

ANDREW D. HUBERMAN, PhD

PRO TOC OLS

**AN OPERATING MANUAL
FOR THE HUMAN BODY**

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AN OPERATING MANUAL
FOR THE HUMAN BODY

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For Costello, Zoë, and Strummer, whose only tasks were to sleep well and enough, eat clean but not too much, stay hydrated, view sunlight, and get exercise. And endlessly give and receive love. Must be nice...

For everyone else: I wrote this book for you.

Introduction

Welcome to *Protocols*.

This book is a guide for improving your health and performance. If you're struggling with one or more areas of your health, it can help you. If you're generally feeling good and you want to level up one or more of those areas, it can also help you.

What is a protocol? A protocol is an established formula to help you overcome common obstacles, achieve a specific health or performance goal, or generally improve your day-to-day physical or mental state. Each is simple to implement. Each is designed to take the minimum amount of time to produce the greatest possible results. Each can work the first time, and every time.

As you learn these protocols, you'll discover the science behind why they work and, in doing so, you'll also discover a lot about how your brain and body work. Because each is based on known aspects of our physiology. They work because they are based in how we work. The science is important for at least two reasons that go beyond just substantiation. First, by understanding how a given protocol can, say, improve your sleep or your ability to focus and learn new things, you place yourself in the position to customize it to suit your needs, while still allowing it to produce the effect you want. Second, you'll start to see similar biological themes turning up in what otherwise would seem like disparate systems. Our brains and bodies repurpose a lot of the same mechanisms to allow these systems to work in concert. Knowing some of the science behind each protocol affords you insights not just into how that protocol works, but how different protocols synergize. Practically speaking, that gives you a level of control over your health that simply learning "do protocol A to get effect B" just can't provide. You can determine what works for your needs and your goals in the context of your life, without having to make the pursuit of health a singular focus.

Because let's face it: The real reason to do any of these protocols is to feel and perform better, mentally and physically, and to have more energy so you can go about the rest of

your life.

I should say, too, what this book is not. This book is not about “optimization,” at least not in the typical sense. That word calls to mind the idea of spending a lot of time perfecting your daily routine. True optimization is about rescuing time—not just by increasing the number of years of your life, but by increasing the number of effective hours of your days (and the number of hours of great sleep at night). Many protocols in this book take only a few minutes to do and can be done whenever you’d like. Others take a bit more time or need to be done within a certain time frame each day or week.

You’ll also notice from just these few short paragraphs that I eschew the whole notion of “biohacking.” A hack is a shortcut that involves leveraging something toward a typically unrelated goal, like jury-rigging a paperclip and tape to fix broken eyeglasses. Hacks are never long-term solutions. The protocols in this book are the opposite of hacks. They are science-supported tools, grounded in robust physiological mechanisms—neural circuits, hormones, and neurotransmitters that have been hardwired into your brain and body starting from even before you were born. You just need to learn how to access them.

You’ll notice that I mostly emphasize the behaviors that can make the greatest difference in your immediate and long-term health. However, because I often get asked which prescription drugs, supplements, and devices are useful to help achieve a given health or performance goal, I discuss those tools too.

Indeed, “What should I take?” is one of the most common questions I get from both men and women. Many people have a perception that the secret to health and performance resides in exogenous molecules—meaning something that comes from outside our body. Make no mistake: Certain pills, powders, or injectables can make a positive difference in health and performance. But because certain behaviors can so potently activate multiple physiological mechanisms, including the release of endogenous molecules—meaning, you guessed it, something that comes from inside our bodies—there is simply no replacement for them. That is why no pill can (or ever will) replace exercise, or sleep, or proper stress control. Even drugs that allow for neuroplasticity, or your brain’s capacity to rewire and learn, won’t produce learning on their own. Plasticity must be directed toward a particular endpoint. That requires certain behaviors. We must

do the right things in the right sequence. Or, as a colleague of mine aptly put it, “better living through chemistry still requires better living.”

Which means you don’t have to buy anything to achieve your health or performance goals. Some people have disposable income to devote to tools for health and performance. Others do not. I wrote this book for everyone and can assure you that it is (and I believe always will be) a core fact that behavioral tools really move the needle in the right direction. And the right ones can work for everyone. Whether you are young or old, currently fit or out of shape, the protocols in this book can make you feel, look, and think far better, and thereby show up better at work or school or on the field or in the gym, and in your relationships... even in your relationship to yourself. I know that statement to be true because literally millions of people have implemented these protocols to great success and continue to do so every day. I also know because I personally use them.

