

THE MORNING MIND

The
**MORNING
MIND**



**USE YOUR BRAIN TO MASTER YOUR DAY
AND SUPERCHARGE YOUR LIFE**

Dr. Robert Carter III | Dr. Kirti Salwe Carter



HARPERCOLLINS
LEADERSHIP

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To our parents and siblings for their support and unconditional love every step of the way, and to our love, Rajshri

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Preface



“Faith is taking the first step even when you don’t see the whole staircase.”

—MARTIN LUTHER KING JR.

A new day is dawning. As the sun rises, so do new opportunities to grow, develop, and improve. Are you raring to go in the morning, eager to jump out of bed and welcome a new day? Or are you hitting the snooze button, resentful of getting up to another day of tedium? Either way, how you start your morning is a decision you make every single day.

What if you could become the master of your mornings and establish a routine that supports you not just in waking up but also in defining and creating the life you want?

This book was written to help you make better choices about your mornings, wake up early and happy, and create the most fulfilling and empowering start to your day. Building a solid foundation for beginning your day will help you achieve success in every area of your life.

The hours of the morning are the most critical time of the day, and to optimize them we first must be aware of our internal 24-hour clock (circadian rhythm) and its role in our brain function. In fact, there is an ongoing biological battle between regions of our brain, senses, and nervous system that plays a vital role in determining whether we can successfully establish new and empowering morning routines. Our objective is to learn to master our morning and the rest of the day efficiently. Each brain region is vital to overall performance in life, and they are all interconnected and so are dependent on one another. Much of humanity is entirely unaware of the shortcomings of the structure and function of this most vital organ. Learning to master your psychology through a better understanding of neuroscience will empower you in more ways than you could ever imagine.

To begin, you must become aware of the conflict between two internal forces in your brain. These two forces are the Lizard and the Wizard, and both of them live inside your head.

Acknowledgments



The Morning Mind represents an integration of our collective experiences, research, life, volunteerism, and professional training in science and medicine. We have learned from and are inspired by many scholars, teachers, colleagues, family members, and friends. Each has played an essential role in our collective development as husband and wife and individually as professionals. We decided to work on this book to translate scientific research and culture into a collection of real-world solutions to help people understand how to use their brain to feel better and enjoy a more fulfilling life.

First and foremost, we are grateful to Dr. Michael Smith. In 2010, we met in Dr. Smith's integrative physiology laboratory. He was not only our professor, he shaped our understanding of physiology, the scientific study of standard mechanisms, and the interactions at work within a living system.

While the ideas and presentation of thoughts are ours, the scientific evidence and concepts presented are the work of many astute scientists, clinicians, and academic scholars who have greatly influenced our foundational ideas on human performance. We extend our gratitude to the many people who saw us through this book—those who provided support, talked things over, read, wrote, offered comments, allowed us to quote their remarks, and assisted in the editing, proofreading, and design. We are also thankful to our literary agent, Giles Anderson, who guided and advised us throughout the process.

We are grateful to the International Association for Human Values for allowing us to serve as volunteers and to assist veterans and trauma victims affected by stress and the perils of life. Special thanks go to our spiritual teacher, His Holiness Sri Sri Ravi Shankar, for his wisdom and guidance in our lives.

We are tremendously thankful for our family for their encouragement and unstinting support during the preparation of this book: Camilla (Dear), Mary, Robert, Ashley, Shashikala, Pradnya, Prashant, Manoj, and Jagruti. We are grateful to our daughter, Rajshri, who supported us in spite of the time it took us away from her playtime. It was a long and demanding journey for our family.

Brief Summary of Parts



PART I: THE HUMAN BODY CLOCK covers the physical and biological aspects of mornings. We discuss the circadian rhythms of the body and look at what happens in your body as you're sleeping and awake. It examines how different bodily changes affect you practically and proposes the best times to do various activities like exercising, eating, going to sleep, and waking to maximize your performance in these areas.

PART II: THE MIND AND BODY IN THE MORNING covers the mental aspects of mornings. We look at some captivating spiritual tools to help you get the best out of mornings, including developing self-discipline, forming new habits that assist you, and creativity through writing in the morning.

PART III: OPPORTUNITIES FOR THE REST OF THE DAY ties together the physical and mental aspects of mornings. We will look at how to make the most out of your mornings and other times of the day, preparing you for a good night's sleep and a triumphant rise the following day. We cover exercise, food, sleep, hydration, relaxation, and meditation. Finally, we look at how some of the world's most successful individuals start their day and offer you even more ideas and tools on how to master your mornings.

Introduction

The Lizard and the Wizard



“The brain is a wonderful organ; it starts working the moment you get up in the morning and does not stop until you get into the office.”

—ROBERT FROST

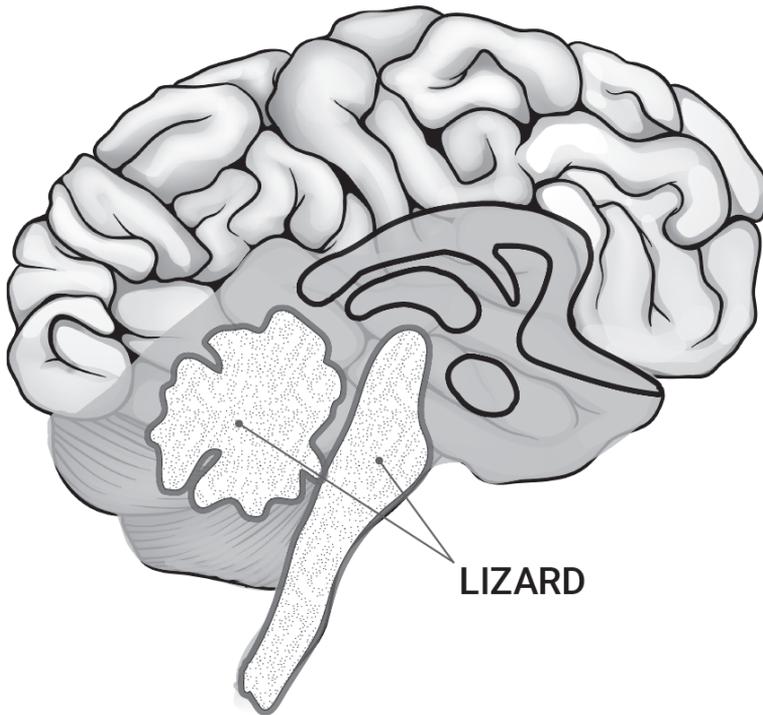
OUR BRAIN CAN be divided into three distinct regions: reptilian brain, mammalian brain, and the human brain from both an anatomical and evolutionary perspective. We will explore how each of these areas plays a vital role in anything we do in life. Through a better understanding of our brain anatomy, the physiology of our senses, and the function of the human body, we can better optimize our brain and body performance.

The Reptilian Brain (the Lizard)

Located at the top of the spine, the reptilian brain, or R-complex, consists of the brain stem, cerebellum, and basal ganglia. This portion of the brain is thought to exist from the time in our evolutionary history when we were lizards, hence its name. It controls vital functions like breathing and heart rate and is also responsible for survival and basic emotions like fear. This primitive part of our mind oversees keeping us alive; however, it also accounts for sabotaging our plans and goals and frequently holds us back. (See Figure I-1)

Whenever we convince ourselves not to do something because it's too risky, or we fear what other people will think, that we will lose something, end up bankrupt, alone, or dead, this is the Lizard speaking. The Lizard does not learn from mistakes and immediately reacts instead of calmly thinking and responding. Like a reptile, it is continuously scanning its environment to detect possible danger, and if it feels threatened,

THE REPTILIAN BRAIN



PRIMITIVE

- ✓ Reliable but tends to be somewhat rigid and compulsive
- ✓ **Control vital functions:**
heart rate, breathing, body temperature and balance
- ✓ In charge of fight, flight, feeding and fear
- ✓ Automatic responses without conscious thought

it rapidly becomes dominant, overriding more sophisticated patterns of thought and behavior. We experience this as panic and fear.

The concerns of the Lizard revolve around supporting life: having enough food, being able to reproduce, reacting to sensory input and new situations, and establishing its place within social hierarchies. To

manage this, it uses the fight-or-flight response. Its behaviors are automatic and instinctive, including aggression, domination, racism, deception, being “cold-blooded,” rigidity, ritual, and defending territory.¹ Operating from the Lizard can cause problems, from simple things such as unwarranted arguments with coworkers, friends, and family members to more complex issues such as world wars.

The Mammalian Brain (the Limbic System)

Journeying a few steps up the evolutionary ladder, we developed the mammalian brain when we became mammals.

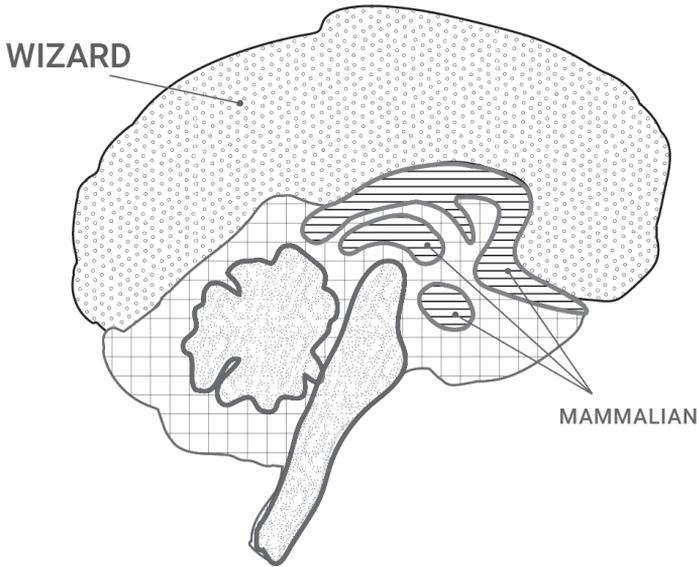
The limbic system derives its name from the hind legs (limbs) of dogs to which it looks similar. It consists of the hippocampus, the amygdala, and the hypothalamus. When this part of the brain evolved, it allowed us to behave with broader awareness, for example, caring for offspring, making value judgments, developing long-term memory, and feeling in response to situations, rather than reacting only instinctively or automatically. This mammalian brain is responsible for emotions where a greater depth of feeling is experienced, such as love, empathy, hope, and other profound feelings.

The Human Brain (the Wizard)

Currently, we find ourselves at a point in nature’s grand evolutionary process in which we came from reptiles to mammals to the upright species we call *Homo sapiens*, the scientific term that is Latin for “wise man,” introduced in 1758 by Carl Linnaeus, the father of modern taxonomy.² This epic process is mirrored during the development of the brain in a human embryo. The structure of the three brain regions develop in order—the reptilian brain forms first, then the mammalian brain matures around it, after which the human brain, the Wizard, forms the outermost layer of this complex and fascinating organ.

The human brain is made up of the left and right hemispheres and the neocortex, the “new brain.” It is the most significant region of the brain, making up 76 percent of the brain’s overall mass in humans. This cerebral evolution opened the capacity for thought, language, sensory

HUMAN AND MAMMALIAN BRAIN



LIMBIC SYSTEM

- ☑ Emotions in human beings
- ☑ Judgments, often unconsciously
- ☑ Strong influence on our behavior
- ☑ Emotion, motivation, long-term memory, olfaction

NEOCORTEX (NEW BRAIN)

- ☑ 2 large cerebral hemispheres
- ☑ Development of human language
- ☑ Abstract thought, imagination, and consciousness
- ☑ Flexible and has almost infinite learning abilities
- ☑ Allowed human cultures to develop

perception, and imagination, significantly expanding awareness, cumulative social harmony, and signaling the dawn of new human culture, a magical development worthy of the name Wizard.³ (See Figure I-2)

Why Should We Manage the Lizard?

If you had to escape from a burning building, then you would certainly want your Lizard to be in charge, but if you were a firefighter who had to

go into the same building to rescue someone, you would be far more efficient with the Wizard in command. Apparently, this takes training. Both the Lizard and the Wizard have their fair places in helping you think and make informed decisions. One of the remarkable secrets to creating productive and fulfilling mornings (and by extension creating a productive and fulfilling life) is in identifying the Lizard and the Wizard, being aware which is in charge, and learning how to modulate this at will.

Survival is the number one job of our brain, notably the Lizard. The ability to cope with life requires us to both protect ourselves from outside threats and adjust or adapt to life's fluctuations and trials. Because reptilian brain coping functions help keep us alive, we are all born with instinctive and automatic survival behaviors. Because these are automatic responses, we do not even need to think before we act to protect ourselves when we feel threatened or wounded (mentally or physically).

Humans and all other vertebrates have intuitive ways to defend themselves when threatened or injured. The reptilian coping brain's instincts are to either hide or attack to protect one's life. One type of reptilian coping behavior is trying to show that you are stronger or more robust than others by using aggression, such as the threat of violence, whether physical or psychological. This could include, for example, asserting your dominance in a group of people or laughing at the misfortune of others. This Lizard behavior can be seen in students starting fights on the playground or bullies who threaten and hurt others.

Anger is another automatic reptilian brain response that is used to frighten others to prevent them from destroying or controlling us. When we display anger, we are not only intimidating others, we are also preparing ourselves for battle. In humans, aggressive behaviors and feelings such as anger increase blood pressure and heart rate by releasing stress hormones (to qualify for either a fight or to run away, also called *flight*).

Reptiles and all mammals, including humans, have reptilian brains that trigger anger to protect themselves and keep others from harming them or their offspring. Humans often get angry when their feelings are hurt, without knowing why. A good way to remember this part of our coping brain is to add "D" in front of "anger." This is how the Lizard survival brain causes us to show anger when we fear we're in D-ANGER.

Fear is an instinctive, primitive response to help us avoid threats, injuries, or death. We would all fear for our lives if we were hiking and came upon a wild bear or mountain lion. But we also dread things that

we have learned through experience are capable of hurting us. One automatic fear we quickly learn is touching a hot stove. Another common concern is fear of spiders and other insects that hide and bite, as well as snakes and wild animals. When we become consistently fearful of specific things, we call it a phobia.

Revenge or retaliation is the Lizard brain's urge to avenge or "get even" with others when we perceive we have been injured, threatened, or something is taken from us that we value. Revenge almost always leads to even more violence between humans since both sides in conflict use Lizard responses to increase their threat to each other. The Lizard's urge for revenge leads humans to punish people or groups because we are hurt by their actions or words.

We know that a Lizard attack can quickly turn into violent conflicts or start wars between groups or countries. Revenge stems from primitive Lizard coping brain instincts, and if we do not learn to control those instincts, they can cause us to hate or attack particular types or groups or even whole cultures. In its extreme form, the Lizard brain in control can create genocide.

One of the most primitive ways the Lizard coping brain seeks to protect us is by joining forces with others. Among teenagers or adults, it might mean participating in a gang or competing to "win" or dominate another team in sports or other competitions. College or professional sports teams are examples of how the reptilian brain urges us toward tribalism. Most professional sports teams are named after and have fans from certain cities. When teams from different cities play against one another, they develop fierce rivalries, and the Lizards of these rival teams are in full effect when it comes to supporting and defending their "tribe."

Being territorial, our Lizard instincts also cause us to protect ourselves and increase our sense of safety by securing a space where we live. This is why humans and other animals often fight to protect their family, home, or land. Lizard tribalism also strengthens our social identity by being part of a social group, nation, religion, or political party. Another type of territorial behavior is excluding and criticizing others who are different from us and outside of our group.

