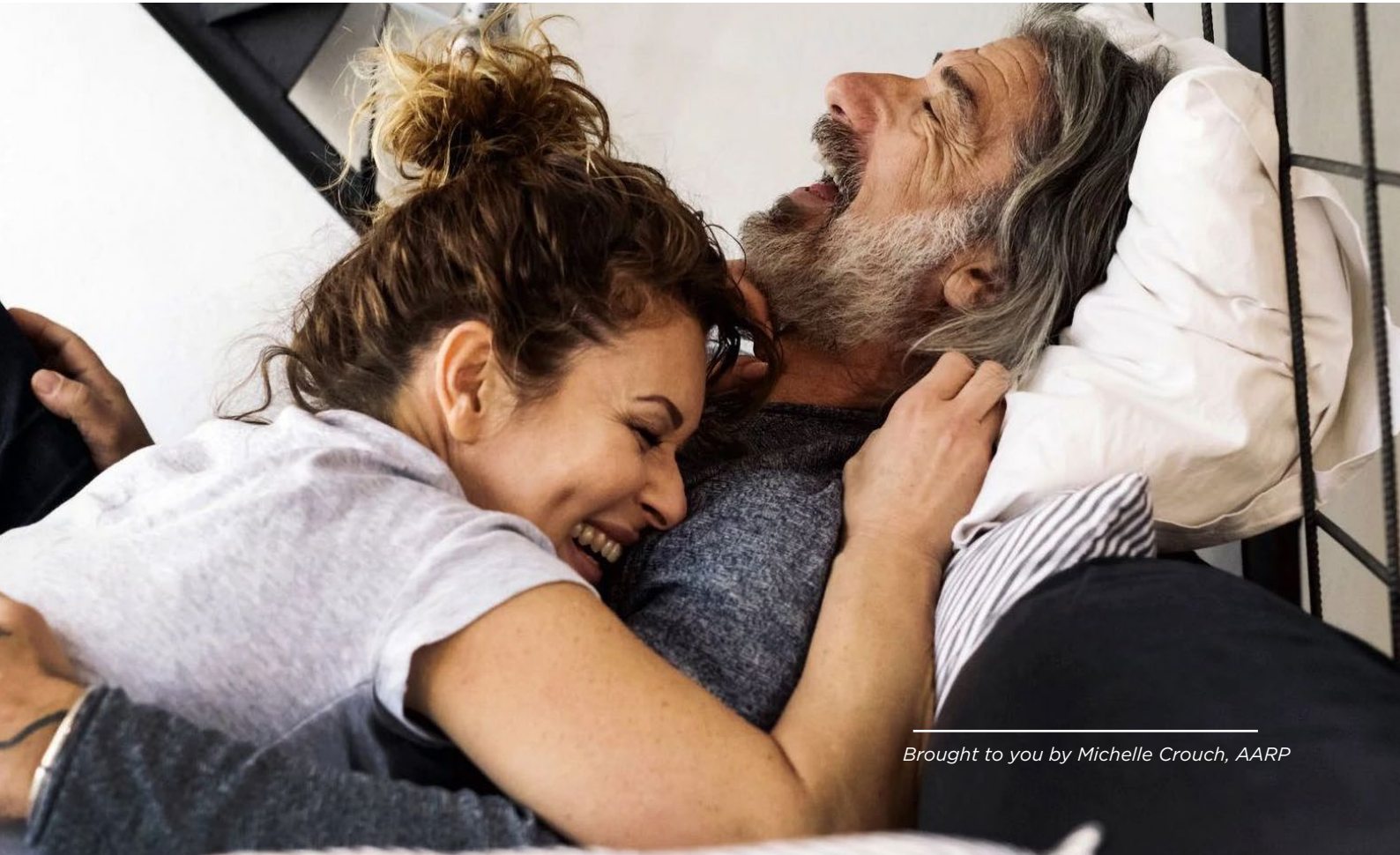
You're never too old to have sex,

researchers say, and making it a regular part of your routine may be a tool to extend your life span.

In Ikaria, Greece — one of the regions of the world where people live significantly longer than average — more than 80 percent of people ages 65 to 100 are having sex, according to Blue Zones.

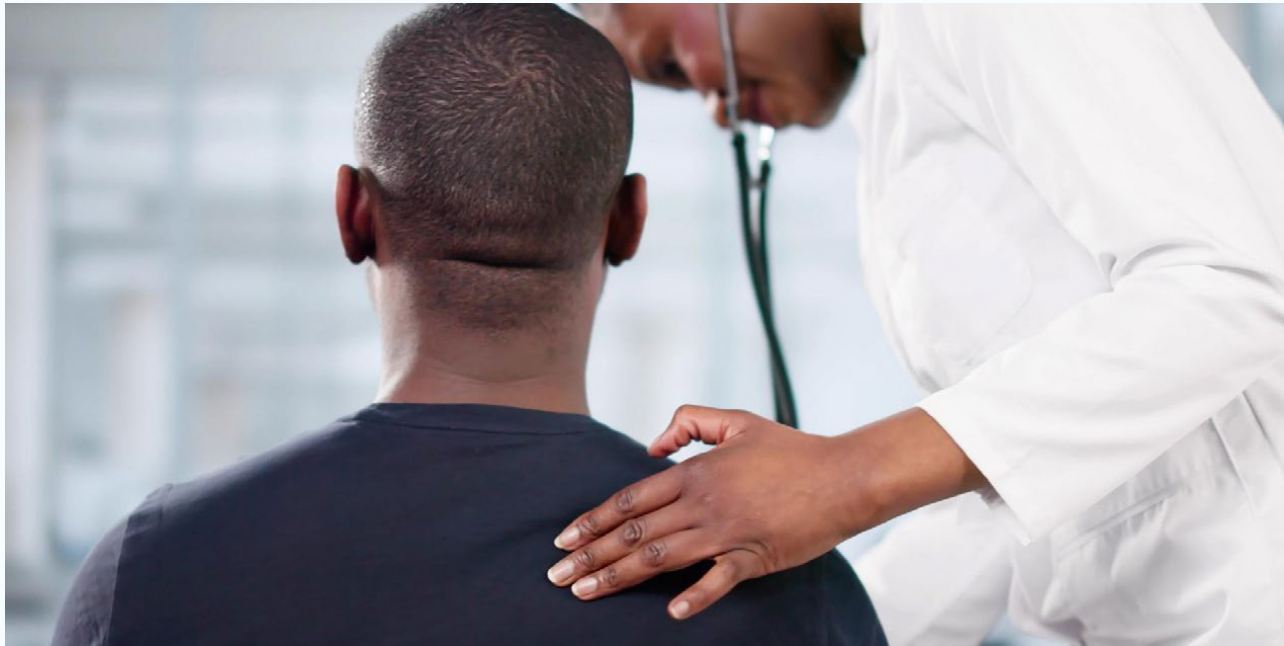
A variety of studies have found a correlation between an active sex life and a longer life. Death rates are about 50 percent lower for those who have sex at least once a week, compared with those who rarely had sex.

Help is available if physical problems such as erectile dysfunction or vaginal dryness are keeping you from being sexually active.



TESTOSTERONE

Testosterone levels in men have fallen more than halfway in half a century. An alarming analysis was presented at the European Society of Human Reproduction and Embryology conference in London: from 1972 to 2019, average total testosterone levels in men declined by approximately 54%.



The main negative factors include a sedentary lifestyle, rising obesity, diabetes, and metabolic disorders.

Men have hormones too! Men begin losing testosterone at a rate of 3% to 10% per year beginning at age 30. Current medical research now defines a male equivalent to menopause as andropause. Male hormones, such as testosterone, decline and men may experience fatigue, lack of mental acuity, loss of libido, less stamina and physical endurance, and difficulty achieving or sustaining an erection. Even if sexual function is normal, there can be changes affecting your day-to-day energy, mood and physical stamina.

Low testosterone affects up to 38.7% of men over 45,

causing symptoms like low libido, fatigue and weight gain. It's linked to increased risks of metabolic syndrome and cardiovascular disease

Obesity and diabetes are closely connected to lower testosterone levels, creating a cycle that's hard to break. Excess fat tissue interferes with testosterone production through various mechanisms. Andropause, or male menopause, involves a gradual decline in testosterone levels starting around age 40. This affects cardiovascular health, body composition and increases risks of heart problems. Natural strategies to boost testosterone include training, regular sun exposure and avoiding endocrine-disrupting chemicals.

Low testosterone isn't just about sexual health. It can increase your

risk of metabolic syndrome and cardiovascular disease as you age. If you're experiencing these signs, it's worth investigating your testosterone levels. Your body composition plays a crucial role in testosterone production. Obesity and diabetes are closely linked to lower testosterone levels, creating a vicious cycle that can be hard to break. Excess fat tissue, especially around your abdomen, can interfere with testosterone production in several ways:

1 LEPTIN RESISTANCE

Fat cells produce leptin, which can lead to central leptin resistance and reduce signals in your brain that stimulate testosterone production.

2 INCREASED ESTROGEN

Fat tissue contains an enzyme that converts testosterone to estrogen, further lowering your testosterone levels.

3 INFLAMMATION

Fat cells produce inflammatory cytokines that can interfere with testosterone production and reduce insulin sensitivity.

These mechanisms not only lower your testosterone but also contribute to insulin resistance, putting you at risk for Type 2 diabetes. Low testosterone can also lead to decreased muscle mass and increased fat accumulation, worsening the cycle. If you're struggling with weight issues or diabetes, it's essential to have your testosterone levels checked. Addressing low testosterone could be a key factor in improving your metabolic health and breaking this harmful cycle.

There's a strong relationship between sex hormones and mortality risk in men. Both very low and very high levels were associated with increased risk. It's not always a case of "more is better"—balance is key.

Low testosterone levels can contribute to the accumulation of visceral fat, which is closely linked to insulin resistance and an unfavorable lipid profile. These factors can accelerate the hardening of your arteries, a process known as atherosclerosis. However, maintaining healthy testosterone levels can have protective effects on your heart. It can help shorten the

heart-rate-corrected QT interval, improve glycemic control and induce vasodilation.

Visceral fat is metabolically active and can increase your risk of various health problems, including diabetes and heart disease. At the same time, lower

testosterone can lead to a loss of muscle mass, a condition known as sarcopenia.

This double whammy of increased fat and decreased muscle can significantly impact your strength, mobility and overall health.

The good news is that addressing low testosterone levels can help reverse these trends. Increasing testosterone levels has been shown to decrease visceral fat accumulation and increase lean body mass. It does this by activating androgen

receptors, which initiate a fat-burning process and promote the differentiation of mesenchymal cells into muscles rather than fat cells. Recognizing andropause isn't always straightforward, but certain biomarkers can provide valuable insights into your hormonal health. While testosterone is the primary hormone associated with andropause, it's not the only one to consider.

Other hormones and proteins in your body can offer a more complete picture of your

endocrine health.

For instance, sex hormone-binding globulin (SHBG) levels tend to increase with age, which can affect the amount of free testosterone available in your body. Estradiol, a form of estrogen, also plays a role. The ratio of testosterone to estradiol can be a useful indicator of andropause, with lower ratios associated with more severe symptoms.

Other biomarkers to consider include dehydroepiandrosterone sulfate (DHEAS), a precursor to testosterone that also declines with age, and prolactin, which tends to increase in older men and can contribute to symptoms like decreased libido.

Even your thyroid hormone (thyroxine) and sleep hormone (melatonin) levels can provide clues about your andropause status.

Testosterone therapy: no increased heart risk for men

STRATEGIES TO RAISE TESTOSTERONE NATURALLY

There are only four hormones many adults can benefit from — progesterone, thyroid hormone T3, DHEA and pregnenolone.

However, if you have low testosterone, there are several evidence-based strategies you can use to boost your levels naturally.

One innovative approach gaining attention is KAATSU training, also known as blood-flow restriction training.

This technique involves using specialized bands to partially restrict blood-flow to your limbs during exercise, tricking your body into thinking it's working

harder than it actually is. Research suggests this can lead to increased growth hormone and testosterone production.

Regular sun exposure is another strategy; if you get sufficient sun exposure it will increase your testosterone levels.

