



*A Practical Guide to Achieving & Maintaining*

# COGNITIVE VITALITY WITH AGING

Cognition is the mental process of knowing and thinking. Cognitive vitality refers to maintaining a strong and active cognitive ability. It results from a combination of reserve brain capacity, acquired knowledge, and the ability to protect against brain injury. People with high cognitive vitality remain intellectually sharp as they age. For older people, it has a tremendous impact on the quality of life and can even be the difference between dependent and independent living.



Alzheimer's  
**Drug Discovery**  
Foundation



Cognitive  
Vitality.org

# INTRODUCTION

Cognitive aging is the term used to describe changes in memory, learning, and other mental processes associated with aging. These changes are usually mild and do not impair a person's ability to function on a daily basis. In some older people, such as those who suffer from Alzheimer's disease, cognitive impairment affects quality of life and daily function.

The good news is we can prevent cognitive impairment and protect brain health through lifestyle interventions and effective management of chronic medical conditions. Being mentally, physically, and socially active—at work and in retirement—are keys to successful aging. As a public charity dedicated to the prevention and treatment of Alzheimer's disease and cognitive aging, the Alzheimer's Drug Discovery Foundation (ADDF) developed this guide to provide adults of all ages with practical, scientifically based strategies to achieve and maintain cognitive vitality.

# THE AGING BRAIN

Neurons are the cells our brains use to access an old memory, perceive the colors of a sunset, and decide to reach for a glass of water. As the brain ages, the rate at which our neurons receive and process information slows. The brain's "processing speed" particularly affects fluid intelligence (the ability to manipulate information) by slowing down our learning, recall, and multitasking skills.

Cognitive aging does have advantages, however. Crystallized intelligence (the total knowledge gained over time) increases with age, allowing older adults to reflect and ponder situations more effectively, to take a broader view, and to make decisions with less information. We sometimes call this "wisdom." Vocabulary, stored experience, and special expertise are examples of crystallized intelligence that contribute to wisdom.

Memory lapses and slow retrieval of information are a normal part of the aging process and vary from person to person. Older adults are likely to have trouble recalling common items such as names, appointments, location of objects, telephone numbers, and words. Individuals experiencing normal age-related memory loss soon retrieve what they are having difficulty recalling.

Contrary to popular belief, our neurons do not die off as we age. In fact, when stimulated, the older brain is capable of neurogenesis—the process of making new neurons.