Lizard brain instincts go beyond what are needed for our survival. They include durability and protection of our own "kind" and species

by causing us to select mates and produce offspring like our self. All vertebrates, including humans, tend to mate with their own kind. We have an instinctive urge that drives us to duplicate ourselves. We are often attracted to possible partners with whom we have shared qualities or desirable characteristics we admire. Hence, we have children like us when we create our own family.

The Lizard brain will be quick to categorize people we meet as friend, foe, food, or for fornication. While it can be useful to make these distinctions, the Lizard lacks a depth of understanding that is only available to the higher-thinking centers of the brain. Left alone to rule, the Lizard in control is often counterproductive and can result in adverse health, lack of control in achieving ones' goals, and consistently lousy morning experiences. Humans would always act like lizards or alligators when threatened or wounded if we didn't have other coping brain functions to help control the Lizard's instinctive impulses.

Now that you understand how, and why, the Lizard operates the way it does, you can begin to imagine how accessing the Wizard could be incredibly powerful. Before we uncover precisely how to manage your Lizard, we need to look in detail at what is occurring in our bodies and minds first thing in the morning. Developing this insightful self-knowledge will put you in a commanding position to access your Wizard and reduce the influence of the Lizard.

We will teach you how to “hack” into the Wizard, the part of your brain that separates you from the rest of the animal kingdom. By hacking into the Wizard, you can excel in anything you set your mind to. Your Wizard will gladly provide you with advanced reasoning combined with planning and communication capabilities that mean you need not be ruled by the Lizard and can instead pursue goals, dreams, and the things that really matter to you in life, starting with waking up early and happy in the morning.

Hacking into the Wizard Begins

The Lizard behavior is automatic. Most individuals going into Lizard mode have no awareness when this transformation is happening to them. They do not have the tools or knowledge of how to overcome their

Lizard until they are cognizant that this ancient part of their brain is behind the scenes causing all this behavior they think is them.

Awareness is the first key to breaking free of the tight fist of the Lizard. Once we understand how and why it is functioning, we can then distance our self from it and reduce its influence on our behavior. When we enter the fight-or-flight response, triggered by some external stimulus, the Lizard diverts the supply of oxygen from our Wizard brain to the parts of our body that need to physically respond to the situation. The key to getting our Wizard back in charge is to provide it with more oxygen, and this can be done through meditation and relaxation, specifically with breathing. (We will explore some of these techniques and concepts later.)

Our breath is interrelated to our emotional state of being: Every emotion has a corresponding breathing pattern.⁴ Breathing consists of three stages: inhalation, exhalation, and a pause. The dynamic between these three stages determines our emotional state. Anger is consistent with slow breaths followed by quick, sharp breaths, usually in the form of aggressive expressions like shouting, and then a long pause. Depression is consistent with short and shallow breathing. The brain is consistently not getting enough oxygen, which clouds our perception.

Being inspired by something new causes us to inhale and hold our breath unconsciously (our breath is “taken away”) and then slowly exhale, with a short pause after. When we’re excited or anxious, we inhale and exhale quickly with very brief pauses in between. Because we tend to be unconscious of our breathing, this also reduces our ability to identify and deal with our emotions, such as stress, anger, or depression, triggered by the Lizard. When we consciously control our breath in a pattern that supports us emotionally, this increases the brain blood flow and activates the neocortex (the Wizard), where we can think more clearly and calmly and deal with the situation, thus bypassing the Lizard.

Meditation can also increase feel-good neurotransmitters like dopamine and serotonin, known as the “happiness hormone,” allowing us to come back to a more balanced and peaceful mental and emotional state. Our Lizard wants to stay in its comfort zone, it wants to feel good, and increased positive neurotransmitters reduce the anxiety and silence the Lizard’s fear. Meditation can reduce anxiety and depression. A study by

the John F. Kennedy Institute of Denmark found that participants practicing yoga nidra meditation experienced increased levels of dopamine, the hormone responsible for motivation and good mood. The Toho University School of Medicine in Japan conducted a study on people practicing Zen meditation and found they experienced a significant increase in serotonin levels while meditating.⁵

Another study was done by Stanford University on U.S. military veterans who returned from Afghanistan and Iraq with post-traumatic stress disorder (PTSD). PTSD is essentially an over activation of the Lizard due to exposure to traumatic events, resulting in a prolonged stress response. The study followed the veterans as they practiced Sudarshan Kriya Yoga, a breathing meditation, over the space of a week.⁶ The participants experienced a reduction in anxiety and PTSD symptoms. The application of such simple techniques is undoubtedly a useful and free alternative to “the limited success of conventional treatments for veterans with post-traumatic stress disorder.” By utilizing these techniques, it is possible for practitioners to access the breathing pattern associated with a positive emotional state

PART I

THE HUMAN BODY CLOCK



Chapter 1

The Human Body in the *Early Morning*



“I trust that everything happens for a reason, even if we are not wise enough to see it.”

—OPRAH WINFREY

BEFORE YOU WAKE up in the morning, your body is undergoing complex processes of which your mind is completely unaware. The human body is an intelligent organism, made up of trillions of tiny cells each with their own intelligence and responsibilities. All cells in our bodies have their own “cellular clock.” These internal clocks are responsible for helping each individual cell to regulate the timing and nature of its functions. For example, they govern such processes like energy use and the repairing or replication of DNA.

Many of the body’s primary organs also have their own clock. This timekeeping function plays a significant role in how you think, feel, and perform on a day-to-day basis. Developing an understanding of the inner workings of your body clock is a powerful way to enhance self-awareness and create a routine that will boost you from dark-eyed mornings to establishing an excellent start to your day, every day.

Biological Rhythms Affecting Your Body

Circadian rhythms, also known as the “body clock,” refer to processes in our bodies that are governed by 24-hour rhythms. These rhythms also apply to other organisms such as plants and animals. The body of knowledge that exists currently on these rhythms is far from complete, but what we do know is fascinating. Some recent evidence suggests that our biological rhythms may be longer than the previously thought twenty-four-hour cycle. Is it possible that the human body is at a different pace than the planet?

The body clock regulates physiological processes such as waking, eating, sleeping, and the function of the immune system and the major organs. These processes are determined from within the organism but can also respond to external signals such as light, odors, and temperature.

If the natural rhythms of the body clock are disturbed, this can cause various health problems, including increased risk of obesity, cardiovascular problems, and depression. Becoming aware of these natural rhythms helps you work in harmony with your body to get the most out of it at the right times of the day. The more you know about your energy levels and the effects of the circadian rhythms, the more you can make well-informed decisions and plans for your daily activity, especially in the mornings.

Chinese medicine teaches that circadian rhythms determine the health of not just the immune system but also each internal organ. The circadian rhythms identify the peaks and troughs of each organ's function throughout the day. In essence, the circadian rhythms govern the internal attention of biological resources to heal and repair the organs, and each organ gets its own segment of time every day.

Below is a table of the organs and their peak performance time of the day. During this time, each organ system is being repaired.

TIME	ORGAN	TIME	ORGAN
11PM – 1AM	Gall bladder	11AM – 1PM	Heart
1AM – 3AM	Liver	1PM - 3PM	Small Intestine
3AM – 5AM	Lungs	3PM – 5PM	Bladder
5AM – 7AM	Large Intestine	5PM – 7PM	Kidney
7AM – 9AM	Stomach	7PM – 9PM	Pericardium (The Heart's Sack)
9AM – 11AM	Spleen	9PM – 11PM	Triple Burner

To find each organ's low-performance time, merely look to the opposite side of the table. For example, from 1:00 to 3:00 p.m. is the weakest time for the liver, corresponding to optimum functioning of the small intestines. This accounts for the predictable timing of health problems that occur in alignment with each organ's lower-functioning

period. The lungs are expelling waste around 3:00 to 5:00 a.m., which results in coughing for some people during this early morning period. The large intestine is in full effect around 5:00 to 7:00 a.m., which is the time of day your body most needs water to help it cleanse and, inconveniently, the least opportune time for your body to take in caffeine, because it can be dehydrating. You will learn that drinking coffee is not the most efficient way to wake up in the morning, but luckily there are some equally compelling alternatives without the adverse effects. However, the aroma of coffee may be enchanting and can have a profound and positive impact on the brain function and mood in the morning. Yes, there can be significant benefit even without ingesting one ounce of it!

Between 7:00 and 9:00 a.m., the stomach is doing its thing. Some people believe this is the best time to eat breakfast, while others advise waiting until later in the day to allow the stomach to repair itself, starting the day instead with the unhurried consumption of warm liquids only. For example, water with a bit of ginger or non-caffeinated teas are excellent to help with morning rehydration.

The spleen is cleansing itself between 9:00 a.m. and 11:00 a.m., the time when people are most prone to flu or allergies. Between 9:00 p.m. and 11:00 p.m., the “triple burner,” based on Chinese medicine, albeit not fully recognized by Western medicine, is in full effect. The triple burner is described in Eastern philosophy as a complex communication and synchronization of the five important organ systems (heart, kidney, liver, lung, and spleen) and is believed to be responsible for overseeing our nutritional health and immune function. Also, it has been theorized that the triple burner plays a major role in sustaining a cohesive dialogue among these organ systems and our external environment. Around mid-morning, after its active role as a member of the triple burner, the heart is “repairing” itself. This also happens to be the time of day when the majority of heart attacks occur, especially among middle-aged men.

From this brief glimpse, we can see the intricate and intelligent relationships that occur through the circadian rhythms overseeing the systematic distribution of the body’s resources. It also gives us some insight into how important it is to know what is going on inside your body throughout the day, and when your energy is at its highest and lowest levels.

Control of the Rhythms: Built-in versus Environmental

There are various internal and external factors that govern your circadian rhythms. Internally, the rhythms have a “central clock” that is conveniently located in the hypothalamus, specifically in nerve cells known as the suprachiasmatic nucleus or SCN. This is the boss in charge of orchestrating these complex processes through the entire human body.

In recent years, scientists have discovered that each of us has a unique circadian rhythm based on our genetic inheritance. This makes up the built-in element of our circadian rhythms. At the same time, the SCN is affected externally by light from the environment—a collaborative effort between nature and nurture that keeps our bodily processes functioning optimally.

A key element of the circadian clock is the production of hormones such as melatonin and cortisol. Melatonin is produced at night in the pineal gland, because it needs darkness to produce the hormone. Melatonin regulates sleep and reproductive cycles, which can come out of balance if people are not getting the right amount of sleep or their body clock is confused by their schedule, such as working night shifts. Melatonin starts being secreted around 9:00 p.m., which is around the time we would ideally be winding down mentally, turning off our electrical gadgets (“yes, on airplane mode”) and preparing to go to bed.

As tempting as it may be to stay up late watching television, this is not what our body needs to function at its best, and the old saying proves true, “early to bed, early to rise.” In fact, our family several years ago removed all the televisions, or “time vacuums,” from the bedrooms to avoid the enticement of one more episode of our favorite miniseries.

The Best Time: To Sleep, to Eat, or for Physical Activity

The demands of our daily lifestyles often conflict with the rhythms with which our body works best. Fortunately, understanding these natural cycles gives us valuable information about how we can structure the most fundamental elements of the day—eating, sleeping, and physical activity. If you can successfully build your schedule around circadian rhythms, you will reap some impressive health benefits and at the same time maximize your productivity.

Optimum Waking and Sleeping Times

The best time to rise in the morning is different from person to person, yet there are some recommended guidelines based on age. Our circadian rhythms adjust as we mature and accumulate more birthdays, and the optimum time to rise gets earlier. Oxford University researcher Dr. Paul Kelley has studied the sleep cycles of people of different ages, and he came to the following conclusions about the best time for each age group to wake up.¹

AGE GROUP	OPTIMUM WAKING TIME	OPTIMUM SLEEPING TIME
Teens	10:00AM	Midnight
20s	9:30AM	01:00AM
30s	8:00AM	11:40PM
40s	7:30AM	11:30PM
50s	7:00AM	10:30PM
60s	6:30AM	10:00PM

His findings are quite astonishing considering the predominant nine-to-five workday patterns of our modern world. Dr. Kelley commented on this predicament: “We’ve got a sleep-deprived society. It is hugely damaging on the body’s systems because you are affecting physical, emotional and performance systems in the body... We cannot change our 24-hour rhythms.”² When we are teenagers and our bodies are still growing, our circadian rhythms are biologically hardwired to go to sleep late, about midnight, and to wake up late, about 10:00 a.m. This would be the ideal time for us to operate. When we are sleep deprived, we have elevated levels of cortisol, the stress hormone, and reduced levels of neurotransmitters, which leads to a decrease in concentration and increase in “moodiness” typically found in this age group.

Our circadian rhythms conflict with the schedules of most academic institutions, which start much earlier. However, the brain of teenagers and young children are just not prepared to assimilate information appropriately at that time.^{3,4} Dr. Kelley was a head teacher at a school

in the United Kingdom, and he found that changing the start time of the school to 10:00 a.m. produced a 19 percent rise in the grades of his students.⁵ Imagine the implications for personal performance in all areas of your life—you can excel by merely working in harmony with your body’s natural rhythms. As we get older, in particular beyond our thirties, we need less sleep. Thankfully, our body clock adjusts so that we profit from our natural rhythms if we go to bed earlier.^{6, 7, 8}

Optimum Eating Times

These times give our body the chance it needs to properly digest food before bed.⁹ For breakfast, the time of rising plays a big part in choosing when to eat. If you stay up late at night and wake up late in the day, like a teenager, for example, then it can be more beneficial for you to have a light breakfast and focus on lunch and dinner to gather your recommended daily calorie allowance.¹⁰ Conversely, if you wake up early and go to bed earlier, as someone in their fifties or sixties, then a substantial breakfast to fuel you for the day and a more modest meal for dinner will be more suitable for your body to handle.^{11, 12}

AGE GROUP	OPTIMUM EATING TIME (EVENING MEAL)
Teens	10.30PM
20's	9.30PM
30's	8.00PM
40's	8.00PM
50's	7.00PM
60's	6.30PM

Optimum Times for Physical Activity

Some of you may be thinking that there is no such thing as an optimum time to engage in physical activity. You might prefer to avoid it all

together or somehow outsource it to your marathon-training neighbor. However, the optimum time for you to engage in physical activity is in the afternoon to evening, when several beneficial elements of the circadian rhythms may make this undesirable activity slightly more palatable. At this time, body temperature is at its highest, so the muscles are warmed up and ready to perform. Additionally, testosterone production is at its peak while cortisol production is at its lowest, thus increasing your performance potential. If you are the connoisseur of over-exhausting yourself, then later in the day is the best time to capitalize on this hormonal dynamic, known as the testosterone/cortisol ratio (T/C ratio). This ratio is commonly used to describe efficiency, and a high T/C ratio has been shown to correlate to the time your body is most prepared to train and recover from physical activity.¹³ Please note that these guides are by no means definite, and some people will undoubtedly find that they do not fit into this schedule as their unique circadian rhythms march to the beat of a different drum, *at least they think so.*^{14, 15}

AGE GROUP	OPTIMUM PHYSICAL ACTIVITY TIME
Teens	6:30PM
20s	5:30PM
30s	4:00PM
40s	4:00PM
50s	3:00PM
60s	2:30PM

Dodge Bad Timing

Understanding the best time for various activities throughout the day also sheds light on when certain activities are best not attempted. There are some behaviors we exhibit, ingrained in our social norms, which simply do not serve our best interests from the perspective of our biology.