In fact, I discovered many of the protocols in this book because I needed them, in some cases urgently. I, like so many others, have struggled with sleep and stress, finding the “right” diet, knowing the best way to exercise to meet specific goals, and on and on.

But if I have one innate quality, it’s curiosity. I love to learn. I also love to share what I learn with others. And what drives my curiosity—at least in the realm of health and performance—is the same thing that likely brought you to this book: I wanted to know the best solutions to those challenges.

There are no tools included in this book that I have not personally tried. Some I have used for brief periods because they are for overcoming a sticking point, and then best set aside. Others are mainstays in my daily life and will remain so until I die because they are so central to my physical and mental health, and my ability to focus and learn effectively as they continue to help me reach my performance goals. I stand by every tool and every concept.

These protocols cover what I know works. Whereas on the *Huberman Lab*, my podcast, I explore and share both topics of which I am certain as well as topics that I’m still exploring—such as peptides or psychedelics—this book focuses mostly on the former. Its chapters on sleep; exercise; stress control; nutrition; light; focus, motivation, and learning; and personal growth are the result of years of research, both in the lab and in life, from experts in every topic, and from my own work. Some protocols are basic; others are more advanced. You’ll be able to decide which are best for your needs and goals.

For those of you who are new to my work, I'll share a bit about my background for context and how we—yes, me and you—got here. If you're going to read this book and use these tools, my hope is that you'll come to see that we are collaborators on this journey. Again, I discovered many of the protocols in this book because I need them. If you do too, know that you are not alone.

As of writing this introduction, I'm fifty years old. For the last three decades, I have spent most of my waking hours researching how the nervous system—that is, the brain and the spinal cord—works, develops, and can change, for better or worse. This is referred to as neuroscience. I first learned about the field of neuroscience in college, from Harry Carlisle. He was a physiologist, a neuroscientist, and a professor at my university. I took his course, and there I first learned about brain circuits for motivation, about learning and memory, and on and on. This treasure trove of knowledge simply did not exist anywhere else at that time, not even in textbooks. He taught all of neuroscience but emphasized the neural and hormonal and peptide interactions between the brain and the body. Harry knew how to connect the dots in a way that only a masterful teacher can. During a lecture one day, he paused writing on the chalkboard, turned to face us, and said: “The next time you see someone delusional from schizophrenia, or collapsed from depression, or addicted to speed, consider what it is to try to move, think, or feel a certain way when the neurons—the cells that subserve those efforts—are simply not there, or are broken...” Something clicked for me.

In some sense, I was primed for that moment. By nineteen, I had witnessed a lot of people with mental and physical health issues related to the brain. Several had become badly addicted to alcohol and drugs. We now know addiction is a brain issue, but back then, most people thought it was simply a lack-of-willpower issue. Many of the “high functioning” people I grew up around suffered from anxiety or depression. By humanizing science and explaining that what often appears psychological is actually physiological, Harry's course inspired me to become a neuroscientist. Also, what could be more interesting than the brain?

To be fair, becoming a scientist wasn't entirely unexpected. I've always loved observing and learning about animals, including humans. And my father is a scientist—a theoretical physicist. Until I was thirteen, my family ate dinner together every night, and my father's colleagues would sometimes join us. While other families talked about politics or

discussed sports over dinner, the only “sport” in my home was science, and the star players were scientists. I heard stories about Richard Feynman and Murray Gell-Mann, famed Nobel Prize-winning physicists, and Ed Wilson, the founder of sociobiology, along with other luminaries. We still laugh about the time when my sister, then a toddler, walked over to one of the most famous Nobel Prize winners, smiled at him, and then threw up on his lap... and he was cool about it. And my maternal grandfather was a biochemist. When we visited, he would take me to his lab to help collect data on the metabolism and body composition of rats fed different types of diets.

So it made perfect sense that I would become a scientist, right? Well, yes and no. When I turned fourteen my parents divorced. I harbor no resentment about it, but at the time, the change made things at home and school unravel. Keep in mind, it was the 1980s, when divorce was less common, and I hit puberty at fourteen too, so it’s impossible to know if what ensued was fueled by the sudden disruption in my family structure or the surge of hormones in my brain and body. As we say in science: “Bad experiment... too many variables to determine causality.”

