

THE EPOCH TIMES

MIND &

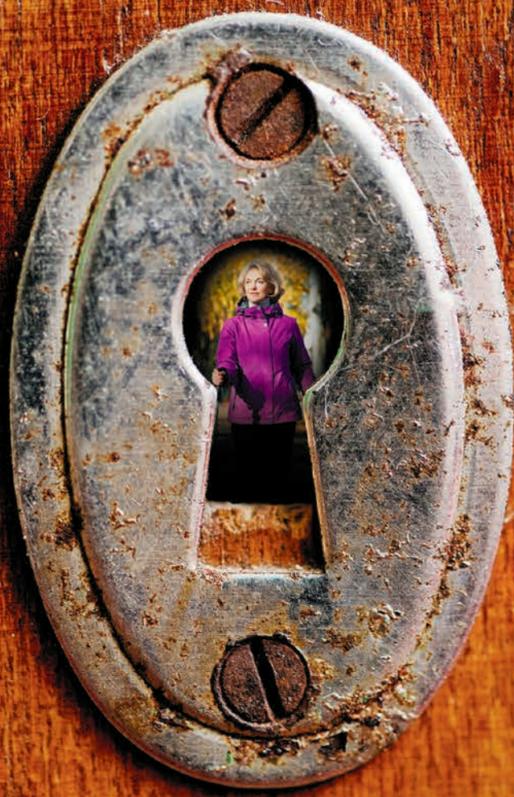
BODY

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The first thing I noticed with people that are over 70 that are fit and healthy and set them apart from someone that may not be so healthy is the positive attitude.

Blanca Garcia, a registered dietitian nutritionist



AGE WELL

The Secret to Healthy and Fit Elder Years

Healthy habits arise from the quality of our character and define how well we age

CONAN MILNER

You find a lot of machine metaphors when trying to understand how the human body works. Fuel is compared to food, for example, or an engine is compared to our digestive process. Computer circuitry is said to be like our nervous system. And just like mechanical parts, body parts are said to wear out with time and overuse. But a machine doesn't have feelings. Or morality. It doesn't have an internal compass that tells it why it shouldn't party all night and eat soda and chips all day, nor a knowing side that nudges it to go outside, connect with nature, and move its

mechanical parts in a healthy way.

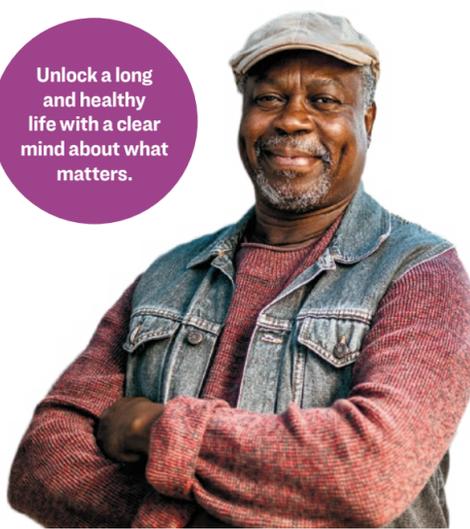
The machine metaphor for the human body overlooks one of the most critical components to good health: good character. And yet the human body as a machine idea is everywhere.

German biologist Dr. August Weismann is credited with introducing this wear-and-tear theory of the aging human body in 1882.

In the past, doctors drew metaphors from nature to describe health and biology. Perhaps Weismann's idea was influenced by the ever-increasing role machines have played in our lives since the industrial revolution.

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Unlock a long and healthy life with a clear mind about what matters.



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MIGUEL SAAVEDRA/SHUTTERSTOCK

FOOD AS MEDICINE

Black Garlic: The Antioxidant Powerhouse

Under the right conditions, garlic can be transformed into something even more powerful

EMMA SUTTIE

Garlic is a pretty magnificent vegetable. There are few, if any, foods more beloved and present in more kitchens than this bulb.

Garlic is one of the most popular foods on the planet and has been used for centuries by cultures the world over. Cloves of garlic have been found in ancient Greek temples and Egyptian pyramids, including the tomb of King Tutankhamen. Back then, garlic was used not only to enhance the flavor and aroma of meals, but it was also used to increase strength, enhance physical performance, preserve food, and support digestion.

Today, a staggering 250 million (a quarter billion) pounds of garlic are consumed every year in the United States alone. Unfortunately, much of our garlic is coming in from distant lands rather than local growers. China produces 80 percent of the world's garlic, followed by India, South Korea, Egypt, and Russia.

In addition to its deliciousness, garlic has a long and impressive list of health benefits. Garlic is an antiviral, antibacterial, antifungal, and anti-inflammatory; it boosts the immune system and fights infections, decreases your risk of cancer, and helps protect against cardiovascular problems such as atherosclerosis (a buildup of plaque in the arteries), clotting, high blood pressure, and strokes.

If you think the above list is impressive, just wait. It turns out that if you heat regular garlic in a humidity-controlled environment for 30 days, something extraordinary happens: It unleashes garlic's little-known secret weapon.

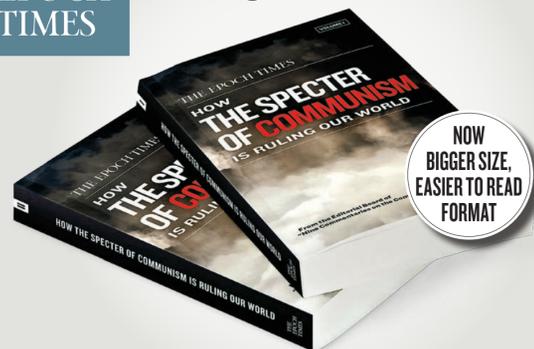
Raw garlic contains minerals such as magnesium, calcium, phosphorus, selenium, and one of the most potent antioxidants in the plant kingdom, allicin. Allicin is only released when the garlic is chewed (not for the faint of heart), cut, or crushed, and you'll know it because it's responsible for garlic's pungent aroma. The problem is that once you crush a clove of garlic and liberate the allicin inside, you have less than an hour before it loses its potency and all the healing benefits that come with it.

But there's a way to preserve and enhance all of garlic's health benefits, and amazingly, it's been used in South Korea, Thailand, and Japan for centuries. It's called black garlic.

What Is Black Garlic?

Black garlic is simply regular garlic that has gone through a process of fermentation.

Continued on Page 3

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Not all heat can be relieved by a cool dip. Sometimes the only way to cool down is to stay calm.

CHINESE WISDOM FOR SEASONAL LIVING

The Heart Is Vulnerable in Summer, so Stay Calm

Solar Term: ‘Summer Begins’ (May 5 to May 20)

MOREEN LIAO

A solar term is a period of about two weeks and is based on the sun's position in the zodiac. Solar terms form the traditional Chinese calendar system. The calendar follows the ancient Chinese belief that living in accordance with nature will enable one to live a harmonious life. This series explores each solar term, offering guidance on how to best navigate the season.

Solar Term: ‘Summer Begins’

2021 Dates: May 5 to May 20

This is the time when the sun's heat finally warms the earth and prompts everything to grow and move.

Naturally, insects and wild animals become very active due to the increase in temperature and relative humidity, and crops start to grow rapidly.

If the heat is too strong, the plants will grow quickly, but their stalks will be weaker. Fast growth also affects their flavor.

Clever farmers in ancient China would use up the summer tea leaves in fruit or flavored tea blends, such as with plum flowers, berries, orange, or jasmine. The fruits and flowers masked the taste of the less-flavorful tea leaves.

The heat from this solar term not only affects the earth, but also our bodies. Very hot weather can damage the heart. Thus, during summer, we need to take good care of our circulatory system by staying calm and avoiding getting angry. It's also important to eat a healthy, cooling diet.

In ancient China, Emperor Qianlong (1711-1799) from the Qing Dynasty used to make cooling summer teas from the morning dew of water lily leaves and the green lotus seed sprouts from his palace gardens. Both of these plants are considered extremely cold in the traditional Chinese medicine system of classification. This method classifies foods according to their nature, not by whether they are physically cold or warm to the touch.

According to a book written in the Warring States period, “Yurling,” women used to drink plum juice with wine, hoping to stay young forever. It is very good to eat plum at this time of year to promote beauty.

The elderly, or people with weak health, often have a poor appetite around this time. Therefore, it is important to design a well-balanced diet for them and pay extra attention to their well-being.

This is also the season when the young ones grow the most rapidly. Make sure they're getting enough nutrients and exercising gently.

Tips for Living
in Harmony With the Season

1. Take midday naps, as they help to strengthen the heart.
2. Drink plenty of water.
3. Avoid exposure to wind after sweating.
4. Massage the temples by pressing firmly with the center of both palms. These two pressure points help clear water retention inside our bodies and protect the heart.

Seasonal Foods to Beat the Heat

Avoid alcohol and strongly flavored or greasy foods. This protects the skin from rashes or irritation brought on by the increase in humidity.

Eat foods such as bean sprouts, celery, cucumber, eggplant, eggs, fava beans, fish, millet, milk, oats, seaweed, spinach, tofu, tomatoes, wheat, and zucchini.

**The heat from this
solar term not only
affects the earth, but
also our bodies.**

Enjoy fruits, such as cherries, grapefruit, strawberries, lemons, melons, and passion fruit. Red-colored foods are beneficial at this time.

Try to avoid overprocessed foods. Sour is the perfect flavor for this time, as sour-tasting foods, especially vinegar, help maintain moisture levels inside the body and stimulate the appetite. Avoid or reduce bitter foods.

The best herbs for the season are coriander, dandelion, peppermint, jasmine, licorice, melissa, rose, and tender ginger.

Epoch Times contributor Moreen Liao is a descendant of four generations of traditional Chinese medicine doctors. She's also a certified aromatherapist, former dean of an Institute in Sydney, and the founder of Heritage Formulations, a complete solution for TCM professionals. Visit RootsTCM.com for details.



In ancient China, Emperor Qianlong (1711-1799) from the Qing Dynasty used to make cooling summer teas from the morning dew of water lily leaves and the green lotus seed sprouts from his palace gardens.

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FOOD AS MEDICINE

Black Garlic: The Antioxidant Powerhouse

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Continued from Page 1

Chemically referred to as the “Maillard reaction,” the process is biologically quite complex. The garlic bulbs are placed in a humidity-controlled room and heated to approximately 170 degrees Fahrenheit for 30 days. This process causes the sugars in the garlic to caramelize, making it turn its distinctive black color. It also changes the texture and taste. Black garlic has a chewy texture and a sweet balsamic flavor.

However, the most significant transformation is that in its black form, garlic is imbued with not just healing properties but healing superpowers. Interestingly, allicin, the powerful antioxidant in raw garlic, is almost completely destroyed during the heating and aging process of creating black garlic. On the surface, this doesn't make sense, as allicin is one of garlic's most potent health-boosting agents.

But the fermentation process that produces black garlic is also the catalyst for an important transformation, turning allicin (a powerful antioxidant) into S-allyl-cysteine (SAC), an even more potent antioxidant. S-allyl-cysteine is better absorbed by the body, is more stable, and is an even more powerful antioxidant than allicin by a factor of more than two to one.

Black Garlic's Health Benefits

Some of the most compelling discoveries about black garlic involve how the heating, moisture, aging, and resulting fermentation process enhances already existing nutrients and changes existing nutrients into new ones. These changes make black garlic superior to regular garlic in terms of its healing and protective abilities.

In a comprehensive review of black garlic's SAC content, the superior antioxidant effect of black garlic over regular garlic was found to be because of various complex mechanisms that illustrate how robust black garlic's antioxidant capabilities can be. One of the most beneficial actions of antioxidants is their ability to destroy free radicals in the body. Free radicals are formed from various factors, such as inflammation, exposure to UV light, air pollution, ionizing radiation, pesticides, alcohol, and smoking. Free radicals accelerate aging and have been shown to be a contributing factor to many diseases.

Adding black garlic to your diet or taking a high-quality supplement is worth it for its free-radical fighting antioxidant benefits alone. But black garlic has a host of other impressive healing benefits that more than earn it the title of a ‘superfood.’

Decreases Inflammation

Inflammation is the root of many of our most destructive diseases, such as autoimmune diseases, metabolic disorders (diabetes, obesity), and cancer. The S-allyl-cysteine in black garlic is one of the best things you can add to your diet to reduce any inflammation already present and reduce your risk of developing inflammatory diseases in the years to come.

Reduced inflammation also reduces your chances of developing cognitive conditions, such as Alzheimer's and Parkinson's diseases, and it can help to improve memory and other cognitive functions.

Looking at several studies, researchers in Taiwan have suggested that black garlic and its bioactive compounds may have a protective effect on the brain and help prevent neurodegenerative disorders and cognitive decline. They published their article in the journal *Molecules* in 2021.