The major external influence on our circadian rhythms is light, and how carefully we align our behavior with the rise and fall of the sun affects how well we function. A significant problem humankind is experiencing involves artificial light from screens and other technological devices because it confuses our body clock into thinking we should stay awake. That's because light inhibits the release of melatonin, the hormone that governs sleep. To make matters worse, this artificial light stimulation usually happens right at the day's end, precisely the time we should be winding down.

A common byproduct of staying up late is the consumption of caffeine in the morning. In a study published in the journal *Science Translational Medicine*, researchers found that consuming caffeine can also delay the release of the nightly dose of melatonin, creating a vicious cycle of staying up late, being more tired in the morning, and thus increasing the craving for coffee.¹⁶

Between 7:00 and 9:00 a.m., when cortisol levels are at their peak, also happens to be the time of day some people choose to consume caffeine. Cortisol is the body's natural way of becoming alert, so to experience this double dose of stimulating chemicals can increase tolerance and reduce the potency of both. Consequently, if you must have coffee or some other caffeinated beverage, the best time would be when cortisol levels have decreased, after 9:30 until around 11:00 a.m.

Cortisol plays an important role when you wake up via the cortisol awakening response (CAR).¹⁷ The hippocampus is known to regulate the cortisol increase that occurs during the morning, although exactly how this works is still a mystery. Researchers at Dresden University of Technology's Department of Psychology have hypothesized that the mechanism behind CAR is related to the hippocampal ability to communicate information about the external environment to the central nervous system as environmental awareness and directions for how to navigate in the physical world. It is possible that the hippocampus's situational awareness and anticipation of the day's activities play prominent roles in the cortisol awakening response. This indicates a sophisticated and intelligent relationship between the brain and the circadian rhythms that influence our morning activities.¹⁸

Summary

We always have a choice about how we live our lives. Fully comprehending how you can function optimally in accordance with your circadian rhythms means you can create a schedule that opens up space for better performance and more efficient use of energy. If you can eat when your body really wants food, then you will require less effort for digestion and have more energy for life.

What areas of your daily schedule can you change right now to improve your energy expenditure?

WIZARD TIPS

- The human body is a complex machine regulated by its own internal body clocks.
- These body clocks, or circadian rhythms, are governed by external factors like light, and internal factors like genetics.
- During different periods of the day, the major organs of the body have a period of cleansing and increased energy.
- The production of the hormone melatonin is vital to governing sleep patterns and needs darkness to be produced, so in the hours just before bed, it is highly beneficial to limit exposure to artificial light.
- The best times for eating, sleeping, and exercising are different depending on your circadian rhythms, which change with age.
- Most of our current lifestyles are geared toward irregular cycles of waking and sleeping that keep us off balance with the cycles of nature and can result in health problems.
- We receive a natural chemical boost of alertness from cortisol in the mornings; therefore, the best time to drink coffee is after this natural stimulant has worn off, at approximately 9:30 a.m.

Chapter 2

A Circadian Clock in Your Nose



“When sleep puts an end to delirium, it is a good symptom.”

—HIPPOCRATES, *THE APHORISMS OF HIPPOCRATES*

THE CIRCADIAN RHYTHMS, otherwise known as the human body clock, regulates much more than our patterns of wakefulness and sleep. Scientists are rapidly discovering that these natural rhythms influence a wide variety of physiological processes with a far-reaching impact. Circadian rhythms affect hormonal production, mood, ability to concentrate, and many more critical aspects of our day-to-day lives.¹ Even our senses are impacted by these natural fluctuations linked to day and night.

Until relatively recently, it was assumed that variations in olfactory sensitivity (the sense of smell) depended only on the individual. It was believed that while there was significant individual variability in the sense of smell, each individual had a set threshold in their ability to detect odors unless they have a cold or other condition explicitly impacting their nose. While the emotional state was thought to have some influence on our ability to smell, it was the broad assumption that the sense of smell is fixed.²

Sleep and Smell

Recent studies conducted at the Sleep for Science Research Lab (Brown Medical School) have uncovered a remarkable variation in our sense of smell. This variation in ability seems to be closely linked to circadian rhythms. The research was initiated to investigate the possible relationship between the sense of smell and food choices, specifically to help teenagers make better food choices. But the results could have a much broader impact and certainly raise interesting questions about why,

evolutionarily, we have developed greater smell sensitivity for different times of the day. The research was conducted on a sample of thirty-seven teenagers who, for nine days, were tested to determine the lowest threshold at which they could detect a specific odor. Saliva samples were used to determine the phase of the circadian cycle, and this was plotted against the odor sensitivity test.

The results of the study demonstrated that the average peak odor sensitivity occurred not long after the production of melatonin, around 9:00 p.m. The study states: “These data demonstrate for the first time that olfactory sensitivity is not a stable trait; rather, it is modulated by circadian phase.” In contrast, the ability to smell was least sensitive between 2:00 and 10:00 a.m.^{3,4}

Ancestral Advantage

The researchers postulated that the peak in sensitivity could have been beneficial in helping our ancestors during darkness when our sense of sight is naturally weaker. Another theory suggested that the hypersensitivity could have been useful in assessing a potential mate and another that it evolved to help us sleep by shutting down unnecessary “data” input.

While the study was conducted on a relatively small sample size, the results indicate an exciting avenue for further investigation. Other factors that impact peak odor sensitivity may have also influenced the study findings, including gender, weight, pubertal development, and age. Women also tended to outperform men on olfactory function tests, and there is already evidence to show the menstrual cycle affects smell sensitivity, specifically the ability to detect the scented sex hormones known as pheromones. Studies show that a women’s ability to identify and be interested in the male scent is 10,000 times greater during ovulation than menstruation.⁵

The cyclical changes in the sense of smell due to the menstrual cycle have a distinct evolutionary benefit. But the changes related to our circadian rhythms are not yet fully understood. They do, however, highlight the importance of smoke detectors, because during the early hours of the morning, the sense of smell is least useful. We are less likely to wake up to the smell of smoke.

For obesity researchers, this study suggests that appetite could be artificially stimulated by the sense of smell, leading to nighttime overeating. Understanding the relationships between smell sensitivity and appetite management could pave the way to smell-based eating therapies that encourage individuals to sniff, not scoff. In fact, there is already a range of specialized essential oil products designed to precisely manipulate the appetite in this way.⁶

Could smelling chocolate be as satisfying as eating it, but with fewer calories?

Odors are also used more controversially by companies to influence consumerism and sell products. *Time* magazine reported that the aromas of chocolate and baked bread in the NetCost Market in Brooklyn, New York, are entirely artificial and pumped in by machine.⁷ We are driven and influenced by smell much more than we realize, and the power of scent to manipulate our mind and mood is surprisingly directly linked to the effect it has on our central nervous system.

The Neuroscience of Smell

The nose and brain are physically located very close to each other and have a straightforward and immediate connection. Olfaction, or the sense of smell, is the detection and understanding of specific chemicals in the air taken in by the nose. This is also known as chemoreception.

We rely on our sense of smell to, among other things, identify hazards such as smoke, use pheromones to help us find a suitable mate and prevent incest, and ascertain the safety of our food. Our reaction to the smell of rotting food is so robust that the equivalent chemical smell, mercaptan, is added to odorless natural gas to help us detect a leak. Our sense of smell is also powerfully linked to our perception of taste, which is actually quite limited.

The moist membrane inside the nose, called the olfactory epithelium, allows aroma compounds and various chemicals to dissolve in mucus so they can be detected. In humans, this specialized tissue is thick and covers about 1.4 square inches. Compared to dogs, who have 10 square inches, our sense of smell is relatively limited.

There is a constant flow of mucus to ensure that any new odor

compounds can be rapidly dissolved and detected, and the sensory input promptly fed to the brain. Here mucus acts as a solvent for the odor compounds and contains enzymes and antibodies to prevent infection and keep pathogens from getting to the brain. Once an odor is dissolved, a minute olfactory receptor captures the information, for example, the scent of a flower. Using a system of sensitive hairs, called cilia, and specialized nerve cells, the information is relayed to the brain for processing. The human nose contains about 40 million olfactory receptors, which comprise a support cell rooted in the mucous membrane attached to an olfactory hair cell. The hair cells have an embedded root, called an axon, or nerve termination, able to stimulate mitral cells, the specialized nerve cells in the olfactory bulb.

The olfactory bulb starts inside the nose and extends into the base of the brain, forming direct connections with the amygdala and hippocampus. This direct brain connection is what makes the sense of smell more likely to trigger emotions than our other senses, which do not have such a deep-rooted relationship with the memory and emotional centers of the brain. Behavioral studies involving the sense of smell report that individuals feel a much more vivid and “real” sense of going back in time when exposed to familiar smells than with any other sensory input such as sound or sight. Increased activity in the limbic system stimulates explicitly powerful memory recall, “visual vividness,” when associating sensory data such as smell and sight. So, if you want to remember something from the past, or anchor a memory for the future, try pairing it with a specific smell.

Stimulation and Detection

The exact method of stimulation and detection by these specialized olfactory hair cells is not entirely understood. It is thought to be a property of the molecular shape, charge, or other attribute to which the hairs respond. Once the receptors are stimulated by an odor molecule, a chain of chemical and ionic reactions begins, which activates the associated nerves. The number of receptors also affects the individual’s level of smell sensitivity. Dogs have billions of these olfactory receptors, making their sense of smell much more acute.

Once the information is transmitted to the mitral cells in the olfactory bulb, the data is sent as electrical impulses along the lateral olfactory tract and cranial nerve to the olfactory cortex and other brain regions. Specific brain areas in the limbic system, including the hippocampus, hypothalamus, and amygdala, are involved in memory and the processing of emotions that are stimulated by the smell data. The emotional and memory-centered processes in the sense of smell are what create such strong associations and recall of long-forgotten memories when we inhale a familiar scent, even after decades.

The stimulation of memories through specific scents can be both a positive experience and also a highly traumatizing one. In extreme cases, such as post-traumatic stress disorder, particular smells can trigger intense and often debilitating negative emotions from the past.^{8, 9, 10} During traumatic events such as a car accident or robbery, our Lizard brain is preparing to get oxygen to our legs and actively seeking an opportunity to escape danger. Understanding what is happening and why it is happening—far less important than removing the threat—are the tasks of the Wizard brain. It is likely that, under stressful, fear-filled situations, you are unaware of perfume fragrance and the color of the shirt of the individual who attempted to victimize you.

In an attempt to create a meaningful whole from a traumatic or unforgettable moment, the human brain syndicates electrical impulses from our five senses. The sense of smell is significant in this “reanimation” process.

Specific brain regions are responsible for receiving, decoding, understanding, and acting on the smell data. For example, the anterior piriform cortex seems to be responsible for decoding the physical and chemical structure of the odor molecule, while the posterior piriform cortex looks for similarities with known odors and forms associations. This information is then transmitted via the thalamus to the orbitofrontal cortex, which is responsible for our conscious recognition and perception of the smell. Projections of the complex nervous system involved in the sense of smell go directly to centers of the brain involved in learning, emotion, motivation, and memory. This is why the sense of smell can be used as a powerful tool to drive conscious action and help us to form positive and motivating habits.

The Smell of Essential Oil Plants

Most of us are familiar with the pleasant fragrances given off by specific plants, trees, and herbs. The smell that you detect is the essential oil of the plant, which naturally vaporizes and carries with it aroma compounds that are typically unique to the plant. The exact smell of a banana is very specific, and the smell, as a chemical compound, can be synthesized artificially in a lab and used to make sweets and drinks that smell, and therefore taste, exactly like a banana.

Plant-based medicines have been used for thousands of years by numerous indigenous populations. Many of our modern pharmaceuticals, including aspirin and many chemotherapy drugs, are in fact borrowed from nature.¹¹ For more than 6,000 years, essential oils—the volatile compounds distilled into concentrated essential oils, or pure plant “essences”—have been used therapeutically.

More recently, there has been a surge in interest in aromatherapy—the use of essential oils in massage, cooking, direct topical application, and inhalation—to treat or even prevent specific ailments and improve mental states and emotions. This has naturally been met with strong opposition from industries with a vested interest in the status quo of artificial medicines, namely the medical and pharmaceutical industries. Despite strong pharmaceutical disapproval, the popularity of these alternative healing oils is on the increase. Individuals attribute the oils with a wide variety of healing benefits: to calm and relax, to energize and stimulate, or to treat specific conditions.^{12, 13}

The study of aromatherapy has, so far, concentrated on the constituents of the oils themselves, for example the presence of free radical scavenging antioxidants.^{14, 15} In contrast, some exciting animal studies have revealed that the stimulation of the sense of smell directly impacts the nervous system. Essential oils may be able to directly manipulate key metabolic and nervous processes in the body without the need to ingest medications, providing safe and effective methods for modulating our own bodies and behavior.

Sleep-Wake Cycles and Essential Oils

A major criticism of the scientific study of essential oils has been the reliance on subjective data. Subjective data is often individuals reporting

that they “feel” a specific way after exposure to an oil. For example, they feel like they get a better night’s sleep or are more alert. The human reporting of feelings is notoriously unreliable and does not create the robust and quality data sets needed to stand up to the scrutiny of pharmaceutical opposition or industry regulation.

Fortunately, a team of researchers in Thailand published a groundbreaking study on rats, clearly demonstrating that essential oils have a profound physiological impact. The study, published in the *Journal of Ethnopharmacology*, showed the quantifiable, reproducible, non-subjective effects of an inhaled essential oil on brain waves and sleep patterns.¹⁶ The results clearly showed that the oil caused a direct, measurable increase in total awake time, a reduction in slow-wave sleep, and there was no impact on rapid eye movement (REM) sleep. The behavioral changes and physiological responses were directly correlated to changes in brain waves, such as reductions in beta wave activity, which is present when we are alert and attentive. The various observed neurological modifications had different time signatures: Changes to gamma brain waves (associated with memory compression) were detected almost immediately and lasted the duration of the test. This contrasted with the reduction in slow-wave sleep, which took a few minutes to take effect and lasted just one hour. While previous studies have shown that essential oils do modify animal responses, for example, the sleep cycles, they have only used indirect measurements such as behavior or hormonal changes. This is one of the first studies to use direct measurement of brain waves to see the impact of inhalation, that is, simply smelling the essential oil.

Adaptogenic Active Compound

Adaptogenic compounds or practice denote a pharmacological concept that is used in balancing our human physiology and cognition. Vetiver is used to make perfumes and in cooking—its sweet, earthy flavors are found in traditional Indian food. The herb also has a cooling effect, much like peppermint, and is used to both stimulate the senses and as a calming tonic and is believed to promote internal stability.¹⁷ Additional animal studies, designed to stress-out rats with confusing mazes, showed the oil has a calming effect similar to that of the drug diazepam, which is used clinically to treat conditions such as anxiety and alcohol withdrawal.¹⁸ The combination of relaxing and stimulating

results is a testimony to the complicated symbiotic and adaptogenic relationship that vetiver, and many other essential oils, has with the brain.

Inhalation of the aroma-rich oils is just one way to get plant essences into the body, blood, and brain. Massage is another popular way to absorb oils, as they easily penetrate the skin and can be spread with a carrier oil. The act of massage also relaxes and stimulates the body while moving out toxins through lymph fluids. Edible plant essences can also be distilled into therapeutic or food-grade oils, which can be taken orally to add flavor and deliver the plant-based benefits.