NEW STUDY SHOWS LINK BETWEEN TESTOSTERONE AND ANXIETY

There are several contraindications to using testosterone replacement therapy, including severe lower urinary tract symptoms, erythrocytosis, congestive heart failure, and prostate or breast cancers. Non-pharmacological treatments include controlling lifestyle factors and avoiding medications that affect testosterone levels.

Researchers have recognized that testosterone plays a role in anxiety and depression-like behavior. A study from Ben-Gurion University in Israel used genetic sequencing to reveal the connection between a protein in the brain, low testosterone levels and anxiety, which offers a possible explanation for how testosterone affects mental health.

Although a low testosterone level is not an explanation for all

anxiety disorders, researchers believe that identifying males with low testosterone and applying appropriate treatment may help reduce symptoms. “Testosterone exposure or deficiency during critical periods of development may have long-lasting consequences persisting into middle or old age,” concluded the authors of one study. After six months of replacement therapy, the men demonstrated improvements in anxiety, depression, quality of life and sexual function.

Researchers have now identified the molecular connection between testosterone, genetic expression in the brain, and anxiety, calling the relationship a “mutual regulation” that may be positively affected by administration of testosterone.

As mentioned above, men with androgen deficiency may experience decreased libido, reduced frequency and quality of erections, gynecomastia (enlarged breast tissue), sweating, fatigue, reduced muscle mass and increased body fat.

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Doctor's Opinion



Denis Sherlaimov

General Practitioner
AMC Almaty

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INFLAMMAGING: The Hidden Cause of Aging and Disease

“We know now that inflammation plays a huge role in aging, or what we’re calling inflammaging”, Dr. Mark Hyman “And it happens because a whole series of factors that we have control over, get out of control”. We eat an inflammatory diet, we don’t exercise, which leads to inflammation. we don’t focus of the quality of our sleep, which leads to inflammation. We don’t learn how to regulate our stress response.

Dr. Mark Hyman defines inflammaging as chronic, low-grade, age-related inflammation that accelerates cellular damage and drives major diseases.

Inflammation is a crucial function of our immune system that exists for a reason: to enable the body to protect itself against everything from physical injuries to infectious bacteria and viruses. Without it, the body wouldn’t be able to deal with a splinter, much less the threat of proliferating cancer cells.

Our modern lifestyles and food systems that are

overloaded with inflammatory triggers like toxins and heavy metals, chronic stress, and ultra-processed foods (to name just a few!) and lacking in the factors that keep inflammation in check, like sleep, exercise, antioxidants, and phytochemicals keeps us in a state of systemic, low-grade inflammation that spreads throughout the body.

This is known as inflammaging (a portmanteau of “inflammation” and “aging”), and it’s the main driver of aging and age-related disease.

As we age, our immune system gradually declines in function through a process called immunosenescence, diminishing

the body’s ability to protect itself, identify and eliminate pathogens, and destroy cancer cells.

This increases our susceptibility to infections and age-related diseases such as cancer—which explains why the risks of dying from cancer and infections increase dramatically as we get older.

But inflammaging amplifies all of this, creating a vicious, self-perpetuating cycle where the factors that contribute to immune dysfunction are exacerbated by the inflammation they produce. What happens is that as the body loses its ability to defend itself, it opens the window for cellular damage, creating a state of low-grade, systemic inflammation

that results in further immune dysfunction—which, in turn, leads to more inflammation, then more immune dysfunction, and so on and so on. This is why inflammation is considered to be the root cause of disease. It’s not our body’s acute inflammatory response that’s the problem, but the chronic, low-grade inflammation—inflammaging—that cascades throughout the body, leading to atherosclerosis, endothelial damage, plaque formation, neuroinflammation, insulin resistance, and, ultimately, diseases like heart disease, dementia, diabetes, and cancer.

1. REMOVE INFLAMMATORY TRIGGERS, like ultra-processed foods, starches and sugars, gluten, conventional dairy, alcohol, refined oils, and excess calories from snacking. These ingredients—in addition to environmental toxins like chemicals and heavy metals—add fuel to the fire of inflammation by triggering inflammatory pathways, contributing to insulin resistance, disrupting the gut barrier and microbiome, and promoting the production of pro-inflammatory eicosanoids and cytokines.

2. FOLLOW AN ANTI-INFLAMMATORY DIET. Whole, low-glycemic foods are a powerful source of anti-inflammatory compounds, particularly red, green, yellow, orange, and purple plant foods like turmeric, ginger, mushrooms, broccoli, peppers, avocado, extra-virgin olive oil, green tea, and berries. These colorful foods contain potent compounds like sulforaphane, epigallocatechin-3-gallate (EGCG), ellagic acid, resveratrol, and ergothioneine that reduce and fight

inflammation. Omega 3 fats found in wild fatty fish like salmon, sardines, and Alaskan cod; flaxseeds, chia seeds, and hemp seeds; and pasture-raised eggs can also help reduce inflammation.

3. STAY ACTIVE. Exercise can lower inflammation in the body through several mechanisms such as increasing the production of NAD (a potent anti-aging molecule); upregulating the production of antioxidants like glutathione; and boosting nitric oxide production, which enhances blood flow. Exercise also helps fight inflammation by reducing stress, modulating the immune system, and helping to regulate blood sugar levels.

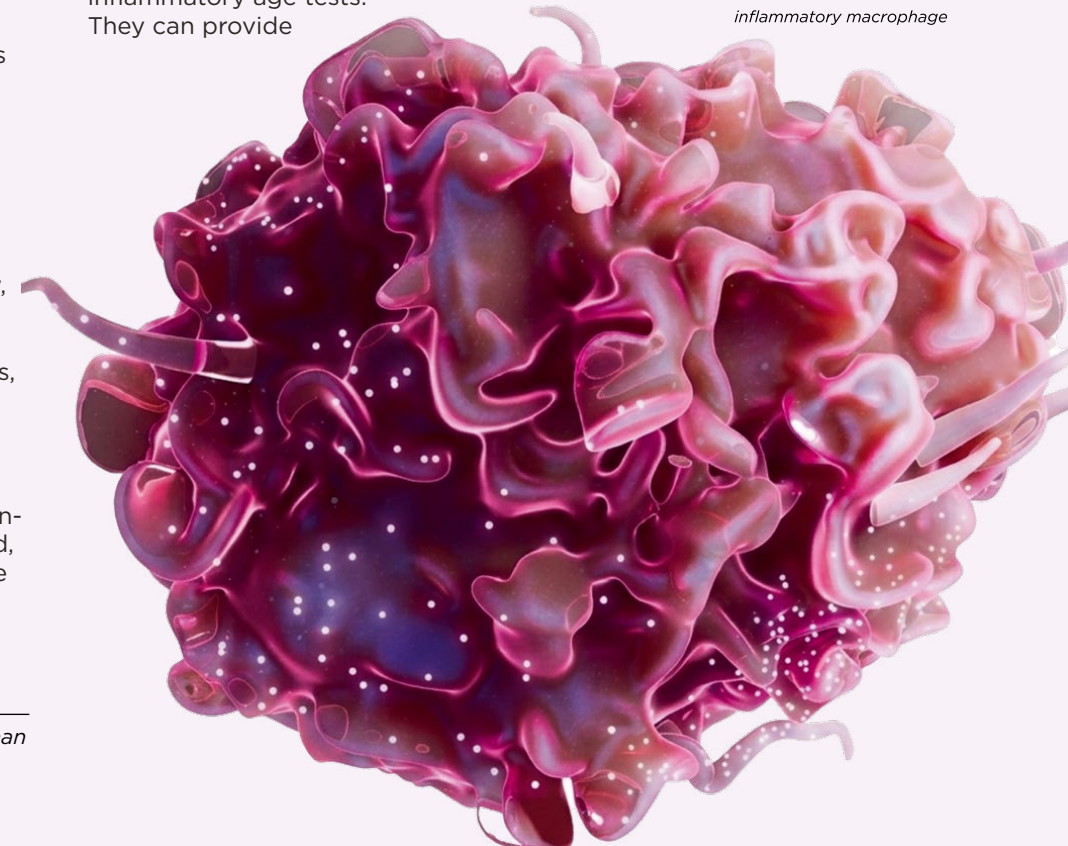
4. KNOW YOUR NUMBERS. There are numerous biomarkers for detecting and measuring inflammation and inflammaging, such as high-sensitivity C-reactive protein (hs-CRP), white blood cell count, antinuclear and rheumatoid antibodies, food allergy profiles, and inflammatory age tests. They can provide

valuable insight as to the state of inflammation in the body as well as the presence of triggers and dysfunction behind it.

5. TAKE CARE OF YOUR GUT. When out of balance, bad bacteria can grow like weeds, creating a toxic environment that drives chronic inflammation. Prebiotics and probiotics in the form of foods and supplements can keep the gut in balance by encouraging the growth of good bacteria and discouraging the growth of bad bacteria.

6. SUPPLEMENT WITH SENOLYTICS. Senescent (“zombie”) cells are a key factor in inflammaging, secreting a variety of pro-inflammatory cytokines, chemokines, growth factors, and proteases that can alter the tissue microenvironment, inducing inflammation both locally and systemically. But plant compounds such as quercetin, fisetin, and curcumin can target and kill these zombie cells, cutting off a key source of inflammation at its root.

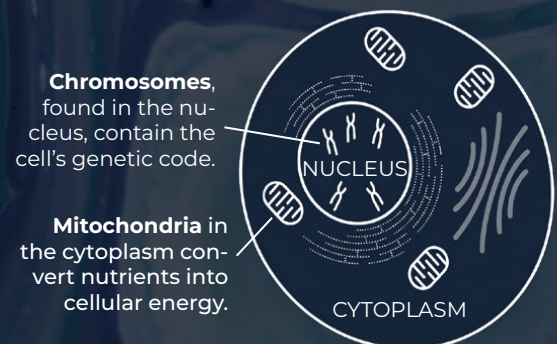
inflammatory macrophage



How our **CELLS** AGE?

Over the past three decades, biomedical researchers have identified a number of mechanisms, or “hallmarks,” of aging to explain the cellular and molecular processes that damage cells. Grouped here into three categories, nine of these are at the core of cutting-edge efforts to slow aging—the leading risk factor for many major diseases, including cancer.