What I do know is that from ages fourteen to nineteen, before I found myself in Harry’s course, my life was a blur of wild, eye-opening adventures, painful losses, and at times, full-blown mayhem. I got really into skateboarding—which back then was rather niche. I loved skateboarding for the activity itself, and for the community of eccentric and often unruly characters it attracted. And I loved that it was a daily lesson in discipline, focus, and energy: You try, try, try, fail, fail, fail, almost succeed, then fail one hundred times more before you finally land the trick. Often with plenty of pain all along the way. And skateboarding was 100 percent self-directed. We all pushed each other by example, and encouraged each other too, but there were no coaches, no referees. Indeed, skateboarding was a go-to activity for those of us who wanted to do a sport but for whom parental involvement wasn’t necessary or, frankly, wanted. We were completely feral. And “we” were multi-generational and from every background imaginable. Skateboarding has also always been an unusual sport because it has twelve-, thirteen-, and fourteen-year-old kids hanging out with guys (back then it was almost exclusively guys) in their late teens, twenties, and thirties. Some were from the suburbs. Others from cities. And they came from all over the country to the legendary spots we frequented. I became close friends

with people from all walks of life. And I got a lot of exposure to drugs, alcohol, sex, and violence. I also missed a lot of school.

I was okay at skateboarding. I picked up a small sponsorship or two. But I was never a contender to turn professional. As much as I may have wanted it and worked at it, I just didn't have the chops. I am blessed to know and remain friends with several of the greats from that time. And I witnessed some truly historic skateboarding. It's impossible to put into words the amount of raw energy and innovation you would find at the now-legendary Embarcadero Plaza ("EMB") in San Francisco or at a contest in San Diego, or in Washington Square Park in New York City in the early 1990s. For that and many other reasons, those years remain among the fondest and most inspiring memories of my childhood. But that's what I was: a child. Marbled into all the amazing experiences were a lot of hard ones too. Now, I want to be careful with what I say next. On the one hand I wouldn't wish a lot of what I experienced in those years on anyone, much less a young kid, but I also wouldn't trade it in either. I was completely free, and yet I felt uncertainty about everything. I got hurt a lot and spent a lot of time on crutches.

My physical injuries led to a few very good decisions, however. They motivated me to go against the convention among skateboarders back then and start running and training with weights. While it might seem commonplace now, in the early 1990s, unless you were a bodybuilder, pre-season football player, or headed to the military, no one lifted weights. Gyms were not a thing. Even weirder was if you were an American kid who meditated, but I started doing that too.

That taught me the basics of exercise- and stress-induced adaptations, and how they are similar and yet different. It goes something like this: Run farther or faster than the last time and the next run becomes easier... and unlocks the opportunity to run a little farther and faster, and so on. Lift a weight until you can't do another repetition despite your best effort in one session, and the next session, you can lift the same amount of weight for more repetitions, or move more weight. Set a timer for five minutes, sit still and try to focus on your breathing while the inevitable agitation grows, then subsides, then grows again. The next day, set the timer for six minutes, then seven minutes; and pretty soon twenty minutes is doable.

Another very good decision, though not exactly related to the physical injuries: I started thinking about college. My girlfriend had graduated high school a year ahead of

me and moved away to university. I missed her and would visit often. In the end, I mostly applied to college just to be near her. I didn't really expect to get in. But I did.

As you might predict, my first year at college did not go well. I kept up with exercise and meditation, but I missed lectures, and I got into stupid fights. The adage "you get out what you put in" is true. I got what I deserved, which was not a whole lot.

Then came the big turning point. On the Fourth of July, 1994, when a group of us were arriving at a barbecue at our friend's house and saw it was getting robbed, we did what any young male morons would do: We fought the robbers. I don't remember it even being a decision. I just recall running straight into the mix. Anyone who has actually been in a street fight—not a boxing class, or a sanctioned match with gloves and a referee—will tell you that it's not like in the movies. Things can escalate really fast, and people can get hurt, or killed. That fight was ugly. Although luckily no one got badly injured, the police showed up and we all had a lot of explaining to do. The guys who were robbing the house were arrested, not us. In fact, before driving off, the police congratulated me. I felt nauseous. It wasn't that I wished I had gotten in trouble for what had happened; I just realized that I was going nowhere in life, so the accolades felt more like a loser trophy than anything worth celebrating. Somewhere in my gut I knew that regardless of who was at fault, I wasn't making good choices; I knew I was gravitating toward self-destruction.