There is a vast difference between artificial fragrances designed to replicate the smell of a healing plant, such as lavender, and the natural essential oil with its array of active compounds. Unfortunately, what is often marketed as a cheap essential oil is a chemical copy. It is strongly advised to research and select certified brands with expertise in the extraction, storage, and use of these delicate, volatile compounds.

The pure concentrated plant extracts, harvested from the roots, leaves, seeds, and even flowers of bioactive plants, contain a mix of active ingredients that work in synergy with one another. While some oils are suited to physical healing, such as preventing infection and speeding up wound healing, others work at a more mental or emotional level, for example, reducing stress and aiding relaxation.

Your Brain on Oils

The exact mechanisms underlying the effects of essential oils on the brain are not yet understood. It is believed that the smell receptors in the nose communicate directly with the brain. The areas of the brain responsible for emotional control and memory (amygdala and hippocampus) are stimulated by the inhalation of the volatile compounds found in some essential oils, like lavender. The activation of these control centers in the brain is thought to influence various physical, emotional, and mental attributes. The specific stimulation of positive emotions combined with therapeutic touch is believed to be behind the beneficial and relaxing effects of aromatherapy massage.

Other proposed mechanisms of action include stimulation of specific

neurotransmitters, receptors, hormones, or enzymes. However, due to the complexity of the active ingredients in oils and our symbiotic relationship with plants, it is likely that a variety of mechanisms are at work. Despite the lack of understanding about exactly how essential oils work, there is substantial evidence to support the fact that they do work and in many cases are much safer and less addictive than their pharmaceutical equivalents.

Although still in its infancy, the scientific study of these healing oils has already supported many of their traditional uses:

- Lavender is one of the most studied oils. In addition to potent wound healing properties (especially treating burns), it has powerful anxiolytic (calming) and mood-boosting effects by stimulating alpha brain waves.¹⁹
- Rose, orange, bergamot, lemon, and sandalwood have also been shown to relieve anxiety, stress, and depression.
- Frankincense, rose, and lavender are successfully used by midwives to reduce postpartum anxiety and fear, increase feelings of well-being, and reduce the need for pain medications during delivery.
- Peppermint oil reduces nausea and vomiting (especially during labor), aids digestion, and treats a tension headache as efficiently as over-the-counter pain medications like acetaminophen and aspirin.
- Neroli oil was found to reduce blood pressure and pre-procedure anxiety in colonoscopy patients.
- Many essential oils have strong antibacterial and antifungal activity verified with *in vitro* tests.
- Citrus oil strengthens the immune system, restores stress-induced immuno-suppression, and reduces depression.
- Fennel, aniseed, sage, and clary sage contain estrogen-like compounds, which seem to relieve symptoms of premenstrual syndrome and menopause.

The list of known therapeutic uses and beneficial effects of essential oils is immense, and science is very slowly catching up with the ancient wisdom that popularized their use. However, despite

significant research efforts to validate claims and prove effects, their power to heal remains esoteric. The vast power and profit of the pharmaceutical industry, threatened by plant-powered treatments, is determined to quash their use and implement tight restrictions in their marketing messages. Currently, only those in the know or with direct experience of their use are looking to essential oils to restore balance, create calm, and heal our stressed-out modern lives.

Restorative and Relaxing Sleep

Sleep is an essential part of physical health. When we sleep, the body performs a vast array of therapeutic and healing functions that detox, repair, and heal the body. Unfortunately, disturbed, low-quality, and insufficient sleep is becoming increasingly common. According to the American Sleep Association, up to 70 million adults have a sleep disorder.^{20, 21} Disrupted sleep impacts not only individual health, but society as a whole: Dozing off while driving is responsible for nearly 2,000 fatalities on U.S. roads each year. The most common sleep disorder is insomnia, with 30 percent of adults experiencing occasional sleeplessness, 20 percent experiencing short-term insomnia (lasting less than three months), and 10 percent experiencing chronic insomnia (unable to get to sleep more than three times a week for three months or more).

For those with occasional symptoms related to specific stress or lack of ideal sleep conditions, this is a minor but tiring irritation. However, for those with chronic issues, it can severely impact the quality of life, reducing energy, motivation, memory, and concentration, thus making accidents, errors, and depression much more likely.

The first step to regaining control of sleep patterns is looking for underlying issues, including nighttime overstimulation, bedroom comfort, and lack of exercise, which would naturally tire you out and use up stimulating hormones like cortisol and adrenaline. In the long run, reducing stress and relaxation are also key to creating a harmonious and balanced sleep-wake cycle.

However, sometimes these conditions are out of our immediate control, and solutions to aid restful sleep are needed, giving the body a calming break and helping you think more clearly in the morning.

While many people turn to pharmaceutical solutions—which are habits forming, have a long list of side effects, and disrupt our natural patterns—essential oils represent simple solutions to getting some sound sleep. Shift workers, for example, nurses, have been shown to benefit from the use of lavender oil to aid restful, quality sleep and help them adjust to changing shifts.²² Lavender oil has even been shown to reduce anxiety and aid sleep in patients in intensive care units, speeding up recovering by allowing the body to restore itself and heal.²³

Lavender is one of the most popular, and well documented, oils for aiding quality sleep, but there are many more with sleep-inducing and calming properties that can be used in various ways. Some personal experimentation is needed to find the best oils to suit your body and preferences. For example, if you hate the smell of lavender, it is unlikely it will help you feel restful.

Application Methods and Oils for Sleep

Application by Inhalation: You can use specialized oil diffusers that send a little electric current through water to vaporize oils into the air in a fine mist. Or simply put a few drops on a tissue or piece of fabric near your bed. Inhalation is uniquely suited to rapid calming of the emotions due to the direct nose-brain connection.

Topical Application: A few drops of oil can be rubbed onto the palms (which has thicker, less sensitive skin) and then rubbed over the chest and arms to penetrate the skin, allowing you to smell the oil throughout the night as it is warmed by the body. Application to the soles of the feet is another excellent way to get the therapeutic compounds into the blood, especially if you prefer not to smell the oil, which is further from your nose. Topical application will physically soothe the body, specifically the nervous system.

Lavender Essential Oil: This is the most popular oil for sleep induction. Try this first and see how it affects you. For some, it can be a little too powerful, causing feelings of disorientation if you need to visit the bathroom in the night and making you sleep much longer than usual. Try a few drops at first and gradually increase the dose until you reach

the desired effect. Lavender is also a relatively inexpensive essential oil, due to its popularity and mass production. Beware of overuse, and if you consistently need sleep support, it is recommended you cycle between different oils, so your body does not get used to it and become less receptive to its effects.²⁴

Chamomile Essential Oil: This has traditionally been used to soothe children, combat depression, reduce stress, and help you wind down and get to sleep. It is a mild sedative that calms the nerves while reducing anxiety and is even used to cut nightmares while combating insomnia. The sedative effects are thought to be due to a specific compound found in the oil apigenin, which binds to receptors in the brain. Chamomile tea is one of the best-known, sleep-inducing teas.²⁵

Valerian Essential Oil: This is also known as a mild sedative. In addition to inducing sleep, it calms the nerves and reduces stress. A meta-analysis of multiple studies published in the *American Journal of Medicine* confirmed that valerian does indeed improve the quality of sleep without the side effects associated with current pharmaceutical interventions.²⁶ A further meta-analysis published in the *Journal of Sleep Medicine* again confirmed valerian's subjective ability to aid sleep but also noted that additional qualitative analysis was needed to create robust data and definitive, marketable, conclusions.²⁷

Essential Oil Blends: The sleep-inducing properties of oils can be enhanced by blending them together, either using proprietary blends or merely mixing together a few yourself. A triple-blind study published in the *Journal of Women and Health* found that lavender with bitter orange significantly improved both the duration and quality of sleep, while the use of lavender combined with sweet orange on hemodialysis patients enhanced overall sleep quality and significantly reduced fatigue.^{28, 29}

Waking Up with Plants

In addition to being used to help you fall asleep quickly, calming nerves and restoring the body, essential oils can also be used to help you wake up and feel more alert. Instead of reaching for caffeine, you can add an essential oil to your morning routine to boost your mental clarity and help you spring out of bed with enthusiasm.

The habitual use of specific smells can create positive associations or triggers in the brain, helping you hard-wire your preferred mood and particular actions to take in the morning. Pleasant smells will lift your mood and create positive associations, helping you rejoice in the new day instead of dread it. While some scientific studies have shown physical benefits, the psychological stimulation alone can boost alertness and attention while reinforcing positive morning behaviors and attitudes.³⁰

Application Methods and Oils for Wakefulness

Diffusion: A simple and reliable method to get the pleasant smells and beneficial effects into your room and body is to use a diffuser. Half asleep, you can reach over and switch it on or even use a timer so that, as soon as you wake up, you are greeted by the fragrance. The less high-tech method of dabbing it on a tissue and simply sniffing is also useful.

Spray: Combining a few drops of a single oil or your own oil blend with water in a spray bottle creates a handy pick-me-up you can use to spritz yourself in the morning or anytime you feel your energy lagging. A few puffs of atomized oils in water create an aromatic mist that can settle on your skin, clothes, or the local environment. In addition to the physical and emotional impacts of the plant compounds, it is also a method of overcoming the ego and deciding how you want to feel. Fatigue is much more of a mental than a physical problem. For example, when athletes tire it is the mind, not the body, that sets the limits.

Showering: You can get the smelling and healing benefits of oils by using a few drops (of a single oil or blend) in the shower. Either spritz from a spray bottle or apply to a washcloth and allow the warm water to spread the volatile compounds and enthuse you with their energy. You can even use ready-made body washes containing refreshing oils like peppermint and citrus to boost the body while keeping it clean.

Citrus Essential Oils: Oils like grapefruit, sweet orange, and mandarin calm the emotions in addition to delivering a pleasant uplifting smell. They blend well with one another and other oils and are typically warming and energizing, creating a gentle lift for your mood and energy.³¹

Eucalyptus Essential Oil: This powerful smelling oil has natural

antibacterial properties and stimulates the immune system while acting as a mental wake up call. It stimulates cold receptors in the nose, making airflow feel increased and stimulating the brain with additional data.^{32, 33}

Peppermint Essential Oil: This powerful odor has explicitly been shown to reduce daytime sleepiness, although the exact method of action is not understood.³⁴ The smell of peppermint has also been shown to increase alertness and can even wake people from sleep. These findings suggest that a mint-flavored toothpaste might not be suited to nighttime dental hygiene! Adding the fragrance to your shower could also help boost energy and even hair growth, as it has been shown to prevent and even reverse male-pattern balding and induce hair growth.³⁵

Rosemary Essential Oil: Studies have shown that inhalation of rosemary oil increases feelings of alertness.³⁶ It also acts as a neuroprotective agent and is being studied for its ability to reduce symptoms of Alzheimer's, inhibit neural cell death, and reduce inflammation in the brain.³⁷ Any substance that boosts the brain in the morning will help you feel more alert and ready to face the day. Rosemary also increases blood pressure, heart rate, and respiration, getting the necessary oxygen and nutrition to your brain and muscles to energize you and get you up and going in the morning.³⁸

Unknowns and Safeguards of Essential Oils

Like all therapeutic substances, essential oils need to be used with respect. It is possible to be allergic to specific oils, and some of them can interact with pharmaceutical medications, either increasing or reducing their effect. Choosing high-quality brands will reduce the likelihood of absorbing contaminants from low-grade chemical distillation processes and increase their beneficial effects. Pregnant and breastfeeding women, children and the elderly should always seek the support of qualified persons with experience in using essential oils therapeutically.

In comparison to modern drug-based therapies, essential oils are significantly safer with virtually no side effects, and only minimal, occasional use is required to benefit from their active compounds. Further

study is needed to understand their methods of action, confirm the long-term safety and understand potential interactions with drugs and other oils. However, thousands of years of successful treatment with plant-based medicines (specifically concentrated essential oils) is a testament to their potential to work in harmony with humans, aiding a wide variety of conditions and helping us manage our own sleep-wake cycles.

Chapter 3

Stress Hormones and Sex Hormones



“The greatest weapon against stress is our ability to choose one thought over another.”

—WILLIAM JAMES

HORMONES ARE CHEMICAL messengers in the human body that control a wide range of functions. They are produced by various glands and secreted into the bloodstream so that they can travel around the body and carry out their jobs. Some of the things hormones are responsible for include body temperature, blood sugar levels, the growth of tissue and muscle, sexual reproduction, and emotional mood.

Stress hormones, such as cortisol and epinephrine, are chemical messengers released by the body in circumstances that are either stressful or considered to be a threat to personal safety, as regulated by the Lizard brain. These hormones are related to our fight-or-flight instinct, times of perceived danger when the body quickly reacts with a biochemical response, for example, increasing blood flow into the muscles so the body can respond quickly to a situation. Unfortunately, continuous stress, prevalent in our lives today, can result in excessive excretion of stress hormones, which can disrupt metabolism, cause weight gain, increase inflammation, and reduce sleep quality. A constant threat of danger, whether real or not, results in hormonal changes and health imbalances.

In mammals, these terrific stress hormones and physiological mechanisms safeguard against life-threatening situations to improve the likelihood of survival. Unfortunately, these stress hormones aligned with our Lizard brain are very active in cases when we have no influence on the outcome.

The Tale of Two Pathways of Fear

When our brain receives emotional stimuli indicating that we may be in imminent danger, these signals are immediately sent to our thalamus. Then, the thalamus communicates these signals, such as fear, to other areas of the brain using two different pathways or routes. The “short route” is fast and involves direct communication between the thalamus and the amygdala. This route is critical for your immediate awareness of the situation. It roughly estimates what may be coming and does not involve thinking about the situation. The “long route” is slower, because the emotional response integrates the input from the thalamus and the amygdala with the cognitive processing center in the sensory cortex (home of the Wizard). The long route is a “road less traveled” in patients with post-traumatic stress disorder (PTSD).

How does this play out in real life? Let’s imagine that you are on a flight from New York to London, quietly watching your second film, and you hear a loud, outrageous sound coming from the side of the aircraft. Immediately you stop watching the movie, and your thalamus is awakened. Your heart is thrashing, you are breathless, and you turn your head to orient your dilated pupils and attentive ears toward the sound. These physiological responses are the work of the amygdala. Suddenly, you experience an unexpected falling sensation. Now, your thalamus is on high alert for sure. As you glance out the window, you observe a dark cloud of smoke pouring out of the right engine. It is highly likely that, unless you are an experienced pilot, you may perceive this situation aligning to catastrophic failure with insufficient options for you to do anything about it. Your short route is in overdrive.¹ This falling sensation is accompanied by an episode of anxiety and fear. This is a very uncomfortable situation for your Lizard. Accordingly, you are terrified and suffering substantial uncertainty about what is going to happen next. Your state of nervousness is exacerbated by the extreme distress being displayed by your fellow passengers. The first-time flying couple next to you discussed their fear of flying earlier, now they are in complete dismay.