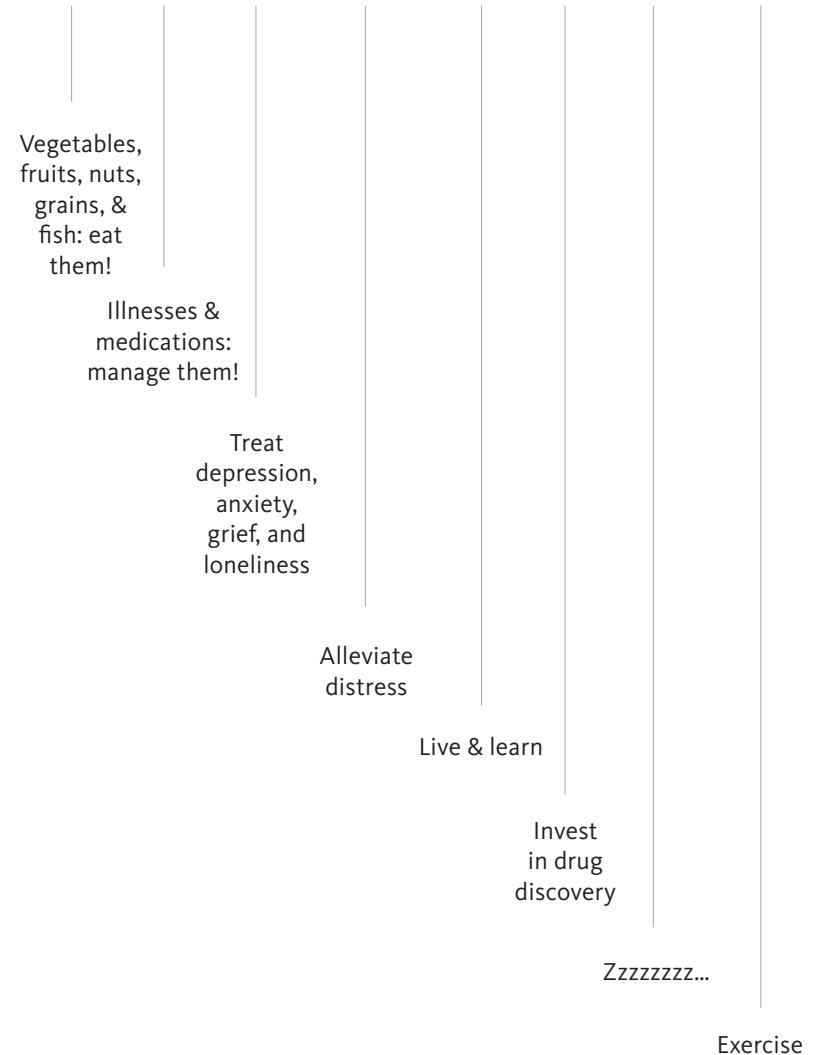
# EIGHT ACTIONS THAT PROMOTE COGNITIVE VITALITY

Vitality is the state of being strong and active. The key to cognitive health during aging is to protect the neurons from damage and to promote their vitality. The eight actions described on the following pages—based on scientific research—promote cognitive vitality. When practiced over time, they will help people of all ages prevent the decreases in cognition that are a normal part of the aging process and may ultimately lower the risk of dementia.

It is never too early to take concrete steps to maintain cognitive health. Cognitive aging begins in your 20s, and many of the greatest risk factors for Alzheimer's disease are conditions that occur in mid-life.

*"Aging is not 'lost youth' but a new stage of opportunity and strength."*  
—Betty Friedan, Writer

# VITALIZE



# VITALIZE

## VEGETABLES, FRUITS, NUTS, GRAINS AND FISH—EAT THEM!

Studies show that diets low in calories and high in vegetables and healthy fats may slow cognitive decline. Stick to diets that contain plenty of leafy greens and other colorful vegetables, berries, fish, nuts, whole grains, legumes, poultry, olive oil, and moderate amounts of wine.

***Nutrition Note: When choosing fruits think 'bright is best'—try fruits such as berries, apples, oranges, and grapes. When choosing vegetables think 'deep greens are delight'—try vegetables such as spinach, kale, and broccoli. Green leafy vegetables and berries have particularly been linked to brain health.***

Green leafy vegetables, dairy products, lean meats, whole grains, eggs, and legumes contain B vitamins like niacin and folic acid. B vitamins may help control inflammation in the brain and may also play a role in the generation of new neurons.

Fish contain the dietary omega-3 fatty acids DHA and EPA. Omega-3 fatty acids may decrease inflammation, increase the generation of new neurons, and increase the fluidity of neural cell membranes. They may also enhance memory and learning by protecting and boosting our neurons' ability to communicate with each other. DHA makes up 97% of omega-3 fatty acids in the brain, and DHA supplements have been shown to slow cognitive decline in clinical trials. Pure DHA supplements are commercially available.

Look for foods rich with B vitamins and omega-3 fatty acids rather than reaching for supplements, most of which have failed to help people in clinical trials. Although supplements might help people with very low levels, foods contain a richer source of diverse brain-healthy nutrients like flavonoids, carotenoids, and vitamins.

Excessive alcohol intake (e.g., more than 2 drinks per day) causes cognitive impairment and increases the risk of dementia. However, moderate levels of alcohol such as wine (two drinks per day for men, one drink per day for women) might benefit the brain. How alcohol can benefit the aging brain is currently unknown, although it may increase levels of HDL, the “good cholesterol,” or decrease inflammation.

### **Fish containing the most Omega-3 DHA**

Anchovy, bluefish, herring, mackerel, sablefish, salmon, sardines, lake trout, tuna, and whitefish

### **Other Omega-3 Rich Foods**

Flax seeds and flax seed oil, canola oil, walnuts, Brazilian nuts, seaweed, green leafy vegetables, tofu, and other forms of soybean

# VITALIZE

## ILLNESSES AND MEDICATIONS (MANAGE THEM!)

It is critical for middle-aged and older individuals to manage medical illnesses associated with diminished cognitive function. Learn all you can about your health and medical conditions. Most importantly, see your doctor(s) on a regular basis, take prescribed medications, eat healthy, and exercise regularly.

Certain conditions such as hypertension, diabetes, and sleep apnea can be associated with cognitive decline and dementia. Indeed, all the risk factors that we typically think of for heart disease are also thought to be risk factors for cognitive decline and dementia. The list below contains conditions that can increase the risk of dementia.

