

# THE BRAVE ATHLETE

CALM THE  
F\*CK DOWN

AND RISE TO THE OCCASION

SIMON MARSHALL, PhD  
& LESLEY PATERSON



“Lesley Paterson is one of the most mentally tough professional athletes I know, and Simon Marshall knows why. Their special sauce has finally been bottled, and the strategies described in *The Brave Athlete* promise to help athletes of all abilities become dirty fast.”

—TIM DON, WORLD CHAMPION TRIATHLETE

“Forget marginal gains; Dr. Simon Marshall understands the most important part of performance: the athlete’s mind. His expertise is an invaluable resource to help athletes master theirs.”

—DAVID BAILEY, PHD, HEAD OF PERFORMANCE AT BMC RACING TEAM

“My training background and philosophy evolved under the coaching of Lesley and the mental slapping of Simon.”

—JESSICA CERRA, PROFESSIONAL CYCLIST

“I have admired Dr. Simon Marshall’s talent as a scientist and a communicator for more than two decades. In *The Brave Athlete* he brings this talent to the fore as he translates psychological science into meaningful strategies to help athletes become more confident, motivated, and calm.”

—DR. KIRSTEN DAVISON, PROFESSOR OF PUBLIC HEALTH, HARVARD UNIVERSITY

“This book will take you deep inside yourself so that you can identify what you thought were your limits and, with Simon and Lesley’s help, smash them to smithereens.”

—BOB BABBITT, HOST OF BABBITTVILLE RADIO, USA TRIATHLON HALL OF FAME INDUCTEE

“Simon and Lesley get to the heart of what it takes to be a brave athlete. It’s about creating a mindset that goes to bat for you rather than against you. *The Brave Athlete* is an invaluable guide to help you sort out your head. Plus it’s funny. Really bloody funny.”

—FLORA DUFFY, WORLD CHAMPION TRIATHLETE

“Marshall and Paterson, in some kind of post-Western duo, limn their own version of Wyatt Earp and Doc Holliday. Only the guns and whiskey are replaced with doctoral degrees and world titles. In *The Brave Athlete* they challenge the reader to draw swords on the psychic battlefields of sport but do so with the gift of Continental mirth and compassion.”

—SCOTT TINLEY, TWO-TIME IRONMAN WORLD CHAMPION, AUTHOR, AND TEACHER

“Simon and Lesley bring years of training at the world-class level, in multiple sports, together with years of working in academia—all in the real world.”

—**JANEL HOLCOMB**, PROFESSIONAL CYCLIST AND COACH

“I always struggled with my inner self and demons during races. Simon taught me not only how to deal with those demons, but also how to manipulate them in such a way to take my racing to an entirely different level.”

—**KYLE HUMMEL**, IRONMAN 70.3 AGE-GROUP WORLD CHAMPION

“Lesley has shown me the ability to suffer like no other with the strategies outlined in this book. With these skills neither family or sport is jeopardized, bringing a much-needed balance to my life.”

—**BRANDON MILLS**, AGE-GROUP MOUNTAIN BIKER

“The formula for *The Brave Athlete* is a winner and can be applied to any challenging situation.”

—**DR. JACQUELINE KERR**, PROFESSOR OF FAMILY MEDICINE AND PUBLIC HEALTH,  
UNIVERSITY OF CALIFORNIA AT SAN DIEGO

“Working with Lesley and Simon has been one of the biggest life-changing experiences.”

—**MAURICIO MÉNDEZ**, XTERRA WORLD CHAMPION AND IRONMAN 70.3 CHAMPION

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# INTRODUCTION

At some point in our lives, we've all been told, "Be brave." You probably first heard it from your mom or dad as you stood sobbing with a skinned knee, or when you realized that the large needle that the nurse was holding was headed for *your* arm. Being brave is about facing physical or mental discomfort with courage. And courage is the ability to act despite having thoughts and feelings that scream at you to run, hide, or freeze.

Being brave is not about acting without fear or anxiety.  
In fact, far from it. **BEING BRAVE** is  
about feeling fear and getting stuck in anyway.

