

# Orange County Vital Aging Program

## *Maintaining Brain Health*



  
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# Maintaining Brain Health

For the aging population, maintaining cognitive and physical vitality is the key to high quality of life. It is also a prudent strategy for avoiding unsustainable economic burdens on our public healthcare system.

Although more comprehensive research is needed, current clinical and epidemiologic studies provide solid guidance on how to protect your brain. Adopting daily strategies that reduce your risks for multiple medical conditions will help you maintain your cognitive and physical vitality as you age.

This short guide provides a roadmap to maintaining brain health and aging with vitality. It is divided into two sections:

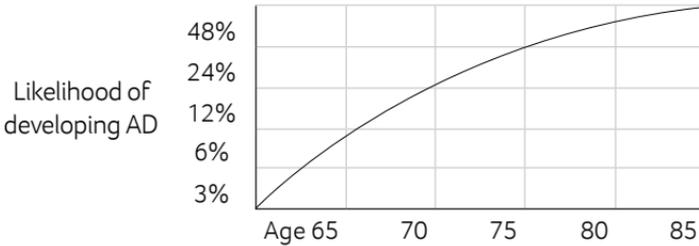
- Identifying Your Risks
- Managing Your Risks

Being aware of your risks and discussing a risk management strategy with your physician are two good places to start. Implementing your risk reduction strategy on a daily basis will optimize your chances of aging with cognitive vitality.

## Identify Your Risks

The first step in maintaining your brain health is to know your risk factors for diseases and conditions known to impair brain health – namely Alzheimer’s disease and related disorders. Having certain risk factors does not mean that you will definitely develop a cognition-impairing disease, but does mean that you have a higher probability of doing so.

For Alzheimer’s disease (AD), age is by far the greatest risk factor. Most individuals with the disease are 65 or older, and the likelihood of developing AD doubles about every 5 years after age 65. While the risk is low at age 65, in the 2% to 3% range, it reaches nearly 50% by age 85.



Another important risk factor for AD is family history. Research has shown higher risk among those with a first-degree relative with AD. A first-degree relative is a mother, father, brother, sister, son or daughter. The risk increases if more than one family member has AD.

Despite the fact that certain risk factors, such as age and family history, cannot be changed, there are many risk factors that you can identify and manage by choosing a healthy lifestyle and using appropriate risk-reducing strategies.

Modifiable risk factors include but are not limited to:

### Stroke

Stroke increases an individual’s risk of developing vascular dementia by 6-10 times. Consequently, managing risk factors for stroke and maintaining cardiovascular health with proper blood flow to the brain are vitally important.

## **Diabetes**

Diabetes increases the risk for stroke, heart disease and hypertension, all conditions that elevate the risk of vascular dementia. Additionally, diabetes also increases risk for AD and impairs cognitive function in those who have AD. Given these inter-relationships, controlling diabetes through proper monitoring and therapy is particularly important to maintaining a healthy brain.

## **Heart Diseases**

Heart diseases, including heart valve diseases, coronary artery disease and atrial fibrillation, reduce blood flow to the brain. Therefore, poorly controlled heart diseases can lead to large or small strokes anywhere in the brain. Given what we know about the correlation between stroke and risk for dementia, it is clear that proper diet and physical exercise may be as good for your brain as we know them to be for your heart.

## **High Cholesterol**

High cholesterol increases the production of beta amyloid, one of the hallmark proteins of AD, and doubles the risk of the disease. Clearly, managing your cholesterol is an important strategy for brain health.

## **High Blood Pressure**

High blood pressure is a major risk for vascular dementia. Since vascular dementia is the second leading cause of significant cognitive impairment, you should work with your physician to manage your blood pressure and keep it at or below 120/80, as recommended by the American Heart Association.

## **Head Injury**

Among individuals with a genetic disposition for Alzheimer's, head injuries with loss of consciousness increase the risk of the disease tenfold. A head injury, with or without loss of consciousness, increases the risk for seizures, which can increase the risk for cognitive impairment and/or dementia. So wear a helmet when needed and protect your brain from unnecessary head trauma.



