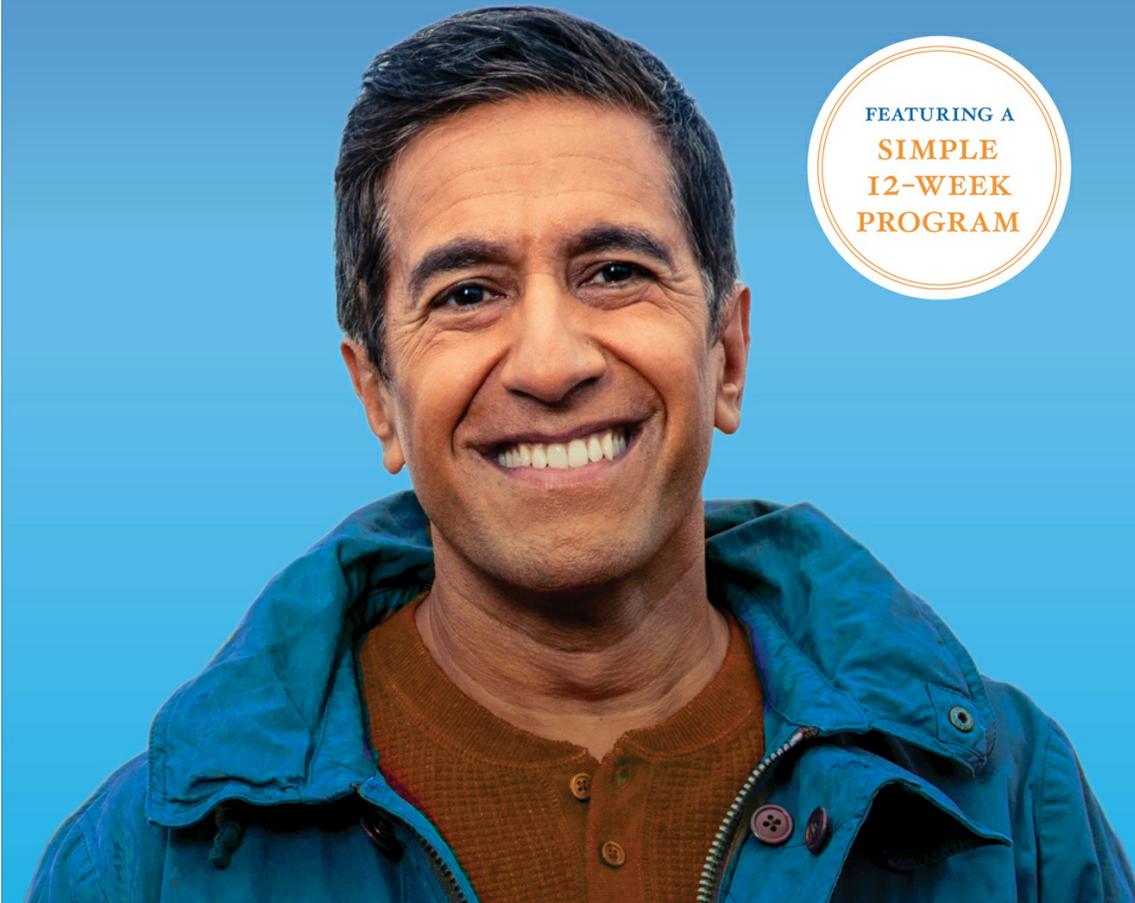


CNN CHIEF MEDICAL CORRESPONDENT

# Sanjay Gupta, MD



FEATURING A  
SIMPLE  
12-WEEK  
PROGRAM

## KEEP SHARP

Build a Better Brain at Any Age

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“This is a frontier where we can dramatically improve human life, and *Keep Sharp* is a helpful primer for anyone who wants to better understand brain function and how to preserve it.” —BILL GATES



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BUILD A  
BETTER  
BRAIN AT  
ANY AGE

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KEEP  
SHARP

Sanjay Gupta, MD

with Kristin Loberg

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NEW YORK LONDON TORONTO SYDNEY NEW DELHI