Only under very specific circumstances would you throw yourself headfirst into danger *without* fear: (1) There is too little time to think about what the dangers actually are, (2) you've grossly underestimated the danger in the first place, or (3) you're f\*cking nuts. For some, it's a little bit of all three. Regardless of how brave you prove yourself to be, you should almost always expect to feel like a scaredy-cat sometimes. It's entirely normal.

In this book we're going to use fairly loose definitions of bravery and fear. This is not just because of the blindingly obvious truth: Being an endurance athlete doesn't actually require you to face real danger—you know, the kind in which fate hangs in the balance and lives are at stake. Real bravery is reserved for the people who put their own lives at risk to help others. Our goal is not to cheapen this virtue, but rather to acknowledge that **we should all do stuff that scares us, however small, and this takes a very personal form of courage.**

It turns out that doing stuff that scares us is surprisingly good medicine for the brain. As you start to accumulate experiences of dealing with scary stuff, your brain thanks you by physically changing to become better prepared. Yes, your brain starts literally reorganizing itself to react in a more “we got this” way. Scientists call this “neuroplasticity,” but we call it “hardening the f\*ck up.” Think about that the next time you’re stuffed into Lycra and on the verge of crapping your pants before a race.

We all feel fear, but how we respond reflects our own life experiences and how we manage the expectation of emotion that comes from thinking about the future. For example, some athletes are excited for competition because they know exactly what lies ahead, whereas others are excited because, well, ignorance is bliss. Some are paralyzed by the thought of competition, despite never actually having done a race. Others are experienced athletes who selectively draw on a single traumatic event to drive anticipation of what must surely happen next.

The bottom line is that we all come to the table with baggage. Yes, even you. For this reason, the brave athlete’s heart is always bandaged. Whether you’re a first-timer buckling under the weight of “feeling like an idiot” or a top pro struggling with the emotional roller coaster of chronic injury, this book is about helping you get through it. You might even be one of those athletes who’s in calm waters, at least for now. No issues, no problem. In that case, think of this book as your mental flu shot. Brush up on a few skills or learn a few tricks to stop the excess (emotional) baggage piling up. Why not also take the time to develop some empathy for your fellow athlete’s experience of suffering and awkwardness? As Reverend John Watson, the Scottish author and theologian, once said: “Be pitiful, for every man is fighting a hard battle.” In contemporary and less sexist parlance, this simply means that you need to be kind because everyone is dealing with their own shit that you probably know nothing about. So quit sippin’ the Haterade and start lovin’ instead of judgin’. (And in return, we promise never to talk like that again.)

It might come as a surprise to some (and very good news to others), but talent is vastly overrated. Your physique, your responsiveness to training, and your personal records (PRs) have little to say about how brave you are. To be a brave athlete, you need a special set of skills. Not Liam Neeson-level skills, but skills nonetheless that go far beyond the physical training, gadgets, data,

and gear. We're talking about skills to help you to face your fears, push through intense physical discomfort, grow self-belief and confidence, build motivation, and enjoy competition amidst frustration and disappointment. And let's not forget the granddaddy skill of all: keeping it all in perspective. **Whatever the situation, however insurmountable it may appear, the first line of defense is to calm the f\*ck down.**

The fundamental building blocks of becoming a brave athlete are represented by the bandaged heart, wings, and a sword. This keeps us from pebble-dashing the page with ideas like “integrated regulation,” “ego depletion,” and “causality orientation”—silly word combinations that only psychologists could dream up. The issues presented in *The Brave Athlete* certainly don't represent all the mental challenges that athletes face, but in our experience, these are far and away the most common. In your quest to become a badass brave athlete, you're gonna have to learn a few new tricks: develop a humongous heart, grow a pair (of wings, that is), and sharpen a massive tool (a metaphorical sword, obviously). Welcome to Brave Athlete School.

Let's take a peek into the armory and see what elements you're missing.



**Heart.** This is the passion and motivation that identify you as an athlete. It's why you do what you do. Brave athletes aren't perfect, but they know their “why,” believe in their ability, and know how to turn intentions into action.



**Wings.** This is the ability to rise above obstacles, setbacks, and conflict. Brave athletes keep perspective whatever the circumstances, leverage a healthy attitude to make good choices, and manage the internal conflict that comes with challenge, social comparison, and judgment.