Decreases Cancer Risk

Numerous studies demonstrate that black garlic is showing promise in its ability to destroy certain types of cancer cells. Black garlic was shown to increase apoptosis (a type of programmed cell death) in human leukemic cells and increase cytotoxicity (toxic to cells—cancerous ones) in human lung carcinoma, breast adenocarcinoma, stomach adeno-



This complex biochemical process caramelizes garlic and makes it sweet and chewy.

carcinoma, and cancerous liver cells. In studies, black garlic also decreased the volume and weight of tumors in human gastric cancer cells and inhibited colon cancer cell growth.

In another study, black garlic was shown to have a hepatoprotective effect, meaning that it protects the liver from damage, which, in this study, was from chronic alcohol abuse.

Boosts the Immune System

Our immune systems are our first line of defense against pathogenic invaders. The allicin in regular garlic is known to be a potent antimicrobial, antibiotic, and antifungal. Still, when that allicin is converted to the S-allyl-cysteine in black garlic, it becomes an even more powerful way to protect the body against viruses, bacteria, and fungal infections such as candida by destroying any such invaders trying to take up residence in our body.

Improves the Cardiovascular System

If you have cardiovascular problems—or would like to avoid them—adding black garlic to your diet is probably a good idea. Black garlic has been shown to decrease the risk of cardiovascular problems such as atherosclerosis (plaque in the arteries), clotting, high blood pressure, and stroke. In a study published in *Frontiers in Physiology*, black garlic improved heart function in patients with coronary artery disease by improving circulating antioxidant levels. The same study also found 27 main compounds in black garlic with strong antioxidant properties.

Another study published in the journal *Nutrients* found that consumption of black garlic helped reduce blood pressure in subjects with high cholesterol.

Some studies also suggest that black garlic has a cardioprotective effect, protecting the heart from damage.

How to Make Black Garlic

If this is the first time you're hearing about black garlic, you aren't alone. Even though it has been used for centuries in many Asian countries, it isn't common in

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Researchers in Taiwan suggest black garlic and its bioactive compounds may have a protective effect on the brain and help prevent neurodegenerative disorders and cognitive decline.

the West, and it isn't something that you would typically see at a grocery store.

There was a time about 10 years ago that it became a bit of a trend with high-end chefs, but other than that, it isn't particularly well known. If you can find it, it costs a pretty penny—upward of \$20 a pound.

Of course, if you feel adventurous, you could always try to make it. Although the process of creating black garlic isn't exactly simple (primarily because of the time involved), it's possible. I was able to find instructions online for three different ways to make black garlic using either a dehydrator, a slow cooker, or a rice cooker.

A Truly Powerful Food and Medicine

The foods that we eat every day are an opportunity to nourish our bodies, fortify our health, and fight disease. Regular garlic is incredibly versatile—it's found almost everywhere and is relatively easy to grow; it enhances cooking and encompasses an impressive list of healing benefits from boosting the immune system to cleansing the body of pathogens. It's a very good thing to have around. If you want to supercharge its healing benefits—which are already pretty spectacular—you can try the recipes for making black garlic, which has all of regular garlic's benefits and then some.

With uncertainty about the future and a lot of talk recently about food shortages and supply chain issues, gaining some knowledge of common foods and their healing capabilities is only prudent. Being well informed, self-sufficient, and healthy will empower us to face whatever the future may bring.

As Winston Churchill once said: “Healthy citizens are the greatest asset any country can have.”

Emma Suttie is an acupuncture physician and founder of *Chinese Medicine Living*—a website dedicated to sharing how to use traditional wisdom to live a healthy lifestyle in the modern world. She's a lover of the natural world, martial arts, and a good cup of tea.



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AGE WELL

The Secret to Healthy and Fit Elder Years

Healthy habits arise from the quality of our character and define how well we age

Continued from Page 1

Whatever the inspiration, the idea is more ingrained than ever. And the modern medical model continues to justify it. Worn out hips, knees, and even hearts can now be replaced by a skilled surgeon, much like how a mechanic replaces a faulty fuel pump.

It's easy to accept the wear-and-tear concept because we can easily find evidence of it. Unfortunately, it overlooks how our choices are the foundation of our long-term health. We don't consider that many of those who exhibit signs of physical and cognitive decline are suffering from the many seductions of our modern era.

So why do some people manage to keep strong bodies and sharp minds after racking up so many more miles than others?

There's no shortage of Instagram pages devoted to the fit-pics of 20- and 30- somethings, but we'd be wise to pay more attention to those who retain a healthy, active physique into their 70s. These are people who, just by virtue of existing, challenge the notion of how we're supposed to age.

According to life expectancy estimates, we're predicted to peter out in our mid-70s. However, many seem to wither away years or decades earlier. So how do some manage to keep their body and mind in good shape? We're often told it's better genes or access to better mechanics. Most of us know better. At a basic level, the practices that lead to health and longevity are no secret at all. So why don't people all practice them?

The most cost-effective and potent "elixirs of youth" are diet and exercise, according to Emily Servante, a personal trainer with Ultimate Performance. These powerful elixirs benefit our health at any age, but they may hold even more power the older you get.

"When people reach their 70s, they often find themselves standing at a crossroads with their health, with two very different paths before them," Servante said. "Lifestyle decisions in this decade can determine whether they continue to age well and maintain vitality, strength, and mental acuity, or see their health rapidly decline."

Sometimes the key is in education. After all, if you don't know that all that cake and television is killing you, you won't have the motivation to take the harder path. So in hopes of getting that motivation, it helps to know how poor habits lead to pain and disease.

Inflammaging

To understand how your lifestyle dictates your health, consider the process found to drive disease.

Researchers have determined that what really accelerates the degenerative process is something called inflammation.

Inflammation is a normal, healthy feature of our immune response and tissue repair, but it's only supposed to last for a short duration. Inflammation switches on when it's needed and switches off when it's not.

Chronic inflammation is a different story. If your body is always inflamed, it will begin to deteriorate. If you want another machine metaphor, think of inflammation as biological rust.

To demonstrate how much of a relationship inflammation has with the aging process, an article published in the July 2018 edition of the journal *Nature Reviews Cardiology* uses a hybrid term: "inflammaging." "Most older individuals develop inflammaging, a condition characterized by elevated levels of blood inflammatory markers that carries high susceptibility to chronic

morbidity, disability, frailty, and premature death," the researchers wrote. "Inflammaging is a risk factor for cardiovascular diseases, and clinical trials suggest that this association is causal."

Inflammaging is also a risk factor for chronic kidney disease, cancer, depression, dementia, and something called sarcopenia: a decline in muscle mass and strength. Sarcopenia can start when you're younger, but as you age, the risk increases tremendously.

According to Servante, advanced sarcopenia can lead to other problems that often plague the elderly.

"With reduced muscle mass comes impaired physical function, reduced strength, poorer coordination, and increased risk of trips and falls," she said.

Several things can contribute to the development of sarcopenia. However, inactivity and a bad diet are the most common factors. These also happen to be the factors we can directly control.

"Research shows that individuals who perform little to no physical activity have a 55 percent increased risk for sarcopenia compared to physically active individuals," Servante said.

And this is where the wear-and-tear theory begins to fall apart. Belts, gauges, gears, and motors demonstrably wear out over time, but the human body can actually improve with use. Regular exercise helps us hold on to our muscle tissue, thereby preventing, or at least slowing, the advance of sarcopenia. Adequate nutrition helps our body continue to rebuild itself and repair injuries we sustain. Machines don't self-repair or get better with use.

Terri A. Corcoran of Falls Church, Virginia, is living proof. She's a healthy 71-year-old woman who has been active her entire life. She used to take dance and fitness classes when she was younger, but eventually switched to working out with videos at home. Today, her regimen includes some Pilates, a few yoga moves, dance, some light weights, and walks around the block when the weather is decent.

"I had to switch from VCR tapes to DVDs at some point, and my workouts today are not as vigorous as they were when I was younger, but I do not gain weight," Corcoran said.

Of course, if exercise is too rigorous for your body to handle, you can suffer a setback. A few years ago, Corcoran hurt her knee during a workout, but it didn't stop her. Instead, she modified her routine for lighter impact. This approach has allowed Corcoran to better handle the challenges of life.

But it isn't simply her exercise routine that has kept her healthy: it's a quality of character that has enabled her to stay diligent in her routine as well as exercise self-restraint when it comes to things that could damage her mind and body.

"I have always done things in moderation, tried to eat relatively well, no smoking, no alcohol, no drugs. I was the primary caregiver for my deceased husband for over 15 years, which was a lot of physical exertion for

Exercise isn't a chore; it's a night out with friends sharing a fun way to move your body while making memories worth keeping.

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55

PERCENT

"Research shows that individuals who perform little to no physical activity have a 55 percent increased risk for sarcopenia compared to physically active individuals," personal trainer Emily Servante said.



The sooner you start using your body, the more capability you will preserve as you age.

me, so that kept me moving. Lots of up and down stairs," Corcoran said.

Finding the Right Exercise

Grocery store and gas station checkout lanes try to seduce us with candy bars and junk food, but a diet rich in fresh fruit and vegetables can reduce inflammation. We also need to consume a sufficient amount of protein to maintain our musculature. And that maintenance also requires that we exert effort and resist the allure of the couch. But what kind of exercise should you consider to fight inflammaging? It mostly depends on what you like, and the current physical shape of your body.

For Bonnie Frankel (77), exercise has always been a way of life. When she entered junior college at age 44, she fell in love with running track, and became the oldest woman ever to compete in a Division One collegiate sport. Later, she began training for the Olympic trials at 60. Today she runs 25 to 30 miles per week.

But you don't have to be an Olympic-level athlete to reap the benefits of exercise. Frankel believes that these benefits are available to anyone at any age. Her 2019 book "Bonnie's Theory: Finding the Right Exercise," explains how to get started.

"For beginners, I would recommend to start slowly with low impact exercises such as walking, cycling, and water exercises. Exercising outdoors is even better as you get the natural vitamin D, and are able to inhale fresh air. Also, try a yoga class or a stretch class and lift weights a couple days a week. I suggest you modify your exercise routine to find out what feels best for you," Frankel said.

You should also strive to be mindful about your movement. Throughout her life, Frankel has had to tailor her workouts to her circumstances. She was diagnosed with breast cancer and endured multiple surgeries in her thirties, and at 56, she had hip surgery. But with each challenge, Frankel found healing through movement.

"I rehabilitated myself through each surgery to regain and return my body and mind to be healthy and fit by engaging in a variety of exercises and sports," Frankel said. "My inspiration to stay healthy today is to keep challenging myself to explore different workouts."

That mindset of persistence and resilience makes all the difference between those who rapidly decline after injury and those who recover. Neither of these traits has anything to do with muscles or physical fitness, but in the end, they make all the difference.

But your motivation to exercise needn't rest on your determination alone. The best exercise is something you enjoy and makes you feel good—and because you enjoy it, you're more likely to sustain it. But give some thought to maintaining your muscle. If you don't have some landscaping work to do in the yard or something else that involves lifting and moving things, you may need to make other efforts. Servante recommends that elders try to fit in some form of resistance or weight-bearing exercises.

"Resistance training is one of the most effective means of maintaining healthy body composition and decreasing the risks of bone loss and muscular strength that come with aging. Especially for postmenopausal women, resistance training can be highly beneficial in counteracting the decrease in insulin sensitivity," Servante said.

Your character also has other effects on top of helping you persist in your fitness routine and eat well. That's because mindset also plays a substantial role in how well you age, says Blanca Garcia, a registered dietitian nutritionist at Health Canal.

"The first thing I noticed with people that are over 70 that are fit and healthy and set them apart from someone that may not be so healthy is the positive attitude," Garcia said. "Most people with a positive disposition will often feel good and want to do activities that make them feel even better. They are more likely to be social and enjoy taking walks and having exercise buddies."

Maintaining an upbeat attitude is often reflected in the company we keep.

But this can be a challenge as we grow older. If old friends pass away, and younger family members are too busy to provide encouragement and support, elders can fall into loneliness and despair. Garcia says seniors who are more proactive in seeking a community support system are more likely to thrive.

"Looking for senior centers and making new friends into older age can really help a person achieve health goals," she said.



Glyphosate is the most heavily used chemical weed killer in the history of agriculture.

ENVIRONMENTAL TOXINS

Saying No to Glyphosate in Our Foods, Environment

As disturbing research about the weed killer comes to light, more people are trying to avoid it

MELISSA DIANE SMITH

Of all the pesticides in our food supply today, the most concerning to consumers is likely glyphosate, the primary active ingredient in Roundup herbicide.

Residues of the well-known weed killer have been discovered in a wide range of staple food products sold in top grocery stores, meaning we are all at risk of inadvertent exposure from the foods we eat. Glyphosate has been at the center of a flood of lawsuits filed by individuals who used glyphosate products long-term in their jobs or on their lawns or gardens, and then developed cancer. However, research links glyphosate not to just cancer, but to other health problems, including reproductive issues, birth defects, and gut health concerns.

