Chapter 2

Promoting and Protecting Brain Health

"For even the mind depends so much on the temperament and disposition of the bodily organs that if it is possible to find some means of making men in general wiser and more skillful than they have been up 'til now, I believe we must look for it in medicine. It is true that medicine as currently practiced does not contain much of any significant use; but without intending to disparage it, l am sure there is no one, even among its practitioners, who would not admit that all we know in medicine is almost nothing in comparison with what remains to be known, and that we might free ourselves from innumerable diseases, both of the body and of the mind, and perhaps even from the infirmity of old age, if we had sufficient knowledge of their causes and of all the remedies that nature has provided."

—René Descartes (*Discourse on Method*, 1637)

Aging successfully in both mind and body requires us to attend to all aspects of our lives: to embrace new challenges, to exercise limbs and cognition, to promote emotional health, and to provide our brains and bodies with the fuel that will allow them to grow healthily from infancy through old age.

In this chapter, I discuss the basic and fundamental strategies for maintaining brain health. Think of this chapter as the overview for having a healthy brain. Everyone needs to follow this advice. In later chapters in Part II, I'll discuss strategies tailored to specific disorders of the brain that only those of you with special concerns will want to follow.

But first, we all need to follow the advice in this chapter. I offer you ways to continue to stimulate your brain, ensuring that neuronal pathways remain strong and productive. I will touch on the role of exercise in keeping both the body and the mind healthy, and how nurturing healthy social and emotional relationships benefits our minds as we age. Finally, I will discuss optimal diet and nutritional habits and give you a plan of foods, vitamins, and supplements that will serve as your first line of defense against age-related mental decline.

Lifestyle Habits For A Healthy Brain

If I'd known I was gonna live this long, 100 years, I'd have taken better care of myself.

—Ubie Blake (1883–1983)

The way we choose to live can have a huge effect on brain health in the long and short term. Let's examine the crucial areas of our lives that can contribute.

Challenge Your Brain

Research has documented that the brain requires constant stimulation and challenge to develop to its fullest potential. From studies

that stress the importance of stimulation in a child's first three years of life,[1] to those that show how using your five physical senses and your emotional sense in unexpected ways will strengthen, preserve, and grow brain cells, science has proven again and again that we must "use it or lose it." In an article published in the *St. Petersburg Times*, the Pittsburgh neurologist Paul Nussbaum, speaking at the joint meeting of the National Council on Aging and the American Society on Aging, stressed that specific training for the brain, such as learning sign language, can boost IQ and promote a lifetime of brain growth—which, if continued, can stave off dementia and other brain diseases as people age. Other brain-challenging activities include taking up a second language, learning to knit, practicing public speaking, or learning to play a musical instrument.[2]

Lawrence C. Katz, PhD, a professor of neurobiology at Duke University Medical Center and the coauthor of *Keep Your Brain Alive: 83 Neurobic Exercises*,[3] suggests a series of exercises that can easily be done on a daily basis and involve one or more senses in a novel way. This type of "cross training for your brain" can help keep your mind fit to meet any challenge.

Try some of the following ways to challenge your brain:

- Use your nondominant hand to go through your morning rituals of hair styling, tooth brushing, and makeup application.
- Shower with your eyes closed, using your tactile senses to adjust water temperature and flow and your sense of smell to locate shampoo and soap.
- With your eyes closed, locate your house keys and open the door to your home.
- Turn a photo album upside down and study the pictures.
- Shop at a new grocery store.
- Read part of the newspaper or a book upside down.
- Sleep on the other side of your bed.

The good news is that, young or old, we can continue to learn. The more complex the learning challenge, the more we stimulate our brains and the more vital they remain. Travel, reading, going to museums, and attending book group readings all contribute to an active brain life. So play Scrabble, or do crossword puzzles, or enjoy bingo, or learn a foreign language. Growing older does not mean that we should lose our sense of curiosity in the world around us or our desire to pursue new challenges.

Exercise Your Body

Most of us know that physical exertion is good for our bodies—but it is also essential for our brains. Exercise should be a natural part of your life, whatever your age. If you do not exercise on a regular basis, or feel that you are too old to embark on a physical fitness program, you can begin to build a stronger body and brain by the simple act of taking a walk. Studies show that senior citizens who walk regularly show significant improvement in memory skills compared to sedentary elderly people. Walking can also improve learning ability, concentration, and abstract reasoning.[4]

Another long-term study that tracked a group of older men and women with no signs of dementia over a seven-year period found that those with a high participation in leisure activities, including walking or participating in an exercise class, were 38 percent less likely than others in the study to develop dementia.[5]

In still another study on physical activity and its effects on brain health, researchers at the University of California in San Francisco measured the brain function of nearly six thousand women during an eight-year period. The results were then correlated with the women's normal activity levels. The study showed that no matter how much or how little the women did in terms of exercise, there was a direct correlation to cognitive performance. It wasn't simply a matter of all or nothing. For every extra mile walked per week, there was a 13 percent lower chance of cognitive decline.[6]

But walking is not your only choice. Citing a 2003 study published in the *New England Journal of Medicine* that showed that ballroom dancing at least twice a week made people less likely to develop dementia, the AARP (formerly the American Association of Retired Persons) recommends dancing as one of the best mind-body workouts.[7] Researchers speculate that the combination of learning and remembering specific steps and sequences specifically boosts brain power.

