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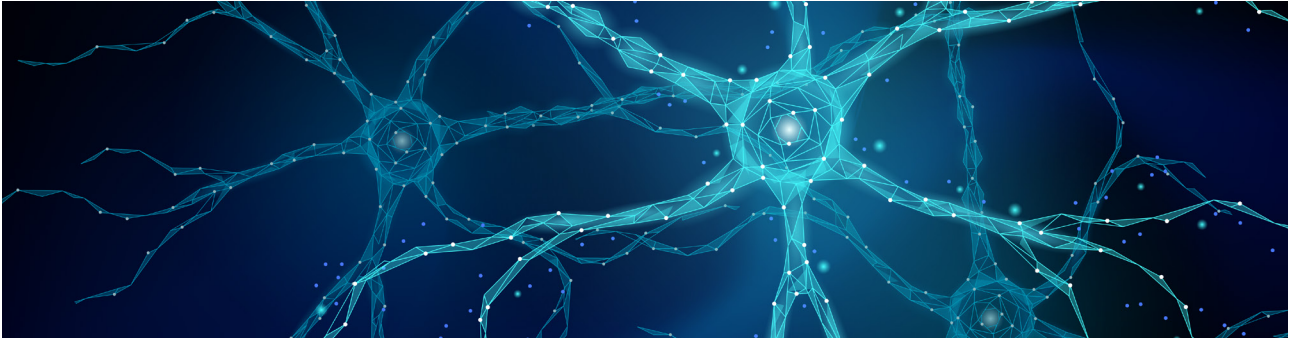


# IMPROVE YOUR BRAIN HEALTH

by HEALTHMEANS

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# WHAT IS BRAIN HEALTH AND WHY SHOULD YOU CARE?

Are you striving to optimize your health to live and enjoy your best life? Then you may want to improve your brain's health and performance. Our focus here is to explore brain health, what it is, why it's important and what you can do to protect your brain and enhance your performance.

## IT IS IMPORTANT TO HAVE A HEALTHY BRAIN.

Your brain is the control center of your body and communicates with your heart and most other abdominal organs via your vagus nerve. Because of this, your brain is involved with movement, coordination, breathing, heart rate, and your five senses. And if that isn't enough, your brain also helps you learn, create, store memories, navigate the world and process external inputs. It controls executive function: a set of skills that includes focus, planning, decision making, working memory, time management and self-control. This is why focusing on good brain health is so important to living your best life!

While your brain may be a small percentage of your total body weight, it uses about 20 percent of all the energy expended by your body. We used to think

the brain ran on carbohydrate-based fuels only, but recent studies show that the brain may run even more efficiently when fueled by ketones resulting from fat metabolism [1,2]. This state is called ketosis. One way to improve your brain health is to make sure you have metabolic flexibility, meaning your body will effortlessly switch back and forth between using carbs or ketones as fuel.

We all know that brain cells die throughout our lives due to injury, aging and various assaults such as infections and toxins. Only recently have we understood that we can grow new brain cells (neurogenesis) and make new neural connections in response to learning and experience (neuroplasticity) throughout our life. These are two exciting and positive new discoveries that should inspire us and give us hope for lifelong brain health. A critical protein that plays a key role in creating the new brain cells is BDNF (brain-derived neurotrophic factor). The good news is that there are many choices within your control that influence the production of BDNF. Exercise is the most powerful of these choices, but diet, lifestyle and supplements like curcumin and omega-3 fatty acids are also helpful to facilitate neurogenesis. This is a powerful and important message!

While we often think about failing cognition as a common symptom and consequence of aging, we now know that it does not have to be, and should not be, considered “normal.” As a matter of fact, there are a variety of factors other than aging that cause cell death or faulty connections between brain cells, which can impact your brain function. Most of these fall into two categories: lack of nutrients or attacks on your brain and body that result in brain inflammation. Providing your brain with the right nutrients, vitamins, minerals and hormones will support neurogenesis and neuroplasticity. But that is not enough.

Minimizing inflammation is also critical. Your brain is protected by a blood-brain barrier, but this barrier can be easily compromised allowing bacteria, viruses, toxins and other inflammatory substances to get into your brain. If infectious organisms or other toxins reach your brain, they can activate special immune cells called microglia. When they are activated, they cause inflammation which leads to the production and accumulation of beta-amyloid and tau protein. The beta-amyloid is a protein fragment that forms plaques between the nerve cells in an attempt to protect the cells from the organisms or toxins. But in the process, it can accumulate so much that it prevents nerve to nerve signaling. Tau proteins may accumulate inside the cells and prevent them from transporting nutrients and other molecules they need for survival. Both of these situations can lead to cell death. What defines Alzheimer’s disease and distinguishes it from other dementias is the presence of these beta amyloid plaques and tau tangles in the brain.

