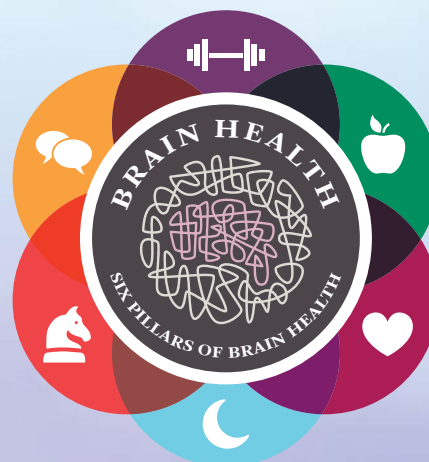




A Brain Health Guide



Visit us at: HealthyBrains.org

YOU ARE YOUR BRAIN



Your brain determines every aspect of your life – your thoughts, emotions, movement and memory. Your brain works tirelessly for you 24 hours a day, 7 days a week. Keeping your brain healthy and sharp is essential to your well-being.

Today we live longer and we live healthier. Our heart, our joints and the rest of our bodies can outlive our brain. In other words, our life span may be longer than our brain span. Brain disorders such as Alzheimer's, Parkinson's and stroke all become more common as we age. Maintaining brain health can help to preserve memory and lower risk for brain disease.

Your lifestyle has a profound impact on your brain health. Unlike aging and genetics, you have control of your lifestyle choices: what you eat and drink, how much exercise and sleep you get, the way you socialize and deal

with stress, the hobbies you develop and the medications you take to control your blood pressure or diabetes. All these decisions are critically important to helping you create a brain span that matches your life span. Learning, study, social connectedness, rest and relaxation contribute to cerebral reserve and help us thwart the effects of brain aging.

We are proud to present Cleveland Clinic Lou Ruvo Center for Brain Health's Brain Health Guide. This guide provides a road map for your journey to brain health. Where supportive evidence is available, recommendations are based on the most current clinical, epidemiological and nutritional data. All recommendations are likely to evolve as scientific evidence accumulates over time.

Read this guide and visit our website at healthybrains.org for a free brain health self-assessment. Learn about the six pillars of brain health. Understand how to protect, maintain and boost your brain health.

Read on, stay healthy, stay sharp!

A handwritten signature in black ink, appearing to read 'Jeff Cummings'.

Jeffrey Cummings, MD, ScD

Director

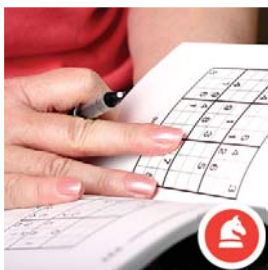
Cleveland Clinic Lou Ruvo Center for Brain Health

[About Cleveland Clinic Lou Ruvo Center for Brain Health](#)

Cleveland Clinic Lou Ruvo Center for Brain Health provides state-of-the-art care for cognitive disorders and for the family members of those who suffer from them. The physicians and staff at the Lou Ruvo Center for Brain Health are devoted to excellent patient care, support of caregivers and development of new treatments in clinical trials. The center offers a patient-focused multidisciplinary team approach to diagnosis and treatment, providing patients a complete continuum of care and integrated research opportunities. The facility, designed by architect Frank Gehry, includes clinical resources, advanced brain imaging, physical therapy, occupational therapy, clinical trials and the Keep Memory Alive Event Center. For more information, please visit clevelandclinic.org/brainhealth.