**Fight.** This is the ability to always give your best when it counts. Brave athletes engage in the internal battle of managing stress and anxiety, feeling competitive, staying focused under pressure, and being able to push through physical discomfort without giving up.

When you acquire these skills you will be better equipped to get stuck in with enjoyment, abandon, and fight. If you are looking for allegorical tales of athletic toughness or inspirational zero-to-hero anecdotes, you won't find them here. In the real world they don't actually help that much (we've tried most of them). Sure, they get you fired up turning the page, but you need more than a one-for-the-Gipper speech. You need long-lasting practical skills. Consider this book your Swiss Army knife. You will find an array of practical strategies grounded in brain science to help you become faster and happier. The onus is on you to do the work—identify your weaknesses, and choose and apply specific techniques in your own training and racing.

# THE BASICS

# HELLO, BRAIN!

## A PEEK INSIDE YOUR 3-POUND LUMP OF CRAZY

*I don't trust anybody who isn't a little bit neurotic.* —MOHADESA NAJUMI

We are about to embark on a Tour de Brain to understand why that 3-pound lump on your shoulders is not only your best friend but also your worst enemy when it comes to being an athlete. If you have the attention span of a flea, here's the executive summary: Over millions of years, the human brain has become wired to protect you from harm. It will kick and scream to warn you that the shit is about to hit the fan, and it has been given ancient powers to ensure that you listen. However, what the ancient parts of your brain don't know is that you live a mostly mundane life. You're not stalked by saber-toothed cats anymore, and there's no risk of being crushed in your sleep by a woolly mammoth. The reality is that modern life in the burbs brings us the daily fear-equivalent of a nipple tweak—annoying, yes, but certainly not genuine pant-crapping danger. The problem is that no one bothered to tell your brain this fact, and so it overreacts. Aw, bless it. Evolution has enabled you to walk upright and open jars of peanut butter, all while talking about how hard it is to qualify for the Boston marathon, but it has also quietly screwed you at the same time. You often show

up to light birthday candles with a flame thrower. Before we learn what we can do about it, let's dig into some juicy evolutionary biology and neuroscience to know why we're in this mess in the first place.

### **You're a fish out of water.**

Our ancestors were all professional swimmers. Okay, that's a little stretch of terminology and evolutionary biology, but scientists agree that we descended from fish. Technically speaking, we evolved from single-cell bacteria before water appeared on earth, but that's getting picky. We arrived via fish. (If you're a panicky triathlete, then there's a cruel irony at work.) Over 350 million years ago, armed with floppy fins and some strange type of gill-lung hybrid things, early amphibians flapped and flopped their way on to the muddy shores. They had a poke about. No one knows exactly why they did this. Perhaps they were just bored with swimming (I can relate) or wanted to try food that wasn't always soggy. Either way, let's be thankful they did. We still carry around remnants of our fishy past, like hiccups and that little groove on your top lip. Get your Google on to find out why.

As our fishy family dragged ass up the muddy shores, they soon realized that they were terribly ill equipped to cope with dry land. Something had to change. Thanks to Chuck Darwin, we now know why and how this happened. Mind you, this was no speedy transition. It took 30 million years to develop a body shape that could crawl properly. Tadpoles now do in it six months. Pah. Kids these days. It wasn't just lungs and mobility we were lacking back then; we also needed more brain power to cope with the new world. The brain we did have was little more than a brain stem and a few basic parts, like a cerebellum—a sort of mini-brain that pulled the puppet strings of our slippery nerves and muscles. We still have a cerebellum, albeit a newer model. Your cerebellum helps coordinate your physical movements and allows you to learn new ones. Tucked underneath your modern brain, it's still perched atop your brain stem, where it has been for millions of years. It looks like it's been sent to the brain's naughty step. (For a sneak peak, see the diagram on p. 7.)