Unannounced to your Lizard, the team of experienced professionals in the cockpit are in full control of the situation and immediately know that this is not a catastrophic scenario. Yes, the pilot and copilot may be

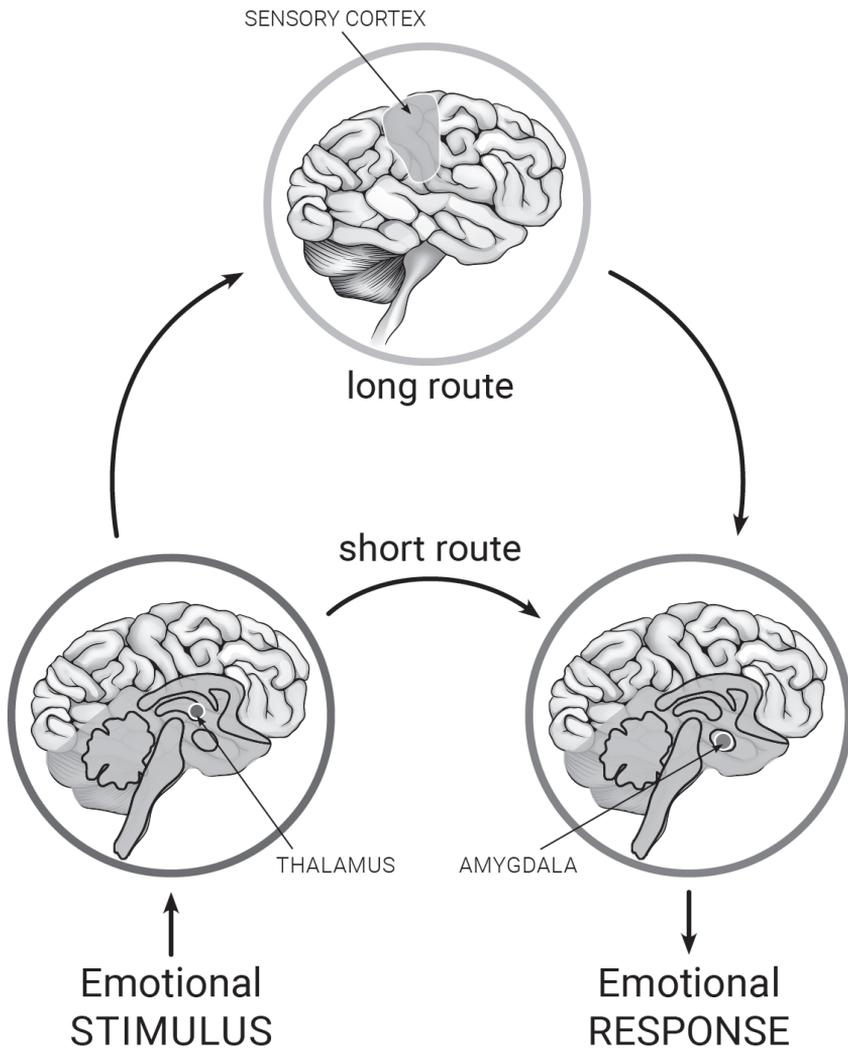
afraid, but they are driving on the long route with their Wizards in control. Why is the pilot's brain functioning so different from you? During flight school, pilots train against this scenario and have knowledge of the aircraft's built-in fire extinguisher system. From the cockpit, the copilot immediately activates the highly effective extinguisher to put out the fire. Additionally, the pilot knows that even if the fire is not contained directly, the engine casing is fireproof to prevent any chance of fire affecting the rest of the engine.

During times like this, you want your body to work at peak performance and your brain to function. Too often, we allow our reptilian Lizard brain to take over when we experience an acute or chronic stressful situation. For us to get the most of what our brain has to offer, it is essential to take advantage of what the cognitive human Wizard brain has to offer as well. For example, the Wizard can help you prepare yourself and fellow passengers with the necessary steps to survive a potentially catastrophic airplane scenario. While the short route is very important for the immediate assessment of the scenario, it is the long route with cognitive processing that will significantly improve your odds of surviving real life, dangerous situations. See Figure 3-1.

Cortisol

Cortisol is produced by the adrenal glands, on top of the kidneys. It leads a double life as a villainized hormone and unsung hero of our daily bodily processes. Cortisol is released during the fight-or-flight mechanism. Again, this may be a real threat, like having to quickly jump out of the way of an oncoming car, or just a very stressful situation, such as watching the evening news. When cortisol is released, it provides a boost of energy to the body. However, if the body does not use this energy boost through physical action, the cortisol builds up inside the bloodstream, which can lead to more stress, inflammation, high blood pressure, accelerated aging, and the risk of heart disease.

The "unjustifiably motivated" Lizard is performing a vital role, but the problem here is that many people, specifically with sedentary lifestyles, do not do the physical movement needed to use up the hormone, so they just get the less desirable aspects of cortisol as it builds up.



Cortisol also plays a role in causing seizures, acting as the chemical mechanism that can trigger epileptic episodes, which occur more frequently in the morning when cortisol production is at its peak.

Yet cortisol is of massive benefit to us in the right doses. It is the hormone behind the scenes helping people to feel awake and alert in the mornings for all the time in human history before coffee came along. It is also responsible for managing blood pressure and can strengthen the

immune system. To keep cortisol at ideal levels, we need to learn how to relax to manage the Lizard better. More on this later.

Epinephrine (Adrenaline)

Epinephrine is another hormone produced in the adrenal glands and plays an essential role in the function of our central nervous system (CNS). As with cortisol, the primary use of epinephrine is the important role of preparing the body for the fight-or-flight response. In stressful situations where we sense danger and need to act, it is promptly released into the bloodstream. This action can manifest as a variety of biological functions in different areas depending on where it is distributed in the body, leading to such physiological responses as increased heart rate, blood pressure, expanding the lungs, and sending blood to the muscles.

When the stressful situation has finished, the adrenals stop releasing epinephrine. As with cortisol, continuous exposure to stressful conditions can result in an overproduction of epinephrine, which can have damaging health consequences, such as heart disease, weight gain, digestive problems, headaches, insomnia, anxiety, depression, nervous tension, and inability to focus and remember things. To protect against the potentially damaging effects of a stressful lifestyle, it is essential that we make time regularly to relax.

Chronic Stress Effects on the Human Brain

Chronic psychological or emotional stress—such as protracted loneliness, marital problems, or the death of a loved one—can lead to the inability of the body to compensate. Unfortunately, this loss of functionality results in emotional trauma and post-traumatic stress disorder (PTSD). Stress and depression are highly prevalent in modern society and, if not managed, lead to milder forms of PTSD.² An estimated 80 to 90 percent of patients visit their doctors because of health issues that are traceable to chronic, unmanaged stress.

High levels of cortisol from prolonged chronic stress destroy the synapses in the hippocampus, which impairs cognitive performance and the

ability to process new information. Elevated cortisol levels in the bloodstream are associated with stress and have been found in people with stressful life situations, for example, emotionally neglected children in a Romanian orphanage, victims of childhood sexual abuse, mistreated schoolchildren, and depressed pre-schoolchildren. Researchers at Yale University discovered that prolonged chronic stress can cause the brain mass in the prefrontal cortex to shrink.^{3, 4}

How to Assess and Control Your Cortisol Levels

Different tests can be done to determine your cortisol levels, whether they are too high or too low. Cortisol tests assess the functioning of the adrenal and pituitary glands and the levels of cortisol in the body. It is commonly measured by taking a blood sample with a needle inserted into a vein. Ask your trusted health professional to perform the test.

Cortisol levels are highest in the morning, so this is when tests are usually performed. Being aware of your cortisol levels means you can take steps to improve them, which can be done quite quickly. As a worst-case scenario, cortisol levels that are too high could suggest a tumor in the pituitary glands.

Managing Stress Hormones with Diet and Lifestyle Changes

Most of us, however, are merely packing on too many stressful events and not enough time for relaxation to help balance hormones in the body. If you have excess cortisol and epinephrine levels, here are some things you can do to reduce them:

- **Eat more fresh vegetables and fruits.** Eat more fresh vegetables and fruits. Repeatedly, vegetable and fruit consumption has been shown to prevent a broad spectrum of diseases and age-related degeneration, promote alertness, support your immune system, and improve mood.
- **Stay physically active.** Essentially, the more you keep physically active, the less cortisol your body needs to release.

- Make time every day to relax. Make sure you have stress-reducing activities scheduled into your calendar on a regular basis. Meditation, deep-breathing techniques, quiet time in nature, a creative activity like painting or writing, reading a book or listening to calming music are all excellent ways to soothe yourself and reduce cortisol levels.
- **Get a good night's sleep.** If your cortisol levels are too low, this can mean that you may have a health condition requiring immediate attention such as Addison's disease, or a condition of the pituitary gland known as hypopituitarism.
- **Eliminate all processed sugars from your diet.** Ideally, processed or refined sugars should never be consumed, because they are a potent neurotoxin. They destroy the neural pathways of the brain, and they have also been shown to cause and feed cancers and are highly addictive substances. Unfortunately, refined sugars are found in most processed foods, often under different names such as corn syrup, fructose, and glucose.
- **Eat citrus fruits and licorice.** A study conducted by the University of Bergen in Norway concluded that grapefruit juice and licorice increase the availability of cortisol in the human body.

There are a few options to boost cortisol levels. One is hormone replacement therapy, taking medication prescribed by your doctor. However, this has many potential adverse health effects, and if considering this option, you should first research the potential health hazards. Instead of resorting to medication, it is possible to improve cortisol levels through some simple dietary adjustments.

What About Sex Hormones?

Sex hormones are chemical messengers that affect the growth and function of sexual reproduction. They are produced in the reproductive organs—the ovaries in women and the testes in men. The sex hormones are divided into three types: androgens, which include testosterone and are regarded male sex hormones, and estrogens and progesterones, which are considered female sex hormones.

They activate around puberty, causing men to grow more body hair and facial hair, the penis to enlarge, and the production of sperm to begin, while for women the development of breasts starts as well as the production of the female ova and the beginning of the monthly menstrual cycle.⁵

Hormones have considerable influence on the behaviors of men and women. They even influence whether an embryo becomes male or female. All men and women produce testosterone, estrogen, and progesterone. Generally, men are producing more significant quantities of testosterone than women, and making smaller amounts of estrogen and progesterone, while conversely, women are typically producing more estrogen and progesterone and much smaller quantities of testosterone.^{6, 7, 8, 9}

Having the right balance of hormones is an essential aspect of good health.

What areas of your daily schedule can you change right now to improve your energy expenditure? The stress hormones cortisol and epinephrine are released as part of the fight-or-flight mechanism when the body perceives it is in danger. Because we lead lives full of chronic stress, our fight-or-flight hormones are often being released when we do not need them.^{10, 11, 12}

WIZARD TIPS

- Hormones are chemical messengers that fulfill many functions in the human body.
- The buildup of stress hormones in the bloodstream leads to damaging health effects, such as weight gain, heart disease, and problems sleeping.
- It is possible to do a cortisol test to discover how much you have in your body. Using the results, you can then improve your cortisol levels according to your needs.
- There are various ways to improve stress hormone levels, including having a proper diet rich in fresh vegetables and fruit, being physically active, setting time aside on a regular basis to relax, and getting good quality sleep.

Chapter 4

Your Body Is Taller in the Morning



“A good head and a good heart are always a formidable combination.”

—NELSON MANDELA

WHEN WE WAKE up in the morning, we are significantly taller than when we went to sleep. The force of gravity exerts a lot of pressure on the human body during the day, especially on the spinal column. When you sleep, and your body is resting vertically, the spine can relax and refill the fluids that lubricate the space between the vertebrae. The additional fluid gives your spine more mobility and flexibility, which in turn also allows the body to stretch, thus extending it by as much as a few inches.^{1, 2} As the day goes on, the spine is subjected to more compression as these fluids lessen.

Implications of Changes in Height and How to Maintain Height

So how does this impact us practically? Apart from scheduling any basketball games for first thing in the morning, the influence it has on us can be far-reaching. Maintaining maximum height is not just about the height itself, but also about how it affects your posture. When we are tall and have good posture, we also use energy more efficiently—a big help in keeping us in top form first thing in the morning and throughout everything we do.

Some of the effects of poor posture:

- Reduced blood flow to tissue throughout our body³
- Reduced oxygen flow to our muscles
- Reduced concentration due to agitation and signals coming from our body

- Reduced mental performance⁴
- Muscle aches and tightness⁵
- Joint stiffness^{6, 7}
- Low self-esteem (correlated with bad posture)⁸
- Over a person's lifetime, he or she can lose several inches of height, due primarily to bad posture and an inflexible spine. Poor posture can have a huge effect on our ability to function in day-to-day life. Since we spend nearly one-third of our time in the "posture" of sleeping, it is critical to find a position that is comfortable for your spine to prevent the damaging effects of poor nighttime posture⁹

It is necessary to experiment with your physical sleeping arrangement to get the best configuration possible for your body. Some individuals find that they sleep better with no pillow, while others need a thin pillow. There is no exact recipe, as each body is different. Over the years, scientists have studied how different pillows ranging from soft to firm affect the muscle fatigue and pain of the neck and shoulder.^{10, 11} Many studies have shown that how the neck muscles are activated is directly related to our individual sleep posture. The bottom line is that if you are experiencing neck and shoulder pain in the morning, you must look into how to modify your mattress and pillow state of affairs for your unique body type.^{12, 13}

We intuitively move toward sleeping positions that are comfortable for us. It will take a little experimentation to discover how your body prefers to sleep. Here are a few tips for sleeping comfortably for better posture:

- Have a mattress that is comfortable. It sounds obvious, but you might be amazed at how many people are willing to sleep on mattresses that do not support their body's best interests. If your current bed is not serving you, invest some time and money in finding one that does. A good night's sleep is fundamental to starting your mornings correctly and is well worth the expenditure.
- When sleeping on your back, your neck and head should align with your body. If your pillow is too large, it will push your head forward, bending the spine unnaturally and causing physical unbalance.¹⁴

- Some individuals find it more comfortable to sleep without a pillow. For others, it may be appropriate for their posture to sleep with a thin pillow.
- You can also experiment with sleeping with a pillow under your knees. It is comfortable, and it may even feel quite decadent. When sleeping on your side, raise your knees toward to your chest. Have a pillow between your knees to keep them comfortable. (If you share a bed, however, take the other person into consideration!)

How to Maintain Height and Good Posture with Physical Activity

Stay active. Movement is essential to produce the fluid your spine needs to stay “well oiled.” The less we move, the less this fluid is produced. You may have noticed that people tend to shrink as they get older. What you may not have noticed is that their brain is shrinking in parallel with the rest of the body. This is thought to be in unfortunate relation to their diminishing physical activity. The good news is that physical activity is very useful in preventing the body and brain from shrinking.^{15, 16, 17}

Practice good posture. This is the most powerful way to adjust your posture, maximize your height, and increase you physical energy, and it's entirely free! Here are the basics that will also help you develop a broader sense of self-awareness:

- Stand with your back straight and your feet firmly planted on the ground.
- Breathe gently.
- Relax the back of your neck and your spine.
- Imagine your spine being pulled in both directions, from the top upward and from the bottom downward.
- While doing this, lengthen the front of your body to create a balance between front and back.
- Raise your breastbone so your chest is as high as it can comfortably be.
- Extend your shoulder and pelvic girdle so that your shoulders and hips expand outward as far as they can comfortably go.

- Practice standing like this when you first get out of bed every morning.

Take up yoga, Pilates, tai chi or qigong or any physical activity that safely extends the spine and gets you more in touch with your body.¹⁸ String visualization is a useful trick employed by many meditation practitioners. Imagine there is a string coming out of the crown of your head and stretching your spine vertically upward, and that the string is being pulled upward. This takes the pressure off your head and causes the weight of your awareness to sink into your body naturally. For some unhelpful reason, so many seats, from park benches to air planes to buses, are designed in such a way that they promote lousy posture.^{19, 20}

Practice sitting well whenever you sit, whether at work, in the car or at the dinner table. This habit will lengthen your spine and your energy.

How do we practice good posture and what should you pay attention to?