Physical Exercise



Mental Fitness



Food & Nutrition

The Six Pillars of Brain Health



Social Interaction



Sleep & Relaxation



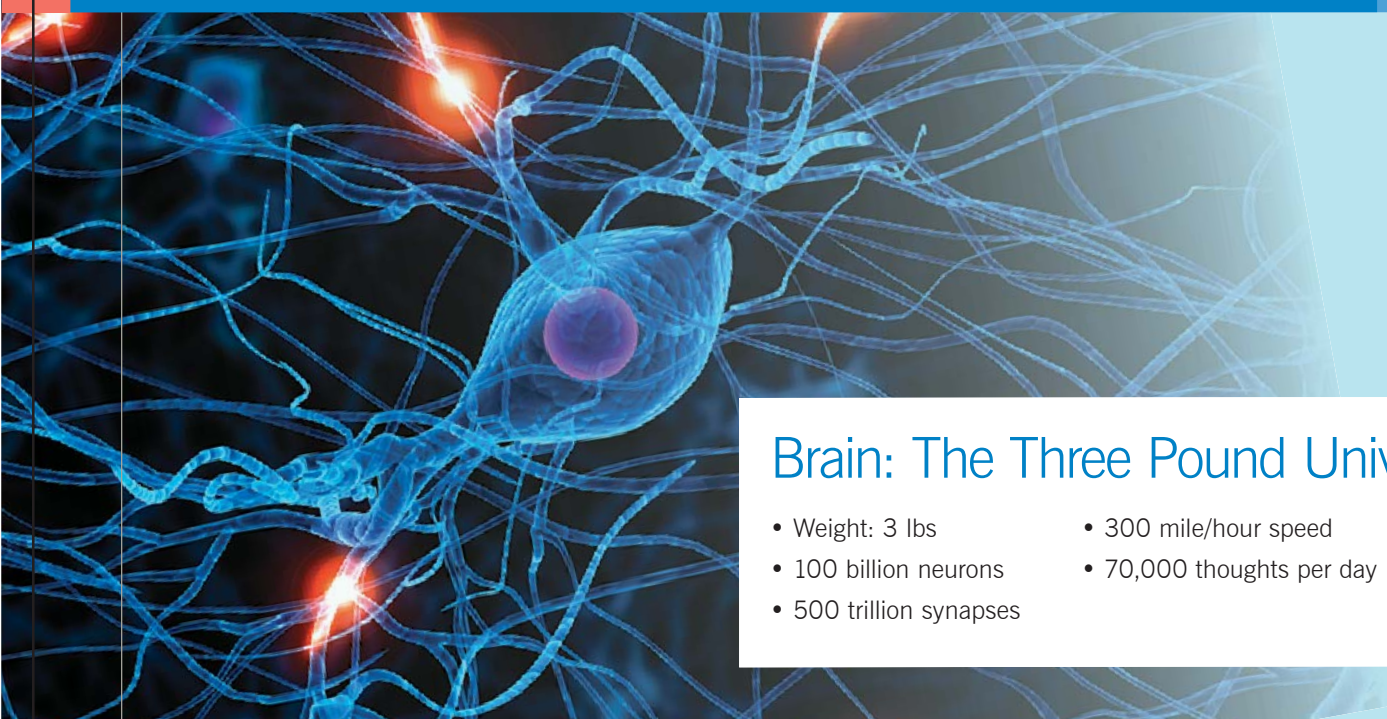
Medical Health

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BRAIN FACTS

"The chief function of the body is to carry the brain around." — Thomas Edison



Brain: The Three Pound Universe

- Weight: 3 lbs
- 100 billion neurons
- 500 trillion synapses
- 300 mile/hour speed
- 70,000 thoughts per day



It's a workhorse

The brain works 24 hours a day, 7 days a week. Even when you sleep, it doesn't.



It's powerful

The brain generates enough electricity to power a light bulb. It is the most powerful supercomputer ever created.



It gets better with use

When you learn something new, the structure of your brain changes. It continues to grow and change throughout life. The more you use it, the better it gets.



It's amazing

The brain creates thoughts, drives emotions, stores memories, and controls your movement and behavior.



It's busy

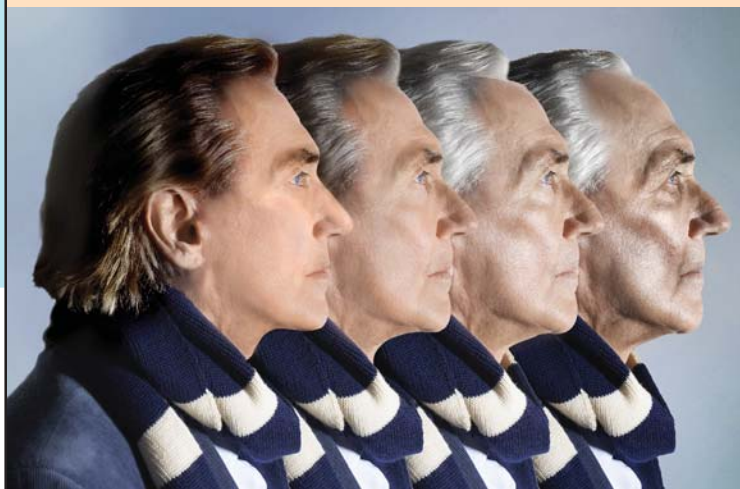
Whenever you dream, think, see or move, tiny chemical and electrical signals race along billions of "highways" between neurons. In fact, neurons create and send more messages than all of the phones in the world.



It's resilient

Due to its "neuroplasticity," the brain is able to adapt and respond to changes and compensate for injuries and diseases. Neuroplasticity allows your brain to be jump-started, fine-tuned and remodeled throughout your adult life.