People of any age can experience symptoms of brain fog, memory problems, lack of mental clarity, poor concentration or inability to focus. These symptoms are often referred to as “cognitive decline” and can be an early indication that you

are on the continuum heading toward poor brain health, which can lead to Alzheimer’s Disease, other dementias or mental health issues.

The brain changes that result in dementia often start two or three decades before the first symptoms. Not everyone on this path will experience brain fog or other obvious symptoms, so it is never too early to think about taking steps toward a healthier brain. So, how do you know if you are moving on the path toward an unhealthy brain? Knowing your health status in areas like insulin sensitivity (HbA1c), inflammation (hs-crp, homocysteine), nutrient levels (Vitamin D, hormones) and potential toxins is a good place to start. In fact, expert neuroscientists and physicians recommend that everyone should get a baseline evaluation at midlife to understand their health status and risk of future disease.

Carrying the ApoE4 gene is a risk factor for cognitive decline that you cannot control. However, to improve your brain health, there are so many more risk factors that are under your control and may dampen the genetic influence. These include diet, exercise, brain training, response to stress, sleep, relationships and supplements. It’s important to focus on these foundational issues that impact the overall health of your body.

## **PUT YOUR FOCUS ON FOUR AREAS:**

- Stop any attacks on your brain that lead to inflammation
- Nourish your brain with everything it needs to thrive
- Create an environment for detoxifying and clearing the brain
- Stimulate the growth of new neuronal connections

**TRY THESE STRATEGIES AND TIPS TO PROTECT AND/OR IMPROVE YOUR BRAIN HEALTH AND OPTIMIZE ITS PERFORMANCE**

# **1. DIETARY OPTIONS: MEDITERRANEAN, DASH, MIND AND KETOFLX 12/3**

You probably know that what you eat and drink can affect your heart health, but did you know that it can affect your brain health as well? In fact, what is good for your heart is generally also good for your brain. Great news! Because you eat multiple times a day, you have many opportunities to make choices that keep your brain functioning well.

Before we talk about individual foods that may improve cognitive function, let's look at broader dietary options that support good brain health.

Both a Mediterranean diet and the MIND diet (a combination of the Mediterranean diet and the Dietary Approaches to Stop Hypertension (DASH) diet) are associated with less cognitive decline and a lower risk of Alzheimer's disease [3]. Those who adhere most closely to the Mediterranean diet retain more brain volume and have a reduced risk of major chronic diseases, including Alzheimer's disease [4,5].

What are the foods common to these dietary plans? They all encourage eating fish, lean meats, plentiful fresh produce, olive oil, and high fiber legumes and whole grains (if tolerated), while minimizing salt, sugar and processed foods.

Are you already experiencing brain fog or early cognitive decline? Then you may want to take it one step further and consider the Ketoflex 12/3 food plan. This way of eating, promoted by Dr. Dale Bredesen, reduces inflammation even further and puts your body into mild ketosis allowing your brain and body to burn ketones. You achieve ketosis by eating a colorful plant-rich diet, clean proteins, reducing your carbohydrate intake (like whole grains, legumes and starchy vegetables), increasing healthy fats and incorporating at least a 12 hour fast each night which includes a three-hour fast before bedtime. If you carry an ApoE4 gene, you may want to gradually increase your overnight fast to 14-16 hours or more. As part of a comprehensive personalized approach, the Ketoflex 12/3 food plan has contributed to reversing symptoms of cognitive decline, even early-stage Alzheimer's [6].

Exploring one of these approaches to eating may be a great place to start on your journey to better brain health! Remember, there's not one 'best' diet for everyone – work with your healthcare provider to find the best one for you.

## 2. METABOLIC FLEXIBILITY AND MILD KETOSIS

What is ketosis and why might it be helpful? By achieving a state of mild ketosis, your body and brain become metabolically flexible to burn ketones or glucose as fuel, and this can improve your brain function. It is especially helpful to achieve mild ketosis if you are experiencing any insulin resistance, cognitive decline and if you carry the ApoE4 gene. Look out for the keto flu as you adapt to eating fewer carbohydrates and generating your own endogenous ketones. Keto flu is a cluster of transient symptoms like headaches, nausea, brain fog, fatigue and light-headedness that is often experienced when your body is transitioning to creating endogenous ketones. It is thought to be caused by dehydration and lost minerals. Make sure you ingest plenty of electrolytes to prevent these symptoms while your body transitions to burning fat for fuel instead of carbohydrates. If you experience keto flu symptoms or feel that you need more energy during the adjustment period, you may want to consider using exogenous ketone esters or salts, such as Perfect Keto or KetoneAid brands, to provide your body with fuel. These are available online or at stores like Whole Foods. But remember, the goal is to eventually generate your own endogenous ketones. Keep track of your ketone levels at home by using a blood test like Keto Mojo and Precision Xtra, or a breath test like Biosense.