ANATOMY OF A CELL



CAUSES OF DAMAGE

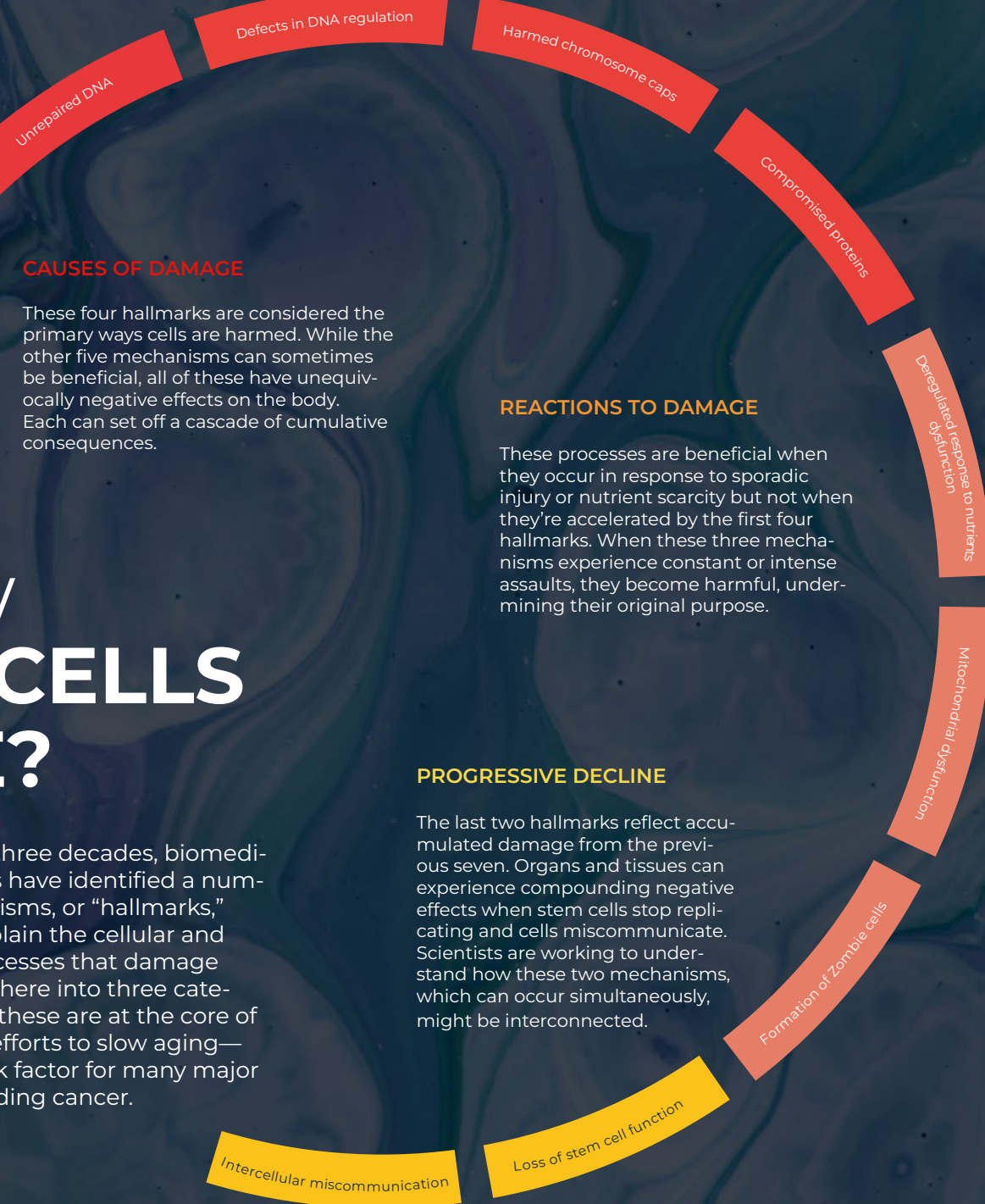
These four hallmarks are considered the primary ways cells are harmed. While the other five mechanisms can sometimes be beneficial, all of these have unequivocally negative effects on the body. Each can set off a cascade of cumulative consequences.

REACTIONS TO DAMAGE

These processes are beneficial when they occur in response to sporadic injury or nutrient scarcity but not when they're accelerated by the first four hallmarks. When these three mechanisms experience constant or intense assaults, they become harmful, undermining their original purpose.

PROGRESSIVE DECLINE

The last two hallmarks reflect accumulated damage from the previous seven. Organs and tissues can experience compounding negative effects when stem cells stop replicating and cells miscommunicate. Scientists are working to understand how these two mechanisms, which can occur simultaneously, might be interconnected.



INSIDE THE NUCLEUS

The nucleus is the heart of the cell. Because it contains DNA, the blueprint for all cellular activity, any damage inside the nucleus is serious and can be transmitted to the entire cell, causing a torrent of negative effects.

CAUSES OF DAMAGE Unrepaired DNA

Myriad hazards, such as pollution, are a constant threat to DNA. Our genomes encode processes that address assaults, but the repair isn't always successful and flaws can accumulate, leading to cancer and other diseases.

CAUSES OF DAMAGE Harmed Chromosome Caps

DNA has special protective end caps, much as shoelaces do. Called telomeres, these caps shorten with age and degrade. Chromosomes then begin to fall apart, causing the death of cells in vital organs.

Broken DNA

CAUSES OF DAMAGE Defects in DNA regulation

DNA strands are wound around spools of proteins called histones. Genes are turned on and off depending on where methyl groups attach to DNA and histones. When those attachments malfunction, precise coordination of gene activity can be compromised.

JASON TREAT AND EVE CONANT; NGM STAFF
KELSEY NOWAKOWSKI
ART: MARKOS KAY

SOURCES: STEVEN AUSTAD, UNIVERSITY OF ALABAMA
AT BIRMINGHAM; MANUEL SERRANO, INSTITUTE
FOR RESEARCH IN BIOMEDICINE, BARCELONA

CELLULAR INTERACTIONS

Cells need to be able to communicate with one another for our body's organs to function in an optimal way. When DNA or cells become damaged, as shown here in the intestinal wall, cells can't receive the proper signals.

PROGRESSIVE DECLINE Loss of Stem Cell Function

Our body's ability to repair tissue and organs depends on healthy stem cells—the main source of new cells. But stem cells replicate only on demand, an ability that declines with age.

Stem cells are multipotent, meaning they are capable of forming several specific cell types.



As we age, our stem cells stop replicating reducing our ability to replace damaged tissues and cells.



healthy cells

senescent cells

REACTION TO DAMAGE Formation of Zombie Cells

Defective cells can enter a permanent nondividing state called senescence. Sometimes called zombie cells, they can play important roles at times, such as in wound healing. But they accumulate with age and never die. These rogues also secrete molecules that harm neighboring cells.

hormones

hormone receptors

PROGRESSIVE DECLINE Intercellular miscommunication

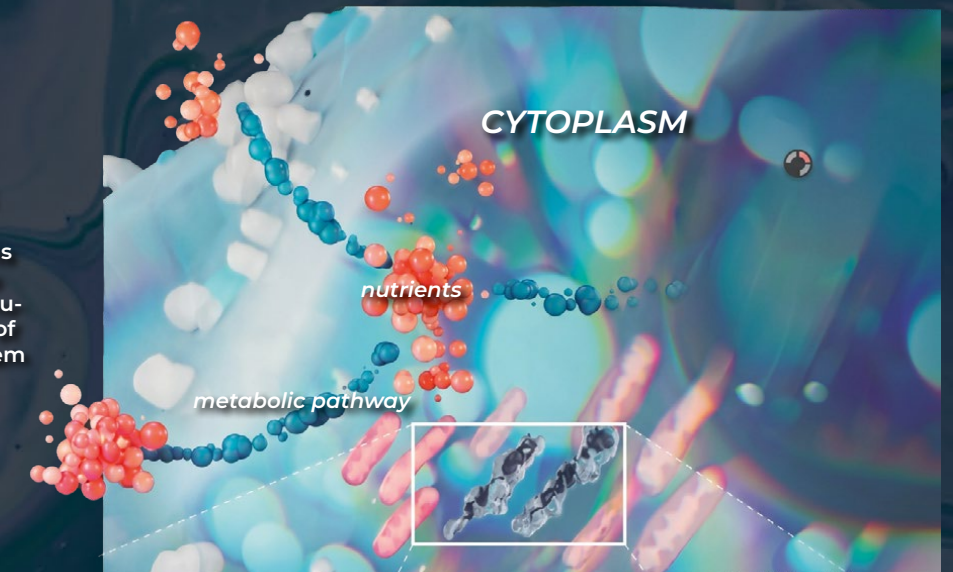
Intercellular miscommunication. Precise communication between cells, mostly mediated by hormones, keeps the body functioning. Disruption of signals (perhaps because of zombie cells or other unknown factors) can, for example, turn an appropriate response to a temporary injury into constant low-level inflammation.

INSIDE THE CELL

Cells are like factories with many critical, interacting parts. Damage to any of them, including the mitochondria that turn food into energy, will compromise the cell's function. This degradation can eventually affect the cell's nucleus and lead to disease.

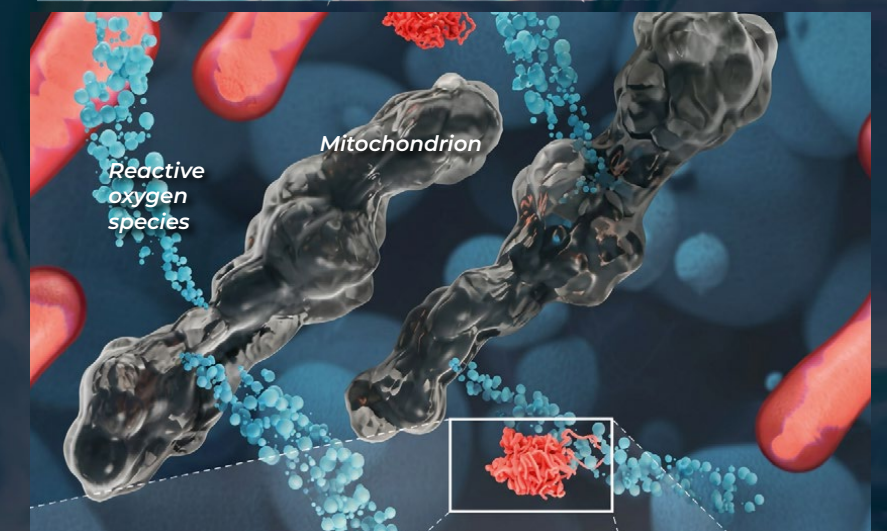
REACTION TO DAMAGE Deregulated response to nutrients

When we eat, we supply our cells with nutrients that they need to keep us healthy. But excessive nutrients can exceed the capacity of cells to store and metabolize them resulting in toxic reactions.



REACTION TO DAMAGE Mitochondrial dysfunction

Mitochondria produce more than 90 percent of a cell's energy and almost all of its free radicals, also called reactive oxygen species. In low amounts these unstable molecules can be useful for signaling stress and triggering maintenance and repair, but too many can be toxic.



CAUSE OF DAMAGE Compromised proteins

To regulate chemical reactions and provide cell structure, proteins must fold in precise, origami-like shapes. When they're injured, they misfold and become sticky, clumping together and gumming up the cellular machinery in ways that can lead to diseases such as Alzheimer's and Parkinson's.



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Art: Markos Kay
Sources: Steven Austad, University Of Alabama
At Birmingham; Manuel Serrano, Institute
For Research In Biomedicine, Barcelona



By **Dr. Violetta Sokol**
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KEY CHARACTERISTICS

- **Low Dose Response:** Mild or moderate stress triggers cell repair and defense systems.
- **High Dose Response:** Excessive exposure causes toxicity, damage, or death.

COMMON EXAMPLES

- **Physical Exercise:** Tears down muscle fibers slightly so they grow back stronger.
- **Temperature Shocks:** Using saunas or cold plunges to build cellular resilience.
- **Dietary Stress:** Intermittent fasting or eating healthy plant toxins (like in broccoli or turmeric) that activate antioxidant defenses.

Model for the involvement of hormesis in the beneficial effects of lifestyle, diet and drugs on health. Hormesis is the biological backbone of healthy aging. It works by intentionally introducing brief, controlled biological challenges to trigger a powerful cellular cleanup and repair response.

HOW HORMESIS IMPACTS AGING AND LONGEVITY

As we age, our cells accumulate damaged proteins and sluggish mitochondria (our cellular powerplants), leading to decline. Hormesis combats this aging clock through three main scientific mechanisms:

- **Autophagy (Cellular Cleanup):**

HORMESIS

Hormesis is a biological process where a low dose of a stressor or harmful agent gives a beneficial effect, while a high dose causes harm. It means “what does not kill you makes you stronger” at a cellular level.

Mild stress activates a process called autophagy, where cells literally consume and recycle their own damaged parts and debris, acting like a cellular trash-disposal system.

- **Mitohormesis:** Small bursts of energy stress signal the body to create new, highly efficient mitochondria. This keeps your cellular energy production young and robust.

- **The TOR Pathway Modulation:** Dietary and physical stressors temporarily downregulate the TOR (Target of Rapamycin) pathway, shifting your body's focus away from constant growth and toward deep cellular repair and maintenance.

4 DAILY HABITS TO SAFELY PRACTICE HORMESIS

To gain the longevity benefits of hormesis without crossing into harmful, toxic stress, use these practical, everyday habits:

1. TEMPERATURE CONTRASTS

THE PRACTICE: Take a normal hot shower, but finish with 30 to 60 seconds of purely cold water. Alternatively, use a sauna for 15–20 minutes followed by a cool down.

THE SCIENCE: Cold and heat shock proteins are released, stabilizing your molecular structure and improving vascular health.

2. STRATEGIC FASTING (NUTRIENT DEPRIVATION)

THE PRACTICE: Restrict your eating window to 8–10 hours a day, allowing a 14- to 16-hour overnight fast.