"Age is an issue of mind over matter. If you don't mind, it does not matter." — Mark Twain



**The brain cannot be transplanted.
The memories you want are
your own.**

Aging by the Numbers (USA)

46 million

Americans 65 and older in 2016

98 million

Americans 65 and older in 2060

600,000

Americans will be 100 or older by 2060

24 percent

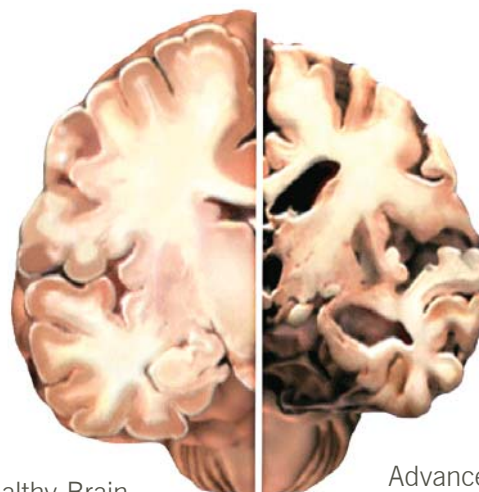
Americans will be older than 65 by 2060

Your Brain: It's Aging

Your brain ages just like the rest of your body: it shrinks in size, slows down in speed, and becomes less able to adapt to change. As the years go on, your brain becomes more susceptible to oxidative stress and more vulnerable to brain diseases such as Alzheimer's and Parkinson's.

The aging brain may account for the "senior moment": forgetting names or misplacing keys. However, getting older doesn't have to mean you're destined for a life of lost car keys.

Advanced age and family history do increase your risk, but so do other factors such as diabetes, hypertension, obesity, high cholesterol, smoking, head trauma, stress, and lack of physical and mental activities. Your lifestyle plays a significant role in your brain health. You can manage the risk and take control to stay sharp and keep memory alive well into your golden years.



Healthy Brain

Advanced
Alzheimer's

Image provided by Alzheimer's Association alz.org

Americans with Alzheimer's disease

5.4 Million Americans with Alzheimer's

5.2 Million people are age 65 and older

200,000 are under age 65 (younger-onset AD)



PHYSICAL EXERCISE



Your Body: Get Moving

- Walking
- Gardening
- Playing sports
- Yoga

Keep Track and Monitor

- Use a fitness tracker
- Track your progress
- Monitor your heart rate
- Aim for 10,000 steps

What's good for your heart is good for your brain

People who exercise regularly may have a lower risk of developing Alzheimer's. Exercise improves blood flow and memory; it stimulates chemical changes in the brain that enhance learning, mood and thinking. Building muscles, staying flexible and practicing balance can improve posture and reduce the risk of falls. Exercise also helps to reduce stress and improve sleep quality, both of which are important to your brain health.



“The only way you can hurt your body is if you don’t use it.” — Jack LaLanne

Pump Up Your Heart

Your target heart rate range for aerobic exercise of moderate intensity should be:

Age	Heart rate range (beats per minute)
70	75-128
50	85-145
30	95-162



Just Get Started

Even if you have never exercised, any physical activity is better than none at all.

Experts recommend you exercise using a combination aerobic, strength, flexibility and balance training as detailed below. As you can see from the example workout schedule, you should alternate activity so you do not work the same muscle groups two days in a row. Consult your doctor before beginning an exercise program, start slowly and gradually build frequency and duration.

For additional tips, exercises and more, visit the National Institute on Aging’s Go4Life website: <https://go4life.nia.nih.gov/>

Aerobic

- 5 days a week
- 30 minutes a day of moderate intensity
- Moderate intensity means you can talk but not sing while exercising.
- Aim for your target heart rate (see box above)
- Walk, hike, bike, swim, dance, or just move

Strength

- 2 days a week
- 1 set per muscle group, with 8-12 repetitions per set
- Exercise all major muscle groups with a 2-day minimum rest in between.
- Squats, lunges, planks, bicep curls, tricep press-down, shoulder press, etc.

Flexibility

- 3-5 days a week
- 10 minutes each session
- Hold each stretch 30 to 90 seconds
- Stretch muscles through a full range of motion
- Tai Chi, yoga, and stretching

Balance

- 2-3 days a week
- Sit to stand
- Stand with feet touching side by side
- Stand heel to toe
- Walk backwards and sideways
- Walk on heels and toes
- Stand on one leg
- Yoga or Tai Chi class

Example Weekly Workout Schedule

Monday



Walk



Weights



Stretch

Tuesday



Swim



Balance

Wednesday

Rest

Thursday



Bike



Weights



Stretch

Friday



Dance



Balance

Saturday



Hike



Balance



Stretch

Sunday

Rest



MENTAL FITNESS



Your Mind: Use It or Lose It

Mental exercise is just as critical as physical exercise in keeping your brain fit and healthy. Mental exercises may improve your brain's functioning and promote new brain cell growth, which could decrease your likelihood of developing dementia. As with muscles, you have to use your brain or you lose it.