As consumers learn about glyphosate, the alarming rise in its use, and its risks, they increasingly want to know how to avoid glyphosate in the air they breathe and the foods they eat. Some cities and countries are worried enough about the health effects that they are taking action to prohibit or restrict the use of glyphosate on playing fields and lawns and in landscaping. There also are savvy ways individuals can protect themselves when they shop, such as seeking out foods with the USDA Organic and Glyphosate Residue Free Certified labels.

Glyphosate and Its Dramatic Rise

Glyphosate is the most heavily used chemical weed killer in food and agricultural production history. It was patented by Monsanto Co. in 1974 and now is manufactured and sold by many companies in hundreds of products.

Its use skyrocketed after the introduction of herbicide-resistant, Roundup Ready genetically modified organisms (GMOs), such as GMO corn and soy, in 1996. A 2017 study found that Americans' exposure to glyphosate increased approximately 500 percent since then.

But the weed killer is not just sprayed on GMO crops. It also is used as a pre-harvest drying agent on non-GMO crops such as wheat, barley, and oats.

It's also important to understand that glyphosate isn't just on the outside of plants—it is absorbed into plants—and glyphosate contamination can't be removed by washing or eliminated by cooking or baking.

The two government agencies that are in charge of regulating the safety of our food, the U.S. Food and Drug Administration (FDA) and the Department of Agriculture (USDA), don't test foods for glyphosate. But non-government, FDA-registered laboratory food testing found extremely high levels of glyphosate in some of America's most iconic food products, such as Cheerios, Oreos, Doritos, and Ritz crackers.

Additional testing discovered the weed killer in a wide range of staple food products including whole wheat bread, chickpeas, and Quaker Oats. The worst offending products were found in top grocery stores, such as Hy-Vee, Whole Foods Market, and Walmart. Alarmingly, 18 of the 26 non-

GMO labeled products tested contained glyphosate.

Cancer and Congenital Defects

In 2015, the World Health Organization's International Agency for Research on Cancer declared that glyphosate probably causes cancer. Since then, thousands of people who used glyphosate-based herbicide and then developed cancer have filed lawsuits against Monsanto and Bayer AG, which bought Monsanto in 2018. In judgments against the corporation, Bayer/Monsanto has been forced to pay more than \$10 billion in damages to gardeners, groundskeepers, and farmers who are suffering from non-Hodgkin lymphoma.

Glyphosate exhibits eight of ten key characteristics of an endocrine, or hormone, disruptor.

"I believe that glyphosate is the most dangerous environmental chemical we face today due to its unique mechanism of toxicity, careless application, and pervasive presence," writes Stephanie Seneff, an MIT senior research scientist, in her book "Toxic Legacy." The scientific literature points to glyphosate "priming the body to fall prey to cancer," according to Seneff.

But health concerns associated with glyphosate exposure go beyond cancer. An October 2020 review paper in *Chemosphere* journal found that glyphosate exhibits eight of ten key characteristics of an endocrine, or hormone, disruptor. It has been found to disrupt thyroid hormone regulation, suppress testosterone synthesis, and inhibit an enzyme critical for conversion of testosterone to estrogen.

Exposure to glyphosate is linked to reproductive disorders, including birth defects in children and fertility problems in adults. A 2018 study in *Environmental Health* suggests glyphosate could be associated with shorter pregnancies, which can be detrimental to maternal health and increase the risk of infant mortality and learning problems as children develop.

Researchers also are concerned about glyphosate's effects on gut health. A 2020 review of glyphosate's effects on the gut microbiome concludes that glyphosate residues on food could cause dysbiosis—an imbalance in the microbes, including bacteria and fungi, in the gut—given that opportunistic pathogens are more resistant to glyphosate than health-protecting beneficial bacteria.

The paper continues, "Glyphosate may be a critical environmental trigger in the etiology of several disease states associated with dysbiosis, including celiac disease, inflammatory bowel disease, and irritable bowel syndrome. Glyphosate exposure may also have consequences for mental health, including anxiety and depression, through alterations in the gut microbiome."

Movements Against Glyphosate

As people understand the magnitude and severity of the glyphosate problem, more people are taking effective action to protect themselves against the herbicide. One example: After hundreds of thousands of concerned citizens joined the Environmental Working Group's campaign to get glyphosate out of our food, Kellogg's announced plans to end the pre-harvest use of glyphosate on all of its crops by the end of 2025.

Grassroots activist efforts have also led to a movement of countries and cities banning glyphosate. According to Baum Hedlund, a U.S. law firm representing hundreds of plaintiffs suing Bayer/Monsanto for allegedly causing their cancer, many countries have banned or placed restrictions on the use of glyphosate.

There are also several cities in the United States that have banned the use of glyphosate, including Portland, Maine, and Miami. More than 150 cities have adopted non-toxic, organic land management policies that don't include the use of glyphosate and other synthetic pesticides. Top cities transitioning to the use of pesticide-free practices include Irvine, California, New York City, Portland, Oregon, and Dubuque, Iowa, according to Beyond Pesticides, which provides pesticide-free training and assistance to communities.

Countries That Limit or Prohibit Glyphosate

- Bahrain
- Belgium
- Bermuda
- Canada
- Colombia
- Czech Republic
- Denmark
- Fiji
- France
- Germany
- Italy
- Kuwait
- Luxembourg
- Mexico
- Netherlands
- Oman
- Portugal
- Qatar
- Saudi Arabia
- Scotland
- Spain
- Sri Lanka
- United Arab Emirates
- Vietnam

How to Steer Clear of Glyphosate

On an individual basis, simple changes in food purchases you make can protect you from glyphosate and other toxic chemicals. Purchase certified organic food or buy real food grown by local farmers who you know don't use glyphosate or other synthetic pesticides. For extra protection when shopping in stores, seek out products that have the Glyphosate Residue Free label. To motivate yourself to make these changes, keep reminding yourself that the body has an amazing ability to heal itself when you simply remove hazardous substances.

Melissa Diane Smith is a holistic nutrition counselor and journalist who has been writing about health topics for more than 25 years. She is the author of several nutrition books, including "Syndrome X," "Going Against the Grain," "Gluten Free Throughout the Year," and "Going Against GMOs."

Seek Out These Food Labels for Protection

To avoid glyphosate in and on foods that you buy, look for these labels.

USDA Organic

By law, glyphosate and other synthetic chemical pesticides along with synthetic fertilizers, sewage sludge, irradiation, and GMOs can't be used in the production of certified organic crops. Even though glyphosate is pervasive in our environment and can drift onto organic crops through wind or rain, research shows that people who eat a predominantly organic diet have significantly less glyphosate in their urine than people who consume mostly conventional foods.

Regenerative Organic Certified

Companies that have products that have met Regenerative Organic Certified (ROC) certification standards must first hold USDA organic certification, which means crops are not sprayed with glyphosate. ROC then adds further criteria to ensure soil health, pasture-based animal welfare, and social fairness for farmworkers.

Products that display the Regenerative Organic Certified label include Dr. Bronner's Regenerative Organic Coconut Oil; Nature's Path Oats; Patagonia Provisions Regenerative Organic fruit snacks; and Lotus Foods Brown and White Basmati Rice. Learn more about this certification at [Regenorganic.org](https://regenorganic.org)

Glyphosate Residue Free

Products that have a Glyphosate Residue Free label contain no glyphosate, meaning they're at the bottom limit of detection for the chemical in laboratories, 10 parts per billion. The products are tested by an accredited laboratory at least three times per year, providing extra assurance against glyphosate exposure in foods that consumers buy.

This certification is one of the fastest-growing in the United States, according to Henry Rowlands, director of The Detox Project, an organization that launched the food label in 2018 to create transparency within the food industry, specifically regarding pesticides.

More than 70 food and supplement brands and 1,500 products have been certified, including Chosen Foods oils and mayonnaise, Califia Farms dairy-free milk alternatives, Nutiva oils and seeds, White Leaf baby food, Once Upon a Farm baby food and kids snacks, Kettle & Fire bone broth and soups, Soozy's Grain-Free baked goods, Jovial Foods grain products, Uncle Matt's juices, and MegaFood supplements. You can learn more about the products that have this label at detoxproject.org

NATURE'S MEDICINE

How Essential Oils can Help the Ailments of Aging

These extractions of complex plant compounds offer another way to access the healing power of nature

SANDRA CESCA

My journey into essential oils began years ago when I started to learn about the power of plants. While working with an herbalist, we used some of the more common plants to create tinctures, oils, salves, and lotions for patients. These included lavender, rosemary, peppermint, lemon, chamomile, clove, and St. John's wort.

The chemical constituents of these plants give them potent soothing and healing qualities.

Brief History of Essential Oils

From Egyptian hieroglyphics and ancient Chinese manuscripts, we know priests and physicians have been using essential oils for centuries. In Egypt, temples were dedicated to the production and blending of oils for medicinal, emotional, and spiritual uses as well as for embalming. In the Bible, there are more than 1,000 references to essential oils particularly for anointing people and healing the sick. These include rosemary, frankincense, myrrh, and cedarwood. The Greeks and Romans adopted essential oils in the practice of aromatherapy.

Today, essential oils are used in traditional and alternative medicines, Chinese medicine, aromatherapy, and massage therapies as well as in cosmetics, perfumes, and the food industry.

Therapeutic Essential Oils

Essential oils are a mixture of highly complex, naturally occurring, volatile



Essential oils have extracts of plant compounds that can be absorbed through our skin.

compounds synthesized by plants as secondary metabolites. These compounds are abundant in flowers, leaves, seeds, root stalks, and barks and are usually extracted using steam distillation or cold pressing methods.

To obtain pure therapeutic oils with a uniform chemical composition, they must be extracted from the same plant, harvested at the same time of year, and under the same growing conditions. Good manufacturers will use modern techniques to analyze the chemical composition before the manufacturing process can be completed.

You can find artificial oils and cheaper oils. Although chemists can reproduce some of the constituents of therapeutic essential oils in the laboratory, they can't reproduce oils as they exist in nature. Using faster distillation processes, which employ high pressure, high temperatures, and chemical solvents, can produce essential oils at a lower cost but they are inferior in quality and lack the pure therapeutic properties that are sought for their healing

Essential oils are a mixture of highly complex, naturally occurring, volatile compounds synthesized by plants as secondary metabolites.

results. Consequently, pure therapeutic essential oils come with a high price tag.

These pure oils can be very potent and must be diluted with a carrier oil such as argan oil, avocado oil, almond oil, or vitamin E oil to assure their safety for human use. These carrier oils also have their own rejuvenating and antioxidant properties that enhance the essential oil. Carrier oils must also be of high quality so as not to decrease the pureness of the original essential oil.

Aging Ailments and Useful Oils

The body's natural aging process is often accompanied by non-disease ailments. Few of these are serious, but they can be annoying and uncomfortable. I have used essential oils for many years as the aging process has been creeping up on me as well. These are the oils I have found to be most helpful for some of my discomforts.

For Digestion

Gas, bloating, acid stomach, heartburn,

nausea, and gut discomfort can be treated with essential oils.

One drop of peppermint oil placed on the finger and then rubbed on the tongue reduces and often eliminates the burning of an acid stomach, especially after a spicy meal of peppers and garlic.

For gut discomfort, I rub several drops of DiGize oil in a circular motion on my abdomen. Works wonders. DiGize is produced by Young Living and contains a combination of eight different essential oils—peppermint, patchouli, juniper, ginger, fennel, tarragon, anise, and lemongrass—all of which have numerous properties for settling the digestive system.

Muscle and Joint Pain

These ailments seem to follow us on a daily basis! I find two oil blends most helpful by rubbing a few drops on the troublesome area. The first is Aroma Seiz, a Young Living blend of oils known to calm, relax, and release the tension of spastic muscles resulting from sports injuries, fatigue, and

Essential Uses of Essential Oils

Having been used for thousands of years for both beauty and healing, essential oils can be a part of your modern life.



Essential oils can reduce wrinkles and improve your skin tone.



Apply essential oils on your skin to help relieve stress and smell great at the same time.



Essential oils are great at revitalizing hair and healing the scalp.



Apply essential oils to aching joints and muscles to relieve tension.

stress. It contains basil, lavender, cypress, peppermint, and marjoram.

The second is PanAway for pain. This blend has strong anti-inflammatory properties and when applied topically has a mild anesthetic effect. I use it for sciatica, arthritis, sprains, and bruises with a few drops rubbed directly on the painful area. This blend, also by Young Living, contains wintergreen, clove, peppermint, and helichrysum.

Neuropathy

This condition is usually due to poor circulation in the extremities called peripheral neuropathy. After years of walking on flip-flops, like many people, I have developed some numbness sensation in my feet. Although this can be an indication of a more serious condition, such as diabetes, my podiatrist's diagnosis was that it was due to poor circulation in my feet and with some nerve injury due to my years of flip-flop use! I have found a few drops of helichrysum oil rubbed on the bottom of my feet just before bed helps. If you don't have this, lavender and peppermint oils may help.