## 3. RETHINK FAT

Your brain is made up of more than 50% fat, yet for years, you were told to avoid eating fat. Your body needs dietary fat to create phospholipids, which are important nutrients for brain functioning, especially learning and memory. Yes, it's time to rethink eating fat! So, let's dig a little deeper and explore what to eat to make sure you get the fatty acids that your brain needs.



Eating enough fat is important, but the type of fat you eat also matters. For optimal brain health, your body needs the correct balance of omega-3 ALA, EPA and DHA as well as omega-6 linoleic acid. Your body can't produce ALA or linolenic acid, and is not efficient at making EPA and DHA, so look for food or supplement sources of these essential fatty acids. These nutrients are especially important for brain formation and optimal brain functioning because they support neuroplasticity [7] and help you avoid dementia [8,9]. The balance of omega-3 to omega-6 fatty acids in the standard American diet is tipped too far in the direction of omega-6, which tends to be more inflammatory. So, focusing on adding more omega-3 fatty acids in your diet may be helpful. You may also need to add a high-quality supplement to meet your needs for these important nutrients. (Note that some omega-6 fatty acids such as GLA can be anti-inflammatory [10]. (These may be found in borage oil or evening primrose oil.)

So, embrace eating enough good quality fats to give your brain the nutrients and essential fatty acids it needs to function well. What are good quality fats? Some examples include: olives and olive oil, avocados and avocado oil, salmon, nuts and seeds.

## 4. WILD-CAUGHT FATTY FISH



You've probably heard that fish is brain food. In truth, fatty fish is one of the best dietary sources of essential omega-3 fatty acids, contains high quality protein and is associated with a slower rate of cognitive decline [11]. Focus on getting at least two servings of fatty fish per week. Make sure to select wild caught over farm-raised options since they generally have a more favorable fatty acid profile and may contain fewer toxins from feed. And choose mainly from the cold water "SMASH" fish: salmon, mackerel, anchovies, sardines and herring, because they have a shorter lifespan and less time to accumulate mercury which has been linked to memory loss and other health issues. Higher concentrations of mercury have been found in some patients with Alzheimer's disease [12].

## 5. GRASS-FED MEAT

If you choose to eat meat, choose 100% grass-fed for a better fatty acid profile (higher omega-3 to omega-6 ratio, which may be less inflammatory). Meat from animals fed exclusively grass contains two to five times more polyunsaturated omega-3 fatty acids than meat from feedlot animals [13]. Make sure that the animals are not "grain finished" for the most supportive nutrients.



## 6. NUTS AND SEEDS



Enjoy eating nuts and seeds daily on their own or in your smoothies or salads. They contain good quality fats, fiber, magnesium and other nutrients. Nuts such as walnuts are rich in the polyunsaturated fatty acids and contain many other phytochemicals important for minimizing inflammation. They have been found to encourage the growth of new brain cells and improve communication between neurons [14]. If you are following a ketogenic diet and trying to reduce your carbohydrate intake, macadamia nuts or sacha inchi seeds are optimal choices as they are low in carbs.

Flax seeds are a very rich whole-food source of the omega-3 fatty acid ALA. You can get the benefits from the seeds themselves or from flax oil. If you eat the seeds, be sure to grind or mill them to allow for better digestion and absorption of the nutrients.

Chia seeds are also rich in omega-3 and other polyunsaturated fatty acids. A one-ounce serving has five grams of complete protein (contains all the essential amino acids). Proteins are one of the building blocks of neurotransmitters which improve mood and brain functioning.

## 7. PHYTONUTRIENTS

Be sure to eat a large variety of plant foods. These are rich in the phytonutrients such as polyphenols, and have powerful antioxidant and anti-inflammatory effects which support your brain. These compounds reduce your risk for chronic diseases, including Alzheimer's and other dementias [15,16].



Many phytonutrients give plant foods their colors. To make sure you are eating these brain-protective compounds, choose a variety of plant foods in different colors to increase your intake of protective polyphenols and other phytonutrients in your diet.

To include a wide variety of polyphenolic compounds in your diet, eat plant foods in every color. Eat green leafy vegetables like spinach and kale, blueberries, blackberries, strawberries, pumpkin, brussels sprouts and summer squash. These foods contain high levels of flavonols, carotenoids and anthocyanins that may protect against developing Alzheimer's disease [17] or reduce the neurotoxicity of the beta-amyloid in the brain associated with Alzheimer's disease [18]. Include brown plant foods too by eating more mushrooms. They are full of powerful antioxidants like glutathione.