- Your buttocks should touch the back of your chair.
- Make sure your feet touch the ground. If they don't, use a footstool.
- Make sure your back is straight, and your shoulders are pushed comfortably back.
- Bend your knees at a right angle.
- When sitting to use a computer, make sure the screen is at head level, so your eyes are looking straightforward.
- If you spend many hours working at a desk, consider a standing desk or stability ball.

Summary

When we are physically present in our bodies with proper posture, it sends a powerful message to ourselves and to others. It communicates self-respect and confidence projected inwardly and outwardly.²¹ Better posture means that not only will you maximize your height, but you'll also reduce tension in your body, develop bodily strength, breathe better and improve memory, mood, and productivity.²² Make an effort to

improve your posture. For chairs you often use, why not leave a sticky note for yourself with a simple reminder, such as “sitting nicely?”

WIZARD TIPS

- Gravity exerts a lot of pressure on the spine. Over time and with bad habits, this can lead to a loss of height.
- When we sleep at night, the spine is able to get “oiled up” and then extends, so when we wake, we are taller than when we went to bed.
- Height and posture are interrelated, and poor posture can cause many health issues such as reduced oxygen, reduced blood flow, and reduced concentration.
- How we sleep at night is very important, because we spend so much of our lives in this position and it has a significant effect on our bodies and minds.
- There are various simple methods we can use to improve our posture while standing and sitting.

Chapter 5

Your Brain Is Bigger in the Morning



“The chief function of the body is to carry the brain around.”

—THOMAS A. EDISON

IN ADDITION TO getting taller, even more strange activity occurs in our bodies while we sleep. We are oblivious to the many wonders our bodies perform while we slumber. In a study looking at more than 10,000 magnetic resonance imaging (MRI) scans of people’s brains, researchers at McGill University discovered that human brains are larger in the morning and, like the spine, gradually shrink in size as the day goes on. The exact mechanism behind the fluctuation of the brain’s size remains unknown. Kunio Nakamura, who led the study, postulated that it is the result of fluids within the brain, “A possible mechanism may be that lying down during the night is associated with a redistribution of body fluids that had accumulated in the lower extremities during the day.”¹

While brain size is not inherently an indicator of intelligence, each individual’s fluctuations in brain size throughout the day can have a significant effect on mental performance and other areas of health. The brain, nerve tissue, and spinal cord are made up of about 73.3 percent water as opposed to the skin (64.68% water) and bone (31.81% water). When we sleep, bodily fluids that are mostly “water” are redistributed throughout the body to the places they need to go. For most people, the time spent asleep is the most prolonged period of time without drinking water, so when we first wake up and later when our brain is at its most shrunken is when we are most in need of hydration.

The Importance of a Well-Hydrated Brain

The brain needs water to function optimally. It also has no method of storing water, so it needs to be hydrated continuously throughout the

day. When the brain is adequately hydrated, it can perform its tasks—receiving energy and nutrients, supporting nerve signal conduction, and removing toxins.

Dehydration has many negative health ramifications. These include trouble sleeping, short-term memory loss, difficulty staying focused and processing logical problems, energy loss and, in more severe cases, it may be a factor in the onset of Alzheimer's, Parkinson's, and Lou Gehrig's disease.

A study performed by the Institute of Psychiatry at King's College London found that dehydration causes brain shrinkage, and as such more energy is required for the brain's neurons to achieve the same output as a well-lubricated and hydrated brain. Essentially, hydration and the function of our brain go hand in hand. A larger, hydrated brain means increased blood flow, more oxygen, and nutrient availability, allowing for increased levels of concentration, improved mood, and better sleep. While there is nothing we can do to stop water escaping when we sleep through necessary bodily processes and breathing moisture into the air, we can ensure that we consume enough water throughout the day to keep our minds running smoothly.

When you first wake in the morning, it is of immense value to your body and mind to immediately consume a minimum of 16 ounces (150 ml) of water. We previously reported in the prestigious journal, *Nutrition Reviews*, that throughout the course of a day, men should drink about 100 ounces of water (13 cups), and women should take about 74 ounces (9 cups) of water.² Men have higher water requirements because they are usually physically larger than women and have more muscle mass where the water is stored. Our daily water needs increase up to the age of eighteen. However, as adults, our baseline daily water needs level off and are relatively constant throughout the rest of our lives.

Please note that all beverages (e.g., coffee and juice) have a hydrating impact on our brain and body. The disadvantage of beverages such as coffee, carbonated drinks, and sports drinks are the high sugar content. However, drinking plenty of water (as close to body temperature as possible) as soon as you can in the morning is a highly efficient way to wake you up and bring the much-needed hydration to your brain.

A recent study from the University of Illinois on 18,000 participants

found that increasing water consumption by as little as 1 percent resulted in a significant decrease in their daily caloric intake and specifically the intake of sugar, sodium, and saturated fat. When the study participants were better hydrated, they had less desire for unhealthy foods.³ Hydration helps the nutrients and energy already in the body get efficiently used, thereby cutting the need to take in more food. Also, many people confuse the sense of thirst with hunger and immediately reach for food when actually what their body would prefer is liquid.

What About Water Quality on Your Brain?

When it comes to the quality of water, tap water should be filtered unless you have the good fortune of a water main connected to a pure mountain spring. Tap water is often full of harmful contaminants. These include:

- Aluminum, which increases the risk of Alzheimer's.
- Arsenic can be found lurking in pipes and is a known poison that increases oxidative stress in the brain and reduces learning and memory ability.
- Pharmaceutical contaminants—from tablets/medicines flushed down the toilet, metabolites in urine, or undigested tablets—leaked a vast array of unwanted antibiotics, hormones, and anti-depressants into drinking water through recycling systems that were not designed to cope with these biologically active chemicals.

At one end of the price spectrum, starting at around five bucks, there are carbon filters, the most uncomplicated and most cost-effective water filters you can buy, which will remove excessive chlorine, benzene, and other harmful chemicals, but will not remove chemicals such as fluorine from your water. More expensive filtration systems will be more effective at eliminating unwanted chemicals and come attached with a higher price tag (from \$100 to more than \$1,000) and extract more trace contaminants and can even ionize and alkalize the water.^{4, 5}

How to Up Your Water Intake

Training yourself to consume more water is a huge advantage in starting your day with optimal energy and nutrient flow. Here are some tips to help you get more water into your body.

- **Remind yourself to drink water.** When you wake up, have a note by your bed or an alarm on your phone that reminds you to drink water straight away. Make it the very first thing you do.
- **Drink water at routine moments in your day.** Have a glass of water while you read the newspaper or take a bottle with you while you walk the dog. Find ways of integrating drinking water with your existing routine. The act of joining a new habit with pre-existing behaviors and habits is a powerful technique, because you are utilizing neural pathways in the brain that already exist, rather than starting from scratch.
- **Challenge yourself.** See how many glasses of water you can consume in a day and record your progress on a weekly calendar. Seeing how much you have improved at something can be a huge incentive to do more, plus making it feel like a fun game is an enjoyable incentive to keep on track.
- **Use a water-tracking app.** There are several free applications that may help you with the difficult task of tracking your fluid intake throughout the day.
- **Add some natural flavor.** Drinking warm water with lemon or a bit of ginger is highly recommended. Freshly squeezed lemon in water is alkalizing inside the body and aids digestion. Alkaline water with a slightly higher pH (7.4 to 7.7) is brilliant for your skin, may help to heal wounds and stomach ulcers, and can help maintain healthy bones and tissue. Also, that citrusy kick is a nice perk in the morning to stimulate your senses.

How to Assess your Hydration Level

Although we do not have a scientific consensus for the ideal way to assess hydration levels, we have identified a few simple, useful methods that can be used by most people.

Urine color and volume (output) are a straightforward and quick way to determine where you are, from well hydrated to severely dehydrated. To take a urine test, find a cute jar to pee in, and then match the color of your urine to the color on a urine color chart. This will help to reduce the subjectivity of examining your urine color. It is important to note that urine color can be easily confounded by some medications, supplements, and vitamins. Unless you are drinking excessive amounts of water each day, your urine volume will range from four to eight cups per day.

In generally healthy people, changes in body weight can be beneficial to determine your hydration levels. The use of nude body weight measurements in combination with first urination (color or volume) each morning allows sufficient sensitivity for detecting daily deviations of normal hydration levels. It is simple, inexpensive, accurately distinguishes between well-hydrated and dehydrated levels.^{6,7}

Dehydrated Brain and Stress Responses

Let us recap the mechanism that leads to the release of stress hormones and see how this affects the brain. During the fight-or-flight response, the brain is on high alert. A dehydrated brain may not respond appropriately during times when high alertness is necessary for survival. The hypothalamus portion of the brain sends a signal to the adrenal glands to release epinephrine and a message to the pituitary gland to release cortisol. This also plays a role by informing us of the need for water. Cortisol narrows the arteries, working in tandem with epinephrine, which speeds up heart rate, making blood more available to the body by increasing blood pressure and perfusion (moving energy and nutrients from the blood into organs and tissues). These physiological responses can be altered when the brain is in a chronic state of dehydration.⁸

This is all well and good when we must run away from a wild boar, but as mentioned previously, prolonged exposure to stressful situations (specifically, prolonged stressful reactions to external situations) can have significant damaging physical and emotional consequences. Recall that our muscles, brain, and other tissue need water to function well. Given that the wild boar is biologically better positioned for winning a battle against a human, a dehydrated body is much worse off.⁹

Summary

Too much stress is bad for your brain. Providentially, there is much that can be done to counteract the negative effects of stress on the brain. Changing ones' environment, engaging in social activities, and learning new things create novel neural pathways in the hippocampus portion of the brain. We will expand on these ideas and delve deeper into solutions with some simple and practical techniques.

WIZARD TIPS

- Our brains have a smaller mass in the mornings due to the distribution of fluids around the body and a prolonged period without hydration while we sleep.
- The brain needs plenty of water to function optimally, and it needs it throughout the day as it cannot store water.
- Dehydration contributes to many negative health effects like sleep disturbances, short-term memory loss, and difficulty focusing. In more extreme cases, it may be a factor in Alzheimer's, Parkinson's, and Lou Gehrig's disease.
- The better hydrated the brain is, the more nutrient availability, blood, and oxygen flow it has, which improves mental performance.
- A minimum of 16 ounces (150 ml) of warm water should be consumed first thing in the morning. Men should be consuming 100 ounces (3,000 ml) of room-temperature water a day, and women 74 ounces (2,200ml) of room-temperature water a day. Drink water and other beverages like Europeans, without ice cubes.
- It is highly beneficial to review the quality of your water and take protective measures to ensure you and your family are consuming healthy drinking water.
- There are various methods you can use to increase your water intake such as setting reminders, challenging yourself with fun games, and using a water-tracking app.

- High levels of stress hormones can have a damaging effect on the brain and destroy neural pathways. Prolonged chronic stress can even shrink brain mass.
- There is much that can be done to combat the effect of stress on the brain. Changing your environment, social enrichment, and learning new things promote the growth of new neural pathways.

Chapter 6

Your Heart and Your Health



“A disease-free body, quiver-free breath, stress-free mind, inhibition-free intellect, obsession-free memory, ego that includes all, and soul which is free from sorrow is the birthright of every human being.”

—SRI SRI RAVI SHANKAR

WHEN WAKING UP in the morning, your heart must work hard. It has just gone from having seven hours of rest, and suddenly it needs to go into overdrive to get enough blood around your body to get you out of bed and moving. The hard-working heart is one of the most critical organs in the body. This muscle is roughly the size of your two hands clasped together, and it has some serious work to do, being responsible for pumping blood around your body and beating 100,000 times a day.

The heart has four chambers—the right atrium, right ventricle, left atrium and left ventricle. The atriums are the chambers that receive blood, while the ventricles are the chambers that pump blood out into the arteries to go around the rest of the body.

Operating under strong influences from circadian rhythms, the heart’s function changes throughout the day. For example, heart attacks are 40 percent more likely to occur in the morning than any other time of day. This is because blood pressure is highest, in accordance with the circadian rhythms, and the cortisol awakening response is under way, which can cause stress on the heart. High blood pressure significantly contributes to the risk of a heart attack, when one of the arteries nourishing the heart itself gets blocked. This blockage, called plaque, is the result of an excess of unhealthy substances in the diet, such as saturated and processed fats and refined sugars typically combined with smoking or a lifestyle lacking in physical activity.

In the morning when you wake up the heart needs about 50 percent more blood to transition from being in bed to standing up. To an already

weak heart with a buildup of plaque, the increased blood pressure coupled with blood vessels that are less flexible in the morning create a higher likelihood of heart attack. This is a significant concern in the United States, where sudden cardiac deaths are the leading cause of natural death, claiming 300,000 lives a year.^{1, 2}

Another variable we have control over is the calmness (or lack thereof) of mornings. Many heart attacks occur when those experiencing them get out of bed too quickly in the morning.³

According to the American Heart Association, your resting heart rate in the morning should average between 60 and 80 beats per minute. If you are over the age of fifty-five years with a family history of heart disease, it may not be a bad idea to periodically assess your heart rate before getting out of the bed and, of course, discuss your concerns with a health care provider.^{4, 5} Several factors may influence your morning heart rate, such as body posture, hydration status, fitness levels, age, and medications. Some individuals in excellent physical fitness may have a morning heart rate as low as 40 to 50 beats per minute.⁶ While being physically fit is a protective factor from advanced heart disease, some individuals may be at risk of a rare condition known as sudden cardiac death or exercise-induced sudden cardiac death. We will explore exercise in greater detail later in the book; however, the good news is that individuals who exercise regularly are twice as likely to survive cardiac arrest than their non-exercising peers.^{7, 8, 9}

The important thing is to know your heart and health-related risk factors. To determine your heart rate, merely transition from lying on your back to a seated position in the bed. Locate your pulse on the underside of your wrist and count the number of heartbeats for 15 seconds. Multiply the number of beats by four. For convenience, you can use a stopwatch or the timer on your mobile phone. Avoid the temptation to check your email or the latest news, if you decide to use the mobile phone.

Here are some steps to creating calmer mornings:

- Plan your day the night before. Do you ever have mornings when you are running around like a headless chicken, trying to get out the door to work only to discover you cannot find your car keys? Avert these chaotic situations by planning your day the night

before. Prepare everything you need in advance: clothes for work, phone charged, car keys to hand. This will save valuable time and energy, so you can get on with the essential activities in the morning and face the world prepared. Another very powerful tip is to write out your to-do list for the next day the night before. This means you can get straight to the critical stuff and reduce the stress of worrying about things you might be forgetting.

- Breathe deeply. If you observe sleeping babies, you will notice that they breathe from their abdomen. This makes a lot of sense as this was where they first breathed from when they were inside the womb, being nourished by oxygen and nutrients through their umbilical cords. As we get older and typically more disconnected from our bodies, living in our heads, our breathing patterns change. We begin breathing more shallowly from the chest.
- Diaphragmatic breathing (also known as belly breathing) opens up space in the abdomen, allowing more blood to be pumped throughout the body, reducing physical stress on the heart. The breath is intrinsically linked to the mind, and shorter, rapid breaths equate to shorter, faster, and unfocused thoughts. Longer, slower breaths relate to longer, more deliberate ideas with clarity and focus, because there is more oxygen available to the brain. This can cause a beneficial reduction in heart rate and blood pressure as well as lower cortisol levels.^{10, 11, 12}
- Make time for yourself. It is often when we are by ourselves that we have some of the most profound and influential ideas and realizations. We need the time for such reflection, and it's highly unlikely that it will happen unless we make it a priority. It could be early in the morning before your mind has a chance to fall into negative thought patterns or on your lunch break. Whenever it is, designate a window of time to be in your own company. You may wish to meditate, pray, do yoga, or physical exercise, or do nothing for 10 minutes. Spending time by yourself allows you valuable space to reflect on life's happenings and can increase productivity and focus and make you appreciate time with others more.
- Minimize noise and distractions. Consider keeping the television,

radio, and other devices switched off first thing in the morning to designate as much energy for mental focus as possible. Avoid watching the news in the morning, if you can help it, as the often-stressful images are not conducive to a peaceful morning.