Fast forward another few hundred million years to what we now recognize as the human brain. We've still got lots of other ancient brain parts, like the

limbic system. These ancient brain regions are still with us because they've proved to be invaluable for keeping us alive and enjoying life. More on that later. Because evolution never stops, the human brain has tripled in size over the past 7 million years. Most of this growth has occurred over the past 2 million years. Think about that for a moment. It took us 4 billion years to evolve a human brain (we only picked up the trail when we exited the water, a mere 350 million years ago), yet most of the growth and development occurred over the past 2 million years. The sheer speed of this growth had even scientists stumped until recently.<sup>1</sup> That said, the human brain is shrinking again. We've lost the size of a tennis ball over the past 10,000 to 20,000 years, probably because humans have become domesticated and the brain has become more efficient. Your brain is also scaled to body size, which is also shrinking. This is hard to believe unless you looked at trends in skeletal size over thousands of years, rather than body blubber over the last 50 years. If you're not giddy with excitement about what's coming over the next 2 million years, then you need to get your nerd on.

### **New science has helped us unlock the secrets of the brain.**

Your 3-pound lump is a pretty impressive piece of kit. The modern human brain has baffled scientists for years because of its sheer complexity in structure and function and because it's so hard to prod and poke around without dire consequences for the owner. In recent years, new methods of measuring how the brain works have given neuroscientists a much clearer idea of not just what the brain does, but when, where, and how. For example, functional magnetic resonance imaging (fMRI) has enabled us to watch, in real time, where the blood flows in the brain in response to different thoughts, mental tasks, or situations. When you follow blood flow, you follow oxygen and glucose (brain food). Oxygen and glucose supply is a sign of energy demand, which is a sign of neural activity, so brain blood flow shows us the parts that are working hard. FMRI studies have helped us debunk popular myths, such as the notion that there are

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1 Alok Jha, "Human Brain Result of 'Extraordinarily Fast' Evolution," *The Guardian*, December 28, 2004, <http://www.theguardian.com/science/2004/dec/29/evolution.science>.

right-brained and left-brained people, or that you only use 10 percent of your brainpower. These are now both proven by science to be utter nonsense.<sup>2</sup>

## **We need to fudge the science a little to make a point.**

What follows is a gross oversimplification of how the brain functions. We've oversimplified the science not because we want to deliberately mislead you or insult your intelligence, but because we need a way of thinking about the brain (and the tricks it plays on us) that makes it easier for us to solve the problems that it gives us in real life. One of the biggest simplifications is that we've conflated anatomy with function. Modern neuroscience has revealed that studying the anatomy of the brain (the physical structures and their location) doesn't accurately reflect the complexity of what the brain actually does (its function). Tasks of the brain don't live exclusively in certain areas. However, we need a "working model" that is at least consistent with the science and, importantly, doesn't fight the biological reality. Practical utility is our goal—we want you to have more thoughts and feelings that are helpful and productive and have fewer psychological and emotional experiences that make you want to crap your pants, tear your hair out, wimp out, shy away, or otherwise mentally self-flagellate. Our working model of the brain relies almost exclusively on metaphors and analogies, many of which aren't even ours. The use of metaphor and analogy to communicate sciencey-things really irritates some people with science backgrounds, because of the oversimplification problem. We stick to our guns on this one (see?) because it is an integral part of science communication, and we've learned that it works.<sup>3</sup> It's also more fun.

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2 Christopher Wanjek, "Left Brain vs. Right: It's a Myth, Research Finds," *Live Science*, September 3, 2013, <http://www.livescience.com/39373-left-brain-right-brain-myth.html>.

3 Caleb A. Scharf, "In Defense of Metaphors in Science Writing," *Scientific American*, July 9, 2013, <https://blogs.scientificamerican.com/life-unbounded/in-defense-of-metaphors-in-science-writing/>.

