## Introduction to the Stress Paradox

And the most phenomenal part of this is that the processes that I'm talking about that are activated, that repair the proteins, repair the DNA, that recycle old and damaged parts and increase your mitochondria, they are countering the very processes that lead to the chronic diseases today that are robbing us from life and longevity.

This is Doctor Talks. Real talk from real doctors on the issues that matter to you most. Dr. Sharon Berquist is a physician, scientist, and now the bestselling author of The Stress Paradox, a book that challenges everything we think we know about stress.

In a world that's told us over and over again to avoid stress at any cost, Dr. Berquist invites us to look a little closer. Today, she and I explore how certain types of stress can actually build our strength, protect our brains, and help us to age not just gracefully, but powerfully.

I hope that you get as much out of this conversation as I did. Dr. Birquist, it's a pleasure to have you here. Thank you for joining us. I am delighted to have the opportunity to dive into the meat of your book, The Stress Paradox.

You talk a lot about how certain types of stress can actually be beneficial. And we're fed this idea that no stress is good, that we need to avoid stress.

## What Hormetic Stress Means

And I think that really what we want to talk about is balance, right? How do we create periods of stress that actually benefit us, that we can get the benefit from?

You talk about the hormetic effect. Can you describe what that is and how we know the differences between stress that serves us and stress that doesn't?

Yeah, so thanks for having me. I'm very excited to be here. And the fact that stress harms is real. And we have about 90 years of literature showing the links between how stress can harm us because most of medical literature is tied to pathology, understanding illness.

But in recent years, really due to molecular and cellular technology, we've been able to understand how stress can benefit us because we can see what is happening at the level of our cells and that is a completely untold story.

The way stress can impact ourselves when the stress response is doing what it was designed to do, which is to help us cope, to help us survive and thrive.

At the level of ourselves, there's a complete regeneration that's taking place to the point where we cannot even be happy, healthy, or live the life that we want in terms of life expectancy without the willingness to go through some stress.

So, hormetic stressors are the types of stressors that are beneficial and they're generally mild to moderate, they're brief in duration, and they're followed by recovery.

So, can you give us some examples of what that might look like? Yeah, so this whole notion that stress can be good, of course, is so counterintuitive and counterculture.

So it's worth putting it all in the context of our daily lives and giving practical examples. So I'll start off with when stress is harmful, because that's what we know, right?

Stress that harms us is chronic stress. It's things that are unpredictable, uncontrollable. Child getting sick, financial hardship, difficult divorce.

These are the types of stressors that are of prolonged duration and we can't get a sense of mastery and control. So they leave us feeling just fatigued and drained.

And at a biological level when we encounter these stressors, they actually lower our resilience. The types of stressors that I'm talking about, they have a beginning, a middle, and an end and that's really how the stress response is healthy.

## Examples of Harmful vs Beneficial Stress

It's a brief duration and all of these hormetic stressors are things that we do that, again, just challenge us in a very healthy way, but we follow them by recovery.

So there are five in particular that work in this way. There are plants and the chemicals in plants, the phytochemicals that actually gently stress us towards health.

Exercise, particularly brief bursts of exercise with high intensity. And again, this is intensity relative to what's intense to you, right? So sometimes people listen to this and think, Oh, this is for biohackers and people who want ultra longevity, but we're talking about just what is pushing you beyond your comfort zone and how that activates a part of your genes and your body's ability to regenerate.

Another is thermal stress which is like heat and cold and they are more than a fad. They actually have biological benefits. Fasting but in a way that aligns with your biology in a circadian manner that is not too restrictive but something that we can all do on a daily basis.

And good emotional and mental challenges. and most of us think oh we have already so much in our lives but specifically the types of challenges that are meaningful that they contribute to something bigger than ourselves that align with our belief system the biochemistry of the stress response in those situations is very different than the threat-based fight-or-flight response and we can certainly get into how the stress responses are different in these situations but the Upshot is that the common thread between the five things I mentioned is that they gently stress our bodies in a mild to moderate way.

When our bodies experience the stress, they go into this hunker down mode where instead of growing, they realize, oh goodness, times are getting hard.

They kind of hunker down. They start to operate more efficiently. So we become more insulin sensitive. We uptake glucose more efficiently. They turn on these repair mechanisms because instead of growing, they start to do housekeeping functions as part of trying to become more efficient.

They recycle old and damaged parts and they increase mitochondrial biogenesis, which is essentially mitochondria are the part of our cells that make energy.

