

**BRAIN RULES: 12  
PRINCIPLES FOR SURVIVING  
AND THRIVING AT WORK,  
HOME, AND SCHOOL**  
*by John Medina*

*Summary & Worksheet*

*durmonski.com*

## **The Book In Three Or More Sentences:**

Our brains are marvelous machines. Yet, most of us have no idea how they actually work. This is the goal of the author, John Medina, in his book with a ridiculously long title, Brain Rules: 12 Principles for Surviving and Thriving at Work, Home, and School. He investigates and examines a huge pile of studies to form a 12-section guide that aims to introduce us to the main operating mechanisms of our grey matter. By doing so, professor Medina wants to expose us to better ways to process information which can potentially help us improve our lives, especially at work and school.

## **The Core Idea:**

Once you realize what are the main needs of our brains, on an atomic level, you'll better understand why sitting in a chair for 8 hours straight seems like an impossible feat and why we doze off in the middle of a presentation. Our brains evolved to survive in the wilderness, not in cubicles. By getting to know our fundamental desires, how our brains actually work, and what they need to thrive, we can better tackle the problems we face in the modern world.

### *Highlights:*

- *Add a dose of emotion to what you're trying to teach to make it easier for others to learn.*
- *We need to expose ourselves, again and again, to important information if we want to remember it for longer.*
- *Stress and the lack of control, hurts people emotionally, not only physically.*

## 5 Key Lessons from Brain Rules:

- *Lesson #1: Exercise Can Boost Your Brainpower*
- *Lesson #2: We Have Three Brains In Our Heads*
- *Lesson #3: We're Bad at Recalling and Remembering Information*
- *Lesson #4: Stressed Brains are Sick More Often*
- *Lesson #5: Twelve Rules Guide The Brain*

### Lesson #1: Exercise Can Boost Your Brainpower

We associate workouts with nice abs. Morning runs with a healthy lifestyle. Tabata sessions with online influencers. But there is more!

Physical exercise can boost your brainpower.

Yes, in addition to shaping your body and fitting into last year's jeans, regular physical activities can also improve your cognitive skills and help you become a better decision-maker.

How is this possible?

To understand this, we need to observe for a moment the requirements for human life to be preserved. Our survival requires the following three things: food, water, and fresh air. That's basically it.

However, these three have different consequences for our bodies.

As mentioned in the book, "You can live for 30 days or so without food, and you can go for a week or so without drinking water. Your brain, however, is so active that it cannot go without oxygen for more than 5 minutes without risking serious and permanent damage."

Or in other words, oxygen is a vital ingredient for our bodies and a couple of minutes without this precious element can cause instant death.

How is this related to physical activities?

Simple, when you move, you improve your oxygen consumption. The more and the better you consume oxygen, the better your brain operates.

The scientific explanation is rather complex and I prefer to refrain from adding even more complexity to it. But in one sentence I can say that blood flow increases when we move regularly which helps us make new blood vessels. These new blood vessels improve the overall

performance of our body – including how fast and well we think.

So, workout doesn't only improve your physical fitness, it also makes you smarter.

Besides, we have only recently started driving cars and flying to other countries. Before that, taking into account the timeline of our whole existence as a species, for the majority of our time we walked. So, if you're not regularly moving your body, you're preventing it from doing what it was designed to do – move.

*“A lifetime of exercise can result in a sometimes astonishing elevation in cognitive performance, compared with those who are sedentary.” John Medina*

## **Lesson #2: We Have Three Brains In Our Heads**

There are three brains in our heads that are layering on top of each other.

The oldest part is called the lizard brain. On top of the lizard brain, we have the mammalian brain. Lastly, on top of everything, there is the prefrontal cortex – the newest addition.

All of these intellects have different functions and responsibilities.

Here they are in short:

- Lizard brain: In control of our basic needs – breathing, heart rate, sleeping, and waking. The lizard brain is always “conscious.” Making sure that you don't choke to death when you're taking a nap.
- Mammalian brain: The functions of this part is often referred to as the “four F's”: “fighting, feeding, fleeing, and... reproductive behavior.” This second brain is also responsible for our feelings – fear, pleasure, rage, etc.
- Prefrontal cortex: The thing that differentiates us from animals. This part helps us fantasize, solve problems, make predictions, and also enables us to think in an abstract fashion so we can conceptualize information.

The first human was not much different from an animal. But during the years, slowly, thanks to the prefrontal cortex, the brain evolved and learned one important thing – that cooperation leads to domination.