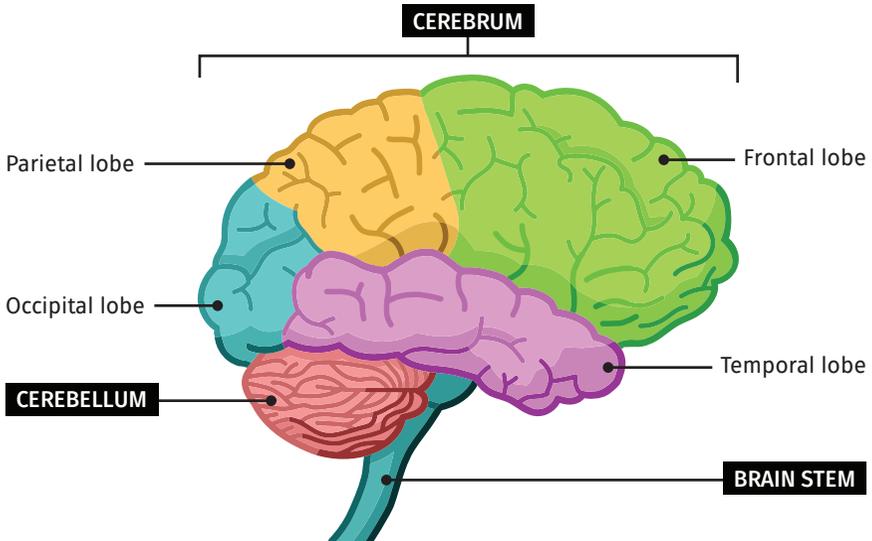
## Let's take a look inside your second favorite organ.

If you recall from your high school biology class (oh, never mind), your brain has three distinct regions:

The **brain stem** connects your cerebrum and cerebellum to your spinal cord and is responsible for involuntary functions like breathing, heart rate, digestion, swallowing, and sleep-wake cycles, among other things. Your brain stem is not very trainable.

The **cerebellum**, or “little brain,” sits on big brain’s naughty step and is responsible for coordinating physical movements and aspects of language and memory. Your cerebellum is somewhat trainable.

The **cerebrum** is the biggest part of your brain and comprises left and right hemispheres. In fact, it’s so big that it has to be folded up and squished (which is why it looks so wrinkled) in order to fit into that tiny skull of yours. Your cerebrum is responsible for all voluntary movements and for interpreting incoming sensory data, plus all the “higher” functions that make us human, such as reasoning, emotion, capacity for abstract thought, learning, and so on. It does lots of other things too. Each hemisphere of your cerebrum has four regions or lobes: the frontal lobe, the temporal lobe, the parietal lobe, and the occipital lobe. Although each lobe of the brain has a job to do, they never really work in isolation. There’s no “I” in lobe.



Your cerebrum is very trainable. In fact, your cerebrum loves training so much it will look for things to learn even when you can't be bothered to train it.

Let's start digging a little deeper. Our brains are made up of a mix of old and new parts. Your ancient brain focuses on keeping you alive and convincing you to create mini-m's (among other things), whereas your new brain helps you think and be smart. Your new brain also enables you to think about your thinking. This is called *metacognition*, and it turns out that not many species can actually do it. Later, we will learn why this is a key strategy for unblocking your mental toilet. Some of your old and new brain regions are shown in the diagram on p. 12.

Don't get hung up on the unpronounceable medical names, but do take a look at what the different parts do. This is important because when you're standing on the pool deck worrying that you look fat in your swimmyes, or you crap yourself at the mere thought of doing your first marathon, this diagram begins to explain why. Even if you feel none of these things, bar the occasional "I don't want to look like a complete tool," this diagram holds clues as to how you can have more of the thoughts and feelings that you want.

## Why can't my brain get along with itself?

Your ancient brain and your new brain argue a lot. Imagine that you had a bodyguard 24/7. What kinds of things do you think you'd argue about? Places you want to go but your bodyguard thinks are too dangerous for you? Your bodyguard getting slightly too aggressive with other people? Getting constantly reminded how dangerous everything is? That's just one of many arguments your ancient brain has with your new brain on a pretty regular basis. Another argument might be how best to handle discomfort during a race, or whether or not you should keep plowing through that jar of cashew butter in a single sitting (yes, you, Lesley Paterson). Perhaps it's whether you should spend \$8,000 on a new bike or a month's salary to do a single race. It might not be about sports at all. You might always fall for the wrong guy or girl, or you get taken advantage of by other people. Your brain has a lot to answer for.