Additional risks include:

- Obesity
- Severe estrogen deficiency
- Severe testosterone deficiency
- Certain cancer treatments
- Alcohol or chemical abuse
- Regular tobacco use now or in the past
- Unhealthy diet
- Depression
- Social isolation
- Lack of mental and physical exercise

All of these risk factors are within your realm of control. They all have immediate, detrimental side effects about which you may be already aware. But now that you know they can harm your brain health as well, you have additional motivation to manage these risks out of your life.

## Manage Your Risks

In the last decade, a wealth of research has emerged that identifies risks for Alzheimer's disease (AD) and suggests ways to reduce those risks. Recently, a panel appointed by the National Institute of Health reviewed the evidence and urged researchers to develop more rigorous studies that would strengthen the evidence for risk-reduction strategies. While more rigorous studies will be welcomed, the previous research has already identified several viable strategies that could benefit cognitive health and reduce other disabling conditions, such as heart disease, stroke, and diabetes, all of which interfere with successful aging.



It is important to work with your physician to establish your overall health baseline and monitor it regularly. This involves an annual health exam plus recommended screenings for at-risk individuals, such as blood pressure, fasting glucose and cholesterol, plus an eye exam, and yearly memory assessment after age 50 or younger if cognitive impairment is a concern.

Also, if you are a Medicare recipient, be aware of an important requirement under the Patient Protection and Affordable Care Act. Beginning on January 1, 2011, physicians performing routine wellness exams must assess cognition and identify any signs of impairment. Be sure to communicate with your physician to ensure that this is a part of your annual physical.

## **Maintain Healthy Weight**

Central or abdominal obesity is considered particularly hazardous as we age. Both weight gain and central obesity after age 65 year increase the risk for Alzheimer's disease (AD) and vascular dementia (VD). Obesity also increases the risk for hypertension, coronary heart disease, stroke, gallstones, and kidney stones.

Another condition frequently associated with obesity is Metabolic Syndrome, a clustering of obesity with other vascular risk factors, including high blood pressure, high cholesterol, and high blood sugar. Metabolic syndrome is a risk factor for AD, diabetes, stroke, heart disease and high blood pressure.

Exercise and proper diet can reduce the chance of becoming overweight or obese and reduce the risk of metabolic syndrome, AD and VD, as well as cardiovascular and cerebrovascular disease.

## **Prevent Stroke**

Stroke increases an individual's risk of developing vascular dementia by 6-10 times, and elevates the risk for Alzheimer's disease. Small strokes, which often go unnoticed, begin to accumulate after age 50 when one or more vascular risk factors are present. These risk factors include high blood pressure, being overweight or obese, diabetes, heart disease, and lack of regular cardiovascular exercise (at least 3 times weekly for about 45 minutes). By controlling existing heart diseases and optimizing cardiovascular health, stroke is preventable.

## **Manage Diabetes**

Diabetes increases the risk for stroke, heart disease, and hypertension, all of which increase the risk of vascular dementia (VD). Diabetes also increases the risk for Alzheimer's disease (AD). Proper diabetes treatment that keeps the hemoglobin A1c level below 7% has been shown to prevent diabetes-related cognitive impairment and reduce risk for AD and VD.

## **Manage Heart Disease**

Coronary artery disease, valvular heart disease, atrial fibrillation and other arrhythmias, and congestive heart disease, are all risk factors for vascular dementia (VD) and Alzheimer's disease (AD). Heart disease is often preventable through proper control of risk factors, which in turn, can eliminate or minimize this risk of developing AD or VD.

## Manage High Cholesterol

High cholesterol increases the production of beta amyloid, one of the hallmarks of Alzheimer's, and doubles risk for the disease. High cholesterol during midlife (40-64 years old) also increases the risk of developing vascular dementia after about 20 years. The American Heart Association recommends that total cholesterol be maintained at below 200 mg/dL with LDL cholesterol under 100 mg/dL.

