



MIND YOUR BRAIN HEALTH!

The month of June brings the beginning of summer, the end of the school year and perhaps even the chance to think about a staycation or vacation. June is also Brain Health and Alzheimer's Awareness Month, the perfect time to discover how to maintain and improve the health of our remarkable brains.

In this issue of SMART Health Insights, explore different ways to treat your brain right and keep it healthy at all stages of life. For example, there are terrific apps that provide simple ways to nurture and care for the state of your brain. If you really want to see what your mind can do, explore Lumosity that provides brain training tailored to you with daily games. Playing games is great way to exercise your brain – Wordle anyone?

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HOW TO KEEP YOUR BRAIN FIT

By Marisa Cohen, Medically Reviewed by Brunilda Nazario, MD Published by WebMD,
<https://www.webmd.com/brain/features/keeping-your-brain-fit-for-life>

Your brain is truly the most amazing part of your body. It comes up with creative ways to express your thoughts and emotions, coordinates movements from chopping onions to running an obstacle course, stores your most precious childhood memories, and solves the Sunday crossword. But it's easy to take those powers for granted.

"Many people don't start thinking about their brain health until they notice some cognitive changes and memory loss in their 60s or 70s," says Elise Caccappolo, PhD, an associate professor of neuropsychology at Columbia University Medical Center in New York. "But there are many things you can do, starting as young as childhood, to keep your brain as healthy as possible throughout your lifetime. We know that intellectual pursuits, social interaction, and perhaps most importantly, physical activity are helpful in keeping one's brain sharp."

Health Heart

The most important strategy, she says, is to work with your doctor to stay on top of your cardiovascular health. You want to keep blood moving easily through your heart and blood vessels. "High blood pressure, high cholesterol levels, smoking, and diabetes all increase the risk for developing neurodegenerative diseases by impeding blood flow to the brain," she explains.

When artery walls get thick with plaque or "hardened," a condition called atherosclerosis, it's difficult to get enough blood to the brain and nurture its cells. This can also lead to ischemic stroke -- when a blood clot forms in an artery, cutting off the blood supply to a section of the brain. That can cause temporary or even permanent brain damage.

A healthy, active lifestyle will go a long way toward keeping your blood flowing and avoiding those problems. A Swedish study of more than 30,000 women found that those who ate a healthy diet, exercised regularly, didn't smoke, drank only moderately, and kept their body mass index (BMI) below 25 had a far lower risk of stroke than women who didn't meet any of those five goals.



Plenty of Quality Sleep

A key way to keep your brain working is shut it off for 7-9 hours a night. "Sleep is the most important thing you can do to reset the brain, allow it to heal, and to restore mental health," says Romie Mushtaq, MD, a neurologist and integrative medicine specialist.

New research shows that during sleep, the brain clears out toxins called beta-amyloids that can lead to Alzheimer's and other forms of dementia.

Mushtaq suggests a few simple things before you go to bed.

Do a digital detox. Commit to the same bedtime each night, and turn off all electronics and screens at least 30-60 minutes before you hit the pillow.

Dump your worries. Jot down any lingering concerns and a quick to-do list for tomorrow to help settle your brain. "Our thoughts are always racing, provoking anxiety," she says. "But if you write it down with pencil and paper, it tells your brain it doesn't have to be concerned about those things while you sleep."

Spend a moment meditating. Not only will 5-10 minutes of mindful meditation calm your brain and make it easier to sleep, meditation has been shown to reduce anxiety, depression, fatigue, and confusion. "Meditation can benefit people with insomnia by helping them fall asleep and stay asleep. It also helps with inflammation in the brain," she says. "Most people find not only do they sleep better, they can focus better and are not as anxious."



Move Your Body

Walking for 30 minutes a day, taking a dance class, or going for a swim helps keep you slim and fit, and it could improve your cognitive health, too. A large Canadian study that found the more physically active adults were, the higher they scored on tests of memory and problem-solving.

Exercise boosts blood flow to the brain. And studies have shown it can increase the size of the hippocampus, the part of the brain responsible for memory, which naturally shrinks as you age.

New research from Italy suggests that working your leg muscles may be key to getting the maximum brain benefit from physical activity. The researchers found that when you use your legs in weight-bearing exercise, the brain receives signals that spur it to make healthy new cells.

Eat Well

A diet rich in omega-3 fatty acids, low in saturated fat, full of the nutrients found in leafy green vegetables, along with whole grains can help keep your brain healthy throughout your life. For many people, this means following the Mediterranean diet, which emphasizes fish, fruits and vegetables, nuts, olive oil, and avocados, while limiting red meat.

The MIND diet -- a hybrid of the Mediterranean diet and the heart-healthy DASH diet, with an extra emphasis on berries and leafy greens -- was created specifically to boost brain health. It's been shown to lower the odds of Alzheimer's disease.