Because brain arguments happen at lightning speed (thanks in part to your uncinat fasciculus), you're not even aware of them most of the time. You often end up just being "forced" to implement the decision that gets handed down to

you. For example, you stay in a comfort zone; you shy away from pressure-filled situations; you buy something you can't afford; you quit when it gets hard; you gorge on sugar at night, or whatever. Sometimes you're very aware of the back-and-forth but still feel powerless to take charge. Let's explore a brain battle that triathletes know well—coping with an open water swim start.

## Inside the head of a triathlete during an open water swim start.

The first event in a triathlon is swimming, and in 99.9 percent of races, this happens in a lake, ocean, or river (hence “open” water). In a triathlon, everyone starts together. If the race is really big, athletes start with others in their age group or gender, but this can still amount to hundreds of people all rushing into the water at once. The first few minutes of any triathlon feels like you've been dumped into a washing machine. It's hard to see anything, arms and elbows are flying, you're swallowing more water than is probably healthy, and all your technique and breathing rhythm are long gone. Just at that moment, someone grabs your ankle. Then they grab your leg. Then you get punched twice and pushed under. Here's the running dialog between the regions of ancient brain and new brain:<sup>4</sup>

**Amygdala** (*which is emotion central*) [shouting]: You do that once more and I will f\*cking drown you!

**Orbitofrontal cortex** (*which helps us see what we can get away with—the reward-punishment tradeoff*): Wait, wait! Don't drown him. You'll never get away with that!

**Uncinate fasciculus** (*which is trying to arbitrate being sensible versus being stupid*): Hang on, we need to find a compromise here. You can't just drown someone because you're in a race. You won't be able to live with yourself. What about just a swift kick in the teeth?

**Dorsolateral prefrontal cortex** (*which deals only with facts and logic*): Stop getting emotional. Is it even the same person? How hurt are you? Is there blood? Are we in danger of drowning? Give me the evidence. I'll stay calm and logical and let you all know what we're going to do.

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4 We thank Dr. Steve Peters for providing the template of this brain fight. “Optimising the Performance of the Human Mind: Steve Peters at TEDxYouth@Manchester 2012,” <https://www.youtube.com/watch?v=R-K1D5NPJs>.

**Ventromedial prefrontal cortex** (*which helps us think about another person's feelings*): Stop being so selfish. Where's your compassion? They're probably also going through hell back there, which is making them overly aggressive. They're just trying to survive too!

**Hippocampus and cingulate gyrus** (*which help regulate emotion, pain, and memory*): I've consulted the memory banks, and this has happened to you before and you got through it. Besides, you can handle more than that. Our data show that in about 6 minutes the thrashing is predicted to stop. If it still goes on, you can stop swimming for a few seconds and just shout at them. This usually does the trick.

**Amygdala** (*which is emotion central*): I don't give a shit. Just hurt them so they stop it.

You now have a whole lot of brains in a fight.

One of them has got to get control. And let's hope it isn't the one who wants to drown or hurt the other swimmer. Sometimes the socially acceptable but devious brain takes charge by saying, "Three strong kicks to the face should do it!" Sometimes the rational frontal cortex brain takes control and says, "Just swim two feet over to the left and all will be fine." Depending on your personality, the brain left holding the reins is likely to vary. Regardless of the outcome, you can see the need to stay calm when utter chaos breaks out in your head. **This internal power struggle is a major cause of mental turmoil for athletes because it creates negative emotion, detracts from the task at hand, and almost always slows you down.** It's also just too damn complicated. Let's make things simpler. The main culprit in the ancient brain is the limbic system. The key player in the new brain and defender of all things sensible is the frontal cortex.

## **In Brainsville, there are always two sides vying for control.**

The different regions of the brain take sides as the battle lines are drawn. On one side we have the limbic system, and on the other the frontal cortex. Before you decide who to root for, keep in mind both sides are needed to keep you alive and healthy. Nevertheless, this dual-brain model is helpful because it provides the basis for understanding much of our inner conflict and decision-making. Let's take a closer look:

The **limbic system** comprises all the ancient brain regions—the amygdala, the cingulate gyrus, the hippocampus, and the hypothalamus. The limbic sys-

tem is an emotional machine that reacts only to drives and instincts, which you experience as feelings and impressions. If your limbic system ruled the roost, you wouldn't have a problem. You'd be as dumb as a post, but you wouldn't have to answer to anyone. You'd have a reacting brain. Your amygdala and hypothalamus would team up to tell you what to do by feeding you feelings and impressions. Your hippocampus would remind you via memories that it feels good to be the King. You'd steal a lot. You'd hump anything. You'd tell people exactly what you thought of them. You'd probably murder a lot. You'd also end up in prison. Some people do end up in prison because their limbic systems are literally controlling their brains.

