

Age-Well Strategies From the LONGEVITY LAB

The experts at Columbia Mailman have a front-row seat to the spectacle of healthy aging research. We found out what they personally do to live longer, healthier lives. Some of their tactics could be in your future, too.

By Alexandra Pattillo/Illustration by Daniella Ferretti

AS HUMANS AGE, a spectrum of biological shifts sets in: Memory fades, bones weaken, muscles shrink, skin thins, and arteries stiffen. This characteristic decline marks the transition into old age and often arrives along with dreaded chronic conditions like cancer, heart disease, and dementia. But what if these hallmarks of aging weren't an inevitable reality, but rather a modifiable process? What if people could live longer, healthier lives free from disease? That's the moonshot that researchers at Columbia Mailman are chasing: not immortality, but helping everyone add healthy years to their life.

Amid a booming longevity industry rife with misinformation and dubious marketing, the School is devoted to research that prevents disease and disability and improves the health of entire populations. This approach to gathering strong evidence around healthy aging is well suited to the current moment: The number of Americans ages 65 and older is projected to grow by more than 40 percent, from 58 million in 2022 to 82 million in 2050.

No one here is searching for a pill or product to cure aging for the lucky few. "We're focused on identifying the best buys for public health prevention to improve healthy longevity," notes Allison Aiello, PhD '03, the James S. Jackson Healthy Longevity Professor of Epidemiology at the Robert N. Butler Columbia Aging Center, housed at Columbia Mailman. "I'm a big fan of implementing known public health measures to improve healthy longevity—so personally I have not tried any 'antiaging bio-hacks,'" says Aiello, who describes herself as middle-aged. Contrary to what wellness influencers might suggest, the experts' best healthy aging strategies are refreshingly simple, as we'll see on the following pages.

move MORE



ALAN COHEN, PhD, 50, an associate professor of Environmental Health Sciences in the Columbia Aging Center, has a somewhat renegade perspective in the field of aging. Rather than study a single intervention or aspect of aging, Cohen takes an integrative approach: He views the body as a complex, finely tuned ensemble, not a sum of parts. "We are not a machine, or a Lego set that you can build from understanding the proteins and molecules," says Cohen, who studies the biological basis of health and aging. "We are a dynamic, flowing system."

Leveraging complex systems theory, Cohen's research revolves around the ways human bodies maintain their dynamic equilibrium, or internal balance, as well as what he calls "intrinsic health." The latter is a state emerging from the interplay of energy, communication, and structure within us that leads to overall robustness, resilience, plasticity, and performance, all of which decline with age. This dynamic equilibrium is supported by multiple mechanisms, from wound healing to DNA repair, that work together to support a broader orchestra of functions. "I don't ask, 'What's the specific target pathway or molecule?' but 'How does the ensemble break down in its ability to maintain the internal balance of your body?'" Cohen explains.

One of the most effective ways to support the body's dynamic equilibrium is to move regularly, Cohen advises, aiming for at least two and a half hours per week. He meets his goal by cycling to work and doing aikido, a Japanese martial art. Exercise is as close to a miracle drug for aging as we know: It lowers the risk of chronic diseases including heart disease, stroke, Type 2 diabetes, and cancer; it improves mental health, sleep quality, and energy levels; and it curbs the risk of early death by a staggering 30 percent.

There's no perfect type of workout, but Aiello, who studies cognitive health, notes the value of aerobic and strength exercise to support the brain, muscles, and heart. Cohen is a particular fan of dancing. "It gives you everything at once: strength, flexibility, balance, and coordination, but also rhythm, social interaction, integration with music, and creativity," he says. It's hard to find any human activity that requires so much of our "humanness." Meanwhile, colleague Thalia Porteny, PhD, a health policy scholar, applied ethicist, and assistant professor of Health Policy and Management at Columbia Mailman, has doubled down on resistance training. Porteny, who recently turned 40, lifts weights to counteract midlife shifts in body composition and insulin sensitivity, as well as to preserve muscle, metabolism, and strong bones.