## 8. COLD-PRESSED EXTRA-VIRGIN OLIVE OIL

Perhaps the richest source of polyphenols is freshly cold-pressed extra virgin olive oil which protects your memory and learning ability, and reduces the classic markers of Alzheimer's [19,20,21,22]. Because olive oil is such an important part of the Mediterranean diet, it may be responsible for much of the brain protective effect of that food plan.

When you choose an extra-virgin olive oil, pay attention to the color of the oil (darker is better) and consume as close to the pressing date as possible. Polyphenols are easily oxidized themselves, so protect them in your olive oil by keeping the oil away from light or heat, and storing in a dark bottle.



## 9. EAT TO REDUCE TOXINS

We mentioned earlier how important it is to remove toxins from the body to improve brain health. Eat vegetables from the brassica family to help you detox: broccoli, cauliflower, brussels sprouts and cabbage. Be sure to eat them chopped and raw or lightly steamed to release the most sulforaphane—a potent antioxidant that helps the liver remove toxins [23]. For the highest sulforaphane intake, grow and eat your own broccoli sprouts. Also consider adding lemons, garlic, parsley, cilantro, dandelion greens and supplements like milk thistle and glutathione, which all support your body's ability to detox effectively.

# 10. EAT EGGS

Eating for your brain includes eating more eggs, especially eggs from pasture-raised chickens. There is no reason to fear eating these superfoods, and this includes the yolk! Eggs contain many vitamins and high levels of choline, a precursor to the neurotransmitter acetylcholine, which is critical for learning and memory and can help you sleep better too [24,25]. And remember, eggs aren't just for breakfast—enjoy them all day long.

Note that since eggs are one of the top allergens, you should be mindful of any symptoms like runny nose, congestion, headaches or cramps within 72 hours of eating eggs.



# 11. HYDRATE WITH HEALTHY BEVERAGES

The beverages you drink can be just as important as the foods you eat when it comes to your brain health. Drink a full glass of filtered water when you wake up to replenish the fluids your brain and lymphatic system lost overnight. Even a dehydration loss of less than 1% of your body weight can make a difference in your memory, cognition and ability to detox, [26] so drink clean filtered water frequently throughout the day. Berkey, Aquasana and AquaTru are brands of water filters you may want to consider for your home. Include antioxidant-rich green tea, coffee (just a little, and not too late in the day) or mushroom-infused beverages like Four Sigmatic brand to give you a boost in focus and cognition [27,28,29]. Regularly drinking silicon-rich mineral water can decrease levels of aluminum in your brain [30]. Tart cherry juice and beet juice can help reduce your blood pressure and increase blood flow to your brain [31]. There are lots of ways to drink yourself to brain health!



# 12. INSULIN SENSITIVITY AND OPTIMAL WEIGHT

Maintain an optimal weight with a body mass index (BMI) between 18.5 and 25. To best support your brain, you want to avoid obesity in mid-life and avoid a BMI that is too low late in life [32,33]. Work to improve your fasting blood glucose level to achieve insulin sensitivity [34]. You can do this by exercising more, getting more sleep, limiting simple sugars and eating more soluble fiber, colorful vegetables and even a few pinches of cinnamon. Test your blood glucose levels at home using a Keto Mojo or Precision Extra meter or a continuous glucose monitor (CGM) like the Freestyle Libre. (Note that you will likely need a prescription for a CGM, but you may find companies that will sell directly to consumers.) Avoiding insulin resistance is critical for the growth, health and vitality of your brain cells.

# 13. TIME-RESTRICTED EATING AND LONGER TERM FASTING

Eating less or less often may also be helpful for your brain health and promotes ketone production and metabolic flexibility, which has been linked to improved thinking, learning and memory [35,36]. Eating this way also reduces insulin spikes throughout the day since you are eating less often.



## THERE ARE SEVERAL FASTING OPTIONS TO TRY:

- **Daily time-restricted eating** in which you eat only during an eight-to-12-hour window (example: eat only between 10:00 am and 8:00 pm for a 14-hour fast).
- **Weekly 5:2 fast** in which you eat normally for five days and fast for two days each week. On fasting days, eat only one meal with less than 500 calories for two days each week.
- **Monthly fast-mimicking diet** in which you eat small portions of foods that are balanced for macro- and micronutrients for five days each month. This fools your body into thinking it is fasting. If you don't want to create this menu for yourself, Prolon offers kits containing foods needed for the fast.

Before you try any of these approaches, please consult with your healthcare providers to determine if they are right for you.

