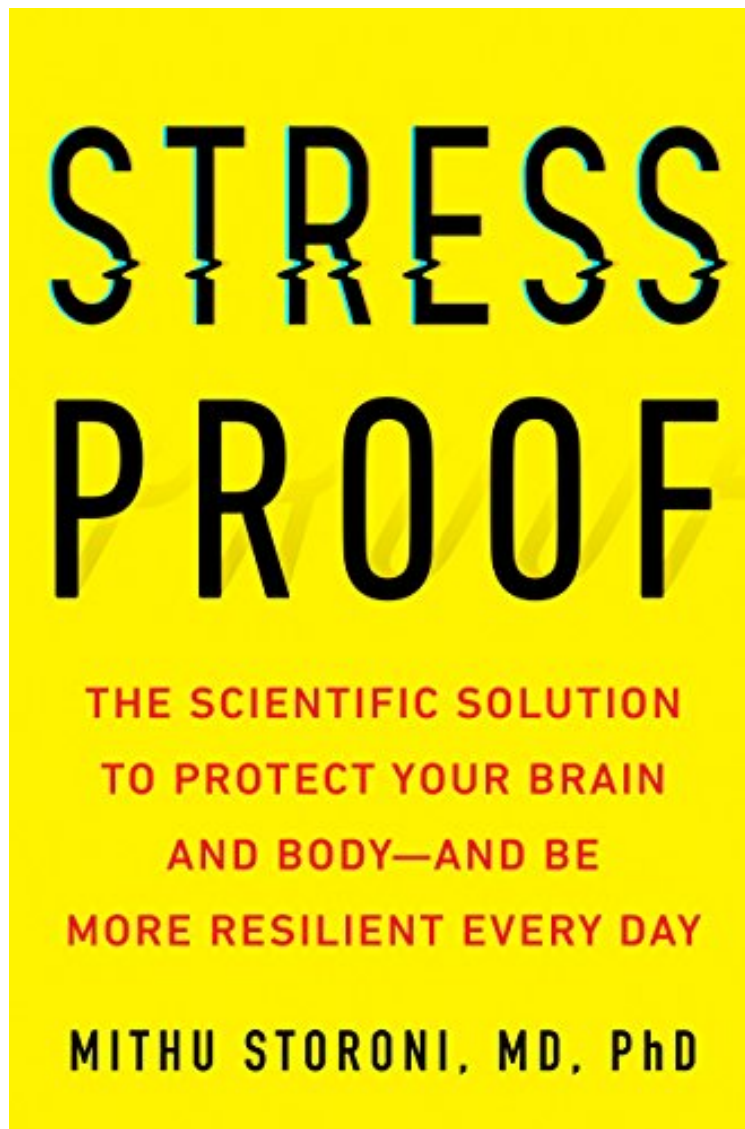


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## **Stress-Proof: The Scientific Solution to Protect Your Brain and Body--and Be More Resilient Every Day**

*Mithu Storoni*

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**Mithu Storoni : Stress-Proof: The Scientific Solution to Protect Your Brain and Body--and Be More Resilient Every Day** before purchasing it in order to gage whether or not it would be worth my time, and all praised Stress-Proof: The Scientific Solution to Protect Your Brain and Body--and Be More Resilient Every Day:

0 of 0 people found the following review helpful. Great read. This book gives you the technology to ...By CustomerGreat read. This book gives you the technology to learn how to control stress. It's a technology we could all