Instead of becoming bigger, humans decided to become smarter.

After all, it's almost impossible to conquer a wild beast all by yourself. But things rapidly improve if you find allies.

Our brains are prone to develop friendships. Not so much because we want someone to talk to, but because these relationships help us achieve more.

*“Suppose you are not the biggest person on the block, but you have thousands of years to become one. What do you do? If you are an animal, the most straightforward approach is becoming physically bigger, like the alpha male in a dog pack, with selection favoring muscle and bone. But there is another way to double your biomass. It's not by creating a body but by creating an ally. If you can establish cooperative agreements with some of your neighbors, you can double your power even if you do not personally double your strength. You can dominate the world.”*  
John Medina

## **Lesson #3: We're Bad at Recalling and Remembering Information**

If we don't transfer information to a more durable form, we lose it.

Since there are constant flows of inputs bombarding our senses, our brain only stores fragmented pieces of the insights we gather from the outside world. That's why, sadly, later we cannot recall most of what happened during a day due to the vast amount of information coming in.

Or in other words, our brains are focused more on dealing with things that are happening here and now than worrying about creating lasting memories. After all, here and now is more important for our survival.

That's actually why habits are formed. What we repeatedly do, we memorize and repeat. Habits are a way for the brain to save energy. When we see something familiar, a clue of some sort, a script is played. This way, the brain doesn't have to always operate at full potential. It simply tells you to wash your teeth when you get up and to eat when you see food.

But what is mentioned in the book about short-term memory and long-term memory is more focused on our ability to remember things – or actually the opposite, why our ability to remember things is so fragile.

We're bad at recalling and remembering information because there is so much happening around all the time. In the words of the author, "The typical human brain can hold about seven pieces of information for less than 30 seconds! If something does not happen in that short stretch of time, the information becomes lost."

But is this it? Or we can do something to improve the way our brains store and recall information - a.k.a. remember better the things we read and watch, so we can use the insights in our daily lives?

The answer is rather simple: Yes, we can boost our memory by revisiting the important information we want to remember.

Sadly, our school system and most companies don't adequately implement repetition in the daily lives of the people participating in these institutions.

It's expected of us to remember the thing we saw once. Unfortunately, this contradicts with the way our brains work - we're bad at remembering stuff unless we repeatedly revisit the source.

One of the studies mentioned in the book explains that by improving the way you present information - make it more entertaining, compelling - you will increase the chances of people remembering what you just described.

People don't pay attention to boring things. They have to be emotionally engaged in order for the insights to be encoded in the brain.

Still, hearing something once won't cut it. You need also to regularly re-expose yourself to the information you want to remember.

*"Learn something while you are sad and you will be able to recall it better if, at retrieval, you are somehow suddenly made sad. The condition is called context-dependent or state-dependent learning." John Medina*

## **Lesson #4: Stressed Brains are Sick More Often**

Extended periods of stress can lead to a state called "learned helplessness."

Chronic stress can alter your perception of the world and convince you that there's no way out of a situation.

At first, you'll resist, and try to fight the object/person who's causing

you pain. But if the stress is extended over a long period of time and becomes somehow chronic, your defense will eventually crack.

And this is not even the saddest part.

Even if the stress is no longer present, there is a huge chance that your mind will never recover. You'll stop dreaming about a better tomorrow and live a life convinced that there is no way out. No way for things to get better.

But there is more...

Chronic stress also badly affects our immune system.

When we're regularly put under pressure, the surges in our blood pressure are no longer correctly managed. This chaotic behavior can create scars in your blood vessels which can later lead to a heart attack.

Not surprisingly, people who experience chronic stress are sick more often.

So, what causes stress?

It might seem like a simple question. In general, we think that we experience stress primarily when we're overworked or when other people act violently – verbally or physically. But the truth is somehow different.

The author argues that there are three conditions that determine whether you are stressed or not:

- An emotional response visible by outside people must be triggered.
- You must perceive the stressor as aversive.
- You don't feel in control of the situation.

To put this into perspective, imagine seeing a spider. If you're afraid of spiders, conditions one and two are met. However, if you have control over the situation, you can flee the scene and successfully dodge a poisonous bite from this insidious insect.

In this type of situation, the consequences are mild and there is no lasting stress.

Different things happen in the brain if you're tied to a chair. Now, if you're attacked by a spider you no longer have control over the situation. Therefore, stress, or at least real, painful stress is observed.