One treat to consider adding to your diet: dark chocolate. New research has found that the flavanols in cocoa beans can help improve memory and cognitive function.

Mushtaq also recommends paying attention to how much caffeine you have. "Coffee in the right dose can help focus and prevent neurodegenerative disease," she says, but after two cups, the effects can become harmful and the stimulants may get in the way of falling asleep. She recommends one or two cups in the morning, then switching to drinks without caffeine by 2 p.m.

Be Social

Instead of watching Netflix or scrolling Facebook, Caccappolo says, spend as much time as you can with friends. Why? "When you're socializing, the blood circulates to several different parts of your brain as you're listening and formulating responses," she explains.

And when you're connecting with friends, you're less likely to get depressed. Depression can hamper how well your brain works. "If you're depressed or anxious, the brain becomes so occupied with what-ifs and worries that it's not able to give 100% to learning new things," she says.

Try New Things

Building new skills throughout your lifetime -- how to cook Indian food, how to play an instrument, even learning the rules of new card games or traveling to an unfamiliar city -- helps keep your brain healthy by constantly creating new connections between brain cells, Caccappolo says.

Challenging your brain essentially creates a backup system. "The more intellectual stimulation you have, the more various neural circuits are used. And the more circuits you have, the harder it is for the changes associated with neurodegenerative diseases to manifest," she says.

It's more helpful to master real-world skills than to play online "cognitive enhancement" games. "We've found that people improve on the specific tasks in those games," she says, "but that doesn't really correlate with real-world activities."

NOURISH YOUR BRAIN

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<https://familydoctor.org/nourish-your-brain/>



Your cognitive health is determined by how well your brain can perform mental processes. These include remembering things, learning things, and using language. A healthy brain is just as important as a healthy body. Many of the things you do to keep your body healthy can also keep your brain healthy. It is also important to stay socially and mentally active.

What is cognitive decline?

Cognitive decline is when your brain doesn't work as well as it used to. For example, a person who is experiencing cognitive decline may have trouble learning, using language, or remembering things.

Some cognitive decline is a normal part of growing older. Cognitive decline that happens quickly or that affects day-to-day activities is called dementia. A head injury, a stroke, or disease (for example, Alzheimer's disease) can damage brain cells and lead to dementia.

As your body gets older, so does your brain. You can't stop normal cognitive decline, just as you can't stop other parts of normal aging. However, you do things to reduce your risk of decline. You can maintain your body and brain health by making healthy choices about your lifestyle, diet, and exercise. Healthy choices can also help prevent disease.

PATH TO IMPROVED HEALTH

There isn't one specific diet that is best for brain health, but eating healthy is important for your overall health. Choosing foods that nourish your body and brain can help prevent or delay health problems, including conditions that increase your risks for dementia.

Tips to nourish your body and brain

Manage your weight. Studies show that obesity, diabetes, high blood pressure, and high cholesterol can all increase your risk

for dementia. To lose weight and keep it off, avoid short-term or "fad" diets. Instead, adopt a healthy way of thinking about and eating food.

Eat fruits, vegetables, and whole grains. A diet that includes lots of fruits, vegetables, and whole grains can reduce your risk for chronic diseases, including heart disease, diabetes, and cancer. These same foods may also help protect brain function. The antioxidants in leafy greens, dark-skinned vegetables, and cruciferous vegetables (broccoli, cabbage, and turnips) may be especially protective. Vegetables including beets, broccoli, Brussels sprouts, cauliflower, eggplant, kale, red bell peppers, romaine lettuce, and spinach are good choices.

Avoid unhealthy fats. Try not to eat any trans fats. These are man-made fats that are bad for you. Trans fats are often used in processed foods and store-bought baked goods. Read food labels carefully to check for trans fats. They will appear in the ingredient list as "hydrogenated vegetable oil" or "partially hydrogenated vegetable oil."

Foods that are high in saturated fats (for example, red meat) can contribute to high cholesterol levels. Over time, high cholesterol can increase your risk for heart attack and stroke. When you do eat red meat, reduce your portion size. Choose poultry and fish more often.

You can also avoid unhealthy fats by using olive oil or canola oil when you are sautéing foods. Bake, broil, or roast your food instead of frying it.

Get your omega-3 fatty acids. The most common source of omega-3 fatty acids is fatty fish (sardines, tuna, salmon, mackerel, and herring). Try to eat this type of fish once or twice a week.

Talk to your doctor about the risks and benefits of taking vitamins or supplements. Your doctor might suggest a dietary supplement based on your overall health and the vitamins or minerals your diet lacks. If you are interested in taking another type of supplement, talk to your doctor about why you want to take it and what you hope it will do for you. He or she can help you figure out if a dietary supplement will interact with any medical conditions you have or any prescription or over-the-counter (OTC) medicine you are taking.