benefit from, in this fast paced and crazy world we live in. 2 of 2 people found the following review helpful. Thoroughly researched, scientifically proven and thoroughly practical strategies to cope with the stresses of modern life. By KundeBooks in this genre typically recount a familiar theme of the fight vs flight reaction and the role of the unconscious brain in our reaction to stressful situations. This book stands head and shoulders above the others in that it moves the conversation beyond this well established truth. Rather than offering soothing platitudes about acknowledging the role of the limbic system / unconscious brain, the author that's extensively researched the medical literature looking for non pharmacological, scientifically proven strategies to alleviate the stresses of everyday life. The result is a series of scientifically and medically sound strategies which can easily be incorporated into ones daily routine. These range from dietary modifications and supplementation to binaural beat therapy. New to you? These certainly were to me. By adopting a selection of the strategies that were suited to my lifestyle as a busy surgeon I have completely transformed my ability to adapt to stress and have found a happier and healthier approach to hectic modern life. 3 of 3 people found the following review helpful. A must read!! By Alexandra Schuilwerve Mithu Storoni's scientific approach to help you understand how to make your body and brain more (stress) resilient is absolutely recommended to anyone who has endured/is enduring Chronic stress/CFS/Me. It has helped me beyond words to understand how to manage my own body brain. Something I thought I was capable of, but when challenged with chronic fatigue, I was lost. This book gives you guidance, with scientific evidence. A must read for anyone who has dealt/is dealing with these challenges or lives in a high stress environment and could use guidance on how to stay healthy.

Discover simple, science-based strategies for beating stress at its own game When's the best time to exercise and how much is too much? Which foods fortify the brain, and which do the opposite? How can we use music, movement, and motivation to boost our rational brain and keep our cool no matter what life throws our way? Short bursts of stress are an inevitable part of modern life. But how much is too much? Research is uncovering the delicate balance that can turn a brief stressful episode into systemic overload, eventually leading to inflammation, anxiety, depression, and other chronic health issues. This practical and groundbreaking guide reveals seven paths to fighting the effects of stress--to strengthen our natural defenses so that our minds remain sharp, and our bodies resilient, no matter what life throws at us. Each chapter examines a common stress agent--including inflammation, an out-of-sync body clock, cortisol levels, and emotional triggers--and presents simple ways to minimize its harmful effects with changes in diet, exercise, and other daily habits--including surprising hacks involving music, eye movements, body temperature, daily routine, and more. Translating cutting-edge scientific findings into clear and simple advice, Stress-Proof is the ultimate user's guide for body, mind and well-being.

"Extensively researched and comprehensive, Stress-Proof is filled with fascinating strategies for preventing chronic stress. Its advice is powerful and yet simple to implement and promises tremendous benefits for both mental and physical well-being."--Dan Buettner, National Geographic Fellow and New York Times bestselling author of Blue Zones "Stress-Proof is a rigorously researched guide that presents cutting-edge strategies for improving resilience, mental performance, and focus. Highly recommended."--Scott Barry Kaufman, Ph.D., psychologist and co-author of Wired to Create "Helpful and practical. Applying this book to your life will make it better."--Kamal Ravikant, bestselling author of Love Yourself Like Your Life Depends on It "Mithu Storoni explains the neurobiology of stress and provides wise and accessible advice on enabling happy resilience. We learn why many practical steps can help us thrive in our stressful lives."--Dame Sandra Dawson DBE, KPMG professor emeritus of management studies, Judge Business School, University of Cambridge "In Stress-Proof, Dr. Mithu Storoni focuses on the problem and solutions for the reason that 80% of my patients decide to see me: stress. Recognizing and managing stress, as described in expert detail in this breakthrough book, can start a revolution in healthcare by focusing at its root causes. Highly recommended."--Joel Kahn, MD, FACC, Clinical Professor of Medicine and Founder, Kahn Center for Cardiac Longevity About the Author Mithu Storoni is a University of Cambridge-trained medical doctor, certified in Ophthalmology, and also holds a PhD in Neuro-ophthalmology. She has undertaken research in Neuro-ophthalmology and Perceptual Neuroscience at Cambridge, in London and at Harvard Medical School. She speaks several languages and is a teacher of hot yoga. Excerpt. copy; Reprinted by permission. All rights reserved. Chapter 1 The Two Sides of Your Brain The moment you encounter a situation that has the potential to be stressful, two conversations take place inside your head. Your entire world can look very different, depending on which one you choose to attend to. One conversation is rational, calm, and reasoned. The other is emotional, impulsive, and hasty. Chronic stress raises the volume of the second and mutes the first. A Prefrontal Executive Your intelligent brain is like a giant corporation with a multitude of departments and subdepartments. An unimaginable amount of information passes through it and must be appropriately processed. The corporation's aim is to adapt your behavior to reap maximal benefits from the environment you are in. At the head of your corporation sits the chief executive officer, who coordinates the corporation's machinery and decides which