Looking for a sport that is easier on your muscles than dancing or walking? Advocates of the gentle, controlled movements of tai chi claim the significant benefits of stress reduction and improved balance and muscle tone. The memorization of specific movements and sequences is similar to learning new steps to a gentle and serene dance.

There is no doubt that even the most basic exercise offers our bodies and our brains long-term benefits. Dr. Kristine Yaffe, chief of geriatric psychiatry at the San Francisco Veterans Administration Medical Center, estimated the protective effects of regular activity against cognitive decline could be as high as 40 percent.[8]

Whether you choose to walk, dance, garden, or practice tai chi or yoga, the most important thing is to get your body moving. The effects of physical activity are beneficial in delaying the onset of dementia, preventing the development of Alzheimer's disease, and improving memory and reasoning skills. Exercise also acts as a powerful antidepressant. No matter how old you are, it is never too late to experience the powerful benefits of some kind of physical activity.

Begin slowly if you must, but attempt to work up to forty-five minutes of exercise at least five days per week.

Strengthen Your Spirit

As we grow older, we can experience a sense of isolation and perhaps feel like withdrawing from interaction in society. This type of shutting down of emotion, intellect, or spirit is as unhealthy for our

brains as the more easily recognized damaging habits of poor diet or lack of exercise.

Numerous studies have shown that individuals who have a strong sense of purpose and meaning in their lives thrive in their later years. Frequent contact with family and friends, participating in one's community, and feeling satisfied with one's accomplishments are key in maintaining mental health.

A positive outlook and ongoing social and emotional involvement are essential in keeping our brains stimulated and vital as we age. Ursula Lehr, PhD, of the University of Heidelberg and the former secretary of health of the Federal Republic of Germany, states that many studies have found that people who are mentally active have a wider range of interests, farther-reaching perspectives, and a greater number of social contacts reach old age with greater feelings of psychophysical well-being.[9]

Practicing meditation may be valuable for brain health, as well. In a recent article published in the *Washington Post*'s online edition, Dr. Richard Davidson, a neuroscientist at the University of Wisconsin, discussed the findings of a study conducted over the past few years evaluating the effects of meditation on Tibetan monks. The results of the study demonstrate, according to Dr. Davidson, that "the brain is capable of being trained and physically modified in ways few people can imagine."[10]

When the monks' brains were measured by MRI, Davidson found that the ones who were the most accomplished practitioners of meditation had brain waves that were better organized and coordinated compared to those of novices who had not been practicing meditation for as long. The more years spent meditating, the higher the gamma wave activity. In previous studies, mental activities such as focus, memory, learning, and consciousness were associated with this kind of high level neural coordination.[11]

Research in this area is ongoing, but I have no doubt that meditation can be a powerful tool in promoting a healthy brain.

Nutrition for a Healthy Brain

In this section, I provide a nutritional plan that you can follow to ensure your brain is protected as you age. This basic plan provides the diet and supplements that our bodies need to fuel its cells, including those in the brain, for optimal performance and health.

This eating plan is simple, easy to follow, and nonrestrictive. I don't want you to think of this approach to healthy eating as a "diet." Diets can leave you feeling deprived and lacking in energy. Diets tend to focus on a goal of weight loss, rather than an overall enhancement of health. They can rob your body of essential nutrients and food groups and put you on the road to bad food habits. While you may lose weight when you follow my protocol for a healthy brain and body, what is more important is what you will gain: energy, focus, and mental vitality.

The supplements have been chosen specifically for their beneficial effect on brain function and health, but you will notice other health benefits, as well.

Of course, before you begin any new health program, you should get a comprehensive, full-body evaluation performed by a qualified health care practitioner. A proper health and medical evaluation should evaluate your blood chemistry to assess your blood markers, your metabolic rate, and your blood pressure for indicators of cardiovascular, hormonal, or other imbalances or danger signs. If you are taking medications of any sort, you need to inform your doctor of any supplements you are considering adding to your daily diet, as some may interact with prescription medications.

The Nutritional Plan

Let's start with a discussion of what to eat.

Complex Carbohydrates

Complex carbohydrates are the gold standard when it comes to brain foods. They are the starches and fibers in foods such as whole

grains, nuts, tubers, beans, seeds, lentils, fresh fruit, and vegetables. Incorporate these foods into your diet in place of refined white rice, pasta, and bread.

To maximize the nutritional benefits of complex carbohydrates, you should eat them in whole-food form. For many years, I have recommended that you eat five or more servings of organic fruits and vegetables each day. You should especially choose dark green, leafy, and root vegetables, such as broccoli, watercress, carrots, sweet potatoes, Brussels sprouts, spinach, green beans, and peppers, either raw or lightly cooked. You should select fresh fruits, such as apples, berries, citrus fruit, pears, and melon.

