

The NEURO Plan (Nutrition, Exercise, Unwind, Restore, Optimize)

A Simple Framework for Optimal Brain Health
by Dr. Dean and Dr. Ayesha Sherzai

NUTRITION:

Top Twenty Brain-Nourishing Foods to Increase:

Avocados: This fruit is packed with monounsaturated fats that support brain structure and blood flow.

Beans: Beans are high in antioxidants, phytonutrients, plant protein, iron, and other minerals, and have been shown to increase longevity and reduce the risk of stroke (one of the four most common neurodegenerative diseases that shares risk factors with dementia). Beans can lower cholesterol and regulate blood glucose even many hours after being consumed—hence the phrase, “second meal effect” (where certain foods affect blood sugar and insulin levels during subsequent meals).

Blueberries: In a Harvard longitudinal study conducted on 16,000 nurses, the consumption of berries, especially blueberries and strawberries, was associated with a lower risk of cognitive decline. Specifically, the study suggested that regular consumption of berries delayed cognitive decline by two and a half years.

Broccoli: Rich in lutein and zeaxanthin, carotenoid antioxidants that can cross the blood-brain barrier and reverse damage caused by free radicals and normal aging. A large study at Harvard Medical School of over 13,000 women found that those participants who ate more cruciferous vegetables like broccoli had less age-related memory decline.

Coffee: The caffeine in coffee is an adenosine receptor antagonist, which stimulates the production of acetylcholine, a known neuroprotective agent in the brain. Coffee also contains potent antioxidants in the form of polyphenols and chlorogenic acid.

Dark Chocolate: Dark unprocessed cocoa or cacao nibs, the purest forms of chocolate, are incredible sources of flavanol phytonutrients that have been shown to relax arteries and help supply oxygen and nutrients to the brain. In fact, people who eat dark chocolate have a lower risk of stroke.

Flax Seed: Contains the highest amount of plant-based omega-3 fatty acids that have been shown to decrease inflammation and reduce LDL (“bad”) cholesterol levels. Flax also contains lignans, chemical compounds that protect blood vessels from inflammatory damage.

Herbal Tea: Mint, lemon balm, and hibiscus teas are the three most anti-inflammatory beverages available. Iced herbal tea (with added stevia or erythritol for sweetness) can easily replace sugary drinks in the summer.

Herbs: Fresh or dried herbs like cilantro, dill, rosemary, thyme, oregano, basil, mint, and parsley contain ten times the antioxidants of nuts and berries. Even a small amount boosts your daily antioxidant consumption.

Leafy Greens: A rich source of polyphenols (plant-derived antioxidants that fight free radicals), folic acid, lutein, vitamin E, and beta carotene, all nutrients that are associated with brain health.

Mushrooms: Whether they're fresh, dried, or powdered, mushrooms improve overall immunity and reduce inflammation in the blood vessels of the brain. Cremini mushrooms are an excellent plant source of vitamin B12, which is linked to a lowered risk of Alzheimer's disease.

Nuts: Nuts provide the highest source of healthy unsaturated fats, which have been shown to reduce the risk of Alzheimer's in multiple studies.

Omega-3 Fatty Acids (derived from algae): High-powered, plant-based omega-3s that reduce inflammation and boost the immune system.

Quinoa: One of the most nutrient-rich foods. Quinoa is the only grain that's a complete protein source (most grains lack the amino acids leucine and isoleucine). It also contains ample fiber, vitamin E, and minerals like zinc, phosphorus, and selenium, all essential building blocks for brain cells and their supporting structures.

Seeds (Chia, Sunflower): High in vitamin E and other brain-boosting minerals.

Spices: Spices contain the highest amounts of antioxidants per ounce compared to any other food and are excellent at supporting the brain's innate detox systems. Both spices and herbs like cinnamon, cloves, marjoram, allspice, saffron, nutmeg, tarragon, and others should be a regular part of our diet, not just a once-in-a-while addition.

Sweet Potatoes: Packed with phytonutrients, fiber, vitamins A and C, and minerals, this tuber actually has the ability to regulate blood sugar. Its anti-inflammatory effects have also been documented in numerous studies.

Tea: Green tea contains green tea catechin, another polyphenol that activates toxin-clearing enzymes.

Turmeric: Curcumin, an extract of turmeric, is an antioxidant, anti-inflammatory, and anti-amyloid powerhouse. In studies of both animals and humans, curcumin has been shown to have a direct effect in reducing beta-amyloid.