Build your brain reserve

You have something called "brain reserve," which helps your brain adapt and respond to changes and resist damage. Your brain reserve begins to develop in childhood and gets stronger as you move through adulthood. People who continue to learn, embrace new activities, and develop new skills and interests are building and improving their brain reserve.



“Every man can, if he so desires, become the sculptor of his own brain.” — Santiago Ramón y Cajal

Play

Do crossword puzzles, play chess, card games or online games. They stimulate the brain to produce new neurons and form new connections.

Playing electronic “brain games” can help improve your reaction time and problem-solving ability. It may also boost your attention span and help maintain your brain health.



Learn

Take up a new hobby or skill. Study a new language, learn a musical instrument or take woodworking classes. If you are right-handed, try using your left hand more often. Novel activities help your brain form new cellular connections and strengthen connections that already exist.

Study

Get educated. It can substantially increase your ability to fight off mental decline. The same is true of working at a challenging job. So go back to school, take classes, get a degree. You're never too old to learn and your brain will thank you in the long run.



Eat Smart, Think Better

You are what you eat. As you grow older, your brain is exposed to more harmful stress due to lifestyle and environmental factors, resulting in a process called oxidation, which damages brain cells. Rust on the handlebars of a bike or a partially eaten apple gives you an idea of the kind of damage oxidation can cause to your brain. Food rich in antioxidants can help fend off the harmful effects of oxidation in your brain.

The Mediterranean Way

Research shows that a Mediterranean-style diet rich in fish, whole grains, green leafy vegetables, olives and nuts helps maintain brain health and may reduce the risk of Alzheimer's disease. Cook and eat fresh food, savor the taste, enjoy dining with family and friends. A Mediterranean regimen is more than just a diet. It's a lifestyle, a way of living well.



Load your plate with fruits and vegetables.

Spinach, kale, broccoli and other leafy green vegetables are rich in many brain-loving nutrients. Blueberries, raspberries and blackberries are packed with antioxidants; they can potentially slow aging in the brain and elsewhere. Eat some every day.



Don't forget fish.

Fish is a great source of omega-3, the type of fatty acid your body can't produce, and it's good for your brain. At least twice a week, eat five ounces of omega-3-rich fish, such as salmon, cod, haddock, tuna or halibut. Fish isn't your thing? Try walnuts, flaxseeds or soybeans instead.



Eat eggs in moderation.

The protein and vitamins B, D and E in eggs and egg yolks may help to improve memory. You can reap the benefits of these vitamins while keeping your cholesterol to a minimum by mixing whole eggs with egg whites to round out your omelet or scrambled eggs.



Eat plenty of whole grains.

Whole grains — such as oats, barley and quinoa — are rich in many of the B vitamins that work to reduce inflammation of the brain.

The potential benefits of supplements

A combination of vitamins C (500 mg) and E (400 international units) have shown to be a potential benefit to brain health. Fish oil supplements rich in DHA (up to 1,000 mg per day) are a good alternative for non-fish lovers.



While these foods, drinks and supplements have been identified as having potential benefits for brain health, these benefits have not yet been scientifically proven.



Enjoy dark chocolate.

Dark chocolate contains flavonoids, which are strong antioxidants. They potentially improve blood flow to the brain and reduce inflammation. Unsweetened cocoa powder offers the greatest benefit, followed by dark chocolate with at least 72 percent cocoa solids.



Grab a cup of coffee or tea.

Coffee, one of the world's most popular beverages, has been shown to improve memory and potentially decrease your risk of dementia. Up to three cups of black coffee a day are recommended. Black and green teas contain brain-boosting antioxidants; give your tea plenty of time to steep before you drink to get the maximum benefit your brain deserves.



Spice up your life.

Many herbs and spices — such as turmeric, cinnamon and ginger — are packed with antioxidants that may decrease harmful inflammation in the brain and elsewhere. The strong flavors and the bright, intense colors are clues to the benefits hiding inside your spice cabinet.



Toast to your good health.

Drink red wine in moderation. Resveratrol, found in red wine and the skin of red grapes, is a potent antioxidant. Resveratrol can possibly reduce cell damage associated with aging and may protect against the formation of damaging plaques in the brain. Stick to the maximum recommended daily amounts of one glass for women and two for men. Not a wine drinker? Enjoy red grape juice.