These three essential oils have antioxidant properties which have been found to help repair nerves by reducing free radical damage.

Skin

Not only does our skin get thinner as we age causing wrinkles to form due to loss of collagen, but age spots, or what some call liver spots, seem to appear overnight. Our thinning skin is also prone to more injuries, scrapes, and wounds. There are oils such as jojoba oil that help moisturize the skin and collagen supplements that can help rejuvenate the skin.

For the age spots and injuries, I use lavender essential oil directly on the area, carefully rubbing it in. I find this helps speed healing and also is good for preventing scar tissue from forming if used daily soon after the injury has healed.

I have also used lavender oil and tea tree oil on my basal cell carcinoma spots on my forehead with good results. This is a controversial treatment and should be discussed with your dermatologist first.

Hair Loss

Hair thinning and hair loss is common as we age. Massaging essential oils into the scalp stimulates the hair roots and aids in the absorption of nutrients. It also awakens and stimulates hair follicles while increasing cellular metabolism and circulation. Essential oils have been used in natural hair care products for centuries. Lavender, rosemary, chamomile, clary sage, cedarwood, and tea tree oils are popular in hair serums, masks, shampoos, and conditioners. The addition of carrier oils such as argon or jojoba oil enhances these oils with their moisturizing properties.

I use rosemary essential oil before I wash my

hair, leaving it on for at least an hour. I wrap my hair in a warm, damp towel to help the process.

Cedarwood essential oil is a powerful treatment for alopecia and other types of hair loss. It balances the oils on the scalp so that it's not too dry or too greasy. Cedarwood is also an excellent treatment for dandruff as is lavender oil.

Research for More Serious Aging Conditions

Essential oils have been of interest to scientists for a long time. The knowledge of their powerful healing properties has encouraged research into the use of these oils for more serious conditions. Studies have been done on Alzheimer's, diabetes, arthritis, and epilepsy to examine essential oil efficacy with these conditions.

Research indicates frankincense essential oil may help reduce wrinkles by improving skin tone. It may also help generate new skin cells as well as prevent sunspots. Early studies indicate its anti-inflammatory properties may reduce joint pain in osteoarthritis as well as inhibit the proliferation of tumor cells in some leukemias and glioblastomas.

Precautions for Use

Plants can cause allergic reactions in some people. Before considering using an essential oil, check your allergic risk by conducting a patch test. To do this, choose a small area of skin that is away from your face such as inside your elbow. If you notice any reaction within 24 hours, you could be allergic to the oil and should not use it.

Do not take essential oils internally until checking with the manufacturer's guidelines. Reputable companies will indicate whether the oil can be taken topically, internally, or used aromatically.

Sandra Cesca is a freelance writer and photographer focusing on holistic health, wellness, organic foods, healthy lifestyle choices, and whole-person medical care. Her background includes allopathic medicine, naturopathy, homeopathy, organic and biodynamic farming, and yoga practices.



The Problematic Overprescription of Psychiatric Drugs

Millions of Americans are taking drugs for depression and anxiety but they aren't getting better

MARTHA ROSENBERG

The use of antidepressants and antipsychotics has skyrocketed among children, adults, and the elderly—a trend seen long before the COVID-19 pandemic. One in six Americans now takes a psychiatric drug and many are on drug "cocktails," with drugs added to treat the side effects of other drugs. Some people have been on the drugs or drug cocktails for decades.

Certainly, mental health conditions that respond to psychiatric drugs exist—but aggressive drug marketing has broadened original diagnostic criteria and added new conditions so that more people are diagnosed. For example, anxiety was never considered a mental illness until the creation of the diagnostic categories "generalized anxiety disorder" and "social anxiety disorder" in 1980. Neither were "alcohol use disorder" and prolonged grief deemed mental illnesses until they were included in the Diagnostic and Statistical Manual of Mental Disorders (DSM) in 2013.

The DSM is the "handbook used by health-care professionals in the United States and much of the world as the authoritative guide to the diagnosis of mental disorders," according to its publisher, the American Psychiatric Association.

Disorder is the operative term, though. Something has gone awry, but has it gone

wrong with the people themselves, or is it something that has happened to them? People are suffering. And many people do need help. The question is what has caused their suffering and what is the best way to alleviate it.

If people are stressed and anxious because they've lost the psychological disposition that once allowed them to navigate the inevitable hardships of life, that's a problem of culture and education.

Or if real conditions in their world have changed and have led to their increased stress and anxiety, that may be a problem of governance or economic management.

Or it could be because of choices they're making that they experience this suffering, or increased contamination from their environment that affects their biochemistry.

The cause of the "disorder" should inform the approach used to help them recover from it. But that may not be happening if we simply ignore the cause and give them substances that alter their biochemistry, emotions, and personality.

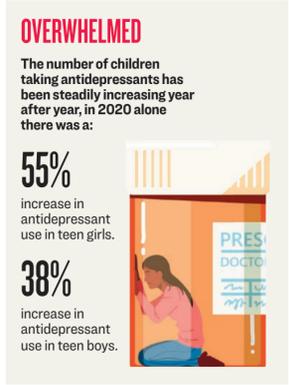
The Rise of Mental Illness

According to the drug-industry-funded mental health advocacy group National Alliance on Mental Illness (NAMI), a mental illness is "a condition that affects a person's thinking, feeling or mood. Such conditions may affect

someone's ability to relate to others and function each day." The description is so broad, who wouldn't be mentally ill under that definition?

In fact, two-thirds of U.S. patient advocacy groups accept drugmaker funding, according to a 2020 article in the Journal of Bioethical Inquiry. Last year, the NAMI received funding from at least 16 drugmakers, as well as funding from PhRMA, the trade group representing the pharmaceutical industry in the United States.

According to the Centers for Disease Control and Prevention (CDC) in 2011, 11 percent of Americans over 12 were taking antidepressants—more than 36,000,000 people. Moreover, the CDC says, more than 60 percent of users had been taking the drugs for two years or longer, and 14 percent for 10 years or longer,



though medical experts recommend taking an antidepressant for only six to nine months and at most for two years.

In 2020, the number of Americans taking antidepressants had not changed, according to the marketing site Evernorth, and antidepressant use had increased by 55 percent in teen girls and almost 38 percent in teen boys.

The debut of SSRI antidepressants such as Prozac and Paxil, buttressed by direct-to-consumer advertising, enlarged the concept of "depression," according to psychiatrist Stuart Shipko.

Until then, depression was defined "as a time-limited condition that typically would go on its own, even if you didn't treat it," he says. "The idea of keeping somebody on maintenance medicine forever ... was just sloppy. You took people off."

But thanks to new depression diagnostic categories like "major depressive disorder" created in 1980 and unproven chemical imbalance brain theories, depression was recast as a chronic brain state requiring long-term medication. "Depression may require long-term treatment," says top medical group the Mayo Clinic.

As depression was redefined as chronic, "situational" depression that might come from problems with a job, romance, health, or family was rolled into the mix and also treated with antidepressants—even if there were clear causes.

Marketing Increases Drug Sales

Of course, some people's depression responded well to antidepressants, and the drugs have a place in the medical arsenal. But other patients experienced worsening panic disorder, or they developed bipolar disorder on antidepressants

and found they couldn't quit without experiencing distressing withdrawal symptoms.

In addition to helping establish chronic types of depression in the DSM, drugmakers also rolled out the concept of "treatment-resistant depression."

"If your primary care doctor prescribed antidepressants and your depression symptoms continue despite treatment, ask your doctor if he or she can recommend a health care provider who specializes in diagnosing and treating mental health conditions," says the Mayo Clinic. "With treatment-resistant depression, standard treatments aren't enough. They may not help much at all, or your symptoms may improve, only to keep coming back."

In fact, the first antidepressant prescribed fails to help as many as two-thirds of patients, says WebMD, and a third aren't helped by subsequent treatments.

How is treatment-resistant depression handled? First, you should find out if you have another mental condition like bipolar disorder, says WebMD. If not, and if a different antidepressant doesn't help, you may need to add additional drugs such as another antidepressant or an antipsychotic like Abilify, Rexulti, or Seroquel, the site says.

Do patients with "treatment-resistant depression" question why their expensive drug didn't work and why they should keep taking it with an additional drug, doubling their costs? Who is benefiting from the protocol—patients, or drugmakers?

The Downside of Antipsychotics

Antipsychotic medications such as Risperdal, Zyprexa, Seroquel, Geodon, Abilify, and Invega have also been best sellers for drugmakers. Research in BMC Psychiatry in 2020 es-

timates that 3.8 million U.S. adults take the antipsychotics for schizophrenia, bipolar disorder, and major depressive disorder, as well as "off-label" uses such as sleep, mood, and anxiety, and obsessive-compulsive disorders. In children, antipsychotics are used to treat autism spectrum disorder, ADHD, disruptive behavior disorders, depression, bipolar disorder, insomnia, and aggression, according to Psychiatry Advisor.

In children, antipsychotics are linked to a greater risk of death from cardiovascular or metabolic causes as well as suicide and unintentional injury.

A few years ago, research in JAMA Psychiatry revealed that 1 percent of boys between 7 and 12 and almost .5 percent of girls that age use antipsychotic drugs; in children 13 to 18, those numbers rise to almost 1.5 percent for boys and almost one percent for girls. Antipsychotics are disproportionately prescribed for poor children and those in foster care, according to published research.

The currently preferred antipsychotics, sometimes called "atypical" or "second generation" antipsychotics, largely replaced older antipsychotics like Thorazine and Haldol because of their apparently better safety profile.

Specifically, the newer drugs were thought to be less linked to tardive dyskinesia (TD) a disfiguring syndrome of involuntary movement disorders that may not be reversible. However, research in the journal Drugs in Context suggests that prescribers may have a "false sense of security" if they think the newer drugs are free from links to TD.

Other Antipsychotic Concerns

TD is not the only concern with antipsychotics. Whether they're used for their FDA-approved indications or nonapproved uses (called off-label), the drugs can have "unwanted and potentially harmful adverse effects," according to a 2021 article in the Journal of Pediatric Pharmacology and Therapeutics, the official journal of the Pediatric Pharmacy Association. "These effects include metabolic effects, such as weight gain, Type 2 diabetes mellitus, and hyperlipidemia, as well as cardiovascular effects, sexual dysfunction, and extrapyramidal side effects," the researchers write.

In children, antipsychotics are linked to a greater risk of death from cardiovascular or metabolic causes as well as suicide and unintentional injury. In the elderly, antipsychotics are so clearly linked to an increased risk of death in demented patients that a warning exists on the label. The American Geriatric Society recommends avoiding antipsychotics for dementia patients because of the increased risks of sedation, cognitive worsening, falls, strokes, and mortality.

Recently, antipsychotics have gained another black mark: They've been linked to breast cancer risk due to their effects on the milk-producing hormone, prolactin. Patients on Risperdal and drugs with similar actions had a 62 percent increase in breast cancer risk ac-

ording to research conducted by scientists at Washington University School of Medicine in St. Louis. Patients on Zyprexa and similar drugs experienced a 54 percent increase in breast cancer risk, the researchers write.

Stay Healthy While Treating Mental Conditions

Clearly, some medical conditions may require treatment with psychiatric drugs. But as side effects emerge, drug safety experts increasingly recommend limiting how long the drugs are taken and seeking safer treatments. For example, natural substances such as lavender, St. John's wort, and omega-3 fatty acids may help with depression. Traditional Chinese medicines, Indian Ayurvedic therapy, and ginkgo biloba have shown promise as "natural" antipsychotics.

With aggressive advertising and "add-on" medications, many people these days are prescribed psychiatric medications by doctors who mean well. But if patients do their homework, they can often find gentler and safer treatments for mental conditions that don't involve some of the risks seen with psychiatric medications.

And it may also be worth questioning what has happened in our society that so many people feel so unwell.

Martha Rosenberg is a nationally recognized reporter and author whose work has been cited by the Mayo Clinic Proceedings, Public Library of Science Biology, and National Geographic. Rosenberg's FDA exposé, "Born with a Junk Food Deficiency," established her as a prominent investigative journalist. She has lectured widely at universities throughout the United States and resides in Chicago.

MEDICALLY CORRECT

Compassion: The Essence of Good Medicine

The best medicine comes when skilled physicians have the heart to care

PETER WEISS

We all get way too many emails and texts that make us want to turn off our devices. I don't need to know about the latest discount for a new laser machine, or a text letting me know that I won a free iPhone—if I just respond.

I also get a lot of old-fashioned mail, from insurance companies denying a patient's prescription for one reason or another, to a company telling me they can provide a service to prevent me from getting unsolicited offers! With all of this, I wasn't expecting a handwritten letter from a long time patient, N.L.

I actually stopped, looked at the envelope, gently opened it, and started reading. Something about it spoke to me and said, "slow down and read."