The **frontal cortex** comprises the parts of the new brain—dorsolateral prefrontal cortex, uncinate fasciculus, ventromedial prefrontal cortex, and orbitofrontal cortex. It's a lot more considerate than your limbic system. Your frontal cortex deals only with facts and logic, and guides empathy, moral judgment, and social conscience. Your frontal cortex is the only part of you that can think. At least in the way we define thinking: using your mind to consider or reason about something. The rest of your brain is simply a machine. When you think about who you are, your values, beliefs, hopes and dreams—it's your frontal cortex doing the work. In short, your frontal cortex is the real you. We like the frontal cortex because it's like your dad: helpful, supportive, and able to put shelves up. Admittedly, he might not be the first person you turn to for emotional comfort, but he'll probably be able to help you with your taxes and he'll know why your engine rattles from a cold start.

A good metaphor will make it easier to follow and even to “win” the brain fight. Because so many psychologists adopt the dual-brain model, there are plenty of metaphors already available. For example, some refer to our limbic system as a “lizard brain” or a “reptilian brain” because of its primordial intentions. Jonathan Haidt, author of *The Happiness Hypothesis*, refers to the two brain systems as the “Elephant” (limbic system) and the “Rider” (frontal cortex).<sup>5</sup> Daniel Kahneman, the Nobel Prize-winning economist and author of *Thinking, Fast and Slow*, refers to them simply as “System 1” and “System 2.”<sup>6</sup> By

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5 Jonathan Haidt, *The Happiness Hypothesis* (New York: Basic Books, 2006).

6 Daniel Kahneman, *Thinking, Fast and Slow* (New York: Macmillan, 2011).

far the best analogy we've come across is from Dr. Steve Peters, a British forensic and sport psychiatrist, who refers to the limbic system as a Chimp. This is a great metaphor for the limbic system because a chimp often acts up, has tantrums, and can be pretty disruptive. But a chimp can also be calm, sleepy, adorable, and cuddly. Most importantly, a chimp doesn't really mean any harm to you because it doesn't know any better. It's just a chimp. We love it, and we have adopted the chimp metaphor as our working model. Thanks, Steve. In contrast to your Chimp, we refer to your frontal cortex as your Professor brain, because it's always logical and only deals in facts and truth.

If there's one book that every athlete should have on their bookshelf, it's Dr. Peters's book, *The Chimp Paradox*.<sup>7</sup> It's not a sports-specific book, but it will help you understand and better manage your Chimp in all aspects of your life.

### **Chimp versus Professor: Where the shit hits the fan.**

In an ideal world, your Chimp brain and your Professor brain would be nice neighbors. Like when your neighbor leans over the fence and asks to borrow something. Polite and considerate. Here's the ideal scenario:

- Your Chimp experiences an urge to [insert instinct of choice here . . . eat, hide, run, have sex].
- Your Chimp asks the Professor brain for permission to get the urge met.
- Your Professor brain carefully considers the request by thinking it through using only facts and logic.
- You make a decision that is in the best interests of both your Chimp and your Professor brains.
- Everyone is pleased and you live happily ever after.

If only things were that simple! But they're not. In fact, we have a major problem. Your Chimp is a bully. And this bully has lightning-fast reflexes and super-human powers of persuasion.

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<sup>7</sup> Steve Peters, *The Chimp Paradox: The Mind Management Program to Help You Achieve Success, Confidence, and Happiness* (New York: TarcherPerigee, 2013).