Whole Grains: Packed with cholesterol-lowering fiber, complex carbohydrates, protein, and B vitamins. The starch in whole grains like oats, buckwheat, millet, teff, sorghum, and amaranth is the most beneficial type of complex carbohydrate: it both feeds good bacteria in the gut and provides an excellent source of sustained energy for the brain.

Top Ten Foods to Reduce or Eliminate:

Processed Foods: Chips, cookies, frozen dinners, and white bread are all high in salt, sugar, and saturated fats that clog the brain's arteries and directly damage brain tissue. Processed oils like canola, and even other "healthy" oils are concentrated sources of fat, which can damage the inner lining of our arteries and cause inflammation.

Processed Meats: Meats like pastrami, salami, bacon, and hot dogs are filled with preservatives, salt, saturated fats and carcinogenic compounds that promote inflammation and damage blood vessels and the supportive structures in the brain.

Red Meat: Farmed or grass-fed beef and wild game meat are high in inflammatory saturated fats. They may cause less inflammation than processed meats, but they still result in considerable damage at the vascular and cellular levels.

Chicken: Chicken is the main source of cholesterol in the standard American diet. Chicken contains three times more fat than protein and is a major contributor to obesity.

Butter and Margarine: High in saturated and trans fats that clog arteries and shrink the brain.

Fried Food and Fast Food: High in trans fats that reduce brain volume, contributing to cognitive decline.

Cheese: High in saturated fat. Damages blood vessels in the brain.

Pastries and Sweets: High in sugar. Cause inflammation and brain burn-out.

Sugary Drinks: The main source of sugar in the standard American diet. Causes inflammation and neuronal damage.

Excessive Alcohol: Alcohol is neurotoxic and directly damages brain cells.

THE MANY NAMES OF SUGAR:

Sugar may be lurking in your favorite foods. Here are some of the many forms to look out for:

- agave syrup
- brown sugar
- corn sweetener
- corn syrup
- dextrose fructose
- fruit juice concentrate
- glucose
- high-fructose corn syrup
- honey
- invert sugar
- lactose
- maltose
- malt syrup
- maple syrup
- molasses
- raw sugar
- sucrose
- sugar

Source: <https://www.nia.nih.gov/health/publication/whats-your-plate/solid-fats-added-sugars>

EXERCISE:

Important Properties of A Successful Exercise Program:

- Convenience: Your program must be easy. If it's too difficult, you'll get discouraged.
- Repeatability: A successful exercise program must be repeatable on a regular basis. Repeatable activities are easy, efficient, and ideally enjoyable.
- Incremental Success: You have to see success in what you're doing. This could be as simple as being able to do nine squats instead of eight, or being able to pedal one minute longer than your baseline.
- Measurable: You should be able to measure how much exercise you've done, and your progress should be visible at all times. You might use a whiteboard in your home, a notebook, or an app on your smartphone.

Work Toward Increasing:

- Taking the stairs
- Moving while watching television
- Walking or riding your bike wherever possible
- Using a stepper while working
- Dancing, doing tai chi, or practicing yoga at home
- Squats or step-ups with a stool while at work or in the living room
- Wall push-ups whenever there is an opportunity
- Hamstring workouts with ankle weights in the kitchen/living room/bedroom
- Sit-ups in bed in the morning

Work Toward Eliminating:

- Long hours of sedentary behavior like sitting at an office desk or in your car
- Watching television without exercising
- Avoiding the stairs
- Days without any form of exercise

Types of Exercise Beneficial For the Brain

Aerobic Exercise

- Choose one of these activities to do on a daily basis.
- Brisk walking
- Stationary bike, reclined or non-reclined

- Jumping jacks
- Stepper
- Stairs
- Dance
- Martial arts (tae kwon do, karate, kickboxing)
- Stepping up and down on a stable stool

Strength Training

- Squats
- Lunges (forward, backward, side to side)
- Leg extensions
- Abdominal crunches
- Planks
- Bicep curls
- Triceps curls
- Shoulder raises
- Push-ups (regular and at the wall)

Balance Training

Below are exercises for balance. Choose one and do it every day. Have a chair next to you if you are just starting out or don't feel steady.