WHAT ELSE CAN I DO TO MAINTAIN MY BRAIN HEALTH?

You can stay active physically, socially, and mentally. Physical activity helps prevent disease and maintain blood flow to the brain. If you don't already exercise, try to work up to 30 minutes of moderate activity into your schedule 5 times a week. Moderate activities include anything that gets your heart rate up. Walking, hiking, bicycling, and swimming are all good options. Choose something you enjoy doing.

Any activity you do with other people helps to stimulate your brain. A social activity can be as simple as having lunch with a friend or walking around the block with a neighbor. Volunteer opportunities in your community or church are good ways to be social. Another option is finding a club or social group that focuses on a sport, hobby, or topic you enjoy.

To keep your brain cells strong and active, it's important to stay mentally active. Challenge yourself to learn something new. Read to stay informed and for fun. Enroll in a class at a local community college or adult education center. Or, challenge yourself in a different way by playing games, completing puzzles, or trying memory exercises.

THINGS TO CONSIDER

It is normal for your memory to lag as you get older. Forgetting where you put your keys, for example, is not a sign of Alzheimer's disease. Being unable to retrace your steps to find the keys could be a sign. Other signs include losing track of the date or the season, or difficulty completing familiar tasks.

There is currently no known cure for Alzheimer's disease. Researchers are working to find a way to delay or prevent Alzheimer's disease. Until then, taking care of your body and brain are the best ways to prolong cognitive health.

QUESTIONS FOR YOUR DOCTOR

- What could be causing my memory loss?
- Is it possible that my medications could be making my memory worse?
- Are there any medications that can help with memory loss?
- Is it safe for someone with cognitive decline to drive?
- My parent could have dementia. How can I talk to them about it?



KEEP YOUR BRAIN YOUNG WITH MUSIC

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<https://www.hopkinsmedicine.org/health/wellness-and-prevention/keep-your-brain-young-with-music>

If you want to firm up your body, head to the gym. If you want to exercise your brain, listen to music.

There are few things that stimulate the brain the way music does. If you want to keep your brain engaged throughout the aging process, listening to or playing music is a great tool. It provides a total brain workout.

Research has shown that listening to music can reduce anxiety, blood pressure, and pain as well as improve sleep quality, mood, mental alertness, and memory.

The Brain-Music Connection

Experts are trying to understand how our brains can hear and play music. A stereo system puts out vibrations that travel through the air and somehow get inside the ear canal. These vibrations tickle the eardrum and are transmitted into an electrical signal that travels through the auditory nerve to the brain stem, where it is reassembled into something we perceive as music.

Johns Hopkins researchers have had dozens of jazz performers and rappers improvise music while lying down inside an fMRI (functional magnetic resonance imaging) machine to watch and see which areas of their brains light up.

Music is structural, mathematical and architectural. It's based on relationships between one note and the next. You may not be aware of it, but your brain has to do a lot of computing to make sense of it.



EVERYDAY BRAIN BOOSTS FROM MUSIC

The power of music isn't limited to interesting research. Try these methods of bringing more music—and brain benefits—into your life.

Jump-start your creativity.

Listen to what your kids or grandkids listen to, experts suggest. Often we continue to listen to the same songs and genre of music that we did during our teens and 20s, and we generally avoid hearing anything that's not from that era.

New music challenges the brain in a way that old music doesn't. It might not feel pleasurable at first, but that unfamiliarity forces the brain to struggle to understand the new sound.

Recall a memory from long ago.

Reach for familiar music, especially if it stems from the same time period that you are trying to recall. Listening to the Beatles might bring you back to the first moment you laid eyes on your spouse, for instance.

Listen to your body.

Pay attention to how you react to different forms of music, and pick the kind that works for you. What helps one person concentrate might be distracting to someone else, and what helps one person unwind might make another person jumpy.

Definitions

Magnetic resonance imaging (MRI): A large machine that uses powerful magnets and radio waves to see inside your body. Unlike an X-ray, MRI testing does not use radiation. If you undergo this test, you'll lie on a narrow table that slides inside a tunnel-shaped scanner for about 30 to 60 minutes while health-care professionals watch from another room. If you feel anxious in small, enclosed spaces, ask your physician about an open MRI that is not as close to the body.

NEW SCANNING TECHNOLOGY COULD HELP DIAGNOSE ALZHEIMER'S DISEASE USING LIGHT

By Tristan Horrom, Published by US Department of Veterans Affairs

<https://www.research.va.gov/currents/0721-New-scanning-technology-could-help-diagnose-Alzheimers-disease-using-light.cfm>

Researchers with the VA Bedford and VA Boston health care systems have developed a non-invasive optical technique to help detect Alzheimer's disease. The new technique uses spectroscopy—measuring how light is scattered and absorbed when passing through matter—to identify structural changes in the brain.