*For my three girls, Sage, Sky, and Soleil. In order of age, so as to preempt any future disputes over the dedication order. I love you so much, and watched you grow faster than this book. Always take the time to be completely present, because it is perhaps the best and most joyous way to keep your mind sharp and your life bright. You are still so young, yet you have given me a lifetime of memories I hope to never forget.*

*For my Rebecca, who has never wavered in enthusiasm. If in the end, our lives are just a collection of memories, mine will be filled of images of your beautiful smile and your steadfast support.*

*For anybody who has dreamed that their brain can be better. Not just free of disease or trauma, but optimized in a way that allows you to best build and remember your life narrative, and equips you to be resilient through life's challenges. For anyone who has always believed their brain wasn't a black box, impenetrable and untouchable, but could be nourished and grown into something greater than they imagined.*

Remembrance of things past is not necessarily the  
remembrance of things as they were.

—Marcel Proust

## *INTRODUCTION*

# **Nothing Brainy about It**

The brain is wider than the sky... [and]... deeper than the  
sea.

EMILY DICKINSON

Unlike most of my colleagues, I didn't grow up with a deep-seated desire to be a doctor, let alone a brain surgeon. My earliest aspiration was to be a writer, likely triggered by a boyhood crush I had on a grade school English teacher. When I chose medicine, I was thirteen years old and my grandfather had just suffered a stroke. We were very close, and witnessing his brain function change so quickly was jarring. He was suddenly unable to speak or write but seemed to understand what people said and could read without difficulty. Simply put, he could receive verbal and written communication easily, but he could not respond in those same ways. It was the first time I became fascinated by the intricate and mysterious functioning of the brain. I spent a lot of time at the hospital and was that annoying kid who asked the doctors a lot of questions. I felt very grown up as they patiently explained what had happened. I watched as those doctors were able to return my grandfather to good health after opening up his carotid artery to restore the blood flow to his brain and prevent future strokes. Having never spent much time with surgeons before then, I was hooked. I started reading everything I could about medicine and the human body. Before long, I was fixated on the brain, and specifically memory. It still astonishes me that our memories—the very fabric of who we are—can be reduced to invisible neurochemical signals between tiny areas of the brain. For me, those early explorations into the world of brain biology were at once demystifying and magical.

Years later, when I was in medical school in the early 1990s, conventional wisdom was that brain cells, such as neurons, were incapable of regenerating. We were born with a fixed set and that was it; throughout life, we'd slowly drain the cache (and accelerate that killing off with bad habits like drinking too much alcohol and smoking marijuana—the truth about that later). Perhaps it was the eternal optimist in me, but I never believed that our brain cells simply stopped growing and regenerating. After all, we continue to have novel thoughts, deep experiences, vivid memories, and new learning throughout our lives. It seemed to me that the brain wouldn't just wither away unless it was no longer being used. By the time I finished my neurosurgery training in 2000, there was plenty of evidence that we could nurture the birth of new brain cells (called neurogenesis) and even increase the size of our brains. It was a staggeringly optimistic change in how we view the master control system of our bodies. Indeed, every day of your life, you can make your brain better, faster, fitter, and, yes, *sharper*. I am convinced of that. (I'll get to the bad habits later; they don't necessarily kill brain cells, but when they are abused, they can alter the brain, especially its memory powers.)

Let me say at the outset: I am certainly a fan of excellent education, but this is not what *Keep Sharp* is all about. This book is less about improving intelligence or IQ and more about both propagating new brain cells and making the ones you have work more efficiently. This isn't so much about remembering a list of items, performing well on exams, or executing tasks adeptly (though all of those goals will be more achievable with a better brain). In *Keep Sharp*, you will learn to build a brain that connects patterns others might miss and helps you better navigate life. You will develop a brain able to toggle back and forth between short-term and long-term views of the world and, perhaps most important, a brain highly resilient in the face of life experiences that might be disabling to someone else. In this book, I will precisely define *resilience* and teach you how to nurture it. Resilience has been a critical ingredient for my own personal growth.