### Medical Risk Factors for Cognitive Decline and Dementia

- Depression
- Diabetes
- Elevated cholesterol
- Environmental exposure to toxins, particularly lead
- Head trauma
- Heart disease
- Hypertension
- Obesity
- Sensory (vision or hearing) problems
- Sleep disorders including sleep apnea
- Transitory ischemic attacks (“mini-strokes”)
- Vitamin B12 deficiency

# VITALIZE

## TREAT DEPRESSION, ANXIETY, GRIEF AND LONELINESS

Depression, anxiety, and grief are very common in older adults, yet they often remain undiagnosed. They may cause cognitive impairment, such as memory loss and difficulty paying attention. Fortunately, today these conditions are very treatable with medications, psychotherapy, and other behavioral therapies. Seek help if you suffer from depression, anxiety, or grief.

Adults of all ages should limit the number of hours they spend alone and socially isolated. Isolated and mentally passive activities, such as watching television, have been linked with poorer performance on measures of cognitive function. Instead, participate in group activities that provide opportunities for social interaction. Work, volunteering, and social networks are important to cognitive health, especially in old age. Engage in mentally stimulating activities to improve cognitive vitality.

Generativity is the concern for establishing and guiding the next generation. It is central to the mental health of older adults. Generative activities include teaching, mentoring, social activism, and grandparenting. Find an activity that fulfills the desire to feel needed and connected to society and family.

*“I read a story once of a group of Jews who were escaping the Nazis. They were walking over a mountain, and they carried with them the sick and the old and the children. A lot of old people fell by the wayside and said, ‘I’m a burden; go on without me.’ They were told, ‘The Mothers need respite, so instead of just sitting there and dying, would you take the babies and walk as far as you can?’ Once the old people got the babies close to their bosom and started walking, they all went over the mountain. They had a reason to live.”*

— Ruby Dee, Actress

# VITALIZE

## ALLEVIATE DISTRESS

Stress is everywhere—distress is our reaction to stress. Prolonged distress can harm your brain and cause fatigue, disturbed sleep, poor concentration, and memory lapses. It affects everyone differently, depending on past experiences and coping techniques.

The “distress reaction” is the body’s natural response to internal and external pressures. When in distress, the body secretes stress hormones, tenses muscles, elevates the heart rate, and increases blood pressure. Chronically high-levels of stress hormones can suppress the immune system and kill brain cells. Older adults with a high level of psychological distress have twice the risk of cognitive impairment.

Finding ways to cope successfully with stress is critical to avoiding and preventing distress and to our physical and cognitive health. Coping takes effort, but can be learned.

*“The greatest weapon against stress is our ability to choose one thought over another.”*

—**William James, philosopher**

## Coping methods to handle distress

- Regularly practice relaxation techniques such as mindfulness meditation
- Exercise regularly to get your blood moving and release endorphins
- Take responsibility for developing a way to cope
- Seek advice from friends, family, or counselors
- Express your feelings privately
- Find a lesson in the situation
- Take a few deep breaths
- Listen to some music
- Have a cup of tea

## Meditation Guidance

There is no single right way to meditate, but one easy place to begin is with a breath-counting meditation. Find a quiet place where you will not be disturbed by anyone or anything. Simply sit on a chair or on the floor. Breathe naturally, and notice the breath come in and out through your nose. Count one on your in breath, two on your out breath, and so on up to ten. Then start back over at one. When thoughts creep up—and they will—simply notice them, then come back to your breath. If you are new to meditation, start with 5 minutes. Later you can build up to 10 or 20 minutes. The important thing is not how long you can meditate in one sitting. The important thing is to make a regular routine of your meditation exercise. There are many great resources to help you meditate, including books, websites, and mobile apps.

# VITALIZE

## LIVE AND LEARN

Stimulate your brain throughout life by engaging socially and intellectually. A rich and stimulating work and social environment helps maintain cognitive function. This should be an important consideration for a person thinking about retirement. In fact, we strongly recommend planning your retirement—and we don't mean that financially. Be open to alternative ideas and ways of retiring such as volunteering, working part-time, or discovering a new career path. Ask yourself, "What am I going to do with the rest of my life?"

*"The Man who works and is never bored is never old. Work and interest in worthwhile things are the best remedy for age. Each day I am reborn. Each day I must begin again."*

—Pablo Casals, Musician

Studies demonstrate that higher levels of education and the ability to speak multiple languages is associated with cognitive health later in life. It's never too late to acquire extra cognitive reserve through education. Enroll in adult education courses, sign up for free online classes, engage in intellectual stimulating activities, learn to play an instrument, read books, or learn a new language to promote cognitive vitality.

"Brain training" activities such as crossword puzzles, memory exercises, computer games, and computer based programs may promote cognitive health. However, the benefits of "brain training" to cognitive health are still very controversial.