THE SCIENCE: Going without food for more than 12 hours forces the body to stop storing fat and switch to repairing cells and burning clean fuel.

3. “XENOHORMETIC” EATING

THE PRACTICE: Consume plants that produced their own chemical defenses to survive environmental stress. This includes broccoli (contains sulforaphane), green tea (EGCG), dark chocolate, turmeric, and grapes (resveratrol).

THE SCIENCE: These mild plant toxins trigger your body's Nrf2 pathway, upregulating your natural internal antioxidant and detoxification networks.

4. HIGH-INTENSITY INTERVAL TRAINING (HIIT)

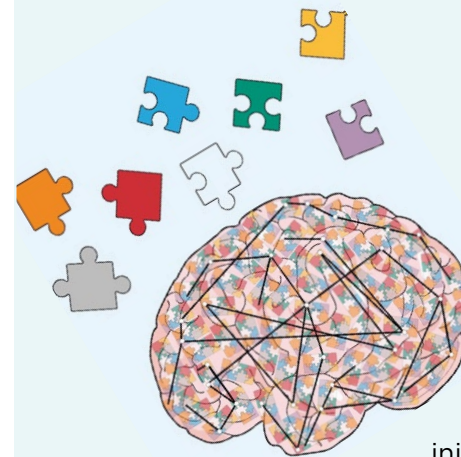
THE PRACTICE: Incorporate short, intense bursts of movement—like sprinting up a hill or cycling vigorously for 30 seconds—into an otherwise moderate workout.

THE SCIENCE: This brief, acute lack of oxygen forces your heart, lungs, and muscles to adapt and build higher baseline resilience.

HEALTH PRECAUTIONS:

If you have underlying conditions like heart disease, chronic kidney disease, or blood pressure issues, consult a doctor before starting extreme heat, cold, or fasting routines.

NEURO PLASTICITY, NEUROGENESIS, and the role of BDNF



The notion that “the BRAIN is 95 BLN cells you get for life and that's it” turns out to be fundamentally wrong. Neuro plasticity was once believed to be limited to early development, but it's now understood to continue across the entire lifespan, underlying learning, memory, and recovery from injury or disease. Current research shows neuro plasticity depends on much more than neurons alone — glial cells play a major supporting role too.

Your brain doesn't just add connections when you learn — it actively rewires itself to prune away outdated ones. Scientists recently overturned the long-held idea of “fixed circuits,” showing the adult brain continuously remodels its own sensory filters to sharpen perception, something previously thought impossible after childhood.

After a severe stroke, undamaged parts of the brain can reorganize and start showing more “youthful” structural patterns — essentially the brain de-aging parts of itself to compensate for damage.

NEUROGENESIS

For decades, textbooks said humans stop making new neurons after childhood. That's now overturned: a landmark 2025 study confirmed new neurons are still born in the adult hippocampus — the brain's memory center — well into old age.

Even more surprising: your brain's immune cells (microglia) act as gatekeepers deciding which new neurons survive. Tweak one gene in them, and you get measurably more surviving neurons.

“Superagers” — older adults who stay razor-sharp mentally — show ramped-up neurogenesis, while it stalls out early in Alzheimer's. Neuron production may be one of the biological differences separating sharp

90-year-olds from those with cognitive decline.

BDNF

Nicknamed “Miracle-Gro for the brain,” BDNF surges after just 15 minutes of aerobic exercise — and the fitter you get, the bigger that surge becomes, a change measurable in just six weeks.

Short, intense exercise bursts boost BDNF more than long, easy sessions — quality over quantity. The mechanism is oddly elegant: exercising muscles produce a ketone body (β -hydroxybutyrate) that travels to the brain and switches on BDNF genes directly — meaning your liver is, in a sense, texting your brain to grow.

TAKE-AWAY RECOMMENDATIONS FOR BRAIN HEALTH & LONGEVITY

1. Move daily, mix intensity — Aerobic exercise reliably boosts BDNF and supports neurogenesis. Short, intense bursts (e.g., a few one-minute hard intervals) seem to spike BDNF more than long, easy sessions. Aim for a mix: brisk walks/cycling most days, with 1–2 higher-intensity sessions weekly.

2. Pair movement with cognitive challenge — Exercise combined with a mental task (learning steps, navigating, strategy games) drives plasticity more

than exercise alone — this is a core finding behind rehab programs for Parkinson's and stroke recovery.



3. Protect sleep — Sleep is when much of synaptic pruning and consolidation happens; it's foundational to both plasticity and metabolic regulation.

4. Mind metabolic health, not just weight — Since the hypothalamus reads blood glucose and fat signals to regulate the whole body, stable eating patterns (regular meals, minimizing extreme glucose spikes) support both metabolic and cognitive health long-term.

5. Stay socially and mentally engaged — Superagers who resist cognitive decline show more ongoing neurogenesis. Novel learning, social interaction, and low chronic stress all appear protective.

6. Manage stress deliberately — Chronic stress hormones interfere with hippocampal neurogenesis; regular stress-reduction practices (whatever fits the person — breathing exercises, time outdoors, therapy) support the same pathways exercise does.

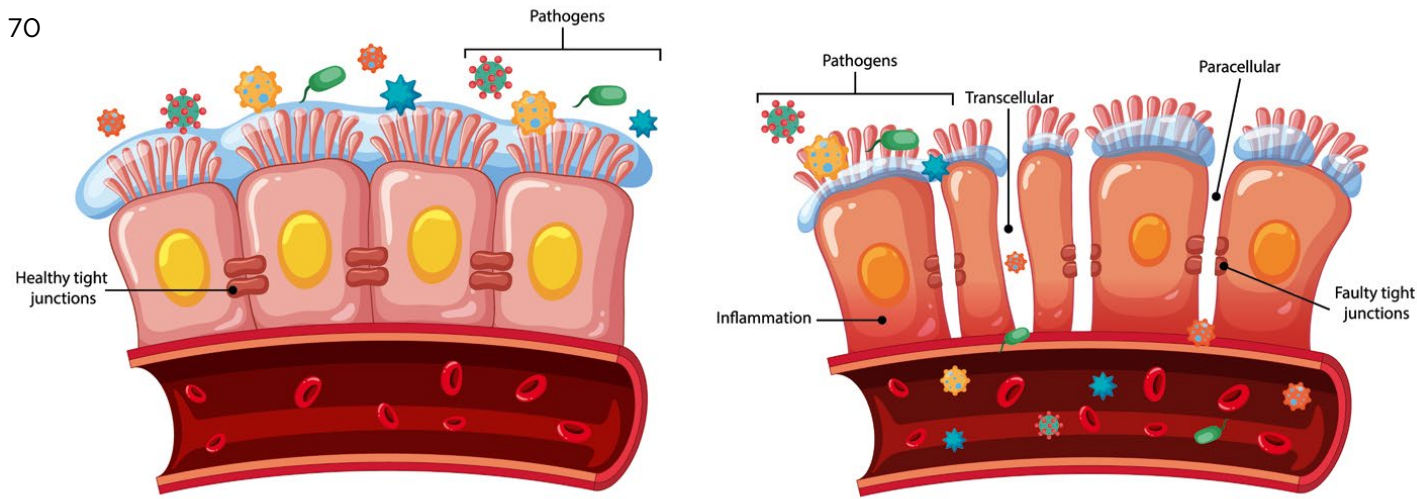


7. Individualize, don't force intensity — Especially for older or clinical populations (Parkinson's, post-stroke, etc.), even light-to-moderate consistent activity shows measurable BDNF and functional benefits — perfection isn't required, consistency is.

PART 5

GUT-BRAIN AXIS &
SYSTEMIC HEALTH





Top 12 Nutrients and Herbs to Heal a LEAKY GUT LINING

Your gut lining is incredibly important for your gut and overall health. If you develop a leaky gut lining, it means that large food particles, microbes, and toxins pass from your gut to your bloodstream. This can increase the risk of chronic inflammation, gut inflammation, gut microbiome imbalance, chronic symptoms, autoimmunity, and chronic health issues. Fortunately, with the help of some nutrients and herbs, you can improve your leaky gut lining and regain your health.

WHAT IS A LEAKY GUT LINING?

Your gut lining or mucous lining of your gut creates a barrier between your gut, your bloodstream, and the rest of your body. A healthy gut lining is naturally semi-permeable. This means that your gut lining has tiny little junctions of holes that allow micronutrients to pass through into your bloodstream.

However, these junctions are not big enough for large food particles, microbes, and toxins to pass through. Pathogens will get eliminated through urine or stool instead of passing into your system. This keeps your gut and the rest of your body healthy.

However, inflammatory foods, infections, environmental toxins, chronic stress, and other harmful external factors can damage your gut lining. Ongoing exposure to these negative factors can break apart the small holes in your gut lining, causing them to be bigger. If these holes get too big and your gut lining becomes permeable instead of semi-permeable, larger food particles, microbes, pathogens, and toxins will be able to pass through into your bloodstream. When this happens, it means you have a leaky gut lining. This condition may also be referred to as intestinal permeability, gut

permeability, leaky gut, or leaky gut syndrome. When big food particles, pathogens, microbes, and toxins pass through these junctions into your bloodstream, they can lead to serious gut health issues and chronic inflammation. This may lead to an ongoing chronic immune response, chronic symptoms, autoimmunity, and chronic health issues.

ROOT CAUSES OF GUT INFLAMMATION INCLUDE:

Inflammatory Diet

Is one of the number one root causes of gut inflammation. Refined sugar and carbohydrates, refined oil, artificial ingredients, gluten, conventional dairy, additives, deep-fried foods, junk food, and overly processed foods can increase the risk of chronic inflammation, gut inflammation, and related health issues. Dietary factors may determine the risk for gut inflammation.

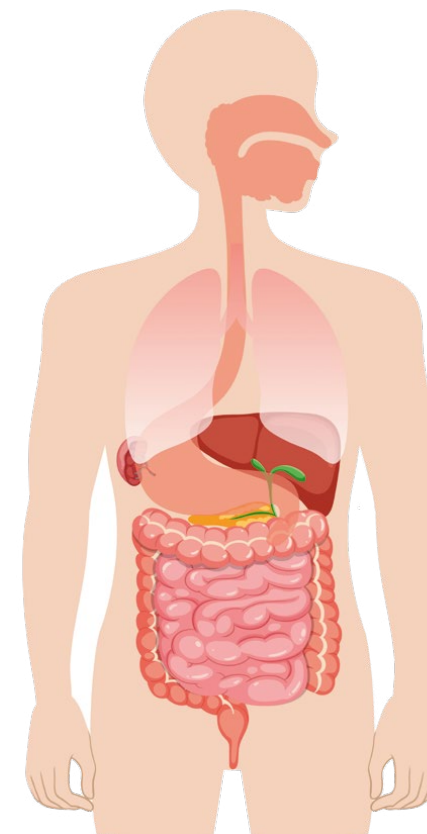
Food Sensitivities

Food sensitivities are another common root cause of gut inflammation. Over time, they can lead to digestive issues, headaches, skin issues, fatigue, and other delayed and chronic symptoms, and lead to gut inflammation. Gluten is one of them.

Poor Vagal Tone

Your vagus nerve is the tenth cranial nerve, which serves as your body's major parasympathetic nerve. It helps slow your heart rate, control the gag reflex, allow involuntary constriction and relaxation of the muscles of your gut, control sweating, regulate blood pressure, and control vascular tone.

Excessive vagus nerve function and poor vagal tone can cause all kinds of issues, including anxiety, panic attacks, depression, other emotional health issues, migraines, headaches, tinnitus, hypertension, fibromyalgia, weight problems, and inflammatory issues. It may also cause gut inflammation and gut health issues.



Chronic Stress, Poor Sleep, and Sedentary Lifestyle

Chronic stress, poor sleep, and a sedentary lifestyle are some of the top lifestyle factors involved with chronic inflammation, gut inflammation, and related problems.

Low Stomach Acid Levels

Stomach acid is critical for disinfection, killing microbes, and optimizing digestion, causing poor digestion, gut microbiome imbalance, and gut inflammation, may increase your risk of bacterial pathogen overgrowth, gut infections, and, consequently, gut inflammation.