- Wake up to inviting sounds. One of the most aggressive ways to start the day is with a high-pitched alarm unwelcomely beeping you into consciousness. Instead, try an alarm that gently and calmly welcomes you into the day, such as a free smart alarm for your smartphone where you can choose a beautiful piece of music to rouse you in the morning. Gradually fading in the volume will allow you to gently wake from your restful slumber instead of panicking you out of bed.

Stress, Food, and Your Heart

Many people are eating foods that do not support their heart health, but there are some straightforward steps that can improve heart health with some simple adjustments to your diet:

- Eat more foods rich in omega-3. The body cannot produce this vital fatty acid, so we have to supplement it from external sources. Omega-3 foods prevent blood clots, thus lowering the risk of cardiovascular disease. Try these tasty foods: walnuts, flaxseeds, chia seeds, hemp seeds, Brazil nuts, almonds, cashews, pistachios, hazelnuts, and egg yolks. Healthy fats also counterbalance the effects of less healthy refined fats such as vegetable oils, which damage blood vessels.
- Eat more antioxidant foods. Free oxygen radicals cause oxidative damage, which attacks various body tissues, cells, and even your DNA. The signs of aging are primarily a result of oxidative damage as a result of metabolizing less healthy foods and various environmental pollutants and toxins. Oxidative damage speeds up the progression of heart disease and is linked to a wide variety of conditions associated with age and lifestyle, including cancer, diabetes, and cardiovascular disease. Foods containing high concentrations of antioxidants are excellent at cleaning up

the damaging free radicals that are causing problems in the body. All fruits and vegetables contain antioxidants, especially organic produce that generally has higher nutritional quality. Some of the highest scorers are oregano, cocoa, turmeric, cumin, dried parsley, basil, ginger, thyme, clove, cinnamon, and dark red or blueberries. Eating a variety of colorful foods (“eat a rainbow”) will provide the most comprehensive spectrum of the antioxidants your body is desperate to receive in order to maintain and even improve all aspects of your health.

- Reduce consumption of unhealthy fats. Lowering your consumption of trans fats (typically found in processed vegetable oils used to deep fry foods) reduces the chance of blocked arteries from plaque buildup. According to a research study by the Department of Biological and Biomedical Sciences, Aga Khan University, the country of Denmark decreased its death rate from coronary heart disease by nearly 50 percent over the course of twenty years by banning foods with trans fats. Yes, this ban on trans fats led to restrictions on fast foods such as burgers, pizzas, and French fries. These foods have virtually no nutritional benefits and are packed with a broad spectrum of additives, preservatives, and flavor enhancers that do you no good whatsoever. They are purposefully made to be addictive and to be more profitable, and they have been proven to damage your physical and mental health.^{13, 14, 15}

WIZARD TIPS

- As strong as our hearts are, they quickly come under fire from stressful situations due to lack of physical activity and poor diet, and any assistance we can give them is an investment in ourselves and our future. Many cases of heart disease are entirely preventable with a little bit of well-informed action.
- There are some variables over which we do have control, and you can take your health into your own hands to ensure you have a healthy heart that lasts a lifetime. Two of the most significant variables are exercise and diet.

- The heart has to do a lot of work to get blood pumping through your body when you first wake up.
- Blood pressure and cortisol levels are at their highest when you wake up in the morning.
- Heart attacks are more likely to occur in the morning and often happen when people are getting out of bed or shortly thereafter.
- The leading cause of natural death in the United States is heart attacks, accounting for 300,000 deaths annually. In fact, heart disease is the leading cause of death worldwide.
- Steps can be taken in our diet and environment to strengthen our hearts and create calmer, stress-free mornings. How will you make your mornings more relaxed?

Chapter 7

The Significance of Body Temperature



“Life is 10 percent what happens to me and 90 percent of how I react to it.”

—CHARLES SWINDOLL

HEAT IS AN integral element of life. Without it, we would die, and on the other hand, with too much of it, we would also keel over. It's a delicate balance. Optimum body temperature, otherwise known as normothermia or eutheria, is considered between the narrow band of 97.7°F (36.5°C) and 99.5°F (37.5°C).

It is incredible how well the body can regulate itself to maintain its temperature within the confines of these limits. This is the ideal temperature for all bodily processes to occur, such as blood circulation and the functioning of enzymes, which control the reactions that occur in the cells of the body. Often when patients visit their doctor, they will have a body temperature reading taken because so much information can be obtained about their condition based on this.

Having a temperature that is too high can cause fevers or, in extreme cases, heatstroke, seizures, and brain damage. If it gets too low, below 95°F, it can cause hypothermia. All of these extremes in temperature and the resulting conditions can be fatal. A change of just 5°F above or below average body temperature is considered dangerous.

Body temperature fluctuates in accordance with the circadian rhythms and will also be different depending on the season, the environment, the individual, and upon eating or drinking.¹ The hypothalamus senses these changes internally and externally by detecting the temperature of the blood flowing through the brain and also by signals from receptors in the skin about environmental temperature. The hypothalamus then regulates body temperature accordingly, continually seeking homeostasis (equilibrium). This incredible process is known as thermoregulation and

requires a lot of the energy we consume. One estimate puts it as high as 70 percent of our daily caloric intake.^{2, 3, 4}

Ideal Body Temperature for Restful Sleep

There is usually a fluctuation of 0.5°C (less than 1°F) in each individual's body temperature throughout the day. The coldest/lowest body temperature levels occur in the morning, a few hours before you wake, and peak in the afternoon between 4:00 and 6:00 p.m. Most mammals, including humans, sleep when their body temperature is low and are most active when their body temperature reaches its peak. From this perspective, the afternoon is the optimum time to exercise due to the summit in body temperature, and night and early morning are the best times for us to sleep.

Body temperature can affect how well we sleep. Researchers from the Netherlands Institute for Neuroscience found that thermoregulation plays a prominent role in the quality of sleep. Due to the circadian rhythms creating cooler body temperature in the morning, the quality of sleep can be improved by ensuring external conditions that allow the body's core temperature to drop a few degrees.⁵ They suggested that people thermoregulate themselves during a night's sleep when they get too warm by kicking off their duvet to expose their skin to the cooler air temperatures.

To assist you in a restful night's sleep, it is recommended that you have the room temperature between 65°F (18°C) and 72°F (22°C). However, every individual will be different, and it is worthwhile experimenting to find the temperature that best supports your quality of sleep. If you do not have a thermostat, you can alter your climate for better rest by wearing little or no clothes, having light bedding and/or with an open bedroom window.

The Effect of Stress on Body Temperature

Anxiety can cause a change in the body's temperature, although this is usually not to the degree that should cause concern. Vasoconstriction

(reduction in the size of the blood vessels) occurs when people are facing stress and experiencing the fight-or-flight response. This constriction can lower body temperature, and anxiety can also lead to hyperventilation (excessive breathing), which further cools the body. In general, it can be said that warmer hands and feet are an indication of being relaxed, and colder hands and feet indicate tension, due to the constriction of blood flow around the body. During the fight-or-flight response, when the body is under stress, the blood is redirected from the body's extremities toward the vital organs to assist in "fighting or flighting." This is why our hands and feet can feel cooler.⁶

Sometimes such fluctuations in body temperature can be uncomfortable and interfere with daily life if someone is undergoing prolonged stress. When body temperature is affected by stress or anxiety, there may be a multitude of mechanisms at work, but the most crucial factor in regulating body temperature in these circumstances is to deal directly with the source of stress and anxiety, and/or learn to more mindfully deal with the cause of such problems.^{7, 8}

How to Maintain Body Temperature

Here are some ways to assist your body temperature in staying in the optimum zone:

- Exercise. Physical exertion keeps the body temperature warm as the byproduct of the heat created by the moving muscles, and also increases the body's tolerance to heat.⁹
- Stay hydrated. Dehydration can raise body temperature. In conditions of high temperature, the body uses the liquids it contains to cool itself down through sweating. If there is not enough liquid in the body to be used for the cooling function of sweat, the hypothalamus signals to the kidneys to extract less water from the blood, and we become aware of thirst. If there is no liquid in the body to cool it, then body temperature will continue to rise. When exercising or during extended exposure to hot or humid climates, make sure to drink plenty of water (water really is the best drink you can consume to keep hydrated.)^{10, 11}

- Eating hot and spicy foods in hot climates. Eating ice cream in the summer is a novel pastime in which countless people partake, but it is nonetheless an artificial activity that is out of alignment with nature. Can you imagine our distant ancestors consuming ice cream on a hot summer day? The immediate effect is cooling down, but this soon wears off. In tropical countries such as India, the Middle East, Africa, the Caribbean and South America, people consume hot and/or spicy food on hot days. This is because it causes the body to sweat and cool down, regulating core temperature to be a closer match to the outside temperature.¹²
- As we have seen, body temperature has a remarkable effect on many areas of our day-to-day lives.

Summary

The ideal body temperature is between 97.7°F and 99.5°F. This temperature is optimum for various bodily processes to occur. If body temperature gets too high or too low, it can cause health problems that can be fatal in extreme cases. Body temperature is regulated by the hypothalamus and circadian rhythms, being slightly cooler in the morning and getting warmer in the afternoon. Now you have a foundation for understanding how and why body temperature impacts our morning and the rest of the day.

WIZARD TIPS

- Body temperature can affect how well we sleep. A room temperature between 65°F and 72°F is considered ideal for sleeping.
- Prolonged stress can affect body temperature. Generally, the more stressed someone is, the colder he or she will be due to a lack of blood flow to the body.
- There are some things you can do to help your body maintain its optimum temperature. These include exercising, staying hydrated, and eating hot and spicy foods on hot days.

PART II

THE MIND AND BODY IN THE MORNING



Chapter 8

Creating Self-Discipline



“The only discipline that lasts is self-discipline.”

—BUM PHILLIPS

GETTING THE MOST out of mornings equals getting the most out of life. “*If you correct your mind,*” said the Chinese philosopher Lao Tzu, “*the rest of your life will fall into place.*” The same can be said of mornings. If you establish good habits and patterns in the morning, this foundation will open the space for good practices and trends for the rest of your day, which in turn will create good habits and patterns for the rest of your life. In the next several chapters, we will look at how to get the most out of mornings using mental and creative tools. First and foremost, we will explore mastering mornings with self-discipline, a skill that can transform displeasing aspects of your life into remarkable experiences.

Self-discipline is the ability to motivate and coordinate our efforts and activities to improve our quality of life. This includes structured planning, organizing, exercising delayed gratification, and the willingness to step out of your comfort zone. These things can appear scary and formidable if you’re not familiar with them, but don’t worry, you are not alone. It is unfortunate that most people are not taught self-discipline, but it is a skill that everyone can learn. All you require is the desire to improve your life, and then for you to make the decision to do it. Once you take the first step, you have ventured onto a beautiful path that offers many rewards for yourself and those around you.

Why We Are Not Self-Disciplined

In the modern world, we have largely lost sight of the value of self-discipline. Advertisements appeal to the weaker aspects of our minds,

attracting the part of us that wants to be instantly gratified. We are conditioned to want things we do not need. When the Lizard is in overdrive, we often go from not needing the sparkly \$150 shoes and delicious “midnight snack” ice cream to wanting it right now after watching a 30-second “ad” designed to appeal to the Lizard inside of us. There are times when we do not care how the product in question is made or if it is as tasty as advertised—we want it because it is shiny and new, and it will (momentarily) allow us to forget our problems.

The problem with instant gratification is that it often creates long term complications, such as addiction, health complaints, and financial problems, and it continually postpones the things that we could do to install empowering habits. How many times have we said to ourselves, “I’ll do it tomorrow,” about something we really want to do but requires consistent effort for us to benefit from, like writing a book or learning a musical instrument or a new language? All too often, tomorrow never comes.

Instant gratification goes hand in hand with not taking responsibility. If we take a step back for a moment and look at the bigger picture, on a societal and global level, this attitude of instant gratification and irresponsibility results in ecological destruction and economic calamity. Many people look at the world and feel powerless, “What can I do?” This attitude is exactly the kind of limiting belief that separates people who are high achievers and make a positive difference in the world from people who live mediocre lives. You do not have to save the world, but a fulfilling life that makes a compelling difference to yourself and others requires long-term thinking and the development of self-discipline.¹

The ego loves to play the victim, blaming others for problems and difficulties in life and creating feelings of powerlessness. It does this to avoid taking responsibility and making the steps needed to enact positive life changes. Life just “happens” to victims. Conversely, people with self-discipline take responsibility for themselves to create the life they want, and this is their power. The difference between these two kinds of people is simply a shift in perspective. Who do you want to be: a victim or an influential person who takes full responsibility for life?

You are reading this book to improve your mornings and your life, and what is offered are the tools and motivation for you to take control

and to empower you to do so. Ultimately it is up to you to take responsibility for yourself and apply what you learn here.

For some people, the word *discipline* has the connotation of punishment, of being made to do something as a penalty for having done something wrong. However, self-discipline is really about the opposite of punishment, it's about putting oneself first in a way that brings you more out of life—more time, more money, more health, and more enjoyment of your mind and body. Yes, you may have to give up things to develop self-discipline, but you will gain something far more significant in the process.

A study conducted at Taiwan's National Sun Yat-sen University found that people who postpone instant gratification reap the long-term rewards of improved health, wealth, and happiness.² Another study by the University of Pennsylvania found that self-discipline was more important than IQ as a factor in the academic performance of eighth-grade students.³ This mindset of success can be cultivated and self-discipline is the door you need to walk through to reveal the most successful version of yourself.⁴

How to Create More Self-Discipline

Self-discipline is like a muscle that has to be exercised regularly for it to grow. Repetition is the mother of learning. Through consistent effort to develop self-discipline, it will get easier and more comfortable until it gets to the point where it is automatic. Self-discipline is the skill that will allow you to reach any goal you set. What follows are eight techniques to achieve your goals by developing self-discipline, the challenges you face in doing so, and how to overcome them.

TECHNIQUE #1

Be Aware of Your Resistance Challenge of Resistance

This is the biggest obstacle to developing self-discipline, and it comes from your own mind, in the form of resistance. Your own resistance (to any kind of change, including new positive habits) is the most prominent

enemy and blockage to your success that you could ever meet. Developing self-discipline means facing your resistance and stepping out of your comfort zone, which will create growth and expansion but will be uncomfortable.

Our egos do not like this, they think it's much safer to stay in the "zone of the known," and they will put up resistance in the form of discouraging internal self-talk, "I can't do it," "I didn't really want it," "Why should I sacrifice my spare time to do this?" "Why should I have to change?"

All psychological theories identify multiple selves within each person's psyche.⁵ We've all experienced this voice of resistance at some point, in any situation where we wanted to do something that we knew was good for us but faced a challenge from within. Perhaps we weren't aware that this voice was actually working against our best interests.