Context matters when talking about something as important as the function or dysfunction of our brains, and our view of cognitive decline has changed dramatically over time. The history of documenting dementia dates back to at least 1550 BCE, when Egyptian doctors first described the disorder in what's known as the Ebers Papyrus, a 110-page scroll or manuscript that contains a

record of ancient Egyptian medicine. But it was not until 1797 that the phenomenon was given a name, *dementia*, which literally means “out of one’s mind” in Latin. The term was coined by a French psychiatrist, Philippe Pinel, who is revered as the father of modern psychiatry for his efforts to push for a more humane approach to the care of psychiatric patients. When the word was first used, however, *dementia* referred to people with an intellectual deficit (“abolition of thinking”) at any age. It was not until the end of the nineteenth century that the word was confined to people with a specific loss of cognitive ability. During that century, the British physician Dr. James Cowles Prichard also introduced the term *senile dementia* in his book, *A Treatise on Insanity*. The word *senile*, which means old, referred to any type of insanity that occurs in old people. Because memory loss is one of the most prominent symptoms of dementia, the word became mostly associated with old age.

For a long time, the elderly with dementia were believed to be cursed, or to have an infection like syphilis (because the symptoms of syphilis can be similar). So the word *dementia* was considered pejorative, used as an insult. In fact, when I first told my kids I was writing this book, they asked if it was about *dementors*, the dark, soul-sucking creatures from Harry Potter. The idea that dementia, which is not a specific disease but a group of symptoms associated with memory loss and poor judgment, is sometimes thought of in such negative ways is worth addressing briefly here.

It is true that scientists and doctors use the word clinically, and it is also true that patients and their loved ones don’t always know what to make of it, especially when they first receive the diagnosis. It is too imprecise, for one thing. Dementia can be a spectrum, ranging from mild to severe, and some of the causes of dementia are entirely reversible. Alzheimer’s disease, which accounts for more than half the cases of dementia, gets nearly all the attention, and as a result, the terms *dementia* and *Alzheimer’s* are often used interchangeably. They shouldn’t be. The word *dementia*, however, is steeped in our common vernacular, and so is the association with Alzheimer’s disease. In this book, I use both terms with the hope that the conversation, and the words we use to describe the broad condition of cognitive decline, will shift in the future.

I believe there has been an overemphasis on Alzheimer's disease as a way to talk about this broad condition, and it has further fueled a widespread sense of fear that memory loss is inevitable as we get older. Perfectly healthy people in their thirties and forties are alarmed about the implications of common memory lapses, like misplacing their keys or forgetting someone's name. That is a misguided fear, and as you will learn, memory loss is not a preordained part of aging.

As I started traveling the world talking to people about this book, I realized something else extraordinary. According to an AARP survey of Americans aged thirty-four to seventy-five, nearly everyone (93 percent) understands the vital importance of brain health, but those same people typically have no idea how to make their brains healthier or that achieving such a goal is even possible. Most believe this mysterious organ encased in bone is a black box of sorts, untouchable and incapable of being improved. Not true. The brain can be continuously and consistently enriched throughout your life no matter your age or access to resources. I have opened the black box and touched the human brain, and I will tell you all about those extraordinary experiences in this book. As a result of this training and decades of additional learning, I am more convinced than ever that the brain can be constructively changed—enhanced and fine-tuned. Just consider that. You probably think of your muscles that way—even your heart, which is a muscle. If you are reading this book, you are someone who is probably already proactive about your physical health. It is time to realize the same is possible with your brain. You can affect your brain's thinking and memory far more than you realize or appreciate, and the vast majority of people haven't even begun to try. *Keep Sharp* is going to help you design your own “sharp brain” program, which you can easily incorporate into your daily life. I have already done it myself, and I am excited to teach you to do it as well.