This scanning method could become a simple, completely non-invasive method of early Alzheimer's detection, according to the researchers, and also has potential as a way to assess the effectiveness of treatment.

"This technology is significant because it probes the biochemical and cellular structures of the brain noninvasively with a technique that is inexpensive and could be put into widespread use, explains Dr. Eugene Hanlon of the VA Bedford Healthcare System, corresponding author on the paper. "Most importantly, it gives useful information about those with mild cognitive impairment."



The results appear in the June 1, 2021, issue of the *Journal of Alzheimer's Disease*.

THE DIFFICULTY OF DETECTING ALZHEIMER'S DISEASE

Alzheimer's disease is a progressive neurodegenerative disease. It is the leading cause of dementia. Alzheimer's disease eventually leads to death and no cure currently exists, although medication and supportive treatments can temporarily relieve symptoms.

Alzheimer's is hard to definitively diagnose at an early stage. Because symptoms are often subtle and gradual at first, the ongoing, irreversible damage is not easy to detect until it is more advanced. Alzheimer's can definitively be diagnosed only by analyzing brain tissue after death.


While detecting Alzheimer's disease in a living patient is difficult, imaging technology has made strides toward this goal in recent years. Positron emission tomography (PET) and magnetic resonance imaging (MRI) allow for high resolution images of brain features. These scans can show structural changes related to Alzheimer's, such as twisted fibers within brain cells and amyloid plaques (misfolded proteins that accumulate between brain cells). They can also detect dynamic features such as how brain cells use glucose.

However, imaging scans such as PET and MRI are expensive, technically demanding, and contribute little to early detection. Using light to scan for Alzheimer's disease VA researchers have developed a new technique that uses light to capture chemical and structural information from brain tissue. The technology works by positioning two fiber-optic probes on the surface of a patient's temple. One probe delivers near-infrared light non-invasively and harmlessly into the patient's brain. The other probe collects the light that scatters back.

Near-infrared light—light just at the border of the infrared region of the electromagnetic spectrum—is particularly useful for examining the brain, according to the researchers. It can penetrate deeply into the tissue because the light is only weakly absorbed. This allows for areas of the cerebral to be probed.

Spectroscopy works by measuring how light moves through and bounces off matter. Different substances block light energy to different degrees, causing the light to be absorbed or scattered. The light is affected at different wavelengths of energy depending on what matter it interacts with. These effects are measured by comparing the light from the source optical fiber with the light collected by the detector fiber. The light detected differs from the initial light because of interactions with the brain tissue.

In collaboration with Boston University's Alzheimer's Disease Center, the researchers previously demonstrated the usefulness of this technology using autopsy brain samples from deceased volunteers. Near-infrared spectroscopy was able to distinguish brains confirmed to have Alzheimer's from those without. By comparing the light refraction from healthy tissue to that of diseased brains, the researchers identified refraction characteristics of tissue affected by Alzheimer's disease.



In the new study, the researchers applied this technique to three groups of living volunteers: healthy controls, patients with mild cognitive impairment, and late-stage patients who had an Alzheimer's diagnosis confirmed by autopsy after they died.

They devised a computer algorithm to identify patterns in the spectroscopy data. Through this analysis, the researchers identified two spectral features that signaled the difference between patients with late-stage Alzheimer's disease from controls with normal brain function. A minor adjustment to those two features allowed the researchers to usefully classify patients with mild cognitive impairment according to degree of impairment. The researchers explain that one spectral feature could be significant in identifying the onset of the disease early on, while the other may be more significant later in the progression of Alzheimer's. These findings raise the possibility that the method could detect Alzheimer's disease at an early stage, say the researchers.

This is the first experiment to use such a non-invasive technique to classify a neurodegenerative condition in living patients, according to the researchers.

NEW POSSIBILITIES FOR TRACKING DISEASE PROGRESSION AND TREATMENT

Beyond helping to identify Alzheimer's disease, the new technology could also lead to improved treatments, say the researchers. Large clinical trials are still needed to determine whether spectroscopy readings can track disease progression. If they can, explain the researchers, "this approach could become a safe, non-invasive method for assessing response to treatments in real time."

The new technology could be especially helpful for Veterans. As lead author Dr. Frank Greco explains, "Veterans are more at risk for Alzheimer's disease than the general population. This technique has the potential to help identify what factors may increase that risk." The spectroscopy method has been accepted by the Food and Drug Administration as a protocol for possible clinical use. Before it can be put into practice, clinical trials will need to be conducted. The researchers are working on refining the design of the probe and the specifications of the spectrometer, software, and interpretation of the output toward that end.

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