SOCIAL INTERACTION



Stay Connected

Leading an active social life can protect you against memory loss. Spending time with others, engaging in stimulating conversation, and staying in touch and connected with family and friends are good for your brain health.

A rich social network provides sources of support, reduces stress, combats depression and enhances intellectual stimulation. Studies have shown that those with the most social interaction within their community experience the slowest rate of memory decline. Happy marriages or long-term relationships and having a purpose in life have shown significant protective effects against age-related cognitive impairment.



“If you haven’t learned the meaning of friendship, you really haven’t learned anything.” — Muhammad Ali

Keep in touch with family, maintain old friendships and work on new relationships. Here’s how:

Branch out

Shared hobbies are a great way to meet like-minded people. Get active in sports or cultural activities. Volunteer or join clubs. You’ll be surprised at how easy it is to talk to others in a relaxed setting that you both enjoy.

Be interested

When you begin a friendship with someone, show a genuine interest in learning about the person and his or her interests.

Treasure your loved ones

It can be exciting to form new friendships, but remember to cherish the friends you already have by spending time with them.



Live with purpose

A life with purpose has been shown to reduce the risk of Alzheimer’s. Volunteer, get involved, worship, help others.



The Power of Pets

People aren’t the only source of loving relationships. Animals have proven to be just as good for our brain health. If you can take on the responsibility, consider adopting a pet.

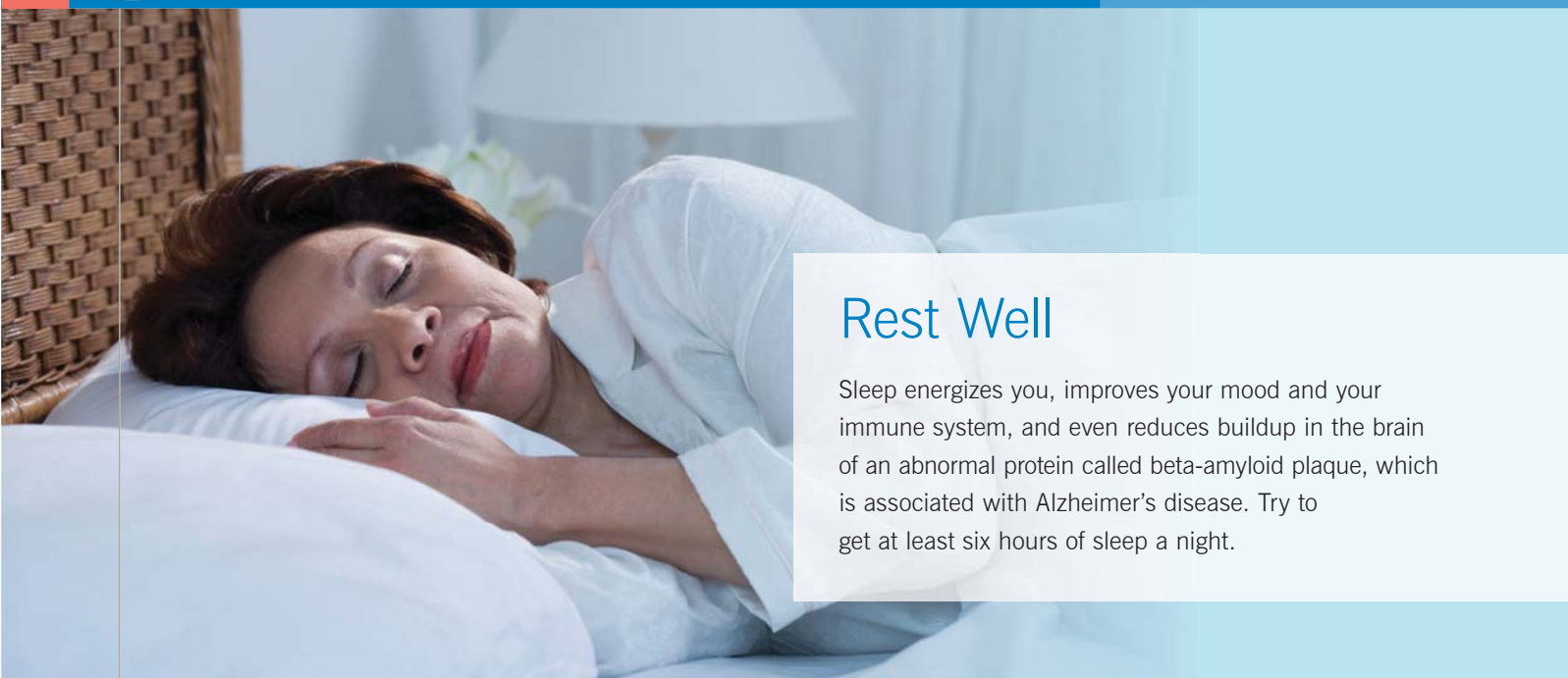
Pets ...