They convert chemical energy from food to the currency of energy in our body called ATP. And when we ramp up our mitochondria, we increase our body's ability to generate energy and that underlies our body's ability to do every function that it needs to do throughout the day.

So the stress actually creates this hunker-down mode where we do this incredible housekeeping so that when we emerge from the stress, when we recover, and again the recovery is just as important as the stress, we grow these healthier cells that are now more efficient.

They've done all this housekeeping. They're running more efficiently. They've repaired all the DNA, the proteins that have been damaged. So we're growing healthier cells and amazing thing is this is actually regenerative medicine.

## Minimum Effective Doses for Daily Habits

This is how our bodies can regenerate using our own machinery because what we need is encoded in our DNA. We naturally have disease defenses and stress is the key that unlocks them.

The things you mentioned are free for the most part, right? It's eating plants and not eating at times, it's getting exercise, doing hot and cold water therapies often we see, and these things are really accessible financially.

Do you have recommendations for sort of how to set up a program for getting the benefits of these things? Yeah, and Heather, this is what I love about it.

You know, I practice internal medicine and for me, making recommendations that are practical, accessible, that we can all do in our busy lives is so important.

we kind of understand that we can regenerate our body through our daily habits. That changes everything, right? We think of regenerative medicine as needing to get stem cell injections in our joints and these high-tech procedures, but each of us has that ability through simple daily actions.

And practical for me is so important because, you know, like you, I work full time, I have kids, I have a husband. I want to practice what I preach and this is not for people who have three hours a day to work on their health.

I think it's wonderful if a person does, but instead of thinking one day when I get there, good stressors are what can you do today and they are really short intervention.

So I think of good stress as medicine. So I think of it as what is the minimal dose you need and from there you can increase the dose if you want to get a stronger result, right?

So minimum effective dose when we're talking about plant chemicals is simply just add a fruit or vegetable. I mean, it's that simple, right? Right now, Only 1 out of 10 Americans eats the recommended 5 fruits and vegetables a day.

Simply meeting that guideline reduces cancer by 50%. I mean so simple things and the key there is we are in this culture where we are focusing so much on what to avoid and you know on our plate and what to avoid eating and certainly we should avoid processed foods and there's so many additives and I wholeheartedly agree but when you look at the data of what you gain by adding some fruits or vegetables or plant-based foods with their phytochemicals there's about a 30-order magnitude greater benefit in terms of mortality and quality of life in morbidity than what you remove from your diet, i.e., like if you remove sugar-sweetened beverages.

And this comes from a very large study called the Global Burden of Disease Study, which followed people for 27 years in 195 countries. So one of the largest dietary surveys And it found that one out of five causes of death in the world is attributable to diet.

And the key to me, the headline really wasn't so much that the number one predictor was your diet. It was it's more what we're not eating enough of than what we're eating too much of.

So real simple, instead of focusing on restriction, focus on just simple, what can you add? And that's true of all the good stressors. It's all about what can we add instead of worrying about the bad and what we need to restrict and avoid.

It's a mindset of abundance, of just curiosity and being willing to challenge our bodies in ways that shape-shift it to become a more resilient self. I can give examples of minimum effective dose for exercise and all the others.

Well, you're right about mindset and maybe as we talk about effective doses, we can talk about this role of mindset and how we experience stress because I can imagine there are people listening who are caregivers for someone struggling with the chronic degenerative disease.

## Mindset, Control, and Stress Perception

there are people who feel overwhelmed, you know, like us juggling parenting and work and relationships and managing a lot. And so when we think about adding, that can, yes, feel like abundance and less restrictive, but also it can lead us into that state of overwhelm.

So tell me about, as we think about adding these doses, how do we adjust our mindset to get into this abundant state? Yeah, this is so huge for me. Anything you ever want to do in life, be it a health habit, be it, you know, cleaning up your finances, whatever it all starts with mindset.

And there are so many aspects of mindset that are relevant here. The first I will start by saying is that your mindset about your role in your health and in the outcomes you expect are actually critically important.

if you believe what you do will affect your health it will if you believe that nothing that you do affects your health it's all luck and fate well nothing you do will like if there's such a mindset around what you believe will become and we call that locus of control which is essentially do you believe that what you do affects your health outcomes or performance outcomes, your life outcomes, or do you attribute it to external factors and have this external locus of control?

