

THE COMPLETE
BRAIN
EXERCISE BOOK

Train Your Brain!

Improve
Memory,
Language,
Motor Skills
& More

+

A Health
& Diet
Plan with
125 Recipes

Dr. Fraser Smith, BA, MATD, ND

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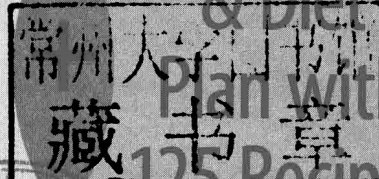
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The recipes in this book have been carefully tested by our kitchen and our tasters. To the best of our knowledge, they are safe and nutritious for ordinary use and users. For those people with food or other allergies, or who have special food requirements or health issues, please read the suggested contents of each recipe carefully and determine whether or not they may create a problem for you. All recipes are used at the risk of the consumer. We cannot be responsible for any hazards, loss or damage that may occur as a result of any recipe use. For those with special needs, allergies, requirements or health problems, in the event of any doubt, please contact your medical adviser prior to the use of any recipe.

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*This book is dedicated to my family,
who make it possible and who
make it all worthwhile.*

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Introduction

Turn on subscription television anytime from midnight to six o'clock in the morning and you'll see a number of promotions for exercise systems to make the body perform better. A drive through most communities will reveal at least a few health clubs and various fitness, yoga and martial arts centers. This is great, because the body craves movement and exercise. But as we age, there is another part of our bodies that needs to be used, stretched and strengthened: our brain, the part of us that houses our memories and thoughts and controls our bodies. We often take for granted our brain's functions and reliability, or simply hope that it won't decline too quickly with age. This is a mistake, because experience and emerging science on the topic of cognitive abilities (thinking and brain performance) clearly demonstrate that the brain responds to work. Training the brain yields changes to its performance.

The adage "use it or lose it" is true when it comes to our mental resources, but there is an important further detail. As we get older, we must avoid the trap of simply repeating behaviors and skills that we mastered long ago. To be young, we must act young — we must acquire and practice new skills, develop new understanding and create new experiences. Novelty literally wakes up the brain and gives it the input it needs for optimal performance.

We live in an age of computer-based (and increasingly mobile) brain training. Although some mental tasks do seem to improve with computer training, the net value may not be consistent among individuals and the total benefit is still unclear. In this book, I present the perspective that any type of brain exercise ought to encourage the use of a variety of aspects of our intelligence, especially those that are underdeveloped or even dormant. That means doing and experiencing a variety of activities in different environments. That means using your hands as well as your head and having experiences in the real world, not in a pixelated screen environment on a computer.

Although computer-based brain training is a wonderful resource, this book takes a more holistic approach. I hope it will provide you with some very useful "how to" instructions so you can live, work, eat, play and love to the best of your ability throughout your life.

— Fraser Smith, BA, MATD, ND
Lombard, Illinois

The 4 Steps of the Complete Brain Exercise Program

- 1 Train more than just memory.** Most brain exercise books focus on preventing and treating memory loss due to aging and disease. This book not only covers this type of memory training but also offers exercises that will help preserve or possibly improve your mental speed, visual acuity, language acquisition, sensory growth and motor skills. We often overwork parts of our brain, based on our work or hobbies, and neglect others. Not only does this lead to untapped potential, but the repetitive way in which we use our brains as we get older is the very opposite of what we need. By stretching our mental abilities and, most important, using a variety of different aspects of our intelligence, we stand a better chance of maintaining our cognitive (thinking) abilities.
- 2 Prevent and repair losses.** Recovery of lost brain function is another common priority of brain exercise programs. This book covers not only recovery strategies but also ways you can prevent these losses in the first place, even when they are the result of a neurological disease.
- 3 Feed your brain with a healthy diet.** The relationship between brain health and diet is touched on as an afterthought in most brain exercise books. In these pages, diet and nutrition are front and center, with detailed brain-food lists, menu plans and delicious recipes.
- 4 Have fun and grow at the same time.** This book contains plenty of serious, in-depth scientific information, but it is entertaining as well as informative. The games are just as fun as those you will find in other brain puzzle books, but they are more sharply focused on interactive activities that enable you to assess your brain health and witness its growth as you work through the exercises.

Part 1

More Than Memory

Aging Naturally

Everyone ages; it's a fact of life. This is easier to ignore in our younger years, when we are still growing, changing and maturing. But eventually it dawns on all of us that our bodies, such as they are, were not made to last forever.

What We Know about Aging

Although we can continue to make new cells as we get older, cell division becomes less efficient and starts to develop some problems.

The causes of aging are only partially understood now, in the early 21st century. We know that our cells' ability to divide and create healthy new cells is limited, and eventually they can't replace themselves. Once old cells have undergone enough wear and tear, they cease functioning normally. The only cells that seem to reproduce endlessly (as far as scientists have been able to observe) are certain cancer cells, which lose all relationship to normal function and whose normal growth-control mechanisms have been destroyed.