"My Dear Dr. Weiss," she began and started by explaining why she didn't come in for her annual exam this past year. Many patients did not, due to the fear of COVID 19. I just acknowledge them and say, "no worries, you're here now."

N.L. went on to say she really missed our annual "visits." I loved how she called her annual exam "our visits." N.L. is my age, has no children, and every year, we discussed what book we really enjoyed that past year. Both of us are avid readers. She said she really liked my recommendation of "The Lost Shtetl," by Max Gross. She wanted to give me "one final recommendation," the book "Yiddish for Pirates" by Barry Garwin. I had to stop and reread that last line, "one

N.L. wrote she loved being my patient for 'forever number of years' and was so ever grateful for her care.

The more rushed and robotic health care becomes, the more we need to make compassion a priority.

final recommendation." I knew what was coming next. She went on to say she had stage 4 terminal glioblastoma (a very aggressive deadly brain cancer) and wouldn't be seeing me again.

N.L. wrote she loved being my patient for "forever number of years" and was so ever grateful for her care. I had been seeing her for some 35 years, and we really did talk about books each of those years. I had her read "The Martian" by Andy Weir, years before the movie came out. She didn't enjoy it as much as I did, but she read it. The letter hit me hard. I have lost patients over the years and have built up a long and strong bond with so many. N.L. was one of the really good ones.

Compassion is very much the buzzword today when speaking about health care. What is it really? The Journal Clinical Ethics had an editorial titled "Compassion in healthcare" in their 2013 specially themed edition of the same title.

The editorial makes that point that "Compassion and empathy involve attunement—the delicate but precise art of 'reading' another person's emotions and responding sensitively and appropriately." There are few times we need this kind of attunement as distinctly as when facing a potentially life-threatening situation where another human being's help is critical to resolving it.

Compassion is the key to providing the best health care possible. Being a physician is about being the patient's champion. Compassion is where "care" begins.

A research review published in the journal The Patient in 2017 looked at nine studies that tried to measure compassion among health care providers. The authors came to the conclusion that there is an "unmet need for a psychometrically validated instrument that comprehensively measures the construct of compassion in healthcare settings."

In other words, there is wide concern about the lack of compassion in health care systems today. What we measure, matters, as the saying goes. Scientists that they are, they want a way to measure it. We need more compassion but I don't think any of us need studies to realize that.

I tried reaching out to N.L., but received

no response. I recently wrote a letter to her, thanking her for being my patient and allowing me to "care."

I told my wife about N.L. and she reminded me of another story I had told her many years ago about the first patient I lost.

It was 1979 and I was in my third year at the University of Michigan Medical School, doing a surgical rotation at the Veterans Administration hospital in Ann Arbor. I was only a medical student, but I considered C.L. my patient.

He and his wife owned a bakery in Toledo, Ohio, only 50 miles down the road. C.L. had severe diabetes as well as significant heart disease. My job was to "debride" his diabetic necrotic toes every day. I had to cut off the dead tissue right at his bedside. In those days, there were just wards with curtains, no private rooms like today.

He had already lost several toes and on that day, with me there, his big toe fell off. He just laughed. C.L. told me about the struggles and joys of his life. Two days after his toe misadventure, his wife brought me in a birthday cake she baked. I never knew how they found out that it was my birthday (I was 22 on that date).

A few days later he coded and we were unable to resuscitate him. I say "we," but I just stood in the back and watched the doctors and nurses do everything they could.

His death shook me, but I knew there would be many more over the years to come. I had to finish my rounds with the team after that, all very somber, hardly an unnecessary word spoken.

Compassion isn't just for physicians, it's for all of us. We must find time to stop and read those letters. Compassion is a two-way street. I am always in awe of the patients who have serious medical issues and yet sincerely ask me how I'm feeling and how my family is.

"A kind gesture can reach a wound that only compassion can heal." — Steve Maraboli

Dr. Peter Weiss is the co-founder of the Rodeo Drive Women's Health Center in Beverly Hills, Calif., and remains in private practice. He also spends part of his time writing and lecturing on health care in America.



The Neurological Toll of Masks and Lockdowns

The physiological consequences children are suffering could have repercussions for a generation

JENNIFER MARGULIS

Dr. Avery Jackson, a board-certified neurosurgeon based in Michigan, performs complicated brain surgeries in the operating room as often as four times a week. During these surgeries, which can last for up to eighteen hours, Jackson, who is Chief Executive Officer and Medical Director of Michigan Neurosurgical Institute in Grand Blanc, wears a surgical mask.

At even the lowest levels of exposure, a study found carbon dioxide reduced brain activity.

While masks make sense in the operating room, Jackson said, people—especially children—should not be wearing masks in their everyday lives.

As Jackson explained to a group of nearly 100 doctors and other health professionals at a two-day medical conference in Conroe, Texas, on April 29, wearing masks outside the operating room creates a host of health problems. Masking, Jackson said during his talk, is especially dangerous for children's developing brains. That's because masks can cause people to rebreathe a small amount of their exhaled carbon dioxide—over and over again.

Continued on Page 10



Any kind of oxygen restriction may have negative effects on the brain.

Become a Hospital Prepper

Get to know your health care environment and be ready if a loved one is likely to require care

PAMELA PRINCE PYLE

I was working the night shift when I received a call from someone in the emergency room. "I'm going to need you to come down to see a patient. It's a tough one."

"Tough" was putting it mildly. Two young newlyweds had come to our resort town, the words "Just Married!" scrawled in big letters across the back window of their car. For fun, they had decided to check out one of the many live theaters in our area that thrill guests with elaborate, grandiose shows. This particular per-

formance featured armored knights on horseback, jousting and displaying the skills of an era long gone.

Soon after entering the theater, the young husband complained of shortness of breath. When his condition worsened, someone called 9-1-1. Before an emergency crew could arrive, the man collapsed, his lips turning blue.

A crowd gathered, unsure of what to do until the ambulance arrived. The frantic wife knelt by his head and whispered in his ear as her tears fell on his face.

Continued on Page 15



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The Neurological Toll of Masks and Lockdowns

The physiological consequences children are suffering could have repercussions for a generation

Continued from Page 9

Inhaling Carbon Dioxide

Jackson started his talk by sharing research from a team of eight scientists who investigated the effect of carbon dioxide on the brain. Their research, which was published in the American Journal of Physiology in 1957, found that when rats were forced to inhale carbon dioxide at low, medium, and high concentrations, concerning changes in their brains occurred at every level of exposure. Carbon dioxide inhalation even at moderately high levels caused the rats to have brain seizures.

In 2014 scientists found that negative brain effects due to carbon dioxide exposure were even more pronounced for juvenile rats. This research, which was done by a team of Turkish scientists at Dokuz Eylul University in Izmir, and published in the peer-reviewed journal Biotechnic and Histochemistry, found that carbon dioxide exposure markedly impaired brain function, causing problems with memory and spatial learning, and increasing anxiety in adolescent rats.

A study on human exposure to carbon dioxide had similar findings. In 2011, a team of scientists based in Dallas, Texas, sought to investigate whether inhaling carbon dioxide altered brain activity. For this study in humans, the scientists did brain magnetic resonance imaging after exposing 50 healthy human subjects (32 males and 18 females) to carbon dioxide enriched air. At even the lowest levels of exposure, this study found carbon dioxide reduced brain activity.

Although Jackson didn't reference it in his talk, a study published in 2021 in BMC Infectious Diseases of 11 healthy

volunteers who ranged in age between 16 and 54, found that using masks resulted in significantly increased concentrations of carbon dioxide.

While these researchers concluded that the elevated levels "should not be a concern" for health care providers, they pointed out that "the clinical implications of elevated CO2 levels with long-term use of face masks needs further studies."

Personal protective equipment (PPE) took on new significance during the pandemic, and some researchers tried to uncover what effect this may have on patients and health care workers. Several studies were published in April 2022 alone looking at different ways re-breathing exhaled carbon dioxide due to wearing a mask affected patients and health care workers.



Early talk is one of the most important factors shaping children's brain development during the first few years of life.

LENA, nonprofit researchers
PAULAPHOTO/SHUTTERSTOCK

A study published in April in BMC Anesthesiology looked at the effects of wearing surgical masks on patients being given oxygen via an oxygen mask placed over a surgical mask and found that oxygen was significantly lower after five minutes and their carbon dioxide levels higher.

Another study published in April by the Royal Academy of Medicine in Ireland's Irish Journal of Medical Science looked at health care workers and noted an increase in carbon dioxide levels in the emergency department health care staff wearing N95 masks without

a break for between 0 and 4h. They suggested that this change "should be noted in terms of PPE-induced hypoventilation."

Another April 2022 study, published in the German journal Lung, looked at the effects of vented and non-vented masks on patients being treated for hypercapnia, a condition of abnormally elevated carbon dioxide levels in the blood. The researchers warned that "CO2 rebreathing from the mask... could influence the effectiveness of the ventilation."

According to Jackson, there's already ample evidence that the use of face masks is unhealthy. Any kind of oxy-



Researchers are starting to better understand the consequences of wearing masks and how normal childhood development has been undermined amid the pandemic.

gen restriction, Jackson said, may have negative brain effects, reducing neural activity and increasing learning problems and anxiety in some people.

Furthermore, the findings in the scientific literature dovetailed with what Jackson saw with his 8-year-old daughter, as well as some of her classmates. After the school forced all the children to wear masks, Jackson reported, his daughter developed headaches, began having difficulty concentrating, and started getting bad grades.

Jackson said that masking made another child at the same school feel so anxious that she threw up, twice, inside her mask. Despite this, the teachers insisted the child had to wear it.

"Our children are having significant cerebral dysfunction when they wear masks," Jackson said, adding that the problems created by masking are both neurological and emotional.

Developmental Delays During COVID

Several studies have shown that babies and small children born during COVID—at a time when adults and children have been masking—are exhibiting

myriad signs of developmental delays.

According to a preprint of a longitudinal study done by researchers at Brown University in Providence, Rhode Island, the verbal skills of babies born during COVID have gone down.

"We find that children born during the pandemic have significantly reduced verbal, motor, and overall cognitive performance compared to children born pre-pandemic."

Led by Sean Deoni, an associate professor of pediatrics at Brown University, the research included 672 Rhode Island children, 308 born before January 2019, 176 born between January 2019 and March 2020, and 188 born after July 2020. The study found that babies had markedly worse cognitive, verbal, and motor skills than their counterparts born before COVID.

The researchers found that even in the absence of direct SARS-CoV-2 infection and COVID-19 illness, the environmental changes associated with the COVID-19 pandemic "significantly and negatively affect[ed] infant and child development."

Another study found that COVID-era infants were less relational and vocal

than babies born pre-pandemic. Put differently, COVID babies don't talk, babble, or coo as much as they should. As these vocalizations are precursors to speaking, these observations suggest that COVID babies may be verbally delayed compared to their peers.

"Early talk is one of the most important factors shaping children's brain development during the first few years of life," LENA, the nonprofit that conducted the study, explained on its website.

According to Harvard University, early experiences lay the foundation for future learning, behavior, and health in children. Compromising brain architecture early in life can have a profound effect on a child's future.

"Just as a weak foundation compromises the quality and structure of a house, adverse experiences early in life can impair brain architecture, with negative effects lasting into adulthood," Harvard's Center on the Developing Child explains. Wearing masks in school, social distancing from peers, and losing over two years of normal childhood development amid a worldwide pandemic would seem to count as an adverse experience.

Menopause: Pharmaceutical and Natural Supports

Entering menopause can be uncomfortable and disruptive, but there are ways to ease the transition

ALLISON WILLIAMS

Older adult women are often left to suffer from hot flashes, mood changes, sudden fluctuations in energy, weight gain, and drastic change to the body they'd previously known. "Welcome to menopause, and good luck!" seems to be the message for many of them.

Please know, not only are you not alone, but there are ways to help work through this phase of life both with pharmaceuticals and naturopathic therapies.

Menopause isn't a disease, but a natural part of a woman's life. There are cycles and rhythms in all aspects of nature, and a human being also experiences cycles and rhythms. You cross into menopause 12 months after your last menstrual cycle. It's normal for women to go through a transition period called peri-menopause during which there is irregularity in cycling and signs of menopause begin to appear.

Common conventional therapy includes antidepressants, hormone therapy, vaginal estrogen, gabapentin, blood pressure medications, and osteoporosis medications where indicated, but other options do exist.

Hormonal Therapy

The symptoms of menopause are the consequence of declining progesterone, estrogen, and testosterone. Thus, many women feel drastic improvements with hormone replacement therapies. Estrogen replacement is one of the most common therapies and has been shown to improve cognitive function, decrease hot flashes, and improve bone density. (Bone density is a huge issue later in life and important to address sooner rather than later.)