# 14. OPTIMIZE YOUR GUT HEALTH, FEED YOUR GUT BACTERIA

We've talked about what you should eat to nourish your body and brain, but did you know you should also take care of your gut health and feed the good organisms that live in your gut? Inflammation and leaky gut often go hand in hand. When you have a leaky gut, undigested food, toxins and other substances that should be eliminated as waste may enter your bloodstream instead, causing inflammation. To reduce inflammation and prevent leaky gut, first identify and eliminate the foods to which you are sensitive. Then eat prebiotic fiber including resistant starch so your gut organisms can thrive and protect your health [37]. They produce short-chain fatty acids like butyrate that keep your gut healthy and may be critical for communication between your gut and your brain [38,39]. Some good foods to include are dandelion greens, garlic, onions, leeks, green bananas, jicama and apples. Resistant starch examples include cooked and cooled sweet potatoes, white potatoes and rice.



# 15. REDUCE UNHEALTHY STRESS

When you experience stress, do you feel disorganized and forget things? This is not uncommon, and if you experience stress over the long term, it can change your brain in ways that affect your mood and memory. Stress can affect you most when it is unpredictable and chronic, with no end in sight. Long-term stress can actually rewire your brain and have a negative effect on memory [40].



So, what can you do to protect yourself from damaging stress? Create routines to control the things that you can control, let go of the things you can't. Yes, we know that's easier said than done! Avoid caffeine and get a good night's sleep. Know your limits and learn to say no to non-essential activities when your responsibilities seem overwhelming. Reach out to loved ones or professionals to get support if you need it.

In addition, can you change your attitude toward stress? Rather than strive for no stress in your life, can you focus on how you respond to stress? Try practicing mindfulness, gratitude or engage in physical activities. To take it to the next level, perhaps explore tools like HeartMath, which measure your heart rate variability (HRV). When your system is relaxed (and not in fight-or-flight mode) the variation between heartbeats is high and this allows you to show more resilience. Lower HRV is associated with worsening depression, anxiety, cardiovascular disease and risk of death. The HeartMath device measures HRV and offers biofeedback to allow you to train your system to relax. When you have optimal heart rate variability you set the stage for better cognitive function [41]. Your brain will thank you for implementing any of these stress-reduction strategies!



## 16. BACOPA MONNIERI

Looking for a rock star supplement to improve your brain function? Try Bacopa monnieri. It has been used by Ayurvedic medical practitioners for years to improve memory and reduce anxiety [42]. It is considered an adaptogenic herb, is a powerful antioxidant and may also reduce inflammation.

## 17. CURCUMIN

Spice up your life while you support your brain! Curcumin is the active component of turmeric which is found in many Eastern curry dishes. It has anti-inflammatory effects, binds beta-amyloid in the brain and improves mild memory problems [43]. You can take curcumin as a supplement or use turmeric in your food. Because curcumin is not well absorbed by itself, eat it with black pepper and a healthy fat, which may increase its bioavailability. Check out 'Golden Milk' recipes for one tasty and healthy way to use turmeric.



# 18. MOVE YOUR BODY

You probably know that being active by exercising or otherwise moving your body is good for your health. But, did you know that movement also protects your brain? Studies indicate that exercise, both aerobic and strength training, might be one of the most effective strategies to prevent cognitive decline and maintain good brain health, including memory and executive functioning. Better leg power reliably predicted both better cognitive testing, greater brain volume and healthier cognition as people aged [44].

Movement which increases your heart rate is helpful in several ways. It increases blood flow which helps with memory and executive functioning, it turns on the genes that increase BDNF which stimulates the growth of new brain cells, and it stimulates glymphatic flow which clears beta-amyloid and other waste from your brain [45,46,47]. There is also growing evidence that resistance or strength training, which helps preserve or build muscle mass, triggers neurobiological processes which preserve your brain and cognition, especially executive functioning [48].

So, make time daily, if possible, to take a walk, go running, hiking or biking, do some gardening, play tennis, dance to your favorite song, take a yoga class, lift weights or use resistance bands to get both aerobic movement and strength training to preserve your muscle mass and protect your brain! Experts recommend at least 20 minutes of exercise per day.

If you're already fit and have limited time to exercise, try adding some running to your daily walk or try high intensity interval training (HIIT). The goal is to push your muscles and cardiovascular system to maximum capacity for short periods. HIIT has been found to improve brain function in older adults, especially in speed processing, memory and executive function [49].

Remember, if you haven't been exercising, consult with your healthcare provider first and start slowly.



# 19. PROVIDE YOUR BRAIN THE HORMONES IT NEEDS



Optimal hormone levels are critical for maintaining cognitive abilities such as memory, thinking, problem solving, spatial ability and even emotion for both men and women. Studies have found that hormonal fluctuations are one of the key factors that lead to defects in cognitive function [50]. Relevant hormones include thyroid, pregnenolone, estradiol, progesterone, testosterone, DHEA, cortisol and vitamin D (actually a hormone!).

In post-menopausal women, there is significant evidence that supports the beneficial effects of transdermal estradiol on cognition and the protective effects regarding Alzheimer's disease [51]. In men, preliminary evidence suggests that testosterone loss may be a risk factor for cognitive decline and dementia in elderly men [52].