I spent the rest of that July Fourth weekend in reflection. I was nineteen, and I wasn't good at anything useful. And I wanted to be. So I made the decision to get my life on track by focusing on something I knew had an "if you just show up every day and work hard at it, there is something waiting for you at the end" quality.

I decided to focus on school. I didn't know what I would do with a college degree or even what degree to pursue, but at that point I didn't care. I just needed a path I knew would lead to someplace better than where I was at that moment. I would figure out the ultimate goal later.

Having missed so much of high school, I knew I was coming from behind, so I moved to a studio apartment away from campus. I studied around the clock, stopping only to go to class, eat, sleep, or exercise. To say I was motivated is an understatement—I lived in the constant fear of remaining a directionless loser, and that kept me going. I didn't have solid study habits from high school to rely on. So I brute-forced it. I would set a timer and push myself to study in two-hour blocks, refusing to let myself get up even for a trip to

the bathroom. After each block, I would take a short break and then get back to work. After I completed three of those cycles, I would allow myself a nap if I needed it, then I would hammer out three more. I worked alone, in my studio apartment, reading and taking detailed notes on every chapter, passage, and sentence. I drank ungodly amounts of water, yerba maté, black coffee, and Diet Coke with lemon juice. I went to every lecture and office hours. I tested myself on course material in my head while I biked to class and when I lay down to sleep at night. My first and last thoughts of the day were about my course material. I sat in the front row of every lecture. Mind you, I still had no idea what I would declare as my major. No specific subject felt like “the one.” I was just clawing my way forward. My girlfriend—who had known me since high school—remarked, “What happened to you?!” She was at once pleased and a bit frustrated with my turnaround. On the one hand, now I was more acceptable to her parents, but I was also a lot less “fun” to be around. Perhaps other guys could go out on Friday and hang out at the beach on Saturday and go to concerts in the park on Sunday and still do well in school. I was not one of them. I was on a mission to right myself. Once a month or so I would go to a party. Friends jokingly called me “Dart” because I would “Irish goodbye” at midnight, to ensure I got enough sleep so I wouldn’t blow the next day. I didn’t feel I was missing out on anything. By nineteen I had accrued enough wild experiences and parties for several lifetimes. For me, the action was elsewhere.

But soon stress and lack of sleep caught up with me. Also, while fear is a potent motivator, it’s not a sustainable one. I started catching colds. I got into a bike accident. Back then no one really talked about stress or the importance of sleep the way they do now, much less why it’s important to cycle periods of focused intensity with rest in between in order to avoid burnout. I bumped up my meditation from twenty to thirty minutes a day. That helped reduce my stress and improved my ability to focus for long stretches of studying. I kept up my exercise program of lifting and running three times a week each, but I started approaching my lifting sessions and runs also as forms of meditation.

Something unexpected but really cool happened with that. I found that by putting as much attention as possible on each repetition in the gym, or by letting my mind go blank while I ran, I soon could switch on those brain states of focus and calm when not exercising. It was my first taste of learning how to deliberately access, and shift between,

different brain states. I was intrigued. So I started reading about brain states. Which led me to reading about drugs. I was never much into recreational drugs. In high school and college, I drank alcohol and I smoked a bit of weed, and I tried psilocybin and LSD. I confess I didn't like any of it. Caffeine was my drug. I mentioned that to the owner of a Chinese medicine shop in town. She encouraged me to try a few herbs instead of coffee. One made me feel like I was going to have a heart attack (pure ephedra tea? I do not recommend!) but a few others made me both incredibly focused and calm for hours at a time. Cool!... but then they quickly stopped working. Not cool. I also tried a mineral that an acupuncturist said would give me much deeper sleep. It gave me lucid dreams, which led me to read a book by a guy named J. Allan Hobson at Harvard about the neurochemistry of sleep and dreaming. That started me on limiting my caffeine at night. But those experiments worked: I began feeling better and performing better in my classes again. I was excited by the idea of how significant shifts in my health and performance could come about from seemingly small behaviors and, in some cases, from ingesting specific compounds.