Poor Digestive Juice Production

Bile is a greenish-brown liquid primarily made of cholesterol, bile salts, and bilirubin produced by your gallbladder. It's important for digesting fats, overall digestion, and gut health. Pancreatic enzymes are secreted by your pancreas to break down fats, protein, and carbohydrates. Problems with both can result in gut inflammation.

Gut Infections

Gut infections, including H Pylori, parasites, yeast, bacterial, and viral infections, can all increase the risk of gut inflammation.

SIBO

Small intestinal bacterial overgrowth or SIBO refers to bacterial overgrowth in your small intestines. SIBO is characterized by abdominal pain, bloating, gas, constipation, diarrhea, fatigue, malnutrition, food sensitivities, and a list of other gut and non-gut-related chronic issues.

Medications

The use and overuse of certain

medications can increase the risk of gut inflammation. Some of these medications include antibiotics, proton pump inhibitors (PPI's), selective serotonin reuptake inhibitors (SSRIs), non-steroidal anti-inflammatory drugs (NSAIDs), and oral contraceptives.

Importance of Gut Mucosa

Your gut mucosa or intestinal mucosa creates the inner lining of your intestinal tract. It is the innermost layer of your intestinal tract. It is made of epithelium cells, thin connective tissues, specialized goblet cells, and secretes sticky mucus throughout your gut. It helps absorption and secretion.

Signs and Symptoms Associated with a Leaky Gut Lining

- Digestive issues, including bloating, gas, constipation, diarrhea, nausea, or irritable bowel syndrome (IBS)
- Food allergies, food sensitivities, or food intolerances
- Skin problems, including acne, rashes, eczema, or rosacea
- Fatigue
- Insomnia or other sleep issues
- Brain fog, difficulties concentrating, memory troubles
- Mood imbalances, including anxiety and depression
- Headaches or migraines
- Chronic muscle or joint pain
- Getting sick often, slow recovery from illness, and other signs of poor immune health
- Autoimmune diseases, such as Celiac disease, Chron's disease, rheumatoid arthritis, Hashimoto's thyroiditis, lupus, or psoriasis
- Seasonal allergies or asthma
- Hormonal imbalances, including irregular periods, PMS, or polycystic ovarian syndrome (PCOS)
- Fibromyalgia
- Chronic fatigue syndrome
- Histamine intolerance and histamine reactions

TOP 12 NUTRIENTS TO HEAL THE GUT LINING

Zinc

Zinc is a critical mineral for your immune health, metabolism, and other areas of your health. Zinc is also a mineral that your body cannot make on its own. This means that you need to get your required intake of zinc through food and supplements.

Quercetin

Quercetin is a plant compound found in grapes, apples, blueberries, blackcurrants, cherries, black plums, cranberries, cruciferous vegetables, kale, red leaf lettuce, romaine lettuce, chicory greens, cabbage, sprouts, snap pea, red onion, peppers, herbs, and olive oil.

It is known for its antioxidant, histamine-reducing, and anti-inflammatory properties. Quercetin helps improve microbial diversity in the gut and reduce gut inflammation and inflammatory intestinal issues.

L-Glutamine

L-glutamine is a non-essential amino acid. Its role is to serve as an energy source for both your intestinal and immune cells. It also allows your gut lining to be healthy and helps the healthy growth and function of your intestinal cells. It plays an important role in gut barrier function, gut mucosal health, metabolism, and the reduction of gut inflammation.

Aloe Vera

Aloe vera is a medicinal plant commonly used topically for wounds, sunburn, and other skin concerns. Used internally, aloe vera may help support digestion and detoxification. In natural medicine, aloe is renowned for its ability to support the gut mucosa and the integrity of the gut lining.

Slippery Elm

Slippery elm is a tree in North America with medicinal properties. Topically, it's commonly used for sores, wounds, boils, and other skin inflammation and skin issues. Orally, it is often recommended for stomach problems, diarrhea, sore throat, and coughs, it helps improve digestion and reduce the risk of gut health issues.

MSM

MSM is a natural compound that may help decrease inflammation, reduce joint pain, and support immune health. Food sources of MSM include leafy green vegetables, alfalfa sprouts, apples, tomatoes, raspberries, tea, and coffee. It may reduce gut inflammation and gut damage. It may also help reduce inflammatory response if you already have a leaky gut lining.

N-Acetyl D Glucosamine

N-acetyl D glucosamine is a bacterial metabolite that may be beneficial for inflammatory bowel diseases (IBDs) and arthritis. It may help reduce biofilm formation by harmful bacteria that may cause gut microbiome imbalance and leaky gut.

Marshmallow Root

Marshmallow root is a perennial herb from Western Asia, North-

ern Africa, and Europe. It is commonly used for digestive and skin problems. Marshmallow extract may be protective against peptic ulcers and may help reduce inflammation and histamine release often associated with leaky gut lining.

Mucin

Mucins are macromolecules found in mucus supporting its biochemical and biophysical properties. It supports lubrication, cell signaling, and other functions in your body. Mucins support the mucus barrier, gut lining, and gut microbiome.

Chamomile

Chamomile is one of the most well-known herbal medicines. It is commonly recommended as a digestive relaxant, for digestive complaints, and for sleep. Chamomile flower extract may help reduce inflammation, stabilize the intestinal barrier, and improve intestinal mucosal health.

Cat's Claw

Cat's claw is an herbal medicine grown in the Amazon forest and tropical areas. It is commonly used for inflammation and for fighting viral infections. It may help reduce inflammation and may be beneficial for digestive complaints.

Citrus Pectin

Citrus pectin is a soluble fiber often recommended for diarrhea, digestive issues, satiety, and low cholesterol. It may help to improve gut barrier function, reduce leaky gut lining, support gut microbiome balance, and reduce the risk of diet-induced obesity. Your gut lining is incredibly important for your gut and overall health. A leaky gut lining may increase the risk of chronic inflammation, gut inflammation, gut microbiome imbalance, chronic symptoms, autoimmunity, and chronic health issues. Keeping your gut lining healthy is key to health.



FULL BODY MRI

A full-body MRI provides a comprehensive, radiation-free evaluation of your major organ systems. Its primary advantage is early detection of silent diseases like tumors, vascular abnormalities (e.g., aneurysms), and organ degeneration before symptoms manifest. Additionally, it uses magnetic waves instead of ionizing radiation.

KEY ADVANTAGES

No Ionizing Radiation: Unlike CT scans, full-body MRIs rely on strong magnets and radio waves. This makes them a safer, non-invasive option for routine preventive check-ups without cumulative radiation exposure.

Comprehensive Screening: It assesses multiple anatomical

regions (such as the brain, liver, kidneys, pancreas, spine, and major blood vessels) in a single session, delivering a holistic picture of your internal health.

Exceptional Soft-Tissue Contrast: MRI technology is highly effective at distinguishing between different types of soft tissues, making it an excellent tool for identifying abnormal growths or lesions.

Peace of Mind: For individuals with a strong family history of cancer or specific genetic risk factors, identifying or ruling out serious health conditions can alleviate health anxieties.

Improved Cancer Detection: Modern protocols, such as diffusion-weighted imaging (DWI), significantly enhance a radiologist's ability to spot suspicious tissue changes across the body.



The Unknown UNIVERSE

Our Bacteria Are Talking. We've Just Begun to Understand What They're Saying. The human microbiome is essential to our health, but scientists still know very little about it.

Scientists refer to this vast, unexplored terrain as biology's dark matter. Our bodies are home to more bacteria — on our skin, up our noses, in our guts and mouths and around our genitals — than there are stars in the Milky Way. These microbes have evolved not only with us but inside us, and scientists who study them closely say that hardly a biological process or system exists in which they do not play a role. They helped create our digestive systems and our immune systems. They influence the size and shape of our bodies. Research suggests that they also affect our brains, moods, personalities and behaviors. And yet, most of them have still not been identified, let alone studied.

It was tantalizing to think about what a fuller picture might reveal. In recent years, scientists had linked the gut microbiome to a long list of conditions, including Crohn's and irritable bowel syndrome, Parkinson's, dementia and autism, and they were hopeful that a better understanding of those links would lead to treatments, if not cures. They were also sifting through the nearly unfathomable array of molecules that microbes produce, in search of biological treasures: not only potential medications but also compounds capable of breaking down pollutants or

repairing damaged ecosystems.

But the unknowns still far outweighs the knowns: No one can say for certain what counts as a healthy microbiome or whether an unhealthy one can be altered intentionally. Nor is it clear whether changes to a person's individual microbiome is a cause of illness or a consequence.

The idea that we might cure almost anything that ails us by tweaking our microbiomes has helped spawn a multibillion-dollar market (diagnostic tests, probiotic supplements, peptides) and an entire social media subgenre (#guttok).

A century or two ago, whenever something happened in the body that we couldn't explain, we attributed it to God. Now we blame the microbiome.

But as scientists are discovering, the microbiome is no fixed entity. In fact, it varies so wildly among different people and places that not even basic concepts like "healthy" or "sick" are universal. "We built a statistical model that can accurately predict whether a person in the United States, Canada or Western Europe is healthy or sick based on the

composition of their gut microbiome," researchers says. "But when we apply that same model to people living in any other part of the world, it fails completely." It is the key to understanding how we influence our microbiomes, how they influence us and what that relationship means for human health.

Among other things, the research has found that microbes talk to one another in ways that directly affect their ability to survive. Scientists have long known that bacteria are promiscuous with their DNA, passing it not only to offspring but also among random neighbors, like humans trading gossip. (The scientific term for this is horizontal gene transfer.)

These exchanges are more frequent than previously thought. Gut bacteria can acquire as many as 100 new genes per year on average. They also appear to serve specific purposes. In communities that consume a lot of fiber, they swap more genes involved in fiber breakdown. In places where antibiotic use is particularly high — where farmers treat livestock with antibiotics, for example — they exchange more antibiotic-resistance genes. And in cities, where humans live closer to one another, they trade more genes that help them spread between people. (The impact of these exchanges on their human hosts depends entirely on the microbes in question. Contagiousness and antibiotic resistance are bad when they help the wrong bacteria thrive. But when these same traits are conferred on any of the countless microbes that promote and protect human health, they are a net gain.)

This microbial dialogue also varies based on the human

environment in which it unfolds. In non-industrialized communities — those that don't have indoor plumbing, many antibiotics or much processed food — human microbiomes tend to be robust and diverse, and their chatter relatively calm.

In industrialized communities, they appear more frantic. Microbes not only exchange more genes more rapidly; they also elicit stronger responses from their human hosts, including more stress signals and more inflammation.

If you imagine the human gut as a neighborhood populated by a mix of microbial and human cells, then neighborhoods touched by industrialization appear to be marked by greater discord. The neighbors fight more (and more loudly); the police respond with greater, sometimes hair-trigger force; and the microbiomes themselves appear to be in decline. Fewer bacteria — and perhaps more important, fewer types of bacteria — reside there with each new generation. This thinning-out is so great that in Western societies even the microbiomes of healthy people can resemble those of people who are chronically ill.

It's easy enough to guess at the causes of this waning. Microbes don't like antibiotics, for obvious reasons. They don't like C-sections, which rob them of the opportunity to colonize new human territory. And they hate ultraprocessed diets. All three of those are more

prevalent in an industrialized world.

Urban microbiomes interact differently with those cells than rural ones. Another research has found that children with a high risk of obesity are missing a gut bacterium that scientists think plays a role in the production of GLP-1, a naturally occurring gut hormone and neuropeptide. Rachel Carmody, a professor and scientist in Harvard's Department of Human Evolutionary Biology, studies the impact that different microbiomes have on metabolism.

As bewildering as microbiomes are turning out to be, a consistent pattern has emerged. Cleaner water means fewer pathogens and fewer gastrointestinal illnesses, and more processed food leads to more chronic conditions like obesity and diabetes. Where fiber intake declines, microbiomes tend to depopulate and become more vulnerable.

Just imagine trillions of gut bacteria signaling furiously to one another as their communities were starved of fiber, or various microbial species fighting for primacy in a sudden storm of added sugar.

How that turmoil might give rise to rampant inflammation, or worse.