Risk Levels for Heart Disease

Total Cholesterol

Total Cholesterol	Risk Level
Less than 200 mg/dL	Desirable
200-239 mg/dL	Borderline-High Risk
240 mg/dL and over	High Risk

LDL (bad) Cholesterol

LDL Cholesterol	Risk Level
Less than 100 mg/dL	Optimal
100 to 129 mg/dL	Near Optimal/Above Optimal
130 to 159 mg/dL	Borderline High
160 to 189 mg/dL	High
190 mg/dL and above	Very High

## Manage High Blood Pressure

High blood pressure is a major risk factor for Alzheimer's disease (AD) and stroke. High blood pressure during midlife (40-64 years old) increases the risk for developing dementia, in general, during later life. The use of medication to control high blood pressure reduces the risk of developing AD by 8% per year prior to age 75 and by 4% per year after age 75. The American Heart Association recommends that blood pressure be kept near 120/80 mmHg.

Blood Pressure Category	Systolic(mm Hg)		Diastolic(mm Hg)
Normal	less than 120	and	less than 80
Pre-hypertension	120-139	or	80-89
High Stage 1	140-159	or	90-99
High Stage 2	160 or higher	or	100 or higher

## **Prevent Head Injury**

A strong link between serious head injury and future risk of Alzheimer's disease (AD) has been reported. Head injury with loss of consciousness in individuals with a genetic disposition to AD (the apolipoprotein E4 gene) increases the risk of the disease tenfold. It is important to protect your head by using your seat belt, wearing your helmet when participating in sports, and making homes fall-proof as appropriate.

## **Healthy Diet**

Maintaining a healthy diet keeps your weight under control, but also appears to reduce the risk for various medical conditions, including diseases that affect cognition. A brain healthy diet includes:

- Lots of fruits and vegetables\*
- Fish or poultry instead of red meat
- Whole-grain breads and cereals
- Alternate sources of proteins, such as beans, nuts and seeds
- More olive oil and less saturated fat

\*The World Health Organization recommends at least 400g (3-4 servings) of fruits and vegetables per day to prevent chronic diseases.

The Mediterranean diet, an eating pattern typical of the countries along the Mediterranean Sea that is high in good fats and plant foods and low in saturated fats, has received media attention related to its benefits for the brain. Benefits include reduced risk of Mild Cognitive Impairment (MCI), reduced risk of MCI progressing to AD, and slowing of cognitive decline. The Mediterranean diet appears to protect the brain by helping maintain blood flow and heart health.

## **Physical Exercise**

Regular physical exercise has many known benefits, including improving heart conditions, strengthening bones and muscles, and reducing stress. It also appears to reduce the risk of various conditions that affect cognition, including Alzheimer's disease (AD).

*"Regular physical exercise is probably the best means we have of preventing Alzheimer's disease today, better than medications, better than intellectual activity, better than supplements and diet."*

by Dr. Ronald Petersen  
Director of the Alzheimer's Research Center  
The Mayo Clinic

Recommended exercises include, but are not limited to, swimming, cycling, jogging, skiing, aerobic dancing, and walking, at least 30–60 minutes several times a week. These exercises increase blood flow to the brain and elevate the level of neurotransmitters or chemicals that are important for protecting the brain and developing new brain cells. Although more research is needed to determine the extent to which physical activity improves memory or slows the progression of cognitive decline, regular exercise is surely important to staying physically and mentally fit.

### **Mental Exercise**

Stimulating your brain with new learning and novel tasks increases your brain activity and builds reserves of brain cells and connections. A small but growing body of research suggests that intentional mental exercise can play a role in keeping your brain healthy. While the majority of studies have focused on healthy adults who are aging normally, some have looked at aging individuals whose mental abilities have been impaired by a medical condition.