It's imperative that estrogen be paired with progesterone to ensure that the body doesn't enter a state of unopposed estrogen, which may increase the risk of breast and uterine cancer. Furthermore, progesterone isn't only protective against breast cancer, but helps calm down the central nervous system, improve mood, and improve sleep quality.

Hormone replacement therapies aren't without controversy. Research has linked them to several potential health risks. One consequence of that is that health agencies, including the FDA, have advised these therapies not to be overused. Another consequence of that research is drug makers marketing bio-identical hormones.

The term "bio-identical hormones" has become a buzzword in anti-aging circles, but it simply means that the hormones introduced to the body are identical to the hormones the body would naturally create. It's best to mimic the body's natural hormone molecules as much as possible, as this decreases the likelihood of harmful long-term effects. Synthetic non-bio-identical hormones

have been associated with an increased risk of hormone-linked breast and gynecologic cancers, blood clots, heart attack, and stroke.

While the marketers of bio-identical hormones present them as a safer option, the FDA and the American Cancer Society have noted there are no large-scale, well-designed studies to support those claims.

As a result, clinicians must still use caution and follow the FDA guideline to use the lowest possible dose for the shortest amount of time to provide symptom relief.

Testosterone and DHEA replacement are also bio-identical hormone therapies that help provide symptom relief in menopausal women. Androgen therapy has been shown beneficial in improving low libido, as well as improving cognition, mood, and bone density.

Lifestyle Therapy

A big part of naturopathic medicine is encouraging the body to heal and support itself. This involves using lifestyle, nutritional, herbal, and regenerative therapies. These therapies work by supporting a woman's basic physiology. And because menopause is a natural process, and there are risks associated with hormone replacement therapies, it's best to use natural approaches before pharmaceutical options when responding to menopause.

Even if these approaches don't provide complete relief, they can lessen the dosage requirements for women who go on to seek hormone replacement therapy.

Nutrition plays a huge role in modulating weight gain, mood, and supporting the body in creating its own hormones and neurotransmitters. Maintaining good blood sugar levels by eating more protein, fasting intermittently, and completely avoiding sugar often makes a huge impact on hot flashes, depression, and unwanted weight gain during menopause. If you want to know how your diet is serving you, speak with your doctor

about testing your blood sugar, insulin, and hemoglobin A1c (HbA1c) to ensure they are in optimal ranges.

Getting proper sleep is also important. It helps reduce stress and the toll stress-triggered hormones and inflammation take on the body. Cognitive behavioral therapy has been used to treat insomnia experienced by menopausal women with good results. It helped improve participants' ability to get to sleep, however, some still experienced waking through the night.

Herbal Therapy

Nature has provided us with additional tools to help regulate hormones in all stages of life. The use of herbs in treating menopause has been done for centuries. The herbs that follow are only a few that have been used and studied.

Black cohosh, *Actaea racemosa*, is an excellent herb to help with menopausal symptoms as it helps modulate hormones, relax the nervous system, and offers antidepressant support. It's also well known to help reduce hot flashes.

A 2013 study by researchers in Germany showed that black cohosh improved menopausal symptoms to a greater degree than placebo. This herb can be taken as a single herb but is also found in combination products for hormone modulation. The recommended dose can range from 40 mg to 2 grams per day of powdered dry root depending on symptoms and health history.

Maca, *Lepidium meyenii*, is another effective herb for hormone modulation and has also long been used to improve libido and fertility.

Animal studies have shown the potential for maca to help reduce the negative impacts of estrogen loss on bone density, which would be a boon to patients prone to osteoporosis.

However, caution should be used, as some research suggests maca may up-regulate processes that increase certain breast cancer cells to migrate. Most of my patients prefer maca in glycerite form instead of eating the plant, the taste is somewhat like butterscotch. But it's also readily available in supplement form.

Lastly, dong quai, *Angelica sinensis*, is another herb used for centuries to help women manage the symptoms of menopause.

It's a potent hormone modulator and helps lower blood pressure and decrease systemic inflammation. The research on dong quai used alone for menopause is mixed, some studies show little to no improvement from controls.

That said, clinically speaking, I see phenomenal results utilizing dong quai in combination with black cohosh, maca, and other hormone modulating herbs rather than any herbs used alone. There is a synergistic effect appreciated in herbal medicine that continues to be studied and evaluated. Just as medications may interact with each other, herbal constituents interact with each other and can sometimes compound effects that benefit the patient.

Menopause is a major shift in a woman's life and it can often be difficult. Find support with lifestyle changes, herbal remedies, and conventional therapies.

Though researchers and public health officials continue to defend the use of face masks, masking children as well as adults wearing masks around children may be one main reason for the developmental delays babies and small children have been experiencing during COVID. Masking raises carbon dioxide levels in the body. Masking also makes it impossible for babies and small children to learn to read facial expressions, which in turn impedes language learning and emotional intelligence.

"Faces are a complex and rich source of social, emotional and linguistic signals," wrote David J. Lewkowicz, a senior scientist at Haskins Laboratories and an adjunct professor in the Yale Child Study Center at Yale University in an article for Scientific American. "We rely on all of these signals to communicate with one another through a complex and dynamic dance that depends on each partner being able to read the other's signals."

Lewkowicz's work found that babies learn to lip-read when they're around eight months old, which is a crucial step in learning to speak as well as to understand speech.

Adults of all ages have difficulty understanding what other adults are saying when they're wearing masks—both because it is harder to hear a person speak through a mask and because much of the speaker's face is not visible, making it difficult for the listener to read facial expressions and emotions. This is one possible explanation of why babies born during a time when most people in public places in America were masking have been experiencing cognitive delays.

Nearly two dozen countries have dropped mask mandates. According to Jackson, the cognitive harms caused by masking children clearly indicate that children should not be forced to wear masks.

"Our children are having significant cerebral dysfunction when they wear masks," Jackson said. "Now that we have knowledge, we have to do something about it. We know this is destructive for our kids."

Jennifer Margulis, Ph.D., a regular contributor to *The Epoch Times*, is an award-winning science journalist and a sought-after speaker. Learn more at her website, JenniferMargulis.net, and follow her on Substack at JenniferMargulis.substack.com

Conclusion

If you're experiencing menopausal symptoms, where should you start? Work on diet, sleep, and lifestyle interventions. Layer on supportive herbs per your physician's advice and consider hormonal therapy as a last resort to further support your long-term health and a healthier and less symptomatic transition to menopause.

Dr. Allison Williams is a naturopathic doctor and professor. She has a passion for helping people improve their health and well-being so that they can live life to the fullest. She works with patients in Arizona, as well as, offers consultations out-of-state and internationally. For more information, visit DrAllisonWilliams.com

Common Signs of Peri-Menopause and Menopause

- Irregular menses
- Mood changes
- Anxiety, depression, anger, irritability
- Fatigue
- Sleep disturbances
- Weight gain
- Appetite changes
- Skin changes
- Low libido
- Vaginal dryness
- Blood pressure changes
- Decline in bone density
- Hot flashes, sweating
- Brain fog, memory loss

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THE EPOCH TIMES

STEPHEN WEISS/SHUTTERSTOCK

The Mighty Agarikon Mushroom

Ancient wisdom has guided medical researchers to study this biochemical marvel

EMMA SUTTIE

The oceans, forests, and jungles of our planet are the sources of our oldest medicines. Long before a trip to the drugstore could yield a bottle of tidy pills, medicines grew in the deepest, most fertile places on earth. And many of them grow there still, at least in the natural places that remain.

Fungi are vital to all life on earth. They exist inside our bodies, our food, and the soil beneath our feet.

Fungi have been used for millennia by cultures across the globe for their powerful healing abilities and as spiritual aids. Many modern medicines come from fungi, including penicillin, to fight bacterial infections. Other examples of medicines derived from fungi are cyclosporine from *Tolypocladium inflatum*, which enables organ transplants, and lovastatin from *Aspergillus terreus*, which is used to lower cholesterol.

One of the oldest and perhaps more mysterious is a species of fungus called agarikon, or *Fomitopsis officinalis*. It's reportedly the oldest living mushroom known to us and can live up to 100 years. Agarikon is a polypore wood conk that grows on trees and is found almost exclusively in the old-growth forests of the Pacific Northwest and on a few of the sky islands in Austria and Slovenia.

Agarikon grows like a fruit hanging from the places where branches connect to the trunks of trees. It is hoof-shaped when young, developing into a cylindrical shape, and grows to very large sizes resembling a giant beehive as it matures.

Agarikon History

The earliest mention of agarikon is from A.D. 65 by Greek physician Dioscorides, who described it as "elixirium ad longam vitam" which means the elixir of long life. The ancient Greeks used agarikon to treat respiratory illnesses, night sweats, and consumption (tuberculosis).

In North America, the indigenous peo-

ples of the Pacific Northwest also revered agarikon for its spiritual and medicinal properties. In the local languages, it was referred to as "bread of ghosts" or "tree biscuits."

Agarikon was used by shamans (the healer and spiritual figure in these communities), who carved it into masks and figures for ceremonies. When a shaman died, agarikon, in various carved forms, was placed at the head of the grave to act as guardians, protecting the shaman in the afterlife.

When used for medicinal purposes, the mushroom was ground into a powder and used for various ailments. Some oral traditions from certain tribes recount that agarikon was used to heal tribes from European diseases like smallpox.

Fungi have been used for millennia by cultures across the globe for their powerful healing abilities and as spiritual aids.

Medicinal Benefits

Agarikon has very potent antibacterial, antiviral, and antimicrobial properties.

A 2013 study concluded that chlorinated coumarins in agarikon were highly active against multi-drug-resistant strains of tuberculosis.

When working with the Bioshield program (part of the U.S. defense department), renowned mycologist and scientist Paul Stamets discovered that mycelial extracts from agarikon had potent properties against poxviruses, flu viruses, and herpes.

Working with the University of Mississippi School of Pharmacy, Stamets and the team there isolated two novel anti-smallpox molecules. Stamets notes that these molecules are even more potent than cidofovir, an an-

tiviral pharmaceutical.

Studies have also shown that agarikon is highly effective against herpes, influenza A and B, smallpox, cowpox, swine and bird flu, and other viruses such as the orthopoxvirus.

The coumarin found in agarikon is thought to be what helps to treat conditions involving the lungs, such as asthma, cough, and pneumonia, by helping open the lungs, decrease inflammation, and get rid of mucus. In a 2018 study, the antimicrobial compounds of agarikon were found to be particularly potent against two dangerous strains of tuberculosis, reaffirming ancient beliefs.

Antibacterial, Anti-Viral, and Anti-Microbial

Agarikon was found to be a natural bioshield against potential infection and disease transmission, and agarikon extract shows evidence of broad-spectrum antibacterial and antiviral activity. After testing 11 strains of agarikon from North America, a few showed exceptionally high activity against viruses, including pox (cowpox), swine (H1N1) and bird (H5N1) flu, and herpes (HSV1, HSV2) viruses. In several sets of tests, extracts against flu viruses exceeded the potency of the drug ribavirin by a factor of ten or more. Recently researchers in Russia have confirmed the strong antiviral activity of agarikon against the H5N1 flu virus, also finding that agarikon is comparatively nontoxic to humans.

Anti-Cancer and Anti-Tumor

Agarikon contains complex carbohydrates, polysaccharides, and antioxidants, giving it immunomodulatory and immunostimulating properties that are particularly effective in preventing and treating tumors and cancer. A 2020 study demonstrated that compounds in agarikon boost interferon, T cells, interleukins, and tumor necrosis factor the body uses to fight cancer. Additionally, by isolating cells, studies found that agarikon

supplements are able to offer immense relief to cancer patients.

Saving Our Environment May Mean Saving Ourselves

Perhaps the most fascinating part of this elusive mushroom and fungi, in general, is that many of the pathogens that affect fungi affect humans as well. Mycologists like Paul Stamets are learning a lot from studying agarikon's natural defenses against microbes and the solutions it has developed against external invaders.

The problem is that agarikon is endangered, and the only places it's found—the old-growth forests of the Pacific Northwest—are shrinking. In fact, only 5 percent of them remain. That means we're quickly losing our opportunity to study this—as Stamets puts it—"deep reservoir of pharmacologically active agents."

"The biodiversity of our ecosystems has within them a wealth of potential solutions to the diseases that afflict us," Stamets said. He and others are working to study as many of the medicinal effects of agarikon and other fungi as possible, and preserve the forests that are their homes. Stamets himself has tirelessly collected and cataloged 37 strains of agarikon (the largest culture bank of this species in the world) and is trying to save it from extinction.

In a culture that has forgotten our connection to the natural world, the story of agarikon is a sobering reminder of what we might lose if we don't acknowledge the wisdom of these organisms and protect the habitats in which they live. Destroying them could destroy the potential cures for unforetold diseases.

Emma Suttie is an acupuncture physician and founder of Chinese Medicine Living—a website dedicated to sharing how to use traditional wisdom to live a healthy lifestyle in the modern world. She is a lover of the natural world, martial arts, and a good cup of tea.