- Calm us down
- Boost our immunity
- Improve our heart health
- Keep us moving
- Enhance our social life

Jordan, our Cleveland Clinic Lou Ruvo Center for Brain Health “pet therapist”: the greeter, the icebreaker, the elevator ride guide, the makes-you-feel-good companion



SLEEP & RELAXATION



Rest Well

Sleep energizes you, improves your mood and your immune system, and even reduces buildup in the brain of an abnormal protein called beta-amyloid plaque, which is associated with Alzheimer's disease. Try to get at least six hours of sleep a night.

Keys to a good night's sleep



Get moving.

Exercise regularly. It makes it easier to get to sleep and improves the quality of your sleep.



Get some rays.

Exposure to sunlight in the morning regulates your sleep/wake cycles.



Keep the weight down.

Sleep affects weight, and weight affects sleep. Insufficient sleep is a risk factor for overeating, while sufficient sleep helps to modulate your food intake.



Make it private.

Make your bedroom a sanctuary. Keep it cool and comfortable. Darken your room with heavy shades and curtains or wear an eye mask to bed.



Ditch the electronics.

Clear your bedroom of TVs, computers and other electronics. These gadgets emit blue light, which can disrupt the body's natural urge to sleep.



Trash the tobacco.

Smokers spend less time in deep sleep and more time in light sleep. They go through nicotine withdrawal throughout the entire night, which further disrupts their sleep.



Stick to a routine.

Develop a relaxing bedtime ritual that you perform every night before bed. Also, try to keep to the same sleep and wake time every night and morning — even on the weekends.

“Sleep is that golden chain that ties health and our bodies together.” — Thomas Dekker

Manage Stress

Stress is a given, and you will always have stress in your life. The question is not really whether you have stress, but rather, whether you’re riding the waves or they’re beating you up. Your own strategies for managing stress make a big difference in the health of your brain.

How to de-stress

- **Practice saying “no”** to requests to take on projects you’d prefer to avoid.
- **Focus on the present.** Try not to worry about what may never happen or what’s already in the past.
- **Keep a list of what’s bothering you** and schedule five minutes a day to review the list.
- **Give your brain a 10-minute break** each day by sitting in a quiet place and focusing on your breathing.
- **Use imagery.** Consider placing a photo of your favorite spot where you can easily see it. Whenever you feel stressed, you could look at that photo, imagining for a moment how it feels, looks, sounds, and even smells to be there.
- **Think positively.** When you find yourself in a stressful situation, tell yourself: I can do this. I can figure this out. I’m going to be okay.
- **Allow events to unfold naturally.** This mindset may help to reduce the anxiety that comes with high (sometimes unrealistic) expectations.
- **Focus on the specific problem at hand** to protect yourself from making it into a bigger issue than it actually is.



Meditation and Brain Health

Meditation is good for your brain health. Research shows that regular meditation helps keep your brain happier and healthier, hopefully for years and years to come.

“Practice makes progress; perfection is the enemy of progress.” — Roxanne B Sukol MD



MEDICAL HEALTH

A variety of medical conditions are strongly linked to the decline of brain function. Hypertension, diabetes, obesity, depression, head trauma, higher cholesterol and smoking all increase the risk of dementia. Keep your blood pressure and weight at healthy levels, take medication as prescribed, cut down salt and sugar, keep active and stay socially connected and positive. All of this can help you stay sharp, smart, and increase the vitality and quality of life as you enter your golden years.

RISK FACTORS

KEEP IT IN CHECK



Hypertension

High blood pressure can cause structural damage in the brain, which later can develop into mental decline.

- Cut down on salt (less than one teaspoon a day).
- Check your blood pressure regularly.
- Keep active.
- Maintain a healthy weight.
- Take your medication.
- Aim to keep blood pressure under 120/80 mmHg.



Diabetes / Obesity

Overweight people are more likely to develop diabetes, and diabetics have a much higher risk of getting dementia.

- Avoid white sugar, white flour and hydrogenated fats.
- Eat more fiber.
- Eat some protein with every meal.
- Control portion size.
- Exercise for at least 30 minutes 5 times a week.

“How come every other organ in your body can get sick and you get sympathy, except the brain?”— Ruby Wax

RISK FACTORS

KEEP IT IN CHECK



High Cholesterol

High cholesterol increases the risk of developing dementia.

- Take cholesterol-lowering medications when prescribed.
- Control other risk factors like hypertension, diabetes, and obesity as advised by your doctor.