So the first thing is what is your mindset in terms of your locus of control? And if you aren't sure, one simple exercise you can do is pay attention to how you tell your story.

So if you are a caregiver, what role do you play in how you describe your life experiences? Are you a nurturer? Are you a victim? Are you the hero that saves your family?

Pay attention to that role because your stories don't just impact the people that you are telling the story to. They have a profound impact on ourselves.

And when you start to recognize how you are stringing together your story, the amazing thing is that you can actually make tiny edits to your story. And you can live and grow into the story that you create.

There's actually forms of therapy based on narrative identity that do this, but it's so profoundly important to start with the mindset that I can do this.

I can do hard things. And from Horn Mises, we know that Our genes are actually designed for doing hard things. We are not designed for abundance. We are not designed for comfort.

So the gift that we have actually received from our ancestors is this beautiful ability to do hard things and grow and unleash this potential that we did not know we have.

So whether you're in a difficult situation in life and caregiving, of course, is probably one of the most stressful and hardest things that any one of us can do.

The first begins with believing that you can do this, right? And it's a mindset and from that you build and stack. The second critical part of this mindset piece is understanding that there is such a thing as beneficial stress and simply making that recognition and then associating it with the outcomes from something in your life.

that alone affects how your body responds to stress, right? So it's a caregiver. You may think this is all nonsense. You know, I have so much stress in my life.

Why am I listening to a podcast that's telling me to add more stress in my life? Like this is ridiculous. And you probably need it more than most people because that simple understanding that the way you view how the stress affects you, okay, whether that stress is beneficial or that stress is harmful, affects how you will respond to stress.

If that sounds a little complicated because you can't control the stress but you can control how you perceive the

stress and from there the amount of cortisol you release can be affected the way that your body actually responds chemically.

We have a bunch of neurochemicals that are part of that stress response, not just noradrenaline or or cortisol. It's so much richer than that. We have chemicals like oxytocin so as caregivers we can bond with the people that we love and we create these beautiful meaningful experiences and if you lean into that part of the stress response the oxytocin is actually a stress recovery hormone.

It helps us mitigate the cortisol. Your perception that mindset is so hugely important and it changes how your body deals with that stressful situation.

So mindset is just such an invaluable part and simply listening to this podcast, really even reading the book I recently wrote on stress, That simple.

It's a mindset intervention that will actually make such a difference, not just in the moment, but there are studies showing it actually has long lasting effects from such a simple intervention.

## How Stress Builds Resilience in the Brain and Body

Sharon, I'm sure many of our listeners can think of an example of maybe witnessing neighbors or churchgoers, somebody that they know going through just an awful experience, right?

Like parents losing a child, a cancer diagnosis in their family, an Alzheimer's diagnosis in their family. And maybe there's two families that go through something similar and one family is destroyed by it, right?

Their hair turns gray, they're filing for bankruptcy. I mean, it just destroys them. There's maybe a divorce in the family. And then the other family going through something kind of similar, they actually seem to rise and become better because of it, right?

They go through something really traumatic and all of a sudden you see the family growing closer, more committed, and they transform whatever that tragedy is into something that helps other people.

And I think when we imagine these examples and many of us kind of come up with them like, oh yeah, I've seen that. It gives us the sense that like, yeah, we can do hard things.

can transform these really stressful times like a period of caregiving for a loved one into something really beautiful and meaningful. And what comes up for me personally is periods of stress, you went to Harvard Medical School, I went through my medical school experience, it was so hard.

You could not pay me to do it again, but I would not give it up for anything, right? My best friends I met through that program and through the challenges, really it was those challenges that made us closer and stronger and I felt so connected to them, right?

So there are all these things where I think everyone can relate to how we can see this manifest, right? Those challenges, those stressors actually make us better.

And this is that hormetic effect. I wanna go back to these doses. What are these minimum doses so that people have these really tangible takeaways? Because I feel motivated already by what you're sharing.

And, you know, I will just piggyback a little on what you just said about the hardest things in our lives or sometimes the most meaningful things. And if you want to live a life of meaning, you cannot separate that from stress.

Every one of us has the capability to be more, to do more, and to live a life of greater possibility. Most of us leave a lot on the table. What happens with hormesis or the beauty of this new science, the science of good stress, is that We have understood growth through adversity conceptually for a very long time, right?

It's been in philosophical works. I mean, it's a mantra of positive psychology. Coaches, trainers always use this idea. And what we know now is not just the psychological feeling of self-trust and confidence and growth that comes from doing hard things, hormesis is the science that explains the biology of what is happening in our body when we are becoming more resilient.