Scientists by now have little doubt that the microbiome would ultimately change the way we understand our bodies and approach our health.



By **Dr. Asset Zharylkapov, MD.**
General Practitioner at AMC

GUT-BRAIN Axis

Inside your digestive tract live trillions of microorganisms (bacteria, fungi, viruses) collectively called the gut microbiome. They outnumber the amount of cells in a human body. These little organisms help digest food, influence your immunity, make chemical messengers and even produce tiny compounds that talk to your brain. Researchers have discovered that the gut and the brain maintain a constant communication - a bi-directional system called the gut-brain axis.

When your gut is in balance, it helps keep your brain sharp, your mood steady, and your nervous system well-regulated. When the gut is compromised, the signals can shift - contributing to challenges in brain health, as well as immunity, digestion, overall health and hormones.

In people with neurodegenerative conditions like Alzheimer's or Parkinson's disease, studies show altered gut microbiome profiles: less beneficial bacteria, more pro-inflammatory types.

In autoimmune neurological conditions such as Multiple Sclerosis (MS), emerging evidence suggests the gut-brain axis is involved: disturbances in gut bacteria may influence immune activity, inflammation and disease progression. Overall called "INFLAMMAGING".

Microbiome influences the brain via several routes - immune signals, metabolic products (short-chain fatty acids), neural pathways (including vagus nerve) and by affecting the integrity of the gut-brain barriers.

While we cannot say "gut problems cause dementia or MS" with absolute certainty yet, it is scientifically proven that we can influence that system.

Here's how you can support your gut-brain health now:

1 EAT WITH GUT AND BRAIN IN MIND.

Choose fibre-rich, colourful vegetables, fruits, legumes and whole grains. These feed your good gut bacteria. Include fermented foods like yogurt, kefir, sauerkraut or kimchi - they help boost microbial diversity. Stay away from ultra-processed foods, sugar, and excessive antibiotics unless medically required - they all are a cause of inflammation and serious health issues.

2 PRIORITISE SLEEP, EXERCISE AND STRESS-MANAGEMENT.

Chronic stress or poor sleep disrupt the gut-brain health. Regular exercise helps both gut and brain. Aim for consistent sleep patterns and relaxation habits (breathing exercise, mindfulness) to keep your nervous system and gut in harmony.

3 BE ALERT TO WARNING SIGNS & GET REGULARLY CHECKED.

Digestive issues like frequent constipation, bloating, or irregular bowel habits and/or neurological signs such as brain fog, memory changes, sleep disruptions, fatigue - these may

suggest your gut-brain health deserves proper evaluation.

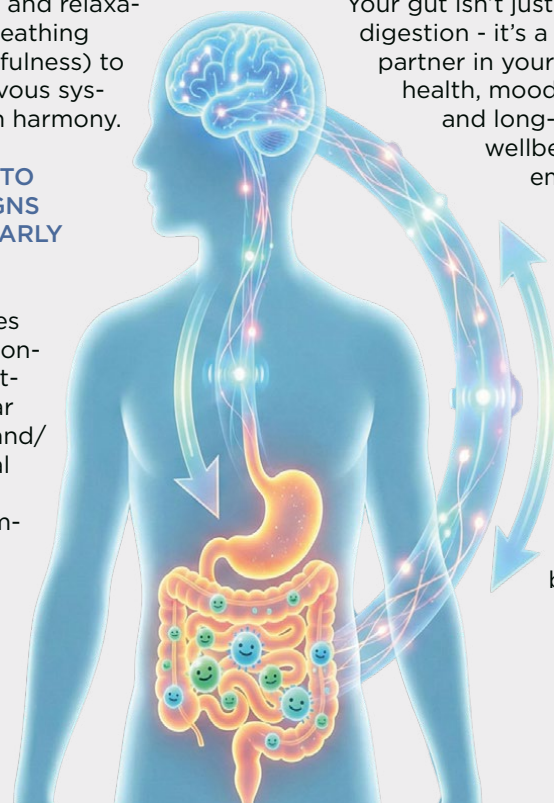
YOU SHOULD LOOK FOR:

- A comprehensive consultation, including gut, neurological, lifestyle review;
- Endoscopic evaluation if prescribed;
- Gastroenterological, Neurological consultations;
- Personalized recommendations: nutritionist support, lifestyle coaching, full spectrum microbiome evaluation;
- Progress monitoring

Take charge of your gut health, support your brain, start thriving, get your energy and focus back.

Your gut isn't just for digestion - it's a powerful partner in your brain health, mood, vitality and long-term wellbeing. In

emerging science, the message is clear: taking care of your gut is taking care of your brain.



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8 ways to BOOST your BRAIN

When it comes to staying smart, the simplest solutions are the best. It can be easy to get bogged down in brain-health directives. Recently, we've been targeted with next-gen nootropic dietary supplements that promise cognitive enhancement and vibrating, vagal-nerve-calming wearables. From "brain rave" (an event blending music and movement with a discussion around how both modalities benefit brain health) and to an aesthetics studio launching transcranial stimulation.

But some of the most important things you can do to boost your brain power are very simple.

1. Protect your head

Basic as it sounds, take measures to avoid bashing your head. Closed head injuries can have an impact on the blood-brain barrier, the protective layer of cells that prevents harmful substances from entering the brain. "Once it is compromised, toxins, drugs and viruses have free entry to our brain and very often result in 'brain fog' or longer-term cognitive decline." And helmets are becoming more portable. Ventete has created the world's first inflatable bike helmet, and UK brand Newlane makes a foldable helmet that meets European safety standards and folds to half its size to slip into a bag.

2. Protect your heart

According to Masud Husain, professor of Neurology and Cognitive Neuroscience at the University of Oxford, "people don't realize that high blood pressure makes a big difference to their brain health". Get regular health checks to keep tabs on your vascular health – blood pressure, BMI, blood sugar and

cholesterol – or at the very least employ a home-use blood-pressure monitor to ensure that blood pressure is consistently below 135/85.

3. Eat a colorful range of foods

The gut-brain axis is well established. "Your intestinal microbes produce neuro-active compounds that impact everything from cognition to mood," says Olga Donica, nutritionist and longevity innovation director at Clinique La Prairie. "A practical start is to consume fermented foods and a range of colorful plants each day." Diversity is great. "Eat a massive variety of whole foods: spices and herbs, in particular turmeric, ginger, garlic and cinnamon, and healthy fats [salmon, avocado, olive oil, mackerel and sardines]." Stay away from refined sugar and ultra-processed foods!

4. Embrace calm

"The brain thrives on stimulation, but also restoration," says Donica. "Meditation, even for five minutes twice a day, regulates the autonomic nervous system, reduces cortisol and activates

neuroprotective pathways." If this isn't for you, a simple path to the parasympathetic "rest and relax" state is to find something fun to do – and think about writing it down. "Gratitude journaling and laughter are super-useful to de-stress and flood our brains with positive hormones," says Donnai. "Neuroplasticity is enhanced, mood improves through increased serotonin and dopamine release and focus is increased."

5. Learn a new skill

According to Murali Doraiswamy, professor of psychiatry and behavioural sciences and director of the neurocognitive disorders programme at Duke University School of Medicine, the best way to keep your brain sharp is the "lifelong pursuit of mentally stimulating and challenging activities". While he'd suggest you push retirement off as long as possible in order to keep the brain challenged in a wide variety of demanding ways, alternatives include anything from competitive bridge to walking book clubs (that's the discussion of books – while walking). The key is to try things that you find difficult.

If you are a whizz at sudoku, for example, then consider something more physical, such as tango; if your comfort zone is numbers, perhaps try to write some poetry. "Greater cognitive stimulation enhances brain size and resilience to pathology," says Doraiswamy.

6. Detoxify your life

Toxins are stored in fatty tissues like our brain. "We are exposed to microplastics, pesticides, herbicides, heavy metals and so forth every day," says Donnai. "In combination, our detoxification pathways are overwhelmed and this results in storing toxins – mainly in fatty tissues like our brain." What to do? Avoid toxins where you can: studies suggest you should drink water and try to avoid heating plastics. If you're concerned about the chemicals in the coatings on non-stick pans, swap them for cast iron or stainless-steel alternatives; and check the labels on your clothing and bedding: natural fibers won't shed microplastics.

7. Test your hearing

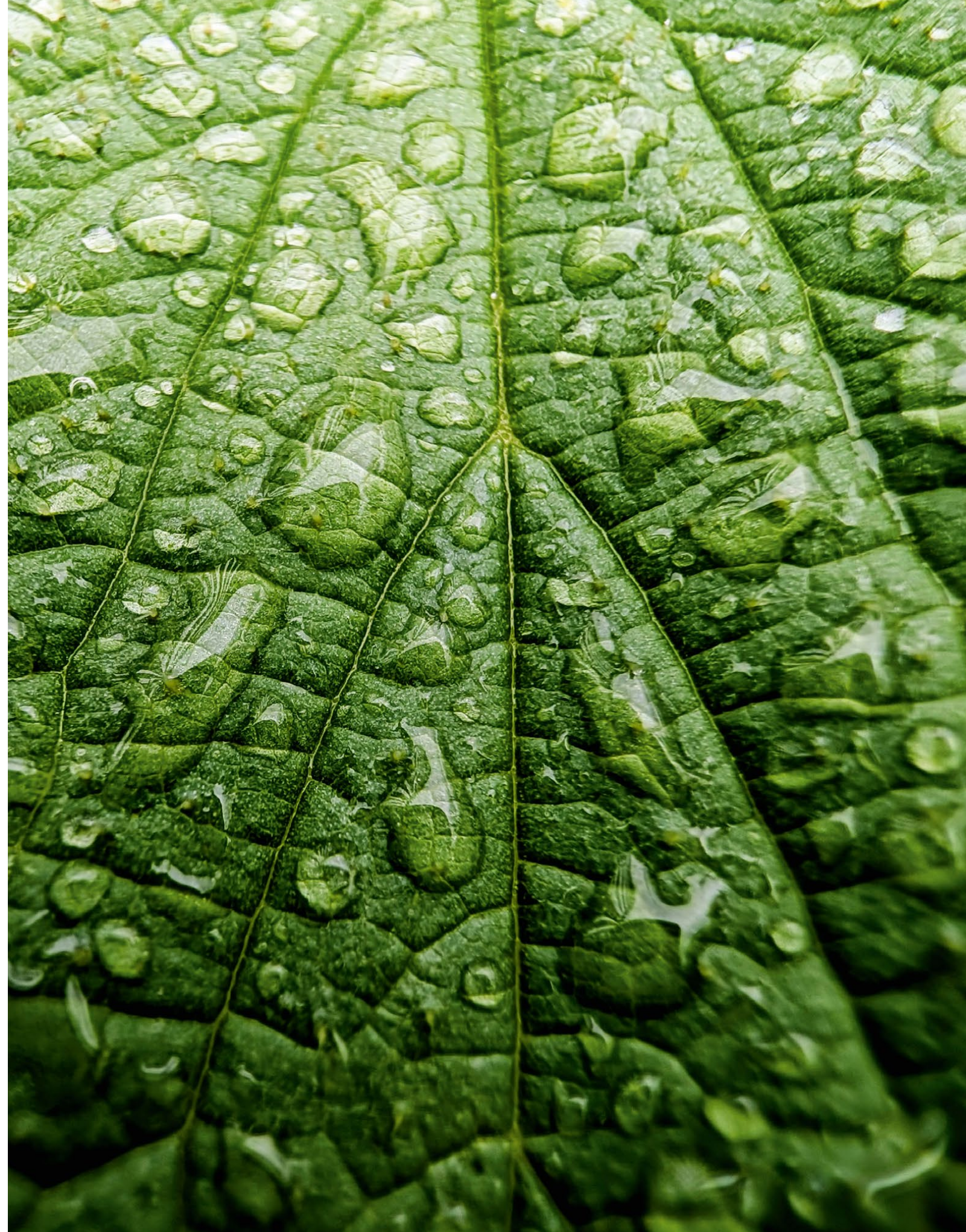
Scientists are linking hearing loss with reduced brain health. Husain says: "The greater the level of hearing loss, the higher the risk of dementia; exactly why this is the case is not established, but it might be through increased social isolation or less intellectual stimulation [caused by missing out in conversations]." People with hearing loss who use hearing aids have a lower risk of cognitive decline, so getting your hearing tested is recommended if you have any concerns.