- Heel-to-Toe Walk: Place the heel of your foot in front of the toes of your other foot; both feet should be touching. Walk in a straight line while focusing on a point ahead of you. Do not stare at your feet.
- Single Leg Balance: Stand on one foot using a chair for support. Raise your leg, bringing the knee forward, and hold for 10–12 seconds. Lower your leg and repeat on the other side. For more of a challenge: do the leg raise without holding on to a chair.
- Back Leg Raises: Stand on one foot using a chair for support. Raise your leg, pushing the knee backward, and hold for 10–12 seconds. Lower your leg and repeat on the other side. For more of a challenge: do the leg raise without holding on to a chair.
- Side Leg Raises: Stand on one foot using a chair for support. Raise your leg, extending it sideways, and hold for 10–12 seconds. Bring your leg back to the midline and repeat on the other side. For more of a challenge: do the leg raise without holding on to a chair.
- Yoga: Tree pose is great for strengthening balance. To start, you can practice it with your back to the wall or the side of your body (standing leg) to the wall. As your balance improves, try stepping away from the wall. To further challenge the pose, you can try it with your arms reaching above your head or with your eyes closed. Chair and warrior 2 are other excellent poses for strengthening the leg muscles and core. Be sure to start slow and breathe.
- Tai chi: The Yang short form is best for beginners.

Flexibility Training

Here are the nine main flexibility exercises that you should do regularly throughout the day:

- Neck Stretch: Tilt your head side-to-side and front to back. Follow with gentle neck circles.
- Shoulder and Back Stretch: Interlace your fingers and raise your arms above your head with your palms facing the ceiling. Extend your elbows and press your arms upward.
- Shoulder Rotator Stretch: Bend your right elbow and place your arm behind your back with your palm facing away from you. Holding a towel with your left hand, extend that arm overhead. Slowly bend your left elbow, bringing your left hand toward your right hand. Hold both ends of the towel firmly. As you breathe you may be able to bring the hands closer to each other, which increases the stretch.
- Wrist Stretch: Rotate the wrists in circles (both directions). Extend your arm and use your opposite hand to stretch your fingers both upward and downward.
- Lower Back Stretch: Sit on the ground with your back upright and legs extended in front of you. Slowly hinge at the waist and reach for your toes. Move slowly. Over time your abdomen will get closer to your thighs, and your head will get closer to your knees.
- Hip Stretch: Stand upright. Circle your hips in each direction. Then, with your hips stable, extend your torso to each side as you lengthen your waist.
- Hamstring Stretch: Stand upright. Fold at your waist, lengthening your torso over the fronts of your thighs. If your hamstrings are tight, bend your knees. Over time, as your muscles, ligaments, and tendons start to loosen, work toward straightening your legs.
- Knee Stretch: Circle your knees in each direction. Gently bend and straighten.
- Ankle Stretch: Rotate your ankles in each direction. While seated, use your hand to stretch your foot upward, downward, and to the left and right.
- Lunges (forward, backward, side to side)
- Leg extension
- Abdominal crunches
- Planks
- Bicep curls
- Triceps curls
- Shoulder raises

UNWIND:

Manage your stress:

- The most effective way is to change from an Urgency driven living to a Vision/Purpose driven living
- Identify your monthly 'Vision'
- Break the activities into:
 - Urgent matters
 - Substantive activities that will help you reach your goal
 - Matters that need to be delegated
- Every day, attend to one urgent matter.
- Every week, attend to one substantive activity that will help you reach your goal
- Delegate at least one item per week
(These ratios can be changed according to your situation)

5 Minutes of Mindful Breathing:

- Find a comfortable place where you won't be disturbed
- Sit up straight. Consider using a wall to support your back
- Close your eyes
- Breathe slowly and deeply through your nose
- When you've reached the natural point of exhale, breathe out slowly through your mouth
- Once you've gotten into a rhythmic breathing pattern, typically after a minute or so, start to focus on the sounds around you. Don't analyze or memorize them. Just listen quietly and experience them
- When other thoughts arise in your mind, don't engage them. Let them drift out of your mind and return your attention to what you can hear
- Try this exercise for 5 minutes each day. As you get more proficient, feel free to increase the time

Variations on Mindful Breathing:

- Sensation: Focus on different bodily sensations, like the floor beneath you, and the sensation of air entering your nose and exiting your mouth.

- **Progressive Muscle Relaxation:** Starting at the top of your body and moving downward, begin to tense all your muscles—your forehead, eyes, jaw, neck, shoulders, back, arms, hands, abdomen, buttocks, thighs, calves, and feet. Hold this tension for at least five seconds. Then take a big inhalation, and on your exhalation release everything. Take a few more deep breaths. Feel the difference between a tensed body and a relaxed body.
- **Visualization:** Imagine you're on a riverbank and that your thoughts are slowly riding a current that flows from left to right. When a thought arises, simply watch it float down the river and out of sight.