## Meet your inner primate—your Chimp brain

Scientific studies in neuroscience and cognitive psychology have proven that your Chimp brain is a tough wee bastard. Your Chimp was bestowed with biochemical powers (called neurotransmitters) that enable it to bully your Professor brain into submission. Instead of being a polite and respectful neighbor, your Chimp sets up camp in your basement and just starts using your shit at will. Here are more facts about your Chimp:

- Controls the fight, flight, or freeze response, a powerful response to danger.
- Is first responder for all sensory information. Research shows that your Chimp brain processes and reacts to sensory input data up to five times quicker than your Professor brain.
- Maintains very strong drives for food, power, sex, ego, being accepted by others, security, inquisitiveness, and so on. Your Chimp is motivated to protect these drives at all times.
- Uses powerful neurotransmitters like dopamine, serotonin, oxytocin, acetylcholine, and noradrenaline to get your attention and move you to act.
- Thinks in black and white, there is no gray. Only right or wrong.
- Is paranoid as a result of a deep-seated need for safety. Is hypervigilant about protecting you.
- Elevates threats to catastrophic—they are always a matter of life or death.
- Acts irrationally; never mind if it's reasonable or feasible.
- Is infallible, final, and merciless.

So, you're stuck with this overemotional roommate that is fixated on preserving basic drives or instincts using feelings and impressions, even though you never asked for help. Your Chimp screams at you to make sure you hear, and worry and anxiety are usually the end result. Here are just a few examples of the havoc that your Chimp creates around your athletic performance: *What if I get dropped? I have to race well for my coach. If I don't get on the podium, this race will be for nothing. I look like an overstuffed sausage in this cycling kit. If I have a bad race, my sponsors will write me off. . . .* or the gazillions of other things that make us feel miserable.



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# ABOUT THE AUTHORS

**Simon Marshall, PhD**, trains the brains of endurance athletes and fitness enthusiasts to calm down and become happier and more mentally resilient. Prior to brain-wrangling athletes full time, he was a professor of behavioral medicine at the University of California at San Diego and a professor of sport and exercise psychology at San Diego State University. He has published over 100 scientific articles, been the recipient of over \$25 million dollars in research grant funding, and has been cited in the scientific literature over 10,000 times. He has served as advisor on the science of behavior change to the National Institutes of Health, the Centers for Disease Control and Prevention, the American Cancer Society (ACS), and the British Heart Foundation. He currently provides performance psychology support for BMC Racing, a WorldTour professional cycling team. Dr. Marshall holds a bachelor's degree in sport science, a master's degree in kinesiology, and a PhD in sport and exercise psychology with a postdoctoral fellowship in behavioral science. He is married to Lesley Paterson, the Godzilla of mental toughness, surrounded by a loving family of carbon, rubber, and Lycra.



**Lesley Paterson** is a three-time world champion in off-road triathlon, an Ironman triathlon champion, a professional mountain biker, endurance coach, and foul-mouthed Scots lassie. Growing up in Scotland, Lesley was the only girl to play rugby in a club of 250 boys. When boobs appeared she was banned from playing with boys, so she started competing in running

and triathlon. Lesley went on to become a national champion in cross-country and an international triathlete. Throughout her 25-year endurance sports career, she's been coached by some of the world's best endurance minds in swimming, cycling, and running. Unfortunately, many endurance coaches she encountered were not coaches at all but were training-prescription experts—usually exercise physiologists with no formal training in psychology or pedagogy, let alone the bedside manner needed to understand and manage the psychological and emotional worlds of their athletes. Continually being told that she was not talented enough, that she was too small, too slow, too fat, too emotional, too disorganized, or just too mouthy to compete at the top ranks of triathlon only cemented her resolve. Lesley's athletic journey is one of passion, grit, toughness, and an unwavering Braveheart spirit, demonstrating what it looks like to face your fears, overcome obstacles, and surround yourself with positive and supportive people. Lesley uses her bachelor's degree in drama and her master's degree in acting to better understand the emotional journey of the athlete and the importance of creating the athlete-character you wish to become.

**Lesley Paterson and Simon Marshall** own Braveheart Coaching ([www.braveheartcoach.com](http://www.braveheartcoach.com)), a San Diego-based company that trains both the body and the brain to help endurance athletes worldwide become faster, more resilient, confident, motivated, and happier in sports and life.

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*I don't handle pressure well.*

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