I also experimented with over-the-counter supplements. A few really worked: For instance, I started taking creatine monohydrate when I was twenty, and it definitely helped to make me stronger. Only now do we know of some of its additional benefits for cognition, especially when mildly sleep-deprived.¹ I tried ginseng and ginkgo but they gave me brutal headaches.

The sum total from all I was doing was that not only did my level of focus and performance in school improve tremendously but my mood improved too. I was sleeping well. I consistently woke up excited for the day. I kept building physical strength. Every Sunday I would go on a long run lasting an hour or more. I had gained a level of control over my life. Studying new information for hours at a time had become a habit, and even an enjoyable one. I had come to associate the frustration of not understanding something at the start of a learning session as a stage to get through, not something to avoid. I never expected to land a skateboarding trick the first time, so why would learning new information be any different? I knew the formula: reps, reps, and more reps until you get it. I was starting to understand the learning process as just that, a process.

And right then is when I found myself in Harry's course in neuroscience. That's when things clicked. I was finally able to bring all the resources of discipline, focus, and energy to a specific, career-related goal: I would become a neuroscientist.

To this day when people ask me how to find their calling, I say whatever you do, don't wait for it to find you. Start working hard now and learn how to take care of your mental and physical health while doing it. It could be school, or a creative pursuit, or starting a business, but stick to that structure. Do *something* hard (for you) that builds on itself every single day. It will ready you for when *the thing* becomes clear.

I've seen so many people work at something like crazy, ignore their physical and mental health, and burn out. Or wait for their calling to beckon them, and have their physical and mental health spiral in the meantime. The key is to make sure the things you do to support your health also prepare you for your calling when it comes. Build mental and physical strength and resilience. And endurance. Master getting a great night's sleep on a regular basis. Work hard in whatever job you do. That's the secret.

I worked hard in Harry's lab during my junior and senior years of college. We ran experiments side by side. I devoured every book I could on the topic of the brain, and physiology too. I went to neuroscience seminars with the grad students and professors. Harry and I even published a paper together. It wasn't a landmark study or anything, but it was solid. And I was the first author on the author line. Which meant I wasn't just another undergrad who volunteered in a lab to get a letter of recommendation for grad school. I was a real scientist. A nascent one, but a scientist nonetheless. "Anyone can read and critique a paper," Harry said, "but once you go through the process of posing a good question, wagering a hypothesis, designing and carrying out experiments, analyzing the data and writing up the findings and your interpretation of them, and you get it peer reviewed and published, you're forever changed. You'll never look at data—or the world—the same way again." I am forever grateful to Harry for giving me that opportunity.

And indeed, I applied everything I learned about the process of doing that study to my pursuit of tools for health and performance: reading, learning, asking questions, testing hypotheses, and gathering data about how different types of exercise, light, nutrition, and so on affected me. I found much of this information shrouded in esoteric names or siloed into subcultures in ways that made it difficult to access. But I had been part of a

subculture once before, and I had learned how to navigate it. And because I had grown up among scientists, I knew that this information could be useful to many.

Indeed, I would occasionally spot an intriguing overlap between something I had learned in my biology textbooks and what I happened to stumble upon in my pursuit of tools for health and performance. My once disparate worlds were starting to gradually converge.

And while my life after college may read a bit dry, like a CV, for me it was incredibly exciting. I became obsessed with our biological rhythms, and how they were affected by light. I got my master's degree by mapping the eye-to-brain circuits that help control those rhythms, and published those findings. From age twenty-five to thirty, I completed my PhD in neuroscience, researching the development and neuroplasticity of the brain. A lot of people hate grad school and finish looking a decade older than their biological age. I loved it. I worked for a scientist named Barbara Chapman, who taught me how to ask really good questions and design the right experiments to address them. She gave me a lot of leeway to develop new tools to answer previously hard-to-crack mysteries. I published six first-author papers with Barbara, all in terrific journals, including one in *Science*. None of it was easy. I routinely worked eighty-plus hours a week. It was both mentally and physically demanding. Turns out the skill I learned on road trips long ago—sleeping in cars and vans—served me well. So did all the tools for sleep and focus that I had figured out in college. Because I often slept in the lab. Along the way, I presented at dozens of meetings, an important part of academic training for which I am forever grateful. No one is born a good public speaker. It's a skill. One I got good at only because I had to present data to both friendly faces and expert critics who were anything but soft in their delivery. Nothing went perfectly, but little by little, and with plenty of red-in-the-face gaffes along the way, I was gaining mastery at my craft.