Vitamin D, produced by the skin under UV stimulation or ingested from food, is actually a hormone, essential for human health. More and more evidence indicates that low levels of vitamin D may be associated with increased risk of developing age-related cognitive decline, dementia and Alzheimer's. Vitamin D plays a role in neurotransmission, reducing beta-amyloid and Tau accumulation, and taming inflammation, all of which are associated with Alzheimer's [53].

What should you do? Reach out to your healthcare provider and initiate a dialog about optimizing your hormone levels for overall health and more specifically for your brain health.

## 20. ASSURE OXYGENATION ALL DAY, ALL NIGHT



Our brains need adequate oxygen to function properly. Studies indicate that people with sleep apnea—pauses in breathing or reduced oxygen levels during sleep—are more likely to develop cognitive impairment in later years, especially affecting attention and executive functions [54]. Check your oxygen saturation levels using a pulse oximeter or other technological tools such as the Beddr SleepTuner™, Apple watch, Fitbit with SPO2 or Wellue O2 Ring. Your daytime oxygen levels should be between 96-100%, and when you sleep they should be very close to your normal daytime levels. If you find that your oxygen levels drop more than 1-2% at night, explore causes and solutions with your doctor. Your overall health, including your brain health, depends on it!

## 21. IDENTIFY AND ADDRESS HIDDEN OR CHRONIC INFECTIONS

More and more evidence links hidden or chronic infections to the onset and development of poor brain function, including brain fog, poor memory and Alzheimer's disease [55]. Specific infections you might want to explore and address include sinus infections, viral infections like herpes simplex, Candida, Lyme and co-infections, and oral infections like gingivitis. Work with your healthcare team to determine which infections might be relevant for you given your history, lifestyle and symptoms and then work to clear them.

## 22. AVOID AND REMOVE TOXINS

We are exposed to a wide variety of toxins daily! These include: heavy metals like mercury and other inorganic chemicals, glyphosate, pesticides and other organic chemicals, and biotoxins like mycotoxins from mold. They can be found in our food, water, air, cleaning products, cookware, personal care products, on our furniture, carpets and bedding, and even in our mouths if we have mercury dental amalgams.

There is growing evidence that toxins, like mercury, lead, cadmium and aluminum may be associated with increased risk for poor brain health, including cognitive decline and Alzheimer's [56,57].

Did you know that the human body has built-in detoxification mechanisms to identify and clear toxins that might be harmful to its health? Unfortunately, with the quantities of toxins that most of us are exposed to, the detox pathways can become overwhelmed. And some people also have genetics that further reduce their ability to detox.

What can you do about this? Minimize your exposure to toxins as much as possible and support your body's ability to detox.

To minimize toxins, buy organic food as often as possible (consult the Environmental Working Group), drink clean, filtered water, use air purifiers at home, transition to less toxic cleaning and personal care products, use stainless steel cookware, avoid eating larger fish like swordfish and tuna to avoid high mercury intake, work with a biological dentist to safely remove your mercury dental amalgams if you have high mercury levels, check for mold if you have had water damage in your home, and try to minimize incidents of general anesthesia as it can impact your brain function [58].

Improve your ability to detox by supporting your body's efforts to eliminate waste and toxins through urination, bowel movements and sweating. Stay hydrated to flush toxins out of your body, increase sweat by exercising or using an infrared sauna, and be sure to wash up with castile soap to prevent reabsorbing toxins through your skin [59]. Make sure you have enough fiber in your diet to facilitate regular bowel movements and add foods and herbs that support detox pathways (see examples in Tip #9)

# 23. AVOID SUBSTANCES THAT NEGATIVELY IMPACT YOUR BRAIN

In addition to the toxins we've already discussed, there are some commonly used products that can negatively impact your brain. These include tobacco, excessive alcohol and anticholinergic drugs.

While an occasional glass of red wine might offer some health benefits from the phytonutrient resveratrol, excessive alcohol acts as a neurotoxin that damages multiple structures in your brain while also impacting your liver's ability to detox. This damage can lead to brain atrophy, memory loss and sleep interference, especially our ability to reach REM sleep which impacts memory formation and cognition. If you choose to indulge occasionally, choose dry red wine and look for organic, sugar free, low-alcohol options such as Dry Farm Wines.



By now you probably know that smoking is bad for your health – especially for your lungs. However, did you know that it also negatively impacts your brain health? Yes! Nicotine and other toxins found in cigarettes are linked to an increased risk of Alzheimer's disease. They increase oxidative stress in the brain, impact cardiovascular health and hypertension, along with other markers that correlate with poor brain health and increased risk for Alzheimer's [60]. So, if you're still smoking, quit!