You might be wondering, "If cells have a built-in shut-off valve, how has the human race been able to pass on genes and cellular information and survive from generation to generation?" The answer is that sexual reproduction allows for two people to combine their genes to make an entirely new organism, starting from square one. When this happens, the cellular clock is set to zero and the brand-new person has the opportunity for many, many cell divisions as their body grows. In childhood (aside from some inborn genetic diseases and, unfortunately, some cases of cancer in the very young), cells grow quickly and do so easily. Organs and other tissues grow fast — but according to a plan. Although we can continue to make new cells as we get older, cell division becomes less efficient and starts to develop some problems.

As we age, cell division is limited by one factor in particular. When a cell is undergoing division, it must first copy its own genetic material (the chromosomes, or your body's genetic blueprints), then align the two copies so that it can split itself

in half to create a brand-new cell. The “pulleys” that align the chromosomes are called telomeres. These proteins start off at a certain length in our youth and shorten over time. By the time we reach old age, our telomeres have shortened significantly and will eventually stop working.

FAQ

Q. Will technology allow us to live longer?

A. It’s likely that scientific advances will extend the human lifespan. It’s arguable that, one day, many people could live to be 120 years old if they use preventive medicines, undergo surgical and medical interventions, and adhere to a way of living that addresses the determinants of health, such as optimal nutrition, sleep, exercise and so on. It doesn’t seem so far-fetched when you think of the possibilities inherent in the use of tissue grafts — such as those that use umbilical cord stem cells (regenerative cells harvested from the umbilical cord of a baby immediately after birth, which are frozen for future use). Although still experimental, there have been impressive reports about the injection of stem cells into the central nervous system to help stroke victims. There are various sources of stem cells and ways to deliver them; it is a new and complex field. The great hockey player Gordie Howe, who suffered a debilitating stroke in 2014, was injected with stem cells when his son, a physician, took him to a center that performs this very new therapy. A few months later, his speech had returned and he was playing ball hockey with his grandchildren. Perhaps the healing abilities of this great athlete asserted themselves over time, but the rate of his recovery astounded his family and friends. Serious research into stem cell treatments for neurological diseases, such as multiple sclerosis, is ongoing.

Everyday Life Affects Cells

Normal living takes its toll on our cells’ ability to reproduce themselves. The various toxins and reactive chemicals that our cells are regularly exposed to can create damage that we simply can’t repair. Our DNA is definitely susceptible to this kind of harm.

Oxygen is a good example of an everyday factor that can damage cells under the right conditions. The oxygen molecule can take unstable forms that react with other chemicals — just look at a rusty nail or rusty gate to see what oxygen can do. Oxygen is essential to human life and enters our cells all the time. But it can also react with our cell components, including DNA, and damage them. We have natural defenses against this,

but eventually the body takes a hit from the damage caused by oxygen and other reactive compounds.

As DNA, cell components and important hormones and other body chemicals become imbalanced and damaged, the body undergoes disturbances in function. In spite of this, we are incredibly adaptable. Our organs are able to continue to function at less than full capacity, and the rest of the body can compensate, to a degree, for a weak organ. But these compensations — such as the retention of water in someone with heart failure, or the making of concentrated urine by someone who is dehydrated — come with a price. Eventually, adaptability erodes, degeneration accelerates and the body can no longer pull off the miraculous balancing act that we call life.

Did You Know?

Neurotransmitters

When neurotransmitters are affected by disease or drugs, there can be a number of different adverse effects on the body. Diseases such as Alzheimer's and Parkinson's are associated with deficits in certain neurotransmitters.

Normal Brain Function

Human life and body functions depend on the brain. When it is healthy, well nourished and functioning properly, it ensures communication between all the body's systems and is the home of thoughts, memories and creativity. To understand how the brain ages naturally, it is valuable to understand how a normal, healthy brain works. The more we learn about the different tasks our brain performs, and how we use different brain areas to accomplish those tasks, the more the concept of exercising the brain begins to seem a necessity.

Brain Basics

The brain is an extremely complex structure made of tissue and nerves and it controls everything we do, from voluntary actions (such as walking) to involuntary actions (such as breathing). The brain is responsible for communicating moment by moment with all other parts of the body through the central nervous system (CNS) and the peripheral nervous system (PNS). The brain is also responsible for managing our emotions and thoughts, and for nurturing our short-term and long-term memories.

Scientists are slowly discovering its secrets, but in many ways the brain is still a new frontier, and aging-related diseases continue to challenge neurologists to fully understand them. However, there is no need to take a course in neuroanatomy to grasp the structures and functions of the brain that relate to aging-related diseases. It is intriguing to know how our brains function normally so we can see how they sometimes do not function so well as we age.