departments should be accentuated and which should be toned down. This process must be able to adapt to changing circumstances. If the CEO orchestrates the corporation with wisdom and precision, it will likely thrive. At the front of your brain, behind your forehead, sits a region known as the prefrontal cortex. It plays a central role in executive control and behaves, with collaborative assistance from others, like a CEO. In every situation, it carefully assesses your terrain and formulates the best possible strategy for navigating through it. It modulates and controls activity across your brain's various departments to create as favorable a climate as possible for you to accomplish what you are doing. For example, if you are trying to read a long e-mail in the middle of a hectic, noisy office, it coordinates networks so the noise is muted and the distractions emanating from your surroundings are dimmed, so that you may focus. Like any great executive, it has some special talents. It gathers as much information as it can from your present situation and holds on to it as working memory. Your working memory lets your prefrontal cortex relate what is happening now with what just happened a moment ago, so it can predict what will happen next and modify its strategy for you, if needed. Your prefrontal cortex also controls the spotlight of your attention and decides where that spotlight should be beamed. It scrutinizes data coming in from multiple channels to decide what deserves attention and what does not. The scrutiny takes place at many levels within the prefrontal cortex and includes analyses of analyses as well as consultation with long-term memory stores via a region of your brain known as the hippocampus. If your thoughts and sensations are unimportant and irrelevant to your task at hand, your prefrontal cortex lowers their volume so your attention does not waver from what you are doing. Your prefrontal cortex, in association with other networks, strategically plans, reasons, regulates behavior, makes decisions, and exerts top-down control over other parts of your brain as you navigate toward a goal. Through trial, error, and intelligence it learns to assign an appropriate behavior to a given set of circumstances and to improve upon that behavior as soon as new information presents itself. It is always learning and trying to upgrade its intelligence. This puts your prefrontal cortex in a state of intense activity as new networks form and change and new connections between brain cells (synapses) materialize and weaken. There are an unimaginable number of synapses within your brain, and these synapses shift and change all the time in a state of heavy flux. The evolving change in the strength and activity of synapses is known as synaptic plasticity. When we adapt to a new situation and the brain rewires itself to cope, it relies heavily on synaptic plasticity. The Rational Regulation of Emotion Your emotional instinct is a valuable tool for navigating the nuances of today's urban environment because your threats tend to come from social interactions, rather than from wild animals. When these threats set off negative emotions in your mind, they may bypass careful analysis by your prefrontal cortex, to save you time. This short circuit prevents you from filtering out false alarms. The brain circuitry that processes your emotions is extensive and includes both positive and negative feedback loops. Many of these loops are modulated by parts of your prefrontal cortex. If your prefrontal cortex decides it is in your best interest to stay on high alert for possible threats coming from your environment, it may raise the volume of your emotional response. If it decides your emotions are proving distracting to what you are doing, it may mute your emotional response and shift the spotlight of your attention away to a worthier target. If it malfunctions, your emotional response may be disproportionate to what your situation warrants. One of the main players in your emotional network is the amygdala. The amygdala carries out a quick preliminary scan of the information coming in from your environment and then sends signals to various other parts of your brain including the prefrontal cortex. The prefrontal cortex, in turn, sends signals to your amygdala. Parts of it may promote or demote its activity depending on the other information it has gathered. During emotional conflict, for instance, parts of the prefrontal cortex appear to "restrain" the amygdala. One other key team member in your emotional network is the (mostly ventral) hippocampus, which collaborates with your amygdala. The prefrontal cortex plays an essential role in conducting the orchestra of your brain so your response to the world you find yourself in is always rational and reasoned. If the regulatory skills of your prefrontal cortex are hampered, your response to your environment may be irrational and inappropriate and your experience of your life will change. Brain scan images of people suffering from chronic occupational stress or post-traumatic stress disorder (PTSD) show signs of defective prefrontal regulation of emotion and behavior. Not being able to down-regulate negative emotions is associated with burnout. If your emotions are not regulated, negative emotions may surface easily and take over your mind. You may view the world with a negative bias, dwelling on its negative features and remembering negative experiences more than positive ones. Your unregulated perspective may make the world feel uncertain and unpredictable, so you constantly feel on edge and anxious. Each of these intense negative emotions feeds back into your brain's emotion networks, amplifying and propagating their activity. Here is an example of how the presence or absence of good emotional regulation can give you a drastically different experience of the same event. Life through an Emotional Lens: Your usually cheerful boss did not smile back at you this morning. You arrive at your desk and start wondering why. You have poor control over your emotions, so your mind creates worst case scenarios as you interpret everything you see and hear with a strong negative bias. You feel anxious and guilty. You worry that your boss has some bad news to share with you, in light of rumors of cuts in your company's budget. You notice others around you discreetly smiling to themselves and wonder if they are laughing at you because your sacking is an open story. You have bills to pay and that new mortgage. You panic. Life through a Rational Lens: Your usually cheerful boss did not smile back at you this morning. As you rationally try to understand why, your prefrontal cortex and hippocampus carefully revisit