Higher cumulative anticholinergic medication use is associated with an increased risk for dementia [61]. So, what are anticholinergic medications? The list includes any drugs that block the neurotransmitter acetylcholine in the central and peripheral nervous system. This impacts the transmission of messages which affects learning and memory. These include some medications for depression, Parkinson disease, schizophrenia and similar disorders, overactive bladder and epilepsy. Common OTC examples include Benadryl, Tylenol PM, Advil PM and Sominex. Work with your healthcare providers to explore options to minimize use of prescription and OTC anticholinergic drugs when possible.

# 24. KEEP YOUR HEART AND ARTERIES HEALTHY

Keep your heart and arteries healthy if you want to reduce your risk for cognitive decline and dementia. Vascular dementia is the second most common form of dementia after Alzheimer's and is caused by decreased blood flow to the brain. Studies indicate that people with better heart health and lower blood pressure have a lower risk for cognitive decline. One study showed that high cardiovascular fitness was associated with a 9.5-year delayed onset of dementia relative to those with lower cardiovascular fitness [62,63].

How can you improve the blood flow to your brain? In addition to the diet and exercise recommendations we've already discussed, you may want to decrease inflammation, manage your stress and optimize your blood pressure. Nitric oxide supports cerebral blood flow, so try adding arugula, beet root or tart cherry juice to your diet [64].

There are other foods that can lower your blood pressure. Consider adding celery, garlic and dark chocolate. Yes, chocolate! High levels of flavonols in dark chocolate allow it to act as a vasodilator that can reduce blood pressure and increase blood flow to the brain. So, enjoy a bit of dark chocolate daily. Just be sure that it is at least 70% cacao, low in sugar and dairy-free. Cacao can be high in cadmium and lead, some make sure to look for a high quality brand such as Endangered Species or Hu. The most effective chocolates are bitter in taste, so learn to savor the bitter notes.



# 25. IMPROVE SLEEP QUALITY AND QUANTITY

One of the most important ways to protect your brain from deterioration is to get enough good quality sleep! Lack of enough good quality sleep is directly correlated to an increased risk of dementia, including Alzheimer's disease [65]. Target seven to eight hours of sleep per night.

Why is sleep so important? At least two critical functions for good brain health happen when you sleep: (1) Your brain processes the information collected during the day and consolidates it to create your memories, and (2) Your brain's glymphatic system works to clear beta-amyloid and other waste products; it is especially efficient during deep sleep and when you sleep on your side [66].

What can you do to improve the quantity and quality of your sleep?

Keep a regular sleep schedule, develop a routine to prepare you for bed and confirm that you don't have sleep apnea. Tips that can help include: Limit caffeine after noon, keep your bedroom dark and cool (65 degrees F recommended), engage in activities that promote stress reduction and relaxation in the evening to prepare yourself for a restful night – perhaps take a hot bath with Epsom salts (magnesium in the salts aid sleep) and lavender essential oil (which may help you relax), meditate or listen to relaxing music.

Reduce exposure to blue light after dark as it impacts the production of melatonin, a necessary hormone for good quality sleep – so put away your electronic devices or wear blue-light-blocking glasses. Another way to improve the quality of your sleep is to get exposure to morning sun – this helps regulate your circadian rhythm and increases the production of melatonin later at night [67].

Consider tools like the Oura ring, Beddr SleepTuner™, Fitbit and Apple watches that can monitor the impact of your efforts to improve your sleep. These will give you information on how long you're sleeping and the amount of deep sleep, REM sleep and your heart rate variability while sleeping.