Alternatives to Traditional Meditation:

- **Walking Meditation:** Walk the same route every day. This will allow your brain to relax and focus on the pleasant sensations in your body. The goal isn't aerobic exercise (though aerobic exercise is very important for brain health). Instead, find a pace that feels natural and try to maintain it throughout your walk.
- **Yoga:** There are many different types of yoga to suit your personality and your desired level of exercise and mental relaxation.
- **Simplifying Your Life:** Live in a clean, uncluttered space. Approach your work in an organized, purpose-driven way.

Meaningful Relationships: Surround yourself with friends, supporters and loved ones. They naturally reduce your stress levels.

Listening to Music: is one of the best ways to unwind. Try to fill your day with music as much as possible, and use it at night to relax before sleep.

RESTORATIVE SLEEP:

TECHNIQUES FOR A BETTER NIGHT'S SLEEP

1. **Normalize Your Sleep Schedule:** Go to bed at the same time each night and get up at the same time each morning. Keeping regular hours helps your brain know when to rest and when to be alert. We evolved to sleep with the fall and rise of the sun. An erratic sleeping schedule interferes with the daily hormonal processes that help facilitate restful sleep.
2. **Avoid Eating Late at Night:** When your gastrointestinal system is working to digest food, you don't sleep as deeply and are more likely to wake up.

These foods can be especially disruptive to sleep:

- Sugary foods give your body quick energy that interferes with relaxation and sleep.
- High-fat foods can cause indigestion and acid reflux.
- Spicy foods can irritate the stomach and also cause acid reflux.
- Chocolate contains sugar and caffeine, both of which negatively affect sleep.

3. Avoid Certain Drinks Too Close to Bedtime:

Caffeine can stay in your body for over eight hours. We recommend drinking coffee and other caffeinated drinks no later than 2 p.m.

Other drinks to look out for:

- One or two glasses of wine can be relaxing, but more than this will disrupt sleep cycles and often cause you to wake up in the middle of the night to use the bathroom.
- Citrus juices can cause acid reflux and irritate the bladder.

4. Avoid Exercising Before Sleep, But Be Sure to Exercise Earlier in the Day:

A brisk walk in the morning has wonderful effects on your sleep. Getting out into the light helps set your circadian cycles and wakes you up for the day, and exercise has been shown in many studies to increase the depth of sleep. Walking after dinner (ideally at dusk) is also a great option. Your brain reacts to the changing light and naturally prepares for sleep. Be sure to complete exercise—especially intensive aerobic exercise—at least three hours before bedtime.

5. Low Light at Night, Bright Light During the Day: Your brain needs bright, natural light during the day, and softer light at night. If you find it hard to get adequate natural light, light boxes are a great solution. They provide twenty to forty times more light than regular lamps and mimic natural light. Many studies have proposed light therapy as a treatment for seasonal affective disorder and depression, but it can also help with the sleep-wake cycle. Light boxes should always be used in the morning—otherwise they could interfere with your sleep. Use only so lights in your bedroom at night, and turn off electronic devices that emit bright light.

6. Avoid Playing Games, Watching Stimulating Movies, and Working on Your Tablet in Bed: The idea is to calm the brain, not rev it up. Try reading instead—something enjoyable but not too engrossing. It allows the mind to relax and helps you avoid the blue light in electronic devices that has been shown to interfere with sleep. It's best to reserve the bedroom for sleep and sex only.

7. Avoid Napping: For most of us, napping during the day will interfere with our ability to fall asleep at night. We don't recommend daily naps unless you have a long-standing habit of napping. Even then you should set an alarm so that you sleep no longer than ten to thirty minutes. Anything beyond that can result in

sleep inertia, a groggy feeling after awakening that can impair performance. If you're trying to establish a regular sleeping pattern, we recommend that you stay awake during the day (unless sleepiness could put you or others in danger). You'll be tired enough at night that you'll fall asleep earlier and faster, which will help you normalize your schedule.