Professionally, it all paid off too. I got a great postdoctoral fellowship at Stanford. There I kept working with complete focus, day and night. I was inspired to do so, because at Stanford everyone was operating at the highest level. It is a truly amazing place.

But the postdoc step is an uncertain one in a scientist's career. There is no degree at the end, no promise of success even if you show up and work extremely hard. The vast majority of postdocs drop out of academic science and many out of science altogether. Also, my project had me competing with a big lab back east and an even bigger lab in

Switzerland, and I was a lone postdoc chipping away with the help of two Stanford undergraduates, Nicko Josten and Mike Susman. I felt the pressure of not failing; I didn't want us to get "scooped"—nerd-speak for "beat to the punch"—on publishing. For the first time in a long time, fear and stress reentered the picture. And something else happened too. One day as I was headed into the lab, I found I barely had enough energy to climb two flights of stairs. And I slept fine the night before. I was doing everything "right." Or at least I thought so...

So I returned to the process that had served me well in college: I searched for tools on how to healthily increase my mental and physical vigor day in and day out. I read, I self-experimented. I also spoke to people who seemed to have a lot of mental and physical vigor but who came by it through effort and therefore understood the process, not simply because they were gifted with great genetics or were innately high energy. At that point I had no intention of being a public health educator. I just wanted to know what would really help me, a person very willing to put in effort but not a natural in any regard with respect to fitness, learning... or really anything.

Though I was, and remain, curious. The adage "seek and you shall find" is true. I found new ways to support my health and performance. Some things have remained the same over the years—for instance, I've hardly ever altered my overall exercise routine, as you'll see. It continues to work well, and not just for me. But other things caused me to make immediate changes to my diet and the way I approach sleep. I adopted a daily practice for something kind of like meditation but which is fundamentally different and quickly restores mental and physical vigor, even when sleep-deprived. And I found new tools for focus. I got good at task switching. All of it helped me complete my postdoctoral training at Stanford with first author papers, a host of invited reviews, and most importantly, the skills and confidence to take the next big step.

I was fortunate. I had made a name for myself in the fields of neural development and neural regeneration. Several figures from my papers were in major textbooks. I accepted a position as a professor at UC San Diego, one of the best neuroscience programs in the world. I was now teaching both undergraduate and graduate students in the classroom and in my lab, writing and reviewing research papers and grants for the National Institutes of Health, and traveling the world to give seminars. I was on journal editorial boards. My lab published a paper in *Nature*—arguably the best and most competitive

journal in all of science. And many more in other top-tier journals. At forty, I returned to Stanford, this time as a tenured professor.

So all was fine and good, yes? Alas, no. While I was in grad school, Harry Carlisle—the person who inspired this path and with whom I had become close friends—took his own life. Soon after I started my lab in San Diego, Barbara Chapman died of breast cancer, at fifty. I was devastated.

And then my former postdoc advisor at Stanford, Ben Barres, had a heart attack right in front of me at dinner. He was an MD, and a PhD too, so when he looked up from his salmon filet and said, “I’m having a heart attack,” I didn’t ask questions. I rushed him to the hospital, where later we learned it wasn’t just a heart attack. Ben got diagnosed with pancreatic cancer. He died about a year later.

I was never prepared for this kind of news. And it seemed to be coming from all sides of my life past and present. In one particularly dark month, three close friends of mine from childhood—Aaron King (the famed graffiti artist ORFN whose work showed in the San Francisco Museum of Modern Art), John Eikleberry, and Jonny Farrer—all of whom were kind, creative, brilliant people, died. Stomach cancer, fentanyl overdose, suicide. I was devastated.

At a far less tragic but still concerning level, often when I ran into friends and colleagues I barely recognized them because they were so out of shape. And often in pain. They complained about their backs, or insomnia, or autoimmune issues. They were concerned, too, about the health—both physical and mental—of their kids. Mind you many of these folks were MDs or scientists. They knew the science but that didn’t seem to matter. One colleague of mine in San Diego became addicted to pain meds and stopped running his lab. Then he died. No one in our community talked about it. It was as if we thought we were immune to the addictions that stem from the very brain circuits we studied.