That's what stress is. The lack of control over a situation or your perception about the absence of control.

*“One of the most insidious effects of prolonged stress is that it pushes people into depression. I don't mean the type of “blues” people can experience as a normal part of daily living. Nor do I mean the type resulting from tragic circumstance, such as the death of a relative. I am talking about the kind of depression that causes as many as 800,000 people a year to attempt suicide. It is a disease every bit as organic as diabetes, and often deadlier.” John Medina*

## **Lesson #5: Twelve Rules Guide The Brain**

Questions like, “What do I really want?” and “Why I do what I do?” may go unanswered if we don't really know ourselves.

And what better way to know your true self, understand what you actually want, than looking at how your brain is hardwired to think.

Below is my summary of the 12 rules mentioned in the book that explain how our brains operate:

- Rule #1: Exercise boosts brain power: Neither our brains nor our bodies are built to stand behind a desk for 8 hours straight. Exercising brings more oxygen to the body which pleasantly affects the overall functionality of your brain.
- Rule #2: The human brain evolved, too: Over the years, our brains have evolved to adapt to the changes taking place in the world. Thanks to the prefrontal cortex, we can mimic other people, assess situations, and cooperate.
- Rule #3: Every brain is wired differently: We're all different. No two brains are alike. We process and store information differently. What we physically do in life and what we learn rewrites our brains.
- Rule #4: We don't pay attention to boring things: We're wired to neglect boring things. We can't multitask. We understand information better when there's an emotional element embedded in the presentation.
- Rule #5: Repeat to remember: The first few seconds are vital for something to be learned. The best way to recall information is by transporting yourself, mentally, to the environment where you first learned the thing.
- Rule #6: Remember to repeat: Most memories have a short life cycle. To ensure that something will be remembered for a long period of time you need to consciously expose yourself to the information, again and again.
- Rule #7: Sleep well, think well: There is a daily battle happening



in the brain. Part of the cells in the brain what to put you to sleep while the other part tries to keep you awake. Getting enough sleep is vital for the operating functions of the brain.

- Rule #8: Stressed brains don't learn the same way: Our brains are designed to alert us when there is danger. However, chronic alerting damages your blood vessels.
- Rule #9: Stimulate more of the senses: Our senses work together, and we use all of them to process what is happening around. If you want to better transmit information to others, stimulate several senses at once.
- Rule #10: Vision trumps all other senses: What we see is often not 100% accurate because the brain adjusts the information based on our previous experiences. Still, the best way to improve communications is by showing visual elements.
- Rule #11: Male and female brains are different: Women are more complex. Their X chromosomes carry over 1,500 genes, while the Y chromosome, available only in men, carries only 100 genes.
- Rule #12: We are powerful and natural explorers: We imitate others because we have "mirror neurons" in our brains. That's why, since we're constantly somehow engaged in social interactions, we're always hungry for more novelty. Therefore, the proper way of "living" is by actively engaging with the surrounding environment. Observing what's happening around, creating a hypothesis, experimenting, making conclusions, and repeating.

*"Researchers have shown that some regions of the adult brain stay as malleable as a baby's brain, so we can grow new connections, strengthen existing connections, and even create new neurons, allowing all of us to be lifelong learners." John Medina*

## **Actionable Notes:**

- Make learning emotionally appealing: We're great at finding patterns. Our brains are constantly looking for similarities to avoid threats. But with so many things happening around, how does the brain know what to prioritize? Simple, by placing events that made us feel something on the top – the so-called ECS (Emotionally Charged Events). If you encountered a bear the last time you were in the forest, you'll surely remember this event the next time you get closer to a group of trees. This tendency to hold emotionally arousing events can be used to our advantage. We can attach newly learned things to old memories that have stimulated our emotions in the past to better remember them.
- Improve your task-switching: We're terrible at multitasking. Not because we haven't read the latest productivity article, but because our brains aren't designed to do more than one thing at a

time. The reason some people seemingly achieve more than others is because of their ability to pay attention to several things at once. This doesn't mean that they do several things at once, they are simply better task-switchers. They have a good working memory that allows them to move from task A to task C and then return to task A again without having to "start over." And how can you do this yourself? By becoming even more proficient in the things you do. When your skills expand, you can easily switch between tasks without losing direction.