8. **Use Meditation:** Meditation is a wonderful addition to your pre-bedtime routine. is powerful practice physiologically relaxes the body by slowing both breathing and heart rate and has also been proven to reduce stress.
9. **Sound- and Light-Proof Your Bedroom:** Both sound and light can wake you up and disrupt your sleep cycles, robbing you of the deep sleep your brain requires. Try using white noise or natural so sounds. If you have consistent loud noise, consider egg-crating the room and insulating the windows and doors. Blackout curtains are great for keeping your room dark.
10. **Get Comfortable:** Do you prefer a warm blanket or cool sheets? There seems to be a difference in temperature preference between men and women. Women prefer a slightly higher temperature, men slightly cooler. It is certainly true with the two of us. We use dual blankets (one warmer and one cooler) so we can sleep together and also enjoy our preferred sleeping temperatures. There are also beds with dual temperature settings, and even pillows designed to maintain certain temperatures throughout the night. Because of hormonal fluctuations throughout the sleep cycle, the temperature pattern for the most restful sleep seems to be: 1) falling asleep at a temperature just slightly above body temperature; 2) the temperature slowly dropping throughout the night; and 3) a minor rise in temperature before waking up.
11. **Address Dependence on Medications:** Use these techniques under a doctor's supervision to slowly reduce your need for medication.
12. **Use Cognitive Behavioral Therapy (CBT) if Necessary:** Seek help from a qualified therapist if you are experiencing excessive anxiety or distorted sleep patterns. CBT is most effective for those who still experience anxiety after trying both the relaxation techniques and the sleep hygiene techniques. Anxiety that doesn't respond to any of these techniques may require an initial round of therapy.
13. **Look for Signs of Sleep Apnea:** If you suspect you might have this common sleep disorder, ask your doctor to order a sleep study (this is the only way to know for sure). Review the results and then discuss the best solution for improving your sleep.

PROGRESSIVE MUSCLE RELAXATION: AN EXERCISE YOU CAN DO IN BED

Try this exercise when you have trouble falling asleep:

- Take a deep breath. Hold it for five seconds, and then breathe out.
- Take another deep breath. This time contract all the muscles in your feet and hold for five seconds. Then breathe out and completely relax your body. Feel the contrast between tension and relaxation, the way your body releases deeply after holding tension.
- Move slowly upward, contracting and releasing your ankles, calves, thighs, hips, abdomen, lower back, upper back, fingers, forearms, upper arms, shoulders, neck, jaw, mouth, cheeks, nostrils, eyelids, temples, and forehead. Be sure to inhale deeply and exhale completely each time.

Work Toward Increasing:

- Relaxation before bedtime
- Time spent without electronics
- Enjoying a regular schedule
- Meditation
- Light during the day
- Exercise earlier in the day

Work Toward Eliminating:

- Bright light late at night
- Eating before bed
- Drinking coffee in late afternoon, evening and at night
- Noise that wakes you up at night
- Physical activity and exercise later in the evening

OPTIMIZE COGNITIVE AND SOCIAL ACTIVITY:

Building cognitive activity is not difficult. Building a resilient, connected brain takes more than simple puzzles and memory exercises. The brain thrives on challenges, especially those that are personally relevant and involve multiple cognitive domains. Identify what optimizing brain function means in your life; you'll then learn about memory-enhancing techniques and many activities that will boost your cognitive function and protect against decline.

Memory:

Short term: Recall a list of names of colleagues and one other related item, such as the names of their family members and their birthdays.

Long Term: In your contact list of colleagues that you have created over the last few years, recall their names, faces (visuospatial recall) or any other features.

Problem Solving:

Ability to solve more complex problems (team-building exercises).

Visuospatial Skills:

Ability to recognize, understand and execute processes in a visual world. An exercise to build visuospatial skills is to visualize a familiar path to a destination, such as walking out of your office building to a nearby coffee shop, a subway station towards, or a restaurant etc. It helps you create a detail-oriented mindset.

ACTIVITY:

PROVIDE PICTURE OF AN OFFICE WITH MULTIPLE OFFICE ITEMS AND FURNITURE

Glance at this picture for the next 30 seconds and then stop and turn the page. On a white page, write down the names of all the objects you saw in the room in the approximate place correlated with the picture.

How many objects did you see? Where was each one placed?

Attention and Focus: This is the foundation of all the other cognitive capacities. You can build focus by doing mathematical calculations in your head. In this case, it's not about the complexity of the math but your ability to stay focused during the process. Try subtracting 3s from 1,000 all the way down to single digits. Then try subtracting 7s. If you have trouble, start with 100 instead.

WORK ON YOUR WEAKNESS

Our research shows that the cognitive domains benefit most from activities that focus on each individual's weaknesses. So, focusing on what is difficult will create more brain cell connections and resilience.

Memorization Strategy:

ACES: These exercises combine four different thought processes to enhance memorization:

A = Attention. Pay attention to the piece of information you're trying to remember.

C = Connect. Associate that information with other related information using a mnemonic device—something that will make the information distinctive.

E = Emotion. Create an emotional link to the information to consolidate it further.

S = Senses. Try to associate other senses with the information (images, smells, tastes, etc.).