The opportunities to continue to live and learn throughout life are abundant.

# VITALIZE

## INVEST IN DRUG DISCOVERY

Effective drugs are our best hope for preventing and treating Alzheimer's disease. Since 1998, the Alzheimer's Drug Discovery Foundation (ADDF) has been on a mission to find and advance promising new ideas for drugs. We have awarded more than \$80 million to fund over 500 Alzheimer's drug discovery programs and clinical trials in 18 countries. And we are the only charity solely devoted to this mission. With your help, we can conquer this disease.

Visit [AlzDiscovery.org](https://www.alzdiscovery.org) for more information on the progress of drug discovery research that we are funding and ways to donate.

# VITALIZE

ZZZZZZZZ....

Getting a good night's sleep is essential to cognitive health and function even with aging. The average individual needs seven to eight hours of sleep per night. Here are a few tips to improve the quality of your sleep:

- Maintain a regular bed and wake time schedule, even during the weekends
- Establish a bedtime routine, such as taking a hot bath, reading, or listening to soothing music
- Use the bedroom only for sleep and sex
- Eat at least two to three hours before bedtime
- Avoid exercising at least three hours before bedtime
- Do not over-use sleeping pills (these can impair the quality of your sleep and sometimes cognition)
- Do not induce sleep with alcohol intoxication, particularly if you suffer from restless legs syndrome
- Work with your doctor to treat sleep-disordered breathing like sleep apnea

*"A man at ninety years old was asked to what he attributed his longevity. "I reckon," he said, with a twinkle in his eye, "it's because most nights I went to bed and slept when I should have sat up and worried."*

— **Dorothea Kent, Writer**

# VITALIZE

## EXERCISE

Physical activity increases blood flow to the brain and stimulates the proteins and molecules that keep our neurons healthy and strong. Exercise has also been shown to improve cognition, prevent or delay dementia, reduce stress and depression, and improve mood. To maintain cognitive vitality, adults are recommended to engage in moderate-intensity aerobic exercise for at least 150 minutes per week (i.e., 30 minutes of exercise, five days per week). Physical exercise consists of aerobic activity, strength training, and flexibility. All forms of exercise are important with age.

The following exercises are fun and effective ways to stay active:

### **Aerobic Training**

Aerobics  
Aqua Aerobics  
Bicycling  
Brisk walking  
Climbing stairs or hills  
Dancing  
Hiking  
Jogging  
Martial arts  
Racquet sports  
Skiing  
Swimming  
Yard work

### **Flexibility/Balance**

Dancing  
Pilates  
Tai Chi  
Yoga

### **Strength Training**

Lifting weights  
Martial arts  
Pilates  
Yoga



# COGNITIVE VITALITY AND WOMEN'S HEALTH

## **Women, Menopause, and Memory**

When the ovaries stop producing the hormones estrogen and progesterone, leading to the end of women's periods, women have entered menopause. Menopause generally occurs between the ages of 45 and 55. Aside from the typical hot flashes, women going through menopause may also experience sleep disturbances and depressive symptoms such as increased irritability and anxiety. Menopausal women can feel as if they experience cognitive symptoms such as difficulty paying attention, increased forgetfulness, or difficulty word finding. However, research studies clearly show that menopause is not associated with any permanent cognitive decline that impairs a woman's ability to function.

## **Hormone Replacement Therapy: The role of estrogen**

Some research has shown that estrogen protects neurons from damage and may promote the production of new neurons in the brain. As a result, researchers studied whether menopausal hormone replacement therapy (HRT) would prevent or delay the onset of age-associated memory loss or cognitive impairment and dementia. However, at present, there is no conclusive clinical evidence to support this theory. Furthermore, some studies have found that HRT increases the risk of heart disease, stroke, breast cancer, and even dementia. For these reasons, long-term HRT is not recommended for women to prevent dementia or treat Alzheimer's disease.

# DEMENTIA AND ALZHEIMER'S DISEASE

Dementia is a medical condition characterized by cognitive impairment that involves multiple domains of cognitive function—including memory, language, and abstract thinking—that is severe enough to impair a person's ability to perform their usual everyday tasks. Early stages of dementia can sometimes be difficult to distinguish from normal cognitive aging, but a qualified health professional can help make an accurate diagnosis.

Alzheimer's disease is the most common cause of dementia in older people. It is characterized by progressive cognitive decline caused by the degeneration of neurons and the formation of amyloid plaques and neurofibrillary tangles, both of which are abnormal in the brain. Alzheimer's disease can be diagnosed and managed by a doctor, though current drugs only treat the symptoms of the disease, not its underlying causes.