Mycelial extracts from agarikon can combat flu viruses, poxviruses, and herpes.

ALL PHOTOS BY SHUTTERSTOCK



Gene therapy has had mixed results, with some treatments seeming to work and others leading to fatal results. Either way, the full consequences remain unknown.

Gene Therapy: Did We Open Pandora's Box?

As biotechnology advances, companies seek to make breakthrough treatments with sometimes fatal results

DR. YUHONG DONG

Jesse Gelsinger, 18, had a rare metabolic disorder called ornithine transcarbamylase deficiency syndrome, or OTCD, in which ammonia builds up to lethal levels in the blood. He managed the condition with a low-protein diet and a regimen of nearly 50 pills a day.

In 1999, Gelsinger volunteered to participate in a gene therapy trial with the hope of helping others with the same disease. However, a few days later, he became the first person to die as a result of a gene therapy experiment.

The potential OTCD treatment was to inject a genetically modified and weakened adenovirus vector into the patient's liver, and to introduce the normal ornithine aminomethyltransferase gene (OTC gene) into the patient's liver chromosomal DNA, to restore the liver's ability to metabolize ammonia.

Gelsinger received this modified virus. However, he had an intense inflammatory response and developed a dangerous blood-clotting disorder, followed by kidney, liver, and lung failure. Four days after receiving the shot, Gelsinger was declared brain dead.

Gelsinger's family sued the University of Pennsylvania, which had developed the program.

The tragedy shocked the drug development community, and immediately cooled the research boom in gene therapy. The entire gene therapy industry began to crumble: investors withdrew their funds, startups went bankrupt, the heads of R&D projects were stripped of their titles, and gene therapy centers were shut down.

Gelsinger's story is well known in the field of gene therapy. The tragedy brought gene therapy development to a near standstill for the next 18 years. Mainly because Gelsinger's accidental death made many developers believe there were many unknown and uncontrollable serious risk factors in gene therapy, as if shooting in the darkness where the target cannot be seen.

More Deaths Caused by Gene Therapy

Some 18 years after Gelsinger's death, a gene therapy for an eye illness was approved by the FDA. In 2017, Spark Therapeutics' Luxturna, a treatment for a rare genetic retinal disease, was approved for people who have a mutated RPE65 gene. Luxturna uses a modified virus to deliver a healthy copy of the gene directly to a patient's retinal cells through eye surgery. It only required local injection and had little effect on the body. That's one of the reasons it could succeed on the market. This treatment re-sparked interest in the field of gene therapy.

In 2019, the FDA approved Novartis' Zolgensma (onasemnogene apearovvec-xioi), a gene replacement therapy indicated for the treatment of spinal muscular atrophy in pediatric patients. Later that year, the company got in trouble for not informing the FDA and the European Medicines Agency (EMA) about toxic effects of the intravenous formulation of the drug observed in laboratory animals until seven months later. The company lost an accelerated assessment of the drug by the EMA over the data manipulation issue.

In 2019, in an animal trial of a gene therapy developed by Solid for the treatment of Duchenne muscular dystrophy, three monkeys and three piglets all suffered severe toxicity and eventually died. The company was later placed under a clinical research hold in 2019 after one of its human participants suffered an adverse reaction, though that hold was lifted in 2020.

In 2020, Astellas Pharma acknowledged that a fourth boy died in the troubled Phase I/II trial through which its Astellas Gene Therapies (formerly Audentes Therapeutics) has been evaluating its adeno-associated virus gene therapy candidate AT132 in patients with the muscular disease X-linked Myotubular Myopathy. The company had lowered the dose of the treatment after the first three deaths led to an FDA clinical hold on the trial.

What Is a Gene?

Genes (DNA) are the most delicate and complex structures in the human body.

If the DNA in the 50 trillion cells of the human body is stretched and connected together, its length is equivalent to 16 times the distance from the earth to the sun.



Modern medicine is still far from able to anticipate the full spectrum of biochemical consequences from pharmaceutical treatments, let alone genetic manipulations.

They exist in the nucleus of the human body's cells to ensure the normal functioning of the structure and function of the human body; in addition, genes also determine characteristics such as height, gender, appearance, hair color, skin color, blood type, sex, etc.

Scientists have now found that humans have at least 20,000 to 23,000 genes. If the DNA in the 50 trillion cells of the human body is stretched and connected together, its length is equivalent to 16 times the distance from the earth to the sun. How can such a small nucleus fit such a length? The DNA twists further on top of the double helix, becoming supercoiled, like an old-fashioned telephone wire when twisted.

The outside of DNA is coated with proteins to form chromosomes. There are 23 pairs of chromosomes in each somatic cell of a normal person, and a chromosome contains hundreds to thousands of genes, that is, each chromosome is a highly coiled and compressed shape of genes.

The discovery of DNA is one of the most important and well-known scientific stories of the 20th century. In 1953, American biochemist James Dewey Watson and British physicist Francis Crick published in the journal Nature that they discovered the DNA of two strands of nucleotides, paired as a double helix form, encoding the genetic information of all living things.

Since then, genetic testing technology has flourished, ushering in a new era in biomedicine. For example, the somewhat-controversial PCR nucleic acid test we used in the COVID-19 epidemic is a genetic test.

Unfortunately, the gene therapies that have followed have traveled a bumpy road marked by adverse reactions and even death.

Gene Therapy: A Pandora's Box

The concept of gene therapy is very attractive: The target gene is introduced into the human body to correct an incorrect gene and cure a disease. However, the structure of genes isn't as simple as that of proteins. Genes are a very central and important substance in the nucleus. Gene therapies target the problem gene that needs to be corrected but can damage other genes when it is off the target.

The consequence of serious off-targets, several cases of death, is a warning.

The human genetic sequence is very important. It's perhaps the most critical aspect of human physiology. It can't be changed casually. Genes control all individual organisms and all important physiological processes such as protein synthesis, cell division, reproduction, etc. Genes can reproduce themselves precisely and faithfully, ensuring the stability of a life's characteristics.

Modern medicine is still far from able to anticipate the full spectrum of biochemical consequences from pharmaceutical treatments. Acetaminophen was around for more than 100 years before we discovered that pregnant mothers who took the drug were more likely to have children with behavioral issues. That inability to foresee side effects is potentially magnified when it comes to genetic alterations.

The 2020 Nobel Prize in Chemistry has been awarded to two scientists for their contributions to the discovery of a gene-editing method called CRISPR-Cas9. This is a technique that allows precise modification of nucleotide fragments and has been described as "God's scalpel."

However, this "God's scalpel" can't be used casually.

Chinese scientist He Jiankui tried to use gene-editing technology to open "Pandora's Box," causing an uproar in the scientific community around the world. He Jiankui rashly edited a baby's genes in the name of helping the offspring of AIDS patients. His unethical and immoral acts got him imprisoned and cost him his career.

As biotechnology advances, there is an ever-greater need to rational rather than blindly advancing in the name of profits and technological superiority, even if it's done under the guise of medical treatment. While we all want a better life, we need to be more cautious when it comes to the development of certain technologies that touch the microscopic level of matter in the human body. We have no idea what could happen as these genetic changes are inherited or how they will interact or interfere with other biological processes. Who knows what we will discover 100 years from now.

Health 1+1 is the most authoritative Chinese medical and health information platform overseas. Every Tuesday to Saturday from 9:00 am to 10:00 am EST on TV and online, the program covers the latest on the coronavirus, prevention, treatment, scientific research and policy, as well as cancer, chronic illness, emotional and spiritual health, immunity, health insurance, and other aspects to provide people with reliable and considerate care and help.

Are Bananas a Nutrient Packed Snack or a Glorified Candy?

MAT LECOMPTÉ

You don't have to be an expert in bananas to know they are super sweet. But can all that sweetness exist in a superfood?

There's no doubt bananas can be highly controversial. They're very high in sugar but remain a low glycemic load food. The biggest danger from these may come from slipping on a peel.

Bananas are rich in nutrition and a great source of something nearly everybody could use more of—fiber. They are also versatile, accessible, convenient, and affordable.

The biggest claim to fame of the banana is the potassium content. One medium-sized banana has 375 milligrams (mg), which is about 11 percent of the daily recommended intake for men and 16 percent for women.

Potassium plays a vital role in heart health, most prominently by helping to regulate blood pressure.

Bananas are also a rich source of other nutrients, phytochemicals, and antioxidants.

There are about five grams of fiber in a banana, which can contribute to benefits like better digestion, lower inflammation, and improved heart health. The fiber makeup

of a banana can be somewhat unique, too.

Unripe or slightly ripe bananas contain resistant starch, which acts as a prebiotic fiber. These types of fiber act to feed probiotics, the guts "good" microbes, which are important for digestion and linked to immunity, brain health, and more.

As a banana ripens, the resistant starch is broken down into natural sugars, which is why it is sweeter than a slightly unripe banana.

If you're thinking about including more bananas into your diet, remember this: It's not the same when used as an ice cream topping, put in banana bread, or eaten as chips.

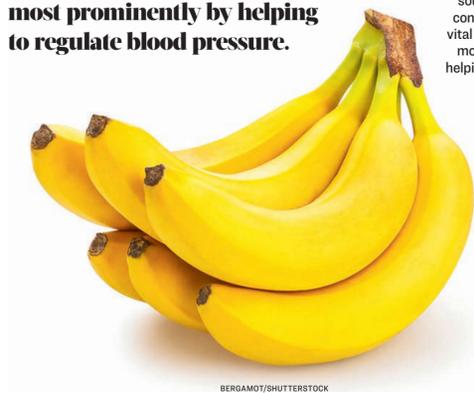
Be careful about banana chips, which are generally dried and fried.

If you want bananas to retain their healthy qualities, there are plenty of other uses for them. They can be added to smoothies as a thickener and sweetener, sliced and put on whole-wheat toast and peanut butter, or simply unpeeled and eaten for a quick snack.

Mat Lecompté is a health and wellness journalist. This article was first published on BelMarraHealth.com.

Bananas are a great source of potassium, which plays a vital role in heart health, most prominently by helping to regulate blood pressure.

Bananas are a great source of potassium content, which plays a vital role in heart health, most prominently by helping to regulate blood pressure.



BERGAMOTTI/SHUTTERSTOCK

Back Yard Workout for Spring and Summer

Get fit as you get your yard in order by moving your body a little more conscientiously

DONNA MARTELLI

Time to get up and start my day. But wait a minute, my whole body is sore. What have I done to myself? I feel as if I have spent hours at the gym.

No, yesterday was a warm and pleasant day, so I worked in my garden, mostly clearing out weeds and dead leaves and clearing the ground of sticks and debris from a recent wind storm. What a workout it was!

With the onset of spring, I am ready to skip the gym and keep my fitness on track by working outside. I love accomplishing two things simultaneously: working out while beautifying my yard. I analyzed the different things I had done while outside and made a workout plan for myself. If you like to work outside, please try my exercise plan. You will love it.

Donna Martelli was a professional dancer with the Harkness Ballet of New York and faculty member at Butler University in Indianapolis. She was also director of fitness arts at LivRite Fitness where she taught ballet, barre, Pilates, and more. She is the author of "When God Says Drop It" and "Why the Dance."



PHOTOS COURTESY OF DONNA MARTELLI



(Above) Triceps
I love it when these are sore. The triceps have to be worked regularly so as not to sag. I often sit on my derriere as I work and use my arms behind me to scoot myself forward. You can make this move forward and back 10 times; rest and then do 10 more. The triceps do the work. As a bonus, your core works, too.

(Left) Hamstrings
These muscles need to be stretched often, as it seems they tighten overnight. When picking up sticks or anything off the ground, bend forward with straight knees so that you feel a stretch in your hamstrings. If you can't reach the ground, it's OK. Go down as far as you can with straight knees, hover there for a few seconds, and then bend your knees as you pick up whatever. Do it at least 10 times, but you will probably find that you will do it more than that.
Be sure to stretch every way you know to stretch before you start working and intermittently between exercises and at the end of your incredible backyard workout. Be pleased with yourself for having simultaneously accomplished your yard work and your workout.



Quadriceps
My quads were screaming the day after my backyard adventure. I realized it was because I had spent a lot of time in a squat as I gathered sticks, leaves, and tools from the ground. Squats are fantastic to strengthen your quads and hips. You can do them with your legs parallel (knees facing straight ahead) or turned out (knees to the side). Be sure your knees go over your middle toe when you bend them so that they are protected.

Pectorals
These chest muscles look great in a tank top, so you want to keep them toned. Plus, they feel superb when they are strong. I know of no better thing to do for them than to trim the hedges or overhanging tree branches. Warning: This exercise can easily lead to sore muscles.

Calves
Heel raises are the thing to do to strengthen and shape your calves. You will have many opportunities to rise to the balls of your feet with your heels lifted as high as possible as you reach for those high limbs and branches. Be sure to stretch them after doing 10 or 12. With legs parallel, put your leg that you are stretching straight behind you on the ground and bend your front (opposite) knee. Press the heel of the back foot to the ground, and you will feel a nice stretch in that calf muscle.