8. Go to bed

Sleep is not simply rest, it's a biological imperative for cognitive function and long-term brain health. It's foundational to brain performance and emotional regulation. Aim for between seven and eight hours each night, and support your circadian rhythm by avoiding late-night meals, alcohol and screen time. Some research suggests blue light can cause melatonin levels to drop, so blue-light-reducing habits could help you drift off more quickly, and consider supporting your sleep with magnesium.

PART 6

BIOHACKING: HYPE VS
SCIENCE



Today's **HYPE** or a **BREAKTHROUGH** in Medicine?

The world of therapeutic peptides: what they are, what they do, and much more.

In recent years, the peptide space has seen a significant uptake in drug discovery, clinical research, and therapeutic applications. However, these treatments remain unfamiliar to a lot of prospective patients, who aren't exactly sure what peptides are or how they work.

Peptides are a complex subject with strange drug names, shared and sometimes contradictory potential effects, and confusing regulatory statuses.

What exactly are peptides? Peptides occur naturally in the body (endogenous) but can also be administered externally (exogenous).

The basics that underline all peptides, endogenous and exogenous alike, are:

- *Peptides are strings of amino acids.*
- *Amino acids are molecules that combine to form protein molecules.*
- *Proteins are essential for a diverse array of bodily functions, including but not limited to immune function, muscle contraction, metabolism, physical growth, physical structure, blood oxygenation, and sexual arousal.*

The human body needs an adequate supply of 20 amino acids to function properly, but those 20 amino acids can

combine in thousands of unique sequences to form different peptides with distinct biological functions. By supplementing your endogenous supply of peptides with exogenous sources, you provide your body with more of the resources it needs to carry out specific functions.

THERAPEUTIC PEPTIDES

Those exogenous sources, when used to treat health conditions, are called therapeutic peptides. They cover: Weight loss, Muscle growth or recovery, Longevity, Inflammation, Sleep, Cognitive function, Diabetes, Energy, Immune function, Stress, mood, Sexual function, Oxidative stress, Heart health, Skin health, Wound healing and others.



Therapeutic Peptides

● Metabolic & recovery ● Cognitive & systemic ● Structural & repair

	Weight loss	Muscle growth or recovery	Longevity	Inflammation	Sleep	Cognitive function	Diabetes	Energy	Immune function	Stress, mood	Sexual function	Oxidative stress	Heart health	Skin health	Wound healing
Semaglutide	●						●								
Tirzepatide	●						●								
Tesamorelin*	●	●													
Sermorelin		●	●			●							●		
Ipamorelin		●	●		●										
CJC-1295		●	●		●										
BPC-157		●		●									●		
TB4		●		●									●		
Collagen peptides		●													
MOTS-c*	●		●	●				●							
Epitalon			●		●				●			●			
SS-31			●			●						●	●		
Thymosin alpha-1				●					●	●					
Selank						●			●	●					
Semax						●			●	●					
Pinealon			●		●	●				●					
PT-141											●				
Oxytocin											●				
GHK-Cu				●										●	●
Rapamycin			●	●									●	●	
DSIP					●					●					
Insulin							●								

*Additional noted use: **Tesamorelin** — HIV-associated lipodystrophy **MOTS-c** — Bone health

ROUTES OF ADMINISTRATION

Therapeutic peptides are often injectables, administered subcutaneously by needle. That's because peptides degrade easily in the digestive tract and tend to be too large molecularly to permeate the skin or intestinal lining, often with bioavailability as low as 1-2%.

But there are some peptides that have a small enough molecular size that they easily transfer into the bloodstream as either an oral or a topical supplement. A couple of good examples are collagen, with an oral bioavailability as high as 63%, and GHK-Cu (copper peptides), which can pass through the skin in therapeutically effective amounts.

MAJOR PEPTIDE TYPES AND THEIR BENEFITS

While peptides can potentially serve myriad health goals, the most commonly sought-after peptides can be organized in five categories based on their primary benefits.

WEIGHT LOSS PEPTIDES (GLP-1 RAS)

Originally developed as diabetes treatments, glucagon-like peptide 1 receptor agonists (GLP-1 RAs) exhibit mechanisms of action on metabolism and the pancreas that promote weight loss by:

- **Slowing digestion:** A longer time to gastric emptying correlates not only with a decreased appetite but also with a milder glucose spike.
- **Increasing feeling of fullness:** When you do get hungry, a GLP-1 RA can help you reach

satiety sooner than you normally would. Ideally, that leads to eating less food during mealtimes and, therefore, consuming fewer calories throughout the day. Today, the most popular and widely used peptides for weight loss are tirzepatide and semaglutide, which you may know by the respective brand names Mounjaro and Ozempic.

BODY RECOMPOSITION

Body recomposition refers to the process of gaining muscle and shedding fat. It's the muscle growth factor that separates body recomposition peptides from GLP-1 RAs. Many body recomposition peptides are growth hormone secretagogues, or substances that stimulate the body's production of growth hormone, which itself promotes physical growth and helps regulate body fat composition through a different hormone called insulin-like growth factor-1. Some of the more commonly used ones are: CJC-1295, ipamorelin, sermorelin, and tesamorelin. There are several uncategorized peptides that a lot of people use to increase their muscle mass. Examples include BPC-157 and TB4/TB500, which are often used together for their synergistic potential to stimulate muscle gain while speeding up recovery.

GENERAL WELLNESS

Peptides for general wellness make the broadest category, as wellness refers to several target health outcomes: longevity, immune health, and quality of life.

EXAMPLES INCLUDE:

- **MOTS-c:** MOTS-c is a naturally occurring protein hormone that may improve metabolic function, reduce inflammation, and improve bone health, among others.
- **Epitalon:** Consisting of four amino acids, epitalon can help preserve the lengths of telomeres (the caps on the ends of chromosomes) and regulate melatonin. In doing so, it may stave off age-related diseases associated with telomere shortening, strengthen the immune system, and improve sleep health.
- **Delta sleep-inducing peptide (DSIP):** DSIP helps with sleep. It may also attenuate stress and have applications as an anticonvulsant, antidepressant, and neuro-protective agent.
- **Thymosin alpha-1:** Thymosin alpha-1 may offer numerous benefits related to immune function, including but not limited to treating hepatitis B, treating infections, improving vaccine efficacy, and reducing the toxicity of chemotherapy.
- **GHK-Cu:** GHK-Cu is a complex of copper and the peptide GHK. It has quality-of-life applications related to skin health, as research supports its ability to tighten loose skin, improve its firmness, reduce photo-damage, promote wound healing, and more.
- **Insulin:** Insulin is a quality-of-life treatment for managing blood sugar. It's helpful for people with type 2 diabetes and necessary for those with type 1.

COGNITIVE ENHANCEMENT

Cognitive enhancement peptides are similar to nootropics in that they can improve focus, memory, and mental clarity, as well as associated factors like anxiety and mood. Two promising synthetic peptides in this category are Selank and Semax. Studies on the former have shown that it can produce a stable and sustained influence on learning and memory, while the latter may be able to support the differentiation, maturation, and survival of neurons in the brain. Another potential cognitive enhancement peptide is Pinealon, which can improve learning and memory by modulating gene expression and neurotransmitter activity. Study suggests that subjects could acquire and retain information more effectively.

SEXUAL FUNCTION

Peptides for sexual function are either alternatives or adjuncts to more ordinary prescription treatments such as sildenafil and tadalafil. One such peptide, called PT-141 (a.k.a. bremelanotide), has been described as a "promising way to treat [hypoactive sexual desire disorder]," a condition characterized by a chronic lack of sexual desire. PT-141 is available as a women-only prescription under the brand name Vyleesi. Another possible sexual peptide solution, for both men and women, is oxytocin, which may have some role in stimulating sexual attraction. But more research is needed, as some studies have found oxytocin to be ineffective at

improving sexual behavior.

THE SAFETY OF PEPTIDE THERAPY

In theory, pharmaceutical-grade therapeutic peptides are generally safe because peptides already occur in the human body. That includes synthetic peptides, which mimic their naturally occurring counterparts in form and function. For example, a normally functioning body already produces collagen and GHRH, so adding collagen peptides or a GHRH analog should only enhance naturally occurring biological processes. For most non-pregnant, non-breastfeeding women without specific allergies, adverse events are limited to mild and transient flu-like effects and (for injectables) injection site reactions.

But in practice, and especially with regard to synthetic and recombinant peptide forms, there are some considerable potential safety concerns:

IMMUNOGENICITY

- **ability of a substance to provoke an immune response.** An immunogenicity-inducing peptide, when introduced to the body, would cause the body's immune system to perceive the peptide not as a medication but as a threat. At the very least, immunogenicity would trigger the production of antibodies that neutralize the peptide's effects; at worst, the same antibodies can elicit life-threatening complications, possibly even systemic anaphylaxis.

CARCINOGENICITY

- **ability of a substance to cause cancer.** Some peptides, by virtue of their action, are potentially and incidentally carcinogenic. A good example of this is growth

hormone secretagogues — peptides that facilitate growth hormone secretion — whose capacity to promote physical growth can potentially trigger the growth and spread of tumors. For that reason, peptides such as sermorelin, tesamorelin, and CJC-1295 are contraindicated for people with active cancer, as well as those with a personal or familial history of cancer.

Other life-threatening conditions include:

- **Heart toxicity (by cesium chloride)**
- **Arrhythmias (by cesium chloride and domperidone)**
- **Kidney injury (by germanium sesquioxide)**

CURRENT LEGAL STATUS OF THERAPEUTIC PEPTIDES

Peptide legality is a complex. Some therapeutic peptides (e.g., collagen) are readily available over the counter. Some need a doctor's prescription but are otherwise widely available (e.g., GLP-1 RAs like semaglutide and tirzepatide). But then there are others that, in the United States, currently drift in a state of legal limbo.

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When nutrients enter your blood-stream directly, your body can utilize them at rates of up to 100% bio-availability, compared to a mere 20-50% absorption rate typical of oral supplements. This remarkable difference explains why so many individuals report feeling immediate effects after just one session of IV therapy.

Explore Our Signature Cocktails

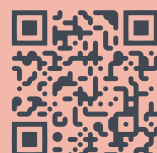
- Stress Relief
- Anti-age
- Hangover Relief
- Cognitive Booster
- Energy Boost
- Immune Support
- Detoxification



Dr. Nino Khoperia, MD
AMC Tbilisi, Georgia

Biohacking is the practice of using science, technology, and personalized strategies to optimize health, performance, and well-being. One emerging tool is intravenous (IV) therapy, which may support hydration, nutrient replenishment, recovery after intense physical activity, and reduction of oxidative stress.

However, biohacking is highly individual, and the benefits of IV therapy depend on personal goals, health status, and medical needs. Used under medical supervision, IV therapy can literally “upgrade your health”, by complementing healthy lifestyle: balanced nutrition, regular exercise, quality sleep, and stress management as part of a holistic personalized wellness approach.



**at select AMC clinics*

Energy Decline And Skin Wrinkles

8 Anti-Aging Supplements For A Younger-Looking Glow And Boosted Energy Levels

As we age, signs of getting older don't just show up in the mirror—they show up in how we feel. From fine lines and dull skin to fatigue and brain fog, aging is deeply tied to what's happening at the cellular level, as one of the biggest drivers of aging is a decline in the body's ability to produce energy.

As we get older the body's cellular fuel declines over time. That fuel is ATP (adenosine triphosphate), which powers everything from skin regeneration to brain function. A critical molecule involved in ATP production is NAD, or nicotinamide adenine dinucleotide—and levels of NAD naturally decrease with age.

Low NAD levels have been linked to fatigue, brain fog, insulin resistance, obesity, wrinkles, and age-related diseases like Alzheimer's, heart disease, diabetes, and fatty liver disease. The good news is that certain supplements can help support NAD levels, which may promote healthier aging from the inside out.