## **Symptoms of Alzheimer's**

- Changes in mood, behavior, and personality
- Difficulty performing familiar tasks
- Disorientation to time, place, and person
- Loss of interest or lack of initiative
- Memory loss (worsens over time)
- Poor or decreased judgment
- Problems with abstract thinking
- Problems with language

*"There is a fountain of youth: it is your mind, your talents, the creativity you bring to your life and the lives of people you love. When you learn to tap this source, you will truly have defeated age."*

**—Sophia Loren, Actress**

While Alzheimer's disease is the most common cause of dementia, there are many other causes, some of which may be treatable. These include multiple strokes, B12 deficiency, thyroid abnormalities, depression, and the side effects of some medications.

Vascular dementia is the second most common cause of dementia in old age. Many older people have both vascular dementia and Alzheimer's disease. Controlling vascular risk factors such as hypertension, diabetes, and heart disease may delay the onset or slow the progression of dementia.

Since some causes of dementia are potentially reversible or preventable, it is very important to get an early diagnostic evaluation for anyone with significant memory problems in old age.

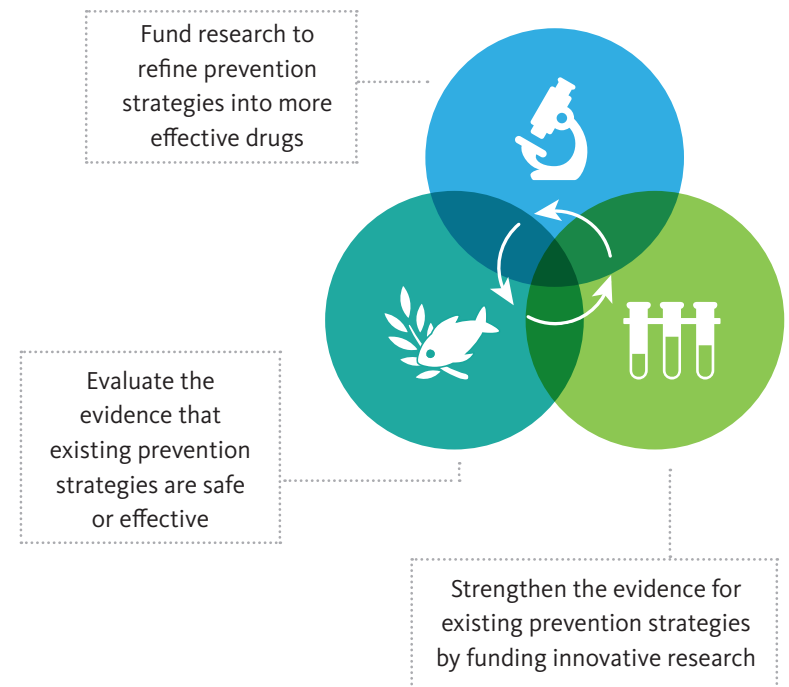
## FACTS ABOUT ALZHEIMER'S DISEASE AND DEMENTIA

- In 2015, an estimated 5 million people suffered from dementia in the US.
- One in three seniors over the age of 80 suffers from Alzheimer's or another dementia.
- The estimated cost for Alzheimer's or other dementias was nearly \$230 billion in 2015.
- The estimated cost for Alzheimer's or other dementias is expected to be more than \$1 trillion by 2050
- One in three seniors who die in a given year have been diagnosed with Alzheimer's or another dementia



The Alzheimer's Drug Discovery Foundation created CognitiveVitality.org to help you separate fact from fiction and make informed choices for your brain health. Developed by our team of scientists led by renowned geriatrician and Alzheimer's expert Howard Fillit, MD, the site features in-depth ratings of the scientific evidence for nutrition, natural products, supplements, drugs and health management, and risks from toxins, drugs, or injuries

Help choose our next topic for analysis at **CognitiveVitality.org**.





## Alzheimer's Drug Discovery Foundation

ADDF is the only public charity whose sole mission is to accelerate the discovery and development of drugs to prevent, treat and cure Alzheimer's disease and cognitive aging. We use a venture philanthropy investment model to bridge the global funding gap between basic research and later-stage development, recycling any return on investment to support new research.

The only way we can end the nightmare of Alzheimer's disease, is to collectively support scientists in their research efforts to develop new drugs. We encourage you to partner with us to conquer the disease. **To make a donation, please visit our website at [www.AlzDiscovery.org](http://www.AlzDiscovery.org).**

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