As an academic neurosurgeon and a reporter, a big part of my job is to educate and explain. I have learned that in order for my messages to stick, explaining the why of something is just as important as the what or the how. So throughout this book, I explain *why* your brain works the way it does and *why* it sometimes fails to deliver what you'd hoped. Once you understand these inner workings, the specific habits I encourage you to adopt will make sense and more likely become an effortless part of your routine.

Truth is, even when it comes to our general physical health, there is very little explanation in public discourse of how our bodies actually work and what makes them work better. Even worse, there is a lack of agreement among medical professionals about the best foods to eat, the types of activities we should pursue, or the amount of sleep we really need. It is part of the reason there are so many conflicting messages out there. Coffee is practically a superfood one day, and the next it's a potential carcinogen. Gluten is hotly debated continuously. Curcumin, found in turmeric, is touted as a miracle brain food, but what does that really mean? Statins seem to have a split personality, at least in the research circles: Some studies propose that statins lower risk for dementia and improve cognitive function, and other studies suggest the exact opposite. Vitamin D supplementation is constantly under fire too; some people swear by it, but study after study shows no benefit.

How does the average person make sense of the competing messages? Almost everyone agrees that toxins and pathogens from mercury to mold are bad for you, but what about certain artificial ingredients or even your own tap water? A new Canadian study showed that the fluoride in tap water consumed by pregnant mothers can lead to a small drop in their children's IQ later in life.<sup>1</sup> But fluorinated water also clearly has benefits for oral health and is still recommended by most top medical associations. It can be confusing. On top of all that, just about every doctor's visit ends with the blanket, generic recommendation that you should "get plenty of rest, eat right, and exercise." Sound familiar? Sure, it's good advice, but the problem is that there is hardly any consensus on what that means from a highly practical, day-by-day standpoint. What is the ideal diet, and how does it change from person to person? How about activity? High intensity, or slow and steady? Does everyone really need seven to eight hours of sleep a night, or can some people do just fine with far less? Why? Which drugs and supplements should one consider, given individual risk factors? And with brain health in particular, there is an even greater lack of basic understanding by both patients and the medical community. Has a doctor ever told you to take good care of your brain besides reminding you of the importance of wearing a helmet when riding a bike? Probably not.

Well, this doctor is going to tell you what you need to know and show you how to do it. If you think this already sounds complicated, don't worry. I am going to take you through step-by-step. You will understand more about your brain than you ever have in the past, and the ways to keep it healthy will make complete sense by the time you finish this book. Think of this as a master class on how to build a better brain, which opens the door to whatever you want to get out of life—including being a better father, mother, daughter, or son. You can be more productive and joyful, as well as more present for everyone with whom you interact. You will also develop more of that critical ingredient, resilience, so the optimization of your brain isn't derailed by the trials of daily life. These goals are all far more connected than you may realize.

Believing you can always be better tomorrow is an audacious way to view the world, but one that has helped shape my own life. Since I was a teenager, I've always worked hard on my physical health—to make my body stronger, faster, and more resilient to illness and injury. I think everyone has different motivations for taking care of their own health. For many, it is to feel better and more productive, and to be there for the children. For others, it is about achieving a certain physical appearance. As we get older, the inspiration often comes from a brush with mortality and seeing the fragility of life up close. That was the case for me. When my father was just forty-seven years old, he developed crushing chest pain while out on a walk. I remember the panicked call I received from my mom, and the voice of the 911 operator I spoke to seconds later. A few hours later, he had an emergency four-vessel bypass operation on his heart. It was a frightening ordeal for our family, and we were worried he might not survive the operation. I was a young medical student at the time and fairly convinced I had somehow failed him. After all, I should've seen the warning signs, counseled him on his health, and helped him avoid heart disease. Luckily he survived, and the near-miss completely changed his life. He lost thirty pounds, paid close attention to the foods he was eating, and made regular activity a priority.

Now that I am past that age with my own children, I make it a priority to learn not just how to prevent disease, but to continually assess myself to make sure I'm performing to the best of my ability. Over the past few decades, I have also been exploring the deep connection between the heart and the brain. It is true that