In addition, you should consume at least four servings of whole-grain foods, such as oats, rice, rye, whole wheat, millet, corn, or quinoa, in cereal, breads, and pasta. Remember, when you can, to also include the skins of fruits and vegetables. Fruits and vegetables are excellent sources of fiber. You may wonder, "Gary, how can fiber help my brain?" Well, fiber helps lower cholesterol and blood pressure levels, which are linked to Alzheimer's disease, as well as other degenerative brain diseases.

A Note About Sugar. Carbohydrate sugar converts to glucose, and, as such, is indispensable to the health of our brains, but you should try to obtain it in as pure a form as possible. Eliminate all refined sugar from your diet. This is not quite as easy as it may sound, for sugar is a hidden ingredient, lurking in many processed foods. We all know sugar can be found in soda, candy, and cakes. But how many of us know that it is also in bread, breakfast cereals, condiments, cheeses, and canned foods? I am fully aware that eliminating sugar from your diet will not be easy. You need to read the nutritional labels on processed foods. It will be worth the effort.

Don't make the mistake of thinking that a quick candy bar is fueling your brain. Common table sugar has been processed to 99.9 percent sucrose, which is stripped of the vitamins and minerals found in sugar cane or sugar beets. The refined sucrose taxes the

body's digestive system, depleting it of essential vitamins, minerals, and enzymes as the sugar is metabolized. For this and other reasons, white sugar is known as an empty food. Choose whole-grain carbohydrates as your body's source of glucose.

Fruits and Vegetables

Fruits and vegetables are packed with the essential vitamins and protective antioxidants that promote optimal brain function. Eating a wide variety of organic fruits and vegetables is crucial to a brain healthy diet.

Antioxidants. Free radicals (atoms with unpaired electrons that can cause damage, called oxidation) in the normal metabolic process, are an important factor in the aging process. Brain cells are particularly vulnerable to oxidation because of their high-energy production. They are constantly firing messages back and forth. As more energy is produced, a greater number of damaging free radicals occur. The destructive effects of the free radical process have been implicated in conditions such as Alzheimer's and Parkinson's disease.

But here's some good news: Two studies out of the University of South Florida Center for Aging and Brain Repair reinforce evidence that specific fruits and vegetables may guard against the brain being ravaged by free radicals as you age. "If these preclinical findings translate to humans, it suggests that eating a diet high in antioxidant rich fruits and vegetables may help reverse declines in learning and memory as you get older," said Paula Bickford, PhD, a professor at the University of South Florida Center for Aging and Brain Repair, and the lead author of the two studies.

The first study involved feeding older rats a diet with high amounts of spinach over a period of six weeks. The results showed a reversal in the normal loss of learning that occurs with age. As noted above, spinach is a great source of antioxidants.

The second study concerned the value of a diet high in fruits and vegetables. The results found that the benefit of such a diet

depends on the amount of antioxidants contained in the fruits and vegetables. The researchers imply that the protective effects of antioxidants may be connected to their ability to reverse the havoc caused by inflammation in the brain. Dr. Bickford found the greatest benefit in richly colored fruits and vegetables, which have the highest antioxidant levels. She recommends having spinach salads for lunch and blueberries and strawberries for snacks.[12]

Antioxidants, which work to protect the cells against free radical damage, are naturally occurring in many fruits and vegetables. Eating these beneficial foods essentially detoxifies the brain, ridding it of free radicals. Antioxidants include vitamins E and C, alpha lipoic acid, grape seed extract, and coenzyme Q10. Antioxidants are specifically found in the following foods: apples, berries (including blueberries, raspberries, blackberries, cranberries, and strawberries), cherries, cooked kale, garlic, grapes, prunes, raisins, and raw spinach.

Organic Produce. All fruits and vegetables you eat should be organic, whenever possible, to avoid exposure to pesticides. Certain conventionally grown produce is especially risky to eat. According to the Environmental Working Group (EWG), a nonprofit environmental watchdog agency based in Washington, DC, eating the twelve most contaminated conventionally grown fruits and vegetables would expose a person to nearly twenty pesticides per day on average. These foods are as follows (and are also listed on the EWG's website, at www.foodnews.org/reportcard.php):

- apples
- celery
- lettuce
- grapes
- blueberries (domestic)
- cucumbers
- nectarines (imported)

- peaches
- potatoes
- spinach
- strawberries
- sweet bell peppers

The website also lists the fifteen least contaminated fruits and vegetables:

- asparagus
- avocado
- kiwi
- mango
- onion
- pineapple
- sweet corn
- cabbage
- sweet peas
- eggplant
- cantaloupe (domestic)
- sweet potatoes
- grapefruit
- watermelon
- mushrooms

To the list of most contaminated foods, I would add leafy greens—because we consume the part of the plant that is sprayed—and nuts and seeds, such as almonds, pumpkin seeds, walnuts, and sesame and sunflower seeds—because their oils can hold chemicals for longer periods of time.

Washing fresh produce may help reduce pesticide residues, but it does not eliminate them entirely. Peeling reduces exposure, but valuable nutrients are also lost along with the peel. If you cannot buy