Can you relate to this? Maybe you've had internal "arguments" about getting up in the morning, part of your mind (one aspect of your psyche) encouraging you to get up and get a head start on the day, promising you will benefit from it. Meanwhile, another aspect of your mind ("voice" in your head) reminds you how tired you are and how comfy and cozy the bed is and suggests you cancel the chores/activities/meetings you have scheduled for the morning. Which voice do you listen to? Which would you like to listen to?⁶

Overcoming Resistance

Know yourself. No one knows better than you what deters you from achieving something. Your resistance, which is a subconscious force against change (any change, good or bad), uses any tactic it can to stop you leaving your comfort zone. This is often communicated to your conscious mind in a very subtle way, with a thought such as: "This is just too hard. Why bother?" By predicting how your ego is likely to respond to adversity, you can stay one step ahead of your resistance. Like preparing for business negotiations, the better prepared you are, the more likely you are to win.

Bringing awareness to the inner discord between what you want to

achieve (your goals) and your resistance (immediate gratification and staying in your comfort zone) is a massive step toward overcoming it. When you catch the voice of opposition and recognize it as a barrier to your success, you're in a better position to move beyond that barrier.

The next time you embark on a new project or activity that causes resistance, remember that there is a part of you that does not want to change. Listen for and acknowledge this part of yourself, hear what it has to say, but firmly deny its requests, refute its protests and excuses and assert your intended goal and the benefits it will bring. Before taking action and beginning to work toward your goal, just write down the ways you know you are likely to face obstacles from your inner voice of resistance.⁷

TECHNIQUE #2

Plan for Every Outcome

Your ego is incredibly talented and will try all and every excuse to stop you from stepping outside your comfort zone. Say you want to start a new routine of running, but when you get up the next day, it's much colder outside than you anticipated. Your resistance to it will create excuses like, "It's too cold; I'm not going!" It is very clever; you might find excuses like: "I'll injure myself if it is too cold. Better not go, just in case!" Excuses are in direct opposition to taking control of your life and they prevent self-discipline, growth, and expansion. Developing self-discipline is recognizing and planning for these self-created obstacles and actively choosing to work through them.

Overcoming the Barrier to Planning

When you set a goal to achieve, such as going running the next day, have in place "Even If's." List the potential obstacles to achieving your goal and counter each one with a promise to yourself that you will still achieve your goal even if these challenges arise.

For example:

GOAL	EVEN IF...
Go running tomorrow morning for 30 minutes	I don't sleep well, it's raining, it's cold, I don't feel like it
Paint the spare bedroom, Sunday	It's a beautiful day outside, I am invited to do something fun with my friends, I don't feel like it
Study 5 hours this week for my final exam	I go to bed late, I have to put my social life on hold temporarily, I don't feel like it

Again, this is all about knowing yourself as an individual, because everyone will face challenges depending on what that voice of resistance is making excuses about. The more aware you are of the countless manifestations of your resistance, the stronger your position to achieve your goals and develop self-discipline. The next time you set yourself a new goal to accomplish, create a table like the one above so you can foresee all the ways your resistance might try to hold you back.

Be amused and impressed at the creativity and cleverness of your ego—it is just doing its “job” to keep you “safe” in your comfort zone, but you (the REAL you) can outwit it and anticipate it and in doing so achieve your goals and so much more in life. The more you let your ego win, the stronger it gets. The more you override its desire to be comfortable, the more you will grow. A comfort zone is only temporary: As soon as you have stepped out of it, you will have a brand-new comfort zone to explore.^{8,9}

TECHNIQUE #3

Prepare to Give Something Up In Order to Gain

To reach your goal, you will more than likely have to impose certain limitations on yourself in order to gain something. These limitations could be less free time, less socializing, less money, less junk food, less television, or less physical comfort. The downside is that you will lose out in some current aspect of your life, but the upside is that through this self-imposed sacrifice you will gain something new, typically much better, and in active alignment with your chosen journey through life.

For example, someone who is performing in a live band may have several nights a week dedicated to practicing. This musician might miss out on watching a favorite television show or going to the bar, but what he or she stands to gain is so much more: the enjoyment of playing on stage, the appreciation and energy of the crowd, social kudos, being paid for doing something he or she loves, the fulfillment of reaping the rewards of hard work, and the social bond that comes with any kind of group activity. Although the rewards outweigh the sacrifice, the voice of resistance wants to remain comfortable and will do what it can to keep the musician stationary.

Overcoming the Limitation of Gaining by Giving

This requires a bird's eye view of the overall pros and cons of your goal. What benefits will it bring you and what drawbacks will it cause? The voice of resistance will do what it can to convince you that your goal is not worth the effort by reminding you what you're losing out on. By consciously acknowledging the bigger picture of the pluses and minuses, you know exactly what you stand to gain and lose in the pursuit of your goal, and you'll often find that it's nowhere near as bad as your resistance would have you believe.

GOAL	PROS	CONS
Meditate for 30 minutes every morning	Improved: focus, calmness, relaxation, emotional balance, immune function, self-esteem. Reduced: anxiety, blood pressure, worry.	Have to go to bed and get up half an hour earlier, have to exercise self-control.
Save \$1000 for vacation by August	Get to go on vacation, see a different country and experience a new culture, meet new people, new experiences, enjoy traveling with my friends, have fun, relax, explore.	Have to stop buying new clothes I don't need for 3 months

GOAL	PROS	CONS
Improve my diet and drop 20 lbs in 4 months	Better health, more energy, better sleep, fit into my summer clothes, look more attractive, feel good about myself, improved confidence, lower blood pressure, reduced risk of disease	Don't get to eat junk food, can't eat out with my girlfriends, can't rely on junk food for comfort eating – have to find another way to deal with my emotions

Every time you make a new goal, create a simple table like the one above and write down the pros and cons of working toward it. This helps to keep things in perspective: reminding you of the disadvantages you'll experience and the rewards you'll reap. Make time during your morning routine to review your goals, pros and cons. This will give you a fresh viewpoint and keep you motivated and disciplined.

TECHNIQUE #4

Rewarding Yourself: The Challenge of Self-Compensation

Let's face it, imposing self-discipline and breaking old habits can be a struggle. You're going to have to give some things up, restrict yourself, and step out of your comfort zone. Of course, it's going to be worth it in the end, but sometimes the reward of accomplishing the goal is not enough to endure the criticisms and complaints of your inner resistance, especially for longer-term goals, which take time to see results.

Overcoming by Self-Motivation

Rewards are an incredibly powerful tool for motivating yourself to reach your goals. Consider them the "carrot on the stick," a technique for bypassing your resistance by keeping it happy and at the same time building self-discipline.

Have a reward in place for when you achieve a goal, part of a goal, or a certain number of goals. Make sure the reward is appropriate, for example, if your goal is to have a healthy diet, do not reward yourself with junk

food. If your goal is a small achievement, like doing your homework, make the reward relative to it, like reading your favorite book for an hour.

The reward does not have to be something huge. Often simple things are effective; it just must be something that you'll look forward to. Rewards are extraordinarily powerful if you have big goals broken down into smaller steps—then you can reward yourself for the completion of each step or a few of the steps, keeping you motivated until the end of the overall goal.

These are a few suggestions for self-compensation:

- Go relax in the park or wilderness
- A quiet night in by yourself
- A dinner out with your family
- Buy a new music track
- Buy a new book
- Have sex
- Go to a play
- Go for a massage
- Take a relaxing bath
- Go to the beach
- Take a free online course
- Do something creative such as drawing, painting, or playing a musical instrument
- Go on vacation
- Buy some new clothes
- Play your favorite sport

Sometimes just ticking off your achievement is enough reward. Using a wall chart or to-do list that regularly accumulates ticks (or stickers, if you prefer) can be extremely rewarding and help you feel proud of your achievements. What rewards work for you?

TECHNIQUE# 5

Break Your Goal Down into Manageable Steps

One of the ways your resistance will try to deter you from reaching

your goal is by saying it is too complicated or too much work for you. Many people have grand visions of what they would like to achieve but the prospect of getting to that point can seem impossible, for example, if you have a lot of weight to lose. Sometimes we set goals (Wizard at work) that are so far away from where we are now (this is the Lizard at play) that we are paralyzed into procrastination, and no progress is made.

Overcoming Aspiration Barriers by Bite-Sized Steps

It might be difficult to subpoena the discipline to achieve big goals, but if you break your goal down into bite-sized steps, you are much more likely to stay disciplined enough to complete each subgoal. Achieving each step of the goal will give you a sense of satisfaction and completion that will provide you with plenty of an encouraging boost to complete the whole goal.¹⁰

For example, if your goal is to find a new job that you love, you cannot just immediately achieve that goal. There is a sequence of events that needs to happen first with reasonable deadlines. For example, if your main goal is to get a new job that you enjoy, you might break it down into simple tasks such as:

- Goal 1: Research jobs that I want to do.
- Goal 2: Learn new skills needed to successfully apply for the new job.
- Goal 3: Update my resume.
- Goal 4: Send resume to five potential employers.
- Goal 5: Successfully acquire a job interview and receive a competitive job offer.
- Goal 6: Give notice to quit my current job.

From this list, you might find that you can break the goals down even further to make a detailed, step-by-step schedule of smaller, more doable tasks. Then you can gradually work toward the big goal on a day-by-day basis. This bypasses your resistance to such a big change by introducing it so slowly that your resistance, or Lizard brain, will

not even realize how much you are going to change, thereby reinforcing your self-discipline in the process. Having your daily goals set out for you the night before is a powerful way to start your mornings ready to take action!

Consider using SMART goals (specific, measurable, attractive, realistic, timed). This makes a goal more definitive, taking it out of the realm of imagination and into tangible action. Using the example of finding a new job used above and the first goal to “Research jobs that I want to do,” a smart goal might look like this:

- Specific: I will spend 30 minutes per day reviewing job sites.
- Measurable: I will capture the time I spend and the sites I consider in a spreadsheet.
- Attractive: Reviewing sites, I will see what inspires me and find ideas for new careers that interest me.
- Realistic: I will use the time on the train to do this instead of reading Facebook updates.
- Timed: I will do this every working day for two weeks, making a total of five to six hours of research.

This level of detail makes it a much more achievable task as it has clear boundaries and you have thought through the how, why, and when of actually getting it done. What SMART goals would you like to set for yourself?¹¹

TECHNIQUE #6

Recognizing Your Progress

We have grown up unaware that we have such negative internal commentary, because it is so routine, we perceive it to be normal. Unless we have actively chosen to work on it, most of us have low self-esteem and discouraging internal self-talk. Criticism, doubt, and a generally negative internal dialogue toward oneself are abundant in our society and can be a major barrier to self-development and evolution. This has a considerable impact on the balance between self-discipline and the voice of resistance, usually in favor of the resistance.

Overcoming by Appreciating Your Growth

Everyone deserves to feel good, and no one is in a more powerful position to validate you and recognize your worth than you. Countering your voice of internal resistance with positive and encouraging self-talk is a powerful tool that gradually diminishes your resistance by cementing the positive result of your achievement in your mind, building confidence and self-discipline.

Honoring your achievements is an excellent tool for building self-discipline and self-esteem. Upon completing your goals that required stepping out of your comfort zone, simply say to yourself, internally or aloud, a phrase such as, “well done, me,” “good work,” or “yes, I did it!” This is an incredibly powerful tool because you are taking responsibility for what you have made happen. Saying positive things about yourself and your accomplishments also puts you in a good mood, which gives you the energy to achieve more, creating an empowering feedback loop of success.

Write down a list of the times you had to step out of your comfort zone or deal with a difficult situation. Each time your resistance tells you that you can’t achieve your goal, counter it by reminding yourself of your strengths and accomplishments and affirm to yourself that you will achieve your goal. What are you proud of accomplishing? It could be minuscule things, but gradually they build up.

TECHNIQUE #7 **Seeing Your Progress**

On the road to self-discipline, your mind can’t be trusted to remember everything that you have achieved or want to achieve. There’s so much information to keep at hand and a whole host of obstacles to avoid. Persisting in a habit when it feels like you’re getting nowhere is an open invitation for your voice of resistance to creep in and question why you’re doing what you’re doing. Left unchecked, that voice can lead to failure to reach your goals.

Overcoming by Keeping Track of Self-Improvement

Recording your progress is a powerful method for growth and development, because it allows you to see how much progress you've already made, which motivates you to keep on track. It's so easy to forget what you've accomplished, however, having a reminder that you regularly look at and add to paints a picture of growth, from humble beginnings when you first started working toward your goal, all the way to the triumph and satisfaction of its completion.

Recording your progress could combine the techniques of Technique 5, "Break Your Goal Down into Manageable Steps," and Technique 6, "Recognizing Your Progress," into one tool, regularly updating and reviewing your efforts to reach your goal. Record the date, the activity, how long it took, notes to yourself on how you could improve next time and notes on things that worked well.

Keep your progress written down in one place, either in a notebook, a note on your phone or a spreadsheet on your computer. Whatever medium you use to record your progress, make it something that you enjoy interacting with, such as a new, quality notebook with colorful pens that keep you enjoyably engaged with the process. If you are more of a digital fan, find a way to make that work for you with a document or app that you like. The more ways you can engross yourself in the process, the more you will reduce your resistance to change and the stronger your self-discipline will become. Being able to look at what you have achieved effortlessly overcomes the self-talk that says you can't get to your goal.

TECHNIQUE #8

Distractions and Temptations

As previously stated, your mind will do everything to avoid doing what it's supposed to be doing when it means stepping out of its comfort zone. Suddenly the most mundane tasks, like cleaning the house, seem really enticing in comparison to the effort needed to reach your goals. In these moments of weakness, the mind will wander away to anything that seems more enjoyable, and keeping it on track can take up a huge amount of energy, like trying to herd an unruly elephant.

Overcoming Your Internal Battle

Make it easy for yourself. Every time you have an internal battle between your resistance and your ambition to succeed, this uses up time and energy that could otherwise be redirected to the completion of your goals. Avoid these inner conflicts altogether by taking the time to reflect on what things hold you back and then removing distractions and temptations from your environment.

This is very subjective depending on you and the goal you are trying to reach. For example, if you're on a new diet, don't fill your freezer with processed foods. If you're prone to wasting time watching pornography or reading Facebook, install software that blocks them. If you have important work to finish by the end of the week, but you usually stay up late to watch your favorite television series on DVD, give your DVDs to a friend to guard them until the weekend, or take the fuse out of the television's plug, whatever it takes to create the optimum environment for success. Combining this with rewards keeps you away from the things that hold you back and on track to fulfillment, prosperity, and improved self-discipline.

Summary

Self-discipline is the ability to motivate oneself to achieve goals and improve quality of life. Self-discipline is not a natural ability that some people have; it is a skill that can be learned by anyone. Self-discipline consists of planning, delayed gratification, and stepping outside of your comfort zone. Self-discipline is an undervalued trait in a modern society that wants everything now. Feeling like a victim keeps the ego in its comfort zone of not taking responsibility. In order to grow and get the most out of your mornings and out of life, we have to step outside the comfort zone. Studies on the results of students have shown that self-discipline is more important than IQ when it comes to success.

WIZARD TIPS

There are various tools you can use to cultivate self-discipline, including:

- Identifying your resistance and being aware of it
- Planning for every outcome
- Listing the pros and cons of achieving your goal
- Rewarding yourself when you achieve goals
- Breaking big goals down into smaller, manageable ones (SMART goals)
- Recognizing and recording your progress
- Removing temptations and distractions