It became clear to me that a lot of people were struggling in one or more areas of health, as I once had. It didn’t matter if they were doctors, scientists, entrepreneurs, or musicians, male, female, young or old... no one was immune.

Of course, I didn’t have all the answers. But I had tools I knew were potent and could be valuable to others. And from my research, both in my lab and outside of it, I understood several of the mechanisms behind why those tools worked. I was by no means

an expert in all fields of biology, but I was fluent in neuroscience. By the time I was a professor, if I had any questions about a specific field of biology, I knew world-class experts who could give me the answers, if such answers existed. I knew a lot of world-class MDs too. And experts in physical health and performance.

Some of the best tools were little-known variations on the classic “eat right, get sleep, exercise” adage. These variations were rarely discussed but maximized results. Other tools came from experts in the trauma-healing and addiction-recovery communities. Some came from elite athletes or their coaches. Still more came from my most forward-thinking MD colleagues and friends. My benchmark was always the same: If the tools worked for me and for others, did not require a lot of time or money, and were safe, they became part of my arsenal, and I would pass them along to others if I thought they might be of help to them too.

Mind you, all along I was still working in my lab, studying brain development, regeneration, and neuroplasticity. Our work was increasingly focused on remedying diseases, but none of it was related to issues I or family members personally had challenges with. But because I saw that stress was such a pervasive issue, and at the heart of so many of the health and performance challenges that so many scientists and MDs, young and old, were struggling with, I decided to devote a significant fraction of my lab to studying stress, resilience to stress, and real-time stress control. My lab’s work became more immediately applicable to more people. And that felt good. Here were more tools for friends, family, and colleagues, and they became part of my arsenal as well.

While I love academic science, it has always been somewhat painful to see incredible data from published findings that I know could be of benefit to the general public kept out of their reach. It’s not that the scientific community actively hides their findings. To the contrary. Universities have press offices, and the news outlets have long had health and science sections. But all I had to do was compare what the press said about the work I knew and understood, with what the scientists who actually did the work said and what some of them were starting to do to support their own health and that of their families, to know that there was a gap—a trench, actually—between the two. No one was to blame. There was nothing nefarious going on. It was just how things were. I decided to try to fill that gap.

Which is why in 2019, I started sharing tools for health and the science behind them on social media, and in 2021, I started the *Huberman Lab* podcast. At that time much of the world was locked down. Stress was at an all-time high, so I felt even more compelled to share information I knew could help people. I knew nothing about podcasting, but I grew up with the ultimate example of DIY media: Skateboarders have always filmed their own movies, long before social media or reality TV made it a thing. My close friend from high school Jake Rosenberg filmed us all as kids. He eventually became a legend in skateboarding filmmaking, as well as one of the original contributors to the film editing program Adobe Premiere.

So to start a podcast, I DIY'd it. But not alone. I recruited my friend Rob Mohr, who had a small podcast and knew the basics of the genre. We looped in famed skateboard photographer Mike Blabac, skateboard filmmakers and editors Chris Ray and Martin Fobes, and we did what we knew would work. We recorded a person—me—talking about and living his passion: science and tools for health. I also started interviewing my colleagues from Stanford and beyond on the podcast. (My bulldog-mastiff Costello was asleep under the desk in my recording studio/closet snoring away for many of our first episodes.)

There are three other critical players who make it work. First is Ian Mackey, whom we (ethically) poached from Stanford's media team to come work for the podcast. Another is Greg Annunziata, who was my Uber driver and is now *Huberman Lab* podcast admin. It's not uncommon that people ask me questions about tools for health, but on a short ride to the airport one day, Greg asked the right questions. I immediately recognized that he was as curious as I am. As he dropped me off, I said: "You should come work for me." That was four years ago.

Everyone on the team wanted to learn, and apply, science-based tools for health and performance in their lives. Mike used the tools in this book to bring lifelong blood pressure issues into check and to lose, and keep off, sixty pounds of extra weight. He also quit excessive drinking, something he had done for decades. Ian—once very overweight—is now super fit and thriving in every aspect of life. Another member of the team has multiple sclerosis and, with these tools, has been able to reduce a lot of his symptoms. He has vigor to spare. All of us use protocols for sleep, exercise, nutrition, stress control, and more to navigate extremely demanding yet rewarding family and professional lives. None