Several studies of cognitive exercise, lasting at least 3 months, have shown that regular mental workouts can improve performance of the task that was rehearsed in the workouts. Importantly, solving reading and math problems has also both been shown to help mental function in everyday life. Furthermore, individuals who engage in cognitively stimulating activities more frequently over the course of their lives appear to be more resistant to the effects of Alzheimer's disease (AD) and to dementia in general.

In the case of AD, researchers suggest that mental exercise may reduce the risk by up to 33%. Activities that involve learning something new and then recalling it later are recommended, since they activate the parts of the brain first affected by AD.

To maximize the benefits of mental exercise, it should include activities that continuously challenge your brain to learn new things. Repeating exercises that make you think but not learn may not be as helpful. Suggested activities include:

- Reading and writing
- Crossword puzzles
- Game playing
- Social engagement

## **Other Preventative Strategies**

There are many other strategies you can use to maintain your health and prevent or delay cognitive decline. Some of the most commonly discussed additional strategies in the literature are summarized below.

### **Stay Engaged in Social Activities**

Socializing is a great workout for your brain and may prove to be the most under-rated strategy for maintaining cognitive health. Meeting friends, attending lectures, joining clubs, and building new relationships are all beneficial strategies for keeping your brain vital. Just like mental and physical exercise, social stimulation encourages your brain to be active and to build more brain connections.

### **Supplements (Vitamins C and E, Ginko Biloba)**

Recommendations about using supplements are not robustly supported in the scientific literature. In fact, there are a couple of major challenges in evaluating the preventive effects of supplement therapy, including the fact that supplement manufacturers are not required to prove that their particular supplements work in humans. Consequently, there is little research evaluating the effect of supplements on cognition, dementia and Alzheimer's disease. Also, the particular form of a commercial supplement may not be the same form that is found in foods. As such, studies showing benefits based on the vitamin content of a particular diet, where the vitamins are consumed through eating various foods, may not translate directly into benefits where a similar vitamin dose is consumed through supplements.

Currently there is no consensus on positive or negative effects of vitamin C and vitamin E supplements. Therefore, if you wish to incorporate a nutritional supplement strategy into your preventative routine, it should be done in conjunction with consultation from a nutritional expert and your physician.

Finally, there have been many anecdotal reports regarding the benefits of ginko biloba on cognition, however, a recent large controlled clinical trial demonstrated that ginko biloba was not effective in preventing or delaying the onset of dementia in persons 75 and older. While ginko biloba is unlikely to be harmful, it is also unlikely to improve cognition for those who are already noting a decline.

## **About This Pamphlet**

If you wish to adopt a health maintenance strategy for your brain, you should consult your physician to make sure the intended strategy is appropriate for you, and that there are no interactions with your medical conditions or your medications. The information provided herein is not intended to replace direct contact with a medical professional, and does not replace your current medical treatments or your physician's recommendations.

The recommendations about maintaining brain health in this pamphlet are based on a review of peer-reviewed medical literature and evidence-based medicine.

## **Evidence Based Medicine (EBM)**

Evidence based medicine is the term used to describe the level of research on which a recommendation has been made. The highest level of evidence is characterized by thorough clinical substantiation and the lowest is characterized by scant scientific support. All of the risks and recommendations referenced in this pamphlet are based on well-substantiated medical research and high levels of EBM.

## **About the Orange County Vital Aging Program (OCVA)**

The OCVA program is a multi-disciplinary program involving our local residents, community-based organizations, and various physician and industry partners. The goal of the OCVA Program is to help you maintain a healthy brain for life. This can best be achieved with education, risk factor management, prevention, and timely intervention against cognitive decline. Find more information about the program, assess your memory, and plan a strategy to manage risks to your cognitive health at [www.OCVitalAging.org](http://www.OCVitalAging.org).

The program is made possible by a generous grant to the Hoag Neurosciences Institute from the UniHealth Foundation, a non-profit philanthropic organization whose mission is to support and facilitate activities that significantly improve the health and well being of individuals and communities within its service area.

**Orange County Vital Aging Program**

**[www.OCVitalAging.org](http://www.OCVitalAging.org)**

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