the scene and go through their inventory of past experiences. They come upon a distant memory buried in your mind, of someone gossiping about your boss's sudden interest in Botox therapy. Thinking back, you now remember how the edges of her eyes twitched while her mouth and forehead remained frozen. Looking around the office floor, you notice your colleagues trying (and failing) to keep a straight face. You smile, too, at the hilarity of the situation. Your Autopilot Response System Your autopilot nerve network, the autonomic nervous system, rapidly carries signals from your brain to your body. Its two halves, the sympathetic and the parasympathetic, which work together to keep your body's engine running smoothly, stay permanently switched on. When their activities need adjusting, their gain or tone is changed without turning them off completely. For instance, sympathetic input to your heart raises your heart rate whereas parasympathetic input lowers it. If your heart needs to beat faster, the tone of the sympathetic input is raised and the tone of the parasympathetic input is reduced, but both continue to provide input to the heart. When your body experiences stress, your brain sets off two distinct chain reactions. The first chain involves your fast-acting autonomic nervous system whose two halves work in opposition during stress. Your sympathetic tone rapidly rises and your parasympathetic tone falls and this chain culminates in the release of epinephrine (also known as adrenaline) and in a range of physiological responses such as rapid breathing, a quickened pulse, and heightened alertness. The second chain of events begins in your hypothalamus and ends with the adrenal gland releasing the stress hormone cortisol. The two chains interact and feed forward and back upon each other until the stressful moment is passed. At this point, your parasympathetic tone rises and your sympathetic tone falls. Your parasympathetic network becomes more active as you relax and your sympathetic network becomes more active when you are stressed. Your amygdala and its close collaborators (known as the Central Autonomic Network) are intricately connected to the circuitry of your stress response. This explains why things that affect you emotionally can rapidly trigger a stress response. Experiences that elicit intense negative emotions can increase your sympathetic tone whether they come from the world around you or from the thoughts floating through your mind. If you experience many such emotional triggers, or if you cannot regain control over your emotions quickly after they have been aroused, you will be prone to frequent bouts of stress and your sympathetic tone may stay unnecessarily raised. Your brain ignites a stress response when it thinks you are being threatened. That threat may be physical or emotional. The stress that we tend to experience most of the time in today's industrialized, urbanized world takes the form of psychosocial stress which acts through your emotional reactivity. Since your prefrontal cortex regulates your emotional reactivity, it plays a vital role in your susceptibility to stress. Its critical role becomes apparent when you find yourself in an unexpected, stressful situation when it reins in your stress reactivity, regulates your emotions and keeps your attention fixed on the task at hand. If it does its job well, it softens the stressful impact of the situation. In the moments that immediately follow a stressful experience, your prefrontal cortex shifts your attention away from the inflammatory thoughts simmering in your mind, so you can recover as quickly as possible and move on. If it is not able to regulate your emotions, your recovery is slow and may even be incomplete.