Biceps
Moving bags of mulch gave my biceps a workout, as did picking up and arranging stones. These items are heavy enough to cause the biceps to flex, and then putting them in place releases the contraction of the muscles. You can pick up and then place the objects several times until the biceps begin to fatigue. I recommend doing 10 pick-ups and set downs and repeating at least one more set of 10. Digging also works the biceps.

On Patience: 17 Original Aphorisms

Short takes on the virtue of patience, and the costs to those short on it

MIKE DONGHIA

The following is a short collection of my own aphorisms on the subject of patience. While I'm not nearly as witty and profound as the many fine writers who have taken up the genre before me, I find that I enjoy it very much. There is pleasure to be found in trying to craft a pleasing line and reflecting on simple but life-changing truths from a hundred different angles. It seems to fit me well.
It's my hope that one or two of them jump off the page for you and cause you to see

these old truths in a fresh way.

- What many call talent is really patience in disguise.
- To be a prodigy requires giftedness, to become a success only patience.
- The ultimate freedom lies in being able to wait patiently for a good thing.
- Impatience is the feeling that important things are outside your control. Wisdom is knowing how few things are within it.
- Impatience is a failure to find a single thing in the present moment to laugh about.
- The way to have enough time is to never

- be in a hurry.
- It is easier to look for a shortcut than to play the long game, and life has set the odds accordingly.
- Life has a simple mechanism to reward the patient at the expense of those in a hurry—the passage of time.
- You're financially rich if you don't have to look at prices, but truly rich if you don't have to hurry.
- The person in a hurry wishes to have arrived yesterday and can't wait for tomorrow. It is today they hold in contempt.
- Those who rush through life are like men

Become a Hospital Prepper

Get to know your health care environment and be ready if a loved one is likely to require care

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The scene was chaotic, the sense of panic increasing with each passing moment.

The new bride, who I later learned was pregnant, could only stand by helplessly as paramedics worked feverishly to get an airway into the husband's swollen trachea (commonly known as the windpipe).

As the ambulance doors closed, she saw them frantically administering CPR. She wasn't allowed to ride in the ambulance—the EMTs couldn't afford to be distracted. We would learn later that dander from the horses in the show had triggered a severe allergic reaction.

The kindly theater manager drove her to the hospital himself. Upon arriving at the ER, the young husband was placed immediately on life support. His scared, solitary wife was ushered into a room to wait.

As I hung up the phone and headed downstairs, my heart broke for this young couple. I could only imagine the wife's shock and disbelief in those horrifying moments.

In the ER, I consulted again with the staff who were attending this young man. They were visibly shaken by the tragedy unfolding in their midst.

"Has he had any sedation?" I asked.

"No. Nothing. Not even in the field."

This was not good news given the fact that the only movement I witnessed was the patient's chest rising and falling with each artificially supplied breath. He wasn't struggling against the ventilator. His pupils were fixed and dilated, and no reflexes were noted. As I continued my exam, I began processing internally the gravity of the situation. I thought about the waiting bride and what I would say to her. In my mind, I asked the same questions that she must have been asking. How can this be happening? Is this real?

Taking a deep breath, I entered the tiny consultation room. It contained two chairs and a young woman who was sitting on the end of a couch, her knees drawn tightly to her chest. She looked up expectantly, tears streaming down her face. "Is he okay? Is he okay?" she asked, searching my face for any hint of good news.

I sat down next to her and held her hands, hoping my eyes didn't convey my deep concern.

"He has had an allergic reaction called anaphylaxis. We're concerned that his brain didn't receive enough oxygen, and so he's on life support ... but he's not waking up. We're going to bring him to the ICU [intensive care unit] and hope we see some change over the next 24 hours."

"But ... but, he will wake up, right?" she asked plaintively.

"I don't know. It's too early to tell," I quietly said. "We can hope things will change. Would you like me to call his family, or would you?"

She hugged her knees tighter and began to sob uncontrollably. I put my arms around her the way a mother hugs a scared child. As I did, she melted into me.

Afterward, I called his family and said the words that no mother or father wants to hear. "Come now!"

Timing an Emergency

The experience in your local emergency department can vary widely based on your presenting symptoms. If you arrive



If you're ill or getting older, it's smart to be prepared for a potential hospital stay.

by ambulance, you are quickly evaluated. Chest pain or stroke symptoms initiate a time stamp from which is measured the timeliness of care from the moment of entry to the facility.

Another time stamp is started for symptoms such as temperature dysregulation (high or low), low blood pressure, or other symptoms and findings consistent with sepsis (an infection that has systemic or whole-body effects).

With the advent of electronic medical records, metrics of time are evaluated. This becomes one of the key performance indicators for quality of care and how hospitals and their staff are assessed.

These changes improve patient experience by reducing adverse drug reactions, adverse surgical events, and—with proper training and usage—they can also reduce mistakes in patient electronic orders.

Yet, because of the level of activity and stress present, the emergency department can sometimes feel like a war zone. The enemy is time.

It is exponentially better to have a plan and not need it than to need one and not have it.

This part of the hospital can feature ongoing flurries of activity by staff who are laser-focused on delivering care with speed. The clock is ticking. The fewer the ticks, the better the outcome.

With trauma patients, physicians once used the term the "golden hour" to speak of the critical need to administer proper care during the first sixty minutes. Now some speak of the "golden time," indicating a shift to a more modern approach to emergency care following trauma. Whichever phrase is used, the fact is that the fewer minutes that elapse from injury or medical event until care begins, the better.

Timely care can prevent tissue damage in stroke and heart attack victims. It can be the difference between surviving a serious infection or succumbing to one. If you're a patient or a scared family member at the center of an ER or ICU flurry, take comfort in knowing that these medical warriors are racing the clock on your behalf.

And if while waiting in the ER you're not at the center of a medical whirlwind, you can take comfort in the fact that your problem must not be life-threatening.

Perspective is everything.

Anticipating the Emergency

How can you be prepared for a war zone in which you may not understand the rules for engagement, the battlefield, or even the seriousness of the battle?

The first step is to gather knowledge. This would be evaluating health care facilities in your area. Which facilities are covered by your insurance? Are there ambulatory facilities or fast-track ERs that can manage simpler problems? Are there hospitals that specialize in stroke or cardiology, trauma, and so on? Would you have a choice of where you want to go if you call 911?

The second step is to gain wisdom. After gathering your knowledge, wisdom is its application to your personal circumstance.

Step one is to learn about your local hospitals, especially if you're older or have an older loved one and a hospital visit seems likely sooner or later. It is exponentially better to have a plan and not need it than to need one and not have it.

Survey Your Health Care Environment

- Visit the fire station closest to your house so that you can learn where you would be taken if you had to call 911.
- Visit local hospitals in your area. Evaluate their emergency departments.
- Try to find out about wait times at local facilities. While average wait times can vary wildly, most hospitals measure, monitor, and publicize how quickly they're able to deliver care. Whenever possible, choose health care systems that value their patients' time. At www.medicare.gov/care-compare/ you can find one such assessment.
- Ask other medical professionals on their choice of hospital and why. This could be your dentist, your doctor (although bias may be built in), and other trusted members of your community.
- Discuss with your primary care doctor if he or she still "makes rounds" (i.e., visits hospitalized patients). If not (and chances, are he or she does not), ask their opinion on the quality of the hospitalists or physician groups at area hospitals.

Know the best hospitals in your area, or those that may specialize in conditions you're more concerned about is a great step in preparing for any medical emergency. There are also things you can do at home if you or a loved one is likely to require care.

Prepare for a Hospital Stay

- Identify an advocate. This is someone who will be with you as you navigate

a hospital stay. It's important to have your health care advocate or proxy with you so you have a second set of ears to hear words that may sound like a foreign language, ask questions, and record information.

- Develop (with family members) an acute-illness plan. For example, always keep an accurate list of medications, current doctors' names, prior surgeries and illnesses, current disease processes, emergency contacts, and your advance care plan.

- Create a medical "waiting bag." This bag can include anything that will help you pass the time if you must spend an excessive amount of time waiting while you or a family member is assessed. For example, you could include a notepad or a book of puzzles. Keep hand sanitizer, bottles of water, snacks, and at least a 24-hour supply of your routine medications in your bag. Remember to rotate these medications regularly as medicine does expire.

- Since most ERs are busy and allow only one or two family members or friends to be with a patient at any given time, have a plan in place to reliably receive and relay information to other loved ones. Write notes, and if you're unsure of the medical terminology, ask the clinician to spell it out for you.
- Don't be afraid to ask questions. As mentioned previously, always ask, "If this were your loved one, what would you do?" Make sure you ask about quality of life after any suggested surgeries.
- If a hospital physician recommends a transfer to another medical facility, recognize that this is in the best interest of the patient. Very specific laws guide inter-facility transfers, the most specific being that a patient's unmet need at the current hospital can be met at the receiving facility.

No one wants to think about something terrible happening to a loved one. Unfortunately, illness is an inevitable consequence of age for nearly everyone. The more you can prepare for a medical emergency, the better you are likely to navigate it.

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who wish to hurry back from their own honeymoon.

- Ruminating on an outcome has never once made it arrive sooner, or made the wait more enjoyable.
- For the mass of men, it appears easier to scratch lottery tickets than to wait patiently on the sure thing.
- To the person in a hurry, life is a series of obstacles. To the patient, life is a stroll toward a happy destination.
- Far more mistakes are made by switching to a supposed better plan, than by sticking with a decent plan for too long.

- Beware of the plan to reinvent oneself overnight; real change occurs over months and years.
- Far better is a good plan executed patiently than a great plan pursued in haste.

Mike (and his wife, Mollie) blog at This Evergreen Home where they share their experience with living simply, intentionally, and relationally in this modern world. You can follow along by subscribing to their bi-weekly newsletter. This article was first published on This Evergreen Home.



Wealth isn't measured in dollars nearly so well as it's measured in having the time to do things you enjoy with people you love.

WISE HABITS

Effortless Effort: Relaxing While Trying Hard

Try taking on the day with a calm intention rather than an intense push to get things done

ALL PHOTOS BY SHUTTERSTOCK

LEO BABAUTA

I've noticed that a lot of us will be pretty wiped out at the end of a long day of work or social activity, to the point where we need time to recuperate from exhaustion. There's nothing wrong with that, but let's talk about the possibility of doing hard things without exhausting ourselves.

We might call it effortless effort (similar to "wu wei" in Daoism)—the idea of acting without a huge amount of pursuit, tension, or extraneous physical effort.

When someone talks about "trying hard," that usually means they put a lot of energy into something, and quickly exhausted themselves. "Trying hard" is equated to being very tense, pushing hard with your body and mind, and putting everything you have into it.



Sometimes we add more strain to a task than it actually requires. What if we can move through the day with a lighter step and gentler determination?

Can you rest your attention gently on one spot, not forcing the attention but just resting it?

If you talk to someone about "relaxing," they will usually think of that as the opposite of "trying hard." They think of lying on the couch, muscles relaxed, not doing anything. "Relaxing" is equated with "laziness" for a lot of people.

So "trying hard" and "relaxing" are seen as two opposite things.

What would it be like to try hard while relaxing?

An Experiment

Try this experiment: Relax the muscles of your torso, neck, jaw, head so that you're sitting upright but relaxed. Now read a few sentences of this article, while keeping that upright relaxed posture. Breathe easy, feel peaceful, while reading.

Notice what it's like to give focus to the reading, while not tensing up. While remaining peaceful and relaxed.

Now try it while drinking a glass of water, or walking around the room. Upright and relaxed, doing things without spending more effort than is needed.

Practicing and Adjusting

We can practice in meditation as well—can you have a relaxed upright posture and keep your focus on the present moment, without straining? Can you rest your attention gently on one spot, not forcing the attention but just resting it?

This is the essence of effort without extra effort. Giving something your focus without spending all your energy. Moving without too much tension.

Of course, it takes some tension to move—otherwise you'd collapse on the floor in a puddle. We need to spend some energy to move around a room, or to sit upright. But we don't need

Meditation is one of the best examples of 'effortless effort.'



to spend more than the minimum required. It's like spending what you need for food, without needing to splurge on every bite.

Sometimes a lot of energy is required. And if so, you try hard with that burst of energy. Just what's needed. And then go back to relaxed upright posture, without needing to spend more.

You can practice all day, if you keep "effortless effort" in mind. You can cook, wash dishes, talk to people, answer email, without needing to be tensed all the time, without needing to exhaust yourself. Notice if your torso is tensed up, your jaw clenched, or your temples tight. Then relax.

Notice what it's like to spend just what's needed, and not everything.

Leo Babauta is the author of six books and the writer of Zen Habits, a blog with over 2 million subscribers. Visit ZenHabits.net



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