"Exercise is our natural state," says Cohen. "Our ancestors were moving all the time, way more than we do. It's what our bodies were built for."

optimizing the EXPOSOME

LONGEVITY IS ALSO SHAPED from the outside in, explains Marcela Tamayo-Ortiz, ScD, 53, an associate professor of Environmental Health Sciences at Columbia Mailman, by what researchers call the exposome, or the cumulative measure of all lifetime exposures. Her work has explored exposure to lead via glazed ceramics as well as occupational hazards that jeopardize bone health.

So-called "forever chemicals," heavy metals, and microplastics may seem inescapable in a modern environment, but Tamayo-Ortiz says we have more autonomy than we think: Start with the food you eat, your skincare products, and the air in your home.

Food is a major source of chemical exposure, so Tamayo-Ortiz cooks at home to avoid hidden

a new food PHILOSOPHY

WHILE THE WELLNESS WORLD offers no shortage of fad diets and food trends, none of Columbia Mailman's experts encourage a strict eating pattern. There's no need to cut carbs, "protein-maxx," or endure a juice cleanse.

There are compelling data, however, around intermittent fasting, and reducing consumption of ultraprocessed foods, which have been linked to obesity and chronic disease, notes Belsky. Many longevity experts swear by skipping breakfast or fasting from the early evening through the night, which shows potential to improve metabolic health in some people. Despite the evidence, Belsky hasn't imposed harsh limits in his own life, noting that he is "definitely unusual" among many of his peers.

Belsky and his team invented the Pace of Aging method and the DunedinPACE clock, tools that use sensitive biomarkers to pinpoint biological age. This metric captures wear and tear on cells and tissues, rather than simply a birthday on a calendar. Belsky is leveraging these tools to determine which

Photographs: (top to bottom) Jevone Moore; Jennifer Lumpkin

additives, limits ultraprocessed foods, skips plastic containers, use stainless steel pans instead of coated nonstick ones, and buys organic as much as possible. Clean air within her home is important, too: She keeps her home dust-free, opens her windows for better circulation, and uses an air filter.

For Tamayo-Ortiz, certified "clean" beauty and personal care products are worth the investment, too. But as with any antiaging strategy, it's not worth fretting over a few slipups, she asserts. Sticking with positive changes over the long haul will have the most impact, Tamayo-Ortiz believes.

"Think about structural changes versus willpower," adds Daniel Belsky, PhD, an associate professor of Epidemiology in the Columbia Aging Center, who also installed air filters in his New York City apartment after reading research by former Columbia Mailman colleague Andrea Baccarelli, MD, PhD, linking air pollution and inflammation. "Investments made in optimization should be durable ones," says Belsky. "Don't force yourself into a habit that's going to be hard to keep."

interventions work on an individual level, as well as which social policies mitigate health disparities across communities. Currently, the team is investigating how food policy, antipoverty interventions, and cash transfers shape health span, often far more than behavioral choices alone. They are also looking at the effects of medication, including GLP-1s, metformin (approved for diabetes), and rapamycin (an immunosuppressant).

For now, Belsky skips the buzzy supplements sweeping functional-medicine circles. There's no metformin or rapamycin in his medicine cabinet. He's open to trying emerging therapies but hasn't yet seen the need as a healthy, active 46-year-old. Supplements might lead to marginal benefit, he says, but most young, healthy people with no deficiency can maintain their micronutrients with a diverse diet. "Supplements are easy, relative to an extra run or earlier bedtime, but they're not without costs," financial or otherwise, Belsky says. "I would order behavioral changes ahead of nutritional changes, absent direct guidance from healthcare providers." Belsky says the best evidence in geroscience comes down to a mashup of time-honored advice espoused by author Michael Pollan and former first lady Michelle Obama: "Eat food, mostly plants, not too much, and move more."



More Age-Well Strategies from Our Faculty



"To practice resistance to and resilience from structural racism and other determinants, each year, I establish a countdown to my birthday where I practice self-care every day for the same amount of days I will be in years. Sometimes I focus on running or weightlifting; sometimes it's gratitude or rest."

Paris "AJ" Adkins-Jackson, PhD, MPH, 42, assistant professor of Epidemiology and Sociomedical Sciences



"I'm a big fan of the sauna. Observational studies suggest it's linked to longevity and brain health. I find it helps a lot with pain from old injuries and relieves stress. Many saunas in New York City have a vibrant social community, which itself is a good thing."