**A Word on Terminology** The network of brain cells that process emotions is vast and complex and I will be referring to it as the emotional brain, so as not to overburden you with too many technical terms. Similarly, the rational brain refers to the networks in the prefrontal cortex that are involved in goal-directed decision-making and behavior, emotional regulation, working memory and learning, and attentional control, and are generally responsible for making sure you respond to your environment as rationally and wisely as possible. This term also includes networks in the (mostly dorsal) hippocampus, a key player in learning and memory, as well as in some other regions that may collaborate with the prefrontal cortex. The terms emotional brain and rational brain in the context of this book refer to what the networks do in the context of psychosocial stress. In reality, the brain is not anatomically divided into rational and emotional sections, and emotion and cognition are tightly interwoven and served by overlapping circuits.

**Acute and Chronic Stress** If you imagine the brain as an orchestra conducted by the prefrontal cortex, the melody being played is synchronous and balanced most of the time. During acute, uncontrollable stress, the conductor, your prefrontal cortex, gives the floor to one instrumental section that emerges out of the harmonious symphony and powerfully dominates the stage. This section processes your negative emotions. After the stressful experience is over, the prefrontal cortex shifts attention away from this section and the soothing harmony resumes. The brain of an adult human alters in response to what is asked of it. It rapidly adapts to meet changing demands so it can thrive in a dynamic environment. If its experience of stress is nonbsp; longer acute but chronic, it may change its connectivity and structure to adapt to this new setting. The temporary weakening of prefrontal control over emotions and behavior now persists and dysregulated emotional behavior lingers on. The change in connectivity makes the imbalance between rationality and emotional reactivity long-standing instead of temporary. Many of the manifestations of chronic stress, from impaired emotional regulation to changes in motivation, behavior, and the ability to feel pleasure, may be the result of diminished prefrontal control. There are many routes by which chronic stress can progressively weaken prefrontal control networks. The prefrontal cortex and the hippocampus are both in a state of constant flux and they rely heavily on intense synaptic plasticity. Any process that obstructs this activity, such as chronic stress, interferes with their functioning. Interestingly, the prefrontal cortex and hippocampus are also vulnerable to damage from aging and degenerative diseases such as dementia. Brain cells in the prefrontal cortex (known as pyramidal cells) have a shape that resembles a tree. They have branches that extend outward (known as

dendritic branches). These branches are involved in synapse formation. Chronic stress makes these branches regress. It also affects cell-to-cell communication and hinders coordinated electrical oscillations between brain cells, which are vital for information processing. These effects compromise the ability of the prefrontal cortex and the hippocampus to do their job properly, and regulatory control may suffer. The poorly regulated emotional brain may now react more easily. While dendritic branches may regress in the prefrontal cortex, they may grow in the amygdala. A recent study has shown an inverse relationship between feeling chronically stressed and the size of the prefrontal cortex. Each small bout of acute stress a chronically stressed brain encounters may feel more intense and prolonged than it otherwise would. We become what we behold. We shape our tools, and thereafter our tools shape us.-Marshall McLuhan A situation that would not have ruffled your feathers before now raises your blood pressure. As it suffers damage from chronic stress, the prefrontal cortex starts performing poorly in tests of working memory and cognitive flexibility. It loses its grasp over attention and self-control. Your experience of the world becomes less balanced and you may find yourself dwelling on negativity when your mind wanders, and jumping to negative conclusions in moments of doubt. It might feel increasingly difficult to disengage from negative emotions and negative thoughts to focus on your task at hand. Eventually, this negative spiral of chronic stress may culminate in depression.