Head Injury

Research has shown a connection between moderate or severe brain injury and the risk of dementia or Alzheimer's disease.

- Protect yourself from falls.
- Prevent injury from vehicle crashes by wearing your seat belt.
- Wear a helmet when biking or playing sports.



Depression

Depression is associated with increased risk for Alzheimer's disease.

- Stay socially connected.
- Seek medical treatment.



Smoking

Heavy smokers have more than double the risk of non-smokers in developing Alzheimer's disease.

- Quit.
- Cut down with a goal of quitting.
- Seek medical treatment or group support.



HealthyBrains.org is an innovative website and mobile app designed by Cleveland Clinic to engage, educate and empower all who are eager to maximize their brain health, minimize their risk of brain disorders and participate in the discovery of new treatments that may prevent, treat, and cure Alzheimer's, Parkinson's and multiple sclerosis.



How Does It Work?

Signing up is completely voluntary. Use a computer, tablet, or smartphone to:

- Browse the HealthyBrains.org website
- Download the HealthyBrains app
- Register for a free, online self-administered brain checkup

Signing up for a free brain checkup does not enroll you in any other research initiatives, but you can indicate an interest in clinical trials.



What is HealthyBrains.org?

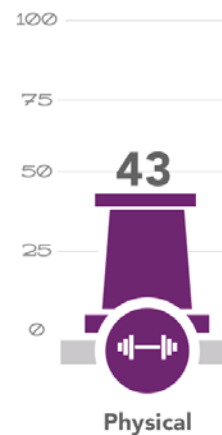
It's a tool designed to engage, educate and empower all who are eager to maximize brain health, minimize risk of brain disorders and participate in the discovery of new treatments for Alzheimer's, Parkinson's and multiple sclerosis

On the HealthyBrains.org website or app, you can:

- Take a free self-administered brain checkup
- Get your Brain Health Index (BHI) score and report
- Use your personal dashboard to track progress and get tips
- Test your memory as often as you'd like
- Elect to receive news trends in brain health
- Choose to learn about possible clinical trials participation