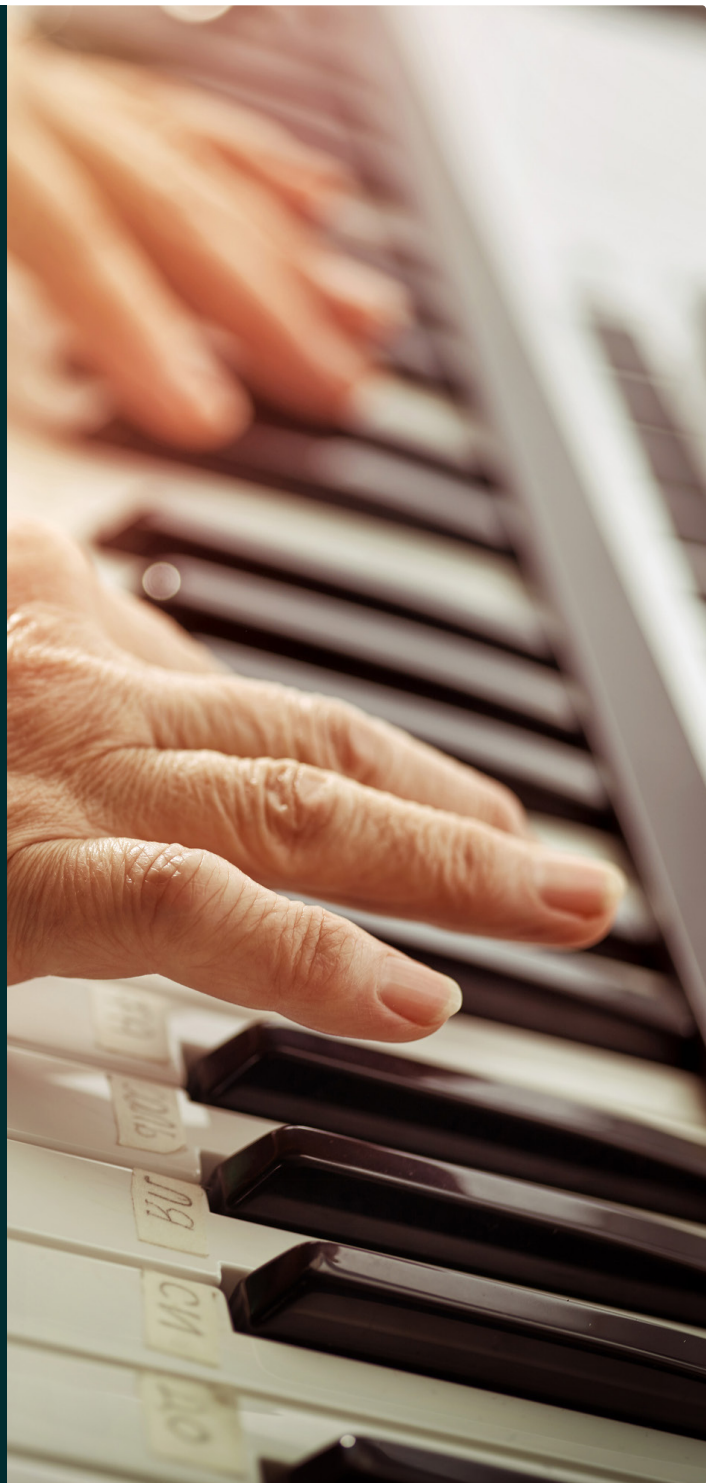
## 26. PROTECT YOUR HEAD

A history of a traumatic brain injury (TBI) can increase your risk for poor brain health. Studies indicate that about 5 percent of all dementia cases may be attributable to a TBI [68]. To minimize your risk for dementia or other brain function issues, protect your head! Take precautions when engaging in sports and other activities to avoid concussions and head injuries. Wear helmets when biking, skiing or engaging in other sports where you might fall or get hit in the head, wear your seatbelt when in the car and avoid situations that put you at risk for falls and other activities that might injure your head.

## 27. FILL AND CHALLENGE YOUR BRAIN

You've heard the saying "Use it or lose it," right? Well, this applies to your brain function as well!

Studies have shown that exercising the brain, learning and education strengthen your brain to improve memory, focus, processing speed and overall functionality [69,70]. Engage in activities that challenge your mind: take a class, learn a new language, learn to play a musical instrument, take a dance class, use your nondominant hand for routine tasks, take a different route when you drive to the store or work and try brain training exercises like BrainHQ or Lumosity. Be creative, find ways to continue to learn and challenge your brain while having fun!



## 28. CONNECT WITH PEOPLE

Build your social networks and nurture your relationships to live a longer, healthier life while decreasing your risk of developing dementia by 46 percent [71,72]. Use online communities, Zoom, Skype and your phone to stay in touch with friends or family and to make new friends. Join a virtual book club, take an online group class in art, music or meditation. Prioritize connecting with people who support you, nurture you and bring you joy!



## 29. FIND YOUR PURPOSE

Yes, finding your purpose can improve the quality of your life! Research shows that people who know their life purpose and why they wake up in the morning live longer, better lives and may also reduce their risk for developing dementia, including Alzheimer's [73]. According to the Blue Zones project, knowing your sense of purpose can increase your life expectancy by seven years. If you already have a passion and purpose, wonderful! If not, think about your values and causes that are important to you and then get involved to make a difference. Perhaps volunteer at your local humane society, mentor or tutor young people online, write poetry or create art that touches people, engage with a nonprofit that supports education, health access or other issues important to you.

# SUMMARY

Because of neurogenesis and neuroplasticity, it's never too late to make positive changes in your habits to optimize brain health and performance. You have it within your power to grow new brain cells and rewire the connections between them. As presented here, there are many factors within your control to improve your brain health today and throughout your life. Minimize inflammation by stopping attacks on your brain and improve detoxification. Be sure to consume all the nutrients essential for your brain. Create an environment that is stimulating for your brain. This will also support a healthy body and heart. Just as it's never too late to make changes to optimize your brain health, it's also never too early, so get started today to live your best life!



**HERE'S  
TO HEALTH.**



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