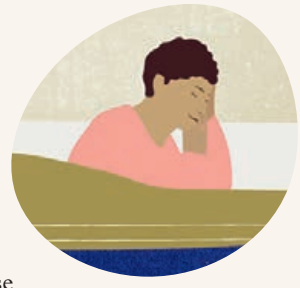
Calen Ryan, PhD, 47, associate research scientist in the Robert N. Butler Columbia Aging Center



"Several of my students have studied the role of social connection in cognition. Their work has reminded me of the importance of social connection not just for cognitive aging, but also for health across the life course. It inspires me to stay connected with family and friends, near and far, and to give everyone a bit more grace."

Sarah Tom, PhD, MPH, 46, assistant professor of Epidemiology (in Neurology)

rest and DESTRESS



ONE LONGEVITY FACTOR THAT we can likely all manage to some degree? Stress. A little is healthy, explains Aiello, an expert on cognitive health and aging. But too much, too often, can kick off a detrimental feedback loop: Chronic stress hijacks the central nervous system, triggering a cascade of glucocorticoid hormones that influences immune function and, in turn, affects the brain. If repeated, this cycle can drive chronic inflammation, undermine mental health, and contribute to disease; it also often feeds harmful habits like poor diet, heavy drinking, smoking, and broken sleep, Aiello says. Keeping stress in check by resting, socializing with friends and family, exercising, and practicing meditation or mindfulness are crucial age-well tactics. "The quality of your relationships and involvement in your community bring you purpose and meaning, which affect you psychologically and may influence your brain and health as you age," Aiello explains. Her team's research has shown that close relationships with family and friends are associated with less immune system aging in midlife.

To keep her own mind engaged, Aiello runs, works out, and plays mahjong with friends, an activity that's both "rewarding and potentially protective," she says. In this vein, Tamayo-Ortiz joined a local swim team, listens to music, and goes to concerts. "Find time to do things that help you enjoy being alive," Tamayo-Ortiz says.

These fulfilling, connective moments provide reasons to live longer, happier. "We've become a culture focused more on preventing death, and less on valuing life," says Cohen. He believes we don't need to "micromanage" our health, searching for the perfect diet or lifestyle change, or even doing more research to figure out what is good for us. We know a great deal about healthy aging already, we just "need to figure out how to do it."

conditions for THRIVING

YUAN ZHANG, PhD, an assistant professor of Sociomedical Sciences in the Columbia Aging Center who studies the social determinants of aging and longevity, believes that to achieve a truly healthy society, we must look beyond the individual to the systems in which we live. "The biggest misconception is framing aging as an individual achievement or failure," says Zhang. People talk about who "ages well" as if it were a matter of personal choice or discipline. Yes, individual behaviors matter, Zhang notes, but they don't happen in a vacuum, and they aren't always under our direct control.

Consider structural racism, where there is continued opportunity for intervention: "Unfortunately, research—my own and that of others—suggests exposure to structural racism early in life sets individuals on a cumulative trajectory of accelerated aging and dementia risk," says Paris "AJ" Adkins-Jackson, PhD, MPH. For Adkins-Jackson, her very career path and research are a means of ensuring healthier aging for generations to come. "My multivitamin won't save my life. But I can invest the time I have in saving others and remembering those before—and that's what I am going to do," she says.

The seeds of longevity are planted far before we reach old age. By the time people hit their 60s or 70s, much of their health trajectory has already been shaped by exposures decades earlier, and by their levels of education, poverty, food security, and economic opportunity. "People live within institutions, policies, and historical moments that shape what's possible for them," Zhang explains. This is what sets apart the public health approach to living well from the consumer longevity industry selling the latest miracle solution. "These aren't personal choices," Zhang says. "They're conditions."

More important than nailing the best antiaging strategy is designing conditions for all people to thrive: walkable cities, better schools, flexible jobs, social support, improved access to healthcare, a nutritious food supply—and an equitable society. "Almost all major improvements in life expectancy have come from structural and public health interventions: scientific advancements that benefit everyone," says Zhang. "Not a consumer good that wealthy individuals can purchase, but 'health as a human right.'" ●

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