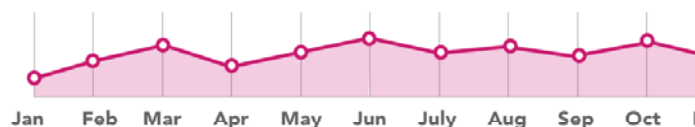


Brain Health Index (BHI) & 6 Pillars of Brain Health



? What is BHI

BHI History



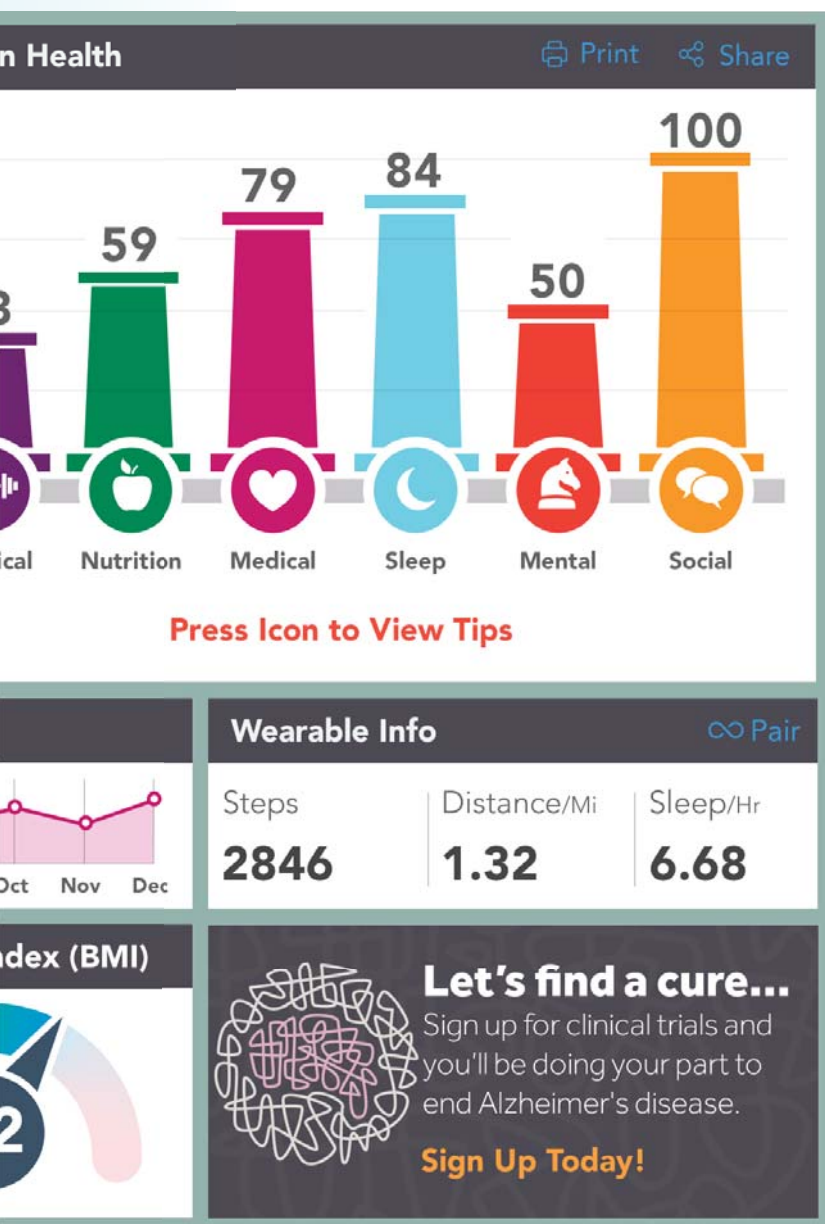
My Memory



Body Mass Index



Know your Brain Health



Brain Health Index (BHI) Score



Get Informed

- Access up-to-date scientific information and resources
- Provide your email to receive current news, articles and recommendations
- Stay informed on brain health news and community events



Join Our Community

- Become a citizen scientist
- Learn about and access clinical trials
- Join the HealthyBrains community of researchers, doctors, caregivers and people just like you
- Together we will reduce the risk, advance science and find cures for brain diseases

Leave a legacy. Keep Memory Alive.



Want to Learn More?

HealthyBrains.org/hbg
healthybrains@ccf.org

Get a FREE
brain checkup

HealthyBrains.org/hbg

RESOURCES

Many resources are available to help you learn and do more to maintain the health of your brain. Here are just a few recommended by Cleveland Clinic Lou Ruvo Center for Brain Health.

Websites

AARP Brain Health Center

aarp.org/health/brain-health/

Brain health material spanning brain games, exercises, lifestyle, diet choices and more.

Administration on Aging (AOA) Resource Centers

acl.gov/Get_Help/Funded_Resource_Centers/AoA.aspx

Resource centers providing information and services for older adults, including the National Alzheimer's Call Center.

Alzheimer's Association

alz.org

A resource and education center for Alzheimer's disease and dementia.

Alzheimer's Drug Discovery Foundation

alzdiscovery.org/cognitive-vitality

Resources on prevention, health management and nutritional supplements that improve brain health.

Alzheimer's Foundation of America

alzfdn.org

Resources on prevention, early detection and brain health.

American Brain Foundation

americanbrainfoundation.org

A resource center for brain diseases.

Center for Disease Control and Prevention

cdc.gov/aging/pdf/2013-healthy-brain-initiative.pdf

The public health road map for state and national partnerships: Healthy Brain Initiative.

National Institute on Aging Alzheimer's Disease Education and Referral Center

nia.nih.gov/alzheimers

Alzheimer's related news, publications and current clinical trials.

NIH SeniorHealth

nihseniorhealth.gov

Health and wellness information for older adults.

See especially the Memory and Mental Health sections.

Cleveland Clinic Sites

Cleveland Clinic Lou Ruvo Center for Brain Health

clevelandclinic.org/brainhealth

Learn about brain diseases, treatments and clinical trials.

Cleveland Clinic Wellness Institute

my.clevelandclinic.org/wellness

Programs to prevent illness and foster health through nutrition, exercise and stress management.

Keep Memory Alive

keepmemoryalive.org/socialservices

Increases awareness and raises funds for the research and treatment of brain disorders and sponsors educational programs at Cleveland Clinic Lou Ruvo Center for Brain Health in Las Vegas.

Healthy Brains by Cleveland Clinic

HealthyBrains.org/hbg

An interactive platform that provides unique brain health assessment tools and much more.

Products

Cleveland Clinic Shop Wellness Store

clevelandclinicwellness.com/Pages/CCWDdepartments.aspx

A variety of products for a brain-healthy lifestyle.

Contact Us

Cleveland Clinic Lou Ruvo Center for Brain Health

888 West Bonneville Avenue

Las Vegas, NV 89106

clevelandclinic.org/brainhealth

keepmemoryalive.org

<https://healthybrains.org/hbg>



For information on brain health and clinical trials, please contact healthybrains@ccf.org or **855.LOU.RUVO (855.568.7886)**.

Want to receive daily health tips via email?

Learn more at clevelandclinicwellness.com.