- 10-minute lectures: The author argues that our attention goes down the drain after 10 minutes. Thanks to our modern devices, it's probably even less than 10 minutes nowadays. What is suggested in the book is to create short modules if you're giving a presentation or lecturing a class. You can start your talk by explaining the general concept of your idea and then dig deeper into the topic. What should happen after the 10th minute? Should I dismiss everyone? No. Simply insert a compelling story. Every 10 minutes tell a relevant story that can trigger an emotion. For a short period, steer your audience to another place. This will give them a mental break from the facts you want to transmit and also the strength the audience needs to endure the other 10 minutes.
- Create a "Spanish Room": A great tactic mentioned in the book to teach your kid Spanish, for example, is to label a room in your house as a "Spanish Room." The rule in this room is simple: "We can only speak Spanish when inside." When learning takes place under the same conditions, our brains process information more easily. And by doing a simple rearrangement in your house, you make it easier for your child's brain to understand new things. Of course, you can tailor the "Spanish Room" to suit your own schedule. You can label it "Chinese room" or "New ideas room." The point is to make learning easier for the brain by giving it a physical cue.
- Write down the meaning of what you're learning: We remember things better when we personalize them and make them fit our own lives in some way. According to a study mentioned in the book, people recall information faster if, after being exposed to something new, they think and write about the meaning of this new data. Let me elaborate. If you're asked to look for the diagonal lines in the word "tall", you will conclude that there are 2 letters that meet these criteria and move forward. But if you're asked to write down the meaning of the same word, you'll probably write something like this: "The word tall is about something, well, tall. I remember a tall man I met a couple of years ago. I literally needed a stool to talk to him." If you want to remember things for longer, take some time and write down the meaning in your own words.

## Commentary and My Personal Takeaway

The goal of the book is to help us understand how our brains are wired, so we can, hopefully, adjust our behavior for the better and learn new things faster.

John Medina, who is a seemingly well-educated medical consultant, outlines 12 rules that, according to him, govern our brains.

And while there are interesting points about how our brains operate, the writing style feels somehow blunt. It felt like I'm reading a 4th-grade biology textbook.

Which is not that bad if you think about it. After all, the author is trying to convey very complex neurological nonsense to an audience formed primarily by people who have no previous experience or knowledge in brain things.

Still, personally, the writing style in the book is not something I can positively grade.

And speaking of audiences, although I don't believe the book was aimed towards marketers, I'm quite sure that people who operate in the advertising industry can benefit a lot from the text.

By learning how our brains are designed to work, sellers can create more compelling products and increase their profits.

Key takeaway:

Above all, our brains have evolved to help us survive the great outdoors. Nowadays, however, it's no longer necessary to be a skilled hunter to live another day. It's more important to become a rational decision-maker. But how do you become such a person? You can start with two things: First, you need to understand that our natural instincts are pushing us towards quick wins that are not always beneficial in our current setting. And second, focus on making learning new things emotionally appealing to you and to others.

### Notable Quotes:

*"Our survival did not depend upon exposing ourselves to organized, pre-planned packets of information. Our survival depended upon chaotic, reactive information-gathering experiences." John Medina*

*"We were not used to sitting in a cubicle for 8 hours at a stretch. If*

we sat around the Serengeti for 8 hours—heck, for 8 minutes—we were usually somebody’s lunch. We haven’t had millions of years to adapt to our sedentary lifestyle. That means we need a comeback. Removing ourselves from such inactivity is the first step. I am convinced that integrating exercise into those 8 hours at work or school will not make us smarter. It will only make us normal.”  
John Medina

“The brain acts like a muscle: The more activity you do, the larger and more complex it can become. Whether that leads to more intelligence is another issue, but one fact is indisputable: What you do in life physically changes what your brain looks like.” John Medina

### What to read next:

- Actionable [Book Summary: The Selfish Gene](#) by Richard Dawkins
- Actionable [Book Summary: The Better Angels of Our Nature](#) by Steven Pinker
- Actionable [Book Summary: Everything is Fucked](#) by Mark Manson

## INTERACTIVE SHEET FOR NOTE-TAKING

*Reading alone won't help you understand the actionable notes. You need to engage with the content. Answer the question below (just type inside the boxes) to outline your future steps:*

- 1. Think about how you can make learning emotionally appealing to you:*
- 2. Evaluate your workflow. Instead of multitasking, try improving task-switching.*
- 3. How can you create 10-minute lectures or 10-minute presentations?*
- 4. What do you want to learn? Create a "Spanish room" about it.*
- 5. When you're learning something new, write the meaning with your own words:*

*Don't forget to save your changes.*