Here are 8 supplements for supporting energy, longevity, and a more youthful appearance:

1. NMN (NICOTINAMIDE MONONUCLEOTIDE)

NMN is a direct precursor to NAD, meaning the body can efficiently convert it into usable NAD. Supporting NAD production may help improve cellular repair, energy levels, and skin vitality.

2. NR (NICOTINAMIDE RIBOSIDE)

Like NMN, NR boosts NAD levels and has been studied for its potential benefits in energy metabolism, cognitive health, and healthy aging.

3. NIACIN (VITAMIN B3)

Niacin plays a role in energy metabolism and NAD production. While effective, higher doses can cause flushing, so it should be taken carefully and under guidance.

4. NIACINAMIDE

A gentler form of vitamin B3, niacinamide supports NAD production without the flushing effect and is also known for its skin-supporting benefits.

5. QUERCETIN

This plant-based flavonoid acts as an antioxidant and may help preserve NAD levels by reducing inflammation and oxidative stress, both of which accelerate aging.

6. APIGENIN

Found naturally in foods like parsley and chamomile, apigenin may help slow NAD breakdown, supporting energy production and cellular health.

7. Fisetin

Another flavonoid, fisetin is being studied for its potential senolytic effects—meaning it may help clear

aging or damaged cells that contribute to inflammation and visible aging.

8. RESVERATROL

Commonly associated with red wine, resveratrol is known for activating longevity pathways and supporting mitochondrial and cellular health, which can translate to improved skin and energy.

While supplements aren't a magic fix, supporting NAD and ATP production may be a powerful way to age more gracefully—boosting energy, protecting skin, and promoting overall vitality from the inside out.



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Testimonials

★★★★★

Very attentive, they listen to everything, pre-
scribe necessary tests, explaining in detail what
needs to be done! We live in London and will now
come to this clinic on a planned basis, because its
difficult to get procedures "on a planned basis",
but here it's fast, simple and detailed! The girls
at the reception are very polite and friendly, they
speak three languages! Thank you!

14:15

★★★★★

We were staying in a nearby hotel and my
son needed to see a doctor. The staff re-
sponded to What's-app" instantly and ar-
ranged a Paediatrician appointment. The
doctor was kind, gentle and playful with my
son who therefore wasn't nervous with him
during the checkup.

13:01

★★★★★

I was treated remarkably quickly. For the first time,
I was even escorted to the pharmacy, a gesture
that was a great help. Throughout the entire pro-
cess, the team was attentive, professional, and
friendly. The test results arrived very quickly, which
allowed me to be reassured and treated without
delay. While the prices may be a little higher than
in a traditional hospital, the peace of mind and
quality of care are well worth the difference.

11:28

★★★★★

Highly recommended!! I was really
impressed how smooth everything
was with this clinic from start to fin-
ish. Very responsive and warm com-
munication through their WhatsApp
channel to get information, arrange
an appointment etc. Doctors are re-
ally nice, welcoming and truly pro-
fessional too! They don't miss any
spot/symptom and help as much as
they can. Thank you so much once
again!

16:48

★★★★★

I was so impressed by this Ur-
gent Care clinic. We are so
fortunate to have found this
Clinic. Every contact with the
clinic has been exceptional.
From start to finish. The recep-
tionist, the nurse, the doctor.
Everything. Their care was ex-
cellent, and their follow up was
unexpectedly terrific. I wish I
could pack the American Med-
ical Center up and take them
home to Atlanta!

23:29



The peace of mind
and quality of care
are well worth the
difference.

★★★★★

[] Highly recommended!! I was really impressed
how smooth everything was with this clinic from
start to finish. Very responsive and warm com-
munication through their WhatsApp channel to
get information, arrange an appointment etc.
Doctors are really nice, welcoming and truly pro-
fessional too!

12:38

★★★★★

We would like to sincerely thank you
for your outstanding support yester-
day. We felt very well cared for, safe,
and in the best hands throughout
the entire experience. It was truly
excellent service, and we appreciat-
ed it very much. We would especial-
ly like to thank Dr. Denis for his great
empathy, kindness, and dedicated
care. His support meant a lot to us
and touched us deeply.

19:08

★★★★★

I'm beyond impressed by the level of care and
service that I received. First, they were able to
send the doctor to assess me at the hotel room
itself so I didn't have to travel to the clinic myself.
Everyone speaks English there so the communi-
cation was easy.

04:05

★★★★★

I recently visited American
Medical Centers in Tbilisi and
cannot recall a more positive
medical experience in all my
years of seeing doctors across
multiple countries.

21:49

★★★★★

I was so impressed by this Urgent Care clin-
ic. We are so fortunate to have found this
Clinic. Every contact with the clinic has been
exceptional. From start to finish. The recep-
tionist, the nurse, the doctor. Everything.
Their care was excellent, and their follow
up was unexpectedly terrific. I wish I could
pack the American Medical Center up and
take them home to Atlanta!

07:11

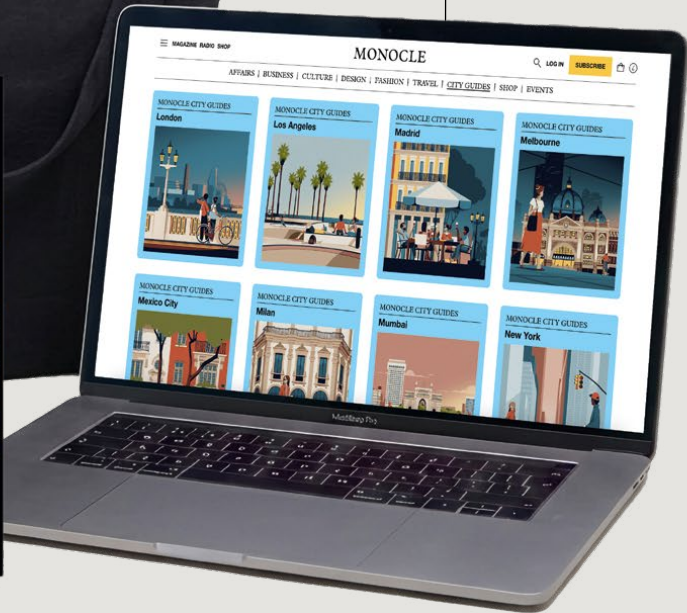


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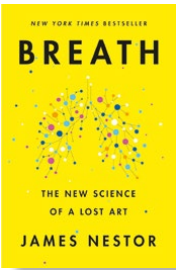


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What We're **READING**...

1



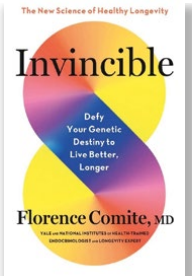
Breath explores how changing the way we breathe can improve sleep, health, performance, and overall well-being.

2



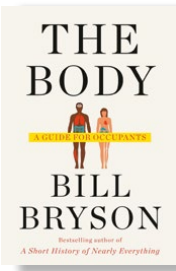
Strangers follows one woman's attempt to understand the sudden collapse of her twenty-year marriage — and the transformation that follows.

3



Invincible explains how personalized medicine, biomarkers, and daily habits can help improve long-term health.

4



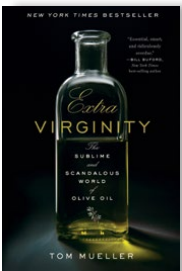
Bill Bryson explores the human body with humor, curiosity, and surprising scientific facts.

5



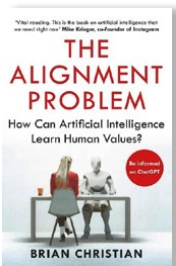
Third Culture Kids looks at the experience of growing up between countries and cultures.

6



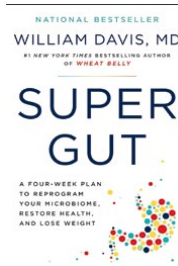
Extra Virginity uncovers the hidden world of the olive oil industry.

7



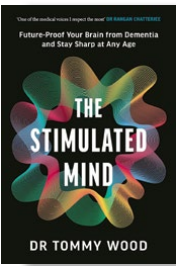
The Alignment Problem examines how artificial intelligence is reshaping modern life.

8



In Super Gut, Dr. William Davis explains how modern diets and antibiotics damage the microbiome.

9



Dr. Tommy Wood explores how to protect and strengthen brain health over time, challenging the idea that cognitive decline is inevitable.

DESTIN



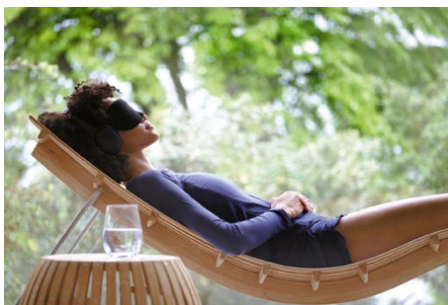
ADLER Spa Resort Thermæ (Italy)

Mineral springs steam across the Val d'Orcia hills, and this resort sits at their centre. The setting does most of the work: thermal waters, wide Tuscan views, the kind of stillness that's hard to find elsewhere. It's a place built for slowing down, not performing it.



CLINIQUE LA PRAIRIE (Switzerland)

Since 1931, Clinique La Prairie has built its reputation on precision — cellular science paired with the quiet luxury of Lake Geneva. Montreux has never needed to shout. Neither does the clinic. It remains the reference point for preventive medicine, trusted by those who've had the means to go anywhere else.



Chenot Palace Weggis (Switzerland)

High above Lake Lucerne, Chenot treats wellness as a discipline rather than an indulgence. Medical diagnostics, detox protocols, and a view that seems to lower your pulse before treatment even begins. It's less a retreat than a recalibration — luxury in service of something more clinical, more lasting.



MAYRLIFE (Austria)

On the shores of Lake Altaussee, MAYRLIFE has spent decades refining a single idea: that the gut is where health begins. The clinic combines longevity medicine with fully personalised nutrition plans, built around each guest's own blood work and intolerance testing. It's slow food, hard bread, and a level of medical precision most spas never attempt.



BUFF Medical Resort (Germany)

Buff Medical Resort sits on the tranquil southern shores of Lake Constance, where Mayr fasting principles meet cardio-MRI diagnostics and functional medicine. The resort treats longevity as a discipline built on measurable outcomes, not just comfort — though the comfort is considerable too.

ATIONS



Lefay Resort & Spa (Italy)

The 40,000-square-foot Lefay Spa regenerates mind and body through a rediscovery of genuine emotions and inner harmony, set among olive groves above the lake. Two Lefay properties — Garda and the Dolomites — share one philosophy: wellness built on silence, space, and time rather than spectacle.



SHA (Spain)

For over fifteen years, SHA Spain has offered a 360-degree approach to health, combining natural therapies, advanced Western medicine, and personalised nutrition on Spain's Costa Blanca. Minimalist by design, serious by practice — this is a medical clinic that happens to look like a resort.



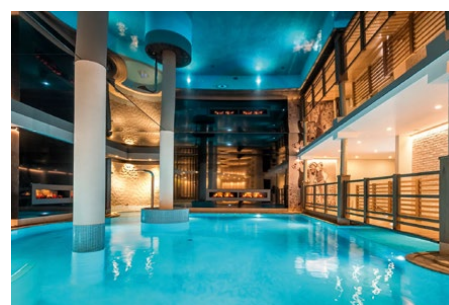
Grand Resort Bad Ragaz (Switzerland)

The thermal spring at Tamina Gorge has been documented as a healing source since 1242. Nearly eight centuries later, the Grand Resort's Tamina Health Center pairs that same water with an interdisciplinary medical team running structured programmes in longevity, detox, and rehabilitation — clinical depth built on genuinely old ground.



Brenners Spa & Wellbeing (Germany)

Inside Germany's most storied spa town, Brenners Medical Care delivers residential preventative healthcare programmes and specialist treatments backed by advanced diagnostic testing. The setting is grand-hotel elegance; the medicine underneath is entirely serious.



Preidlhof Luxury Dolce Vita Resort (Italy)

Buff Medical Resort sits on the tranquil southern shores of Lake Constance, where Mayr fasting principles meet cardio-MRI diagnostics and functional medicine. The resort treats longevity as a discipline built on measurable outcomes, not just comfort — though the comfort is considerable too.

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