So when we go through this hard situation, our bodies are building new brain cells. We are creating synapses which are the connections between the brain cells that are literally rewiring our brain to become a more resilient brain.

Resilience is a muscle And just like going to the gym and lifting 5 pounds and 10 pounds and making our muscles bigger, we are growing resilience with these micro stressors, which is why the lower doses are so effective for horn mesas, right?

It's just you stress, you recover, you stress, you recover. And over time, you can actually increase human resilience 60 to 90% like our human potential.

So that's the real profound part of it. This is so different than when people think, oh, growth or adversity, this is all about grit and you just got to push yourself.

This is a message of hope and love. This is not a message of be tough. This is how we can become what we want to become and live the life we want. And the most phenomenal part of this is that the processes that I'm talking about that are activated that repair the proteins, repair the DNA, that recycle old and damaged parts and increase her mitochondria, They are countering the very processes that lead to the chronic diseases today that are robbing us from life and longevity.

Neurodegenerative diseases, diabetes, heart disease, The underlying process is that we are getting damage in our cells. We're getting damage to the proteins.

We're getting damage to the mitochondria. We're getting damage to our ability to recycle cells. Our proteins aren't functioning well. That is what is leading to these diseases at the most fundamental level, right?

The level of our cells, right? You can't get further root or uproot when you're looking at root cause than the smallest unit in our body. So that's where the research has taken us to this really fundamental unit and so when we are growing and building our resilience we are also at the same time becoming healthier and living longer.

## Exercise as a Powerful Hormetic Stressor

So this is so profound because so much of the grin and bear it and push through and if you just get through this there'll be a time where you can take better care of yourself you know that kind of mindset but this is how you become resilient while you're becoming healthier right so total 180 what we're capable of and minimal effective dose I'll quickly go through with the other of the hormetins which is how we refer to the factors that trigger hormesis.

So we talked about plant food or plant-fried chemicals. With exercise the beauty is minimum effective dose can be in one study they called it vigorous intermittent lifestyle physical activity which are brief spurts of intense activity throughout the day.

So in this one study that was done out of the UK Biobank, they found that people who just did like one to two minutes of brief intervals of high intensity, like running up a flight of stairs or run to catch a bus, if they did that three or more times a day over the duration of the study, which was a little short of seven years, they had a 50% lower cardiovascular mortality, 40% lower all-cause mortality.

It's a minimum effective dose, like really profound, right? It's minutes, but it's all about pushing ourselves, right? We're told so much that take it easy.

Oh, you're going through so much, but the body works through bioplasticity, right? It's use it or lose it. And the more we push, the more we become able to handle more in the future.

And we're never too old to do this. And at any point, wherever we are, whatever we've been told, if we start today, we can grow any part of our body like we grow muscle.

So we talked about vegetables and it was just adding one or two fruits or vegetables a day. Exercise, it's like short bursts, one to two minutes. How frequently is this?

Try and get at least three times a day, like one to two minutes. Yeah. Okay. Three times a day, one to two minutes. That is doable. That is a flight of stairs, running to your car, maybe in the parking lot, other quick examples of like how to get this in.

You know, I do it in stairs at home and stairs at work when I'm going up to my car. I just kind of huff it, you know? Can this be carrying all of my groceries in, in one go?

You can, and you know what's really fun, Heather? They've also looked at taking any activity that you like doing, even walking, right? I think that's the most popular form of exercise.

In doing it in intervals there was this beautiful Japanese study that had people instead of walking 30 minutes continuous pace created another group where they did three minutes just fast walk then three minutes just slow down catch your breath three minutes fast slow down and this was done in middle age and older people like this is not like people who are super athletic and they found that The interval walking improved cardiorespiratory fitness by 15%, reduced cardiometabolic risk factors by 20% and cardiorespiratory fitness is probably the single best predictor of longevity.

So even if you don't want to run up a flight of stairs, just push yourself in interval walking, you know, just at least once a week, find this opportunity to get some of that high intensity in.

Okay, so if anybody thinks I'm crazy, like running around the grocery store, the mall, or in and out of the parking lot, I'll just tell them it's because you told me to do it.

I'm right there with you. So fruits and vegetables, exercise, hot and cold? Yeah, this one's probably the hardest one for most people, but I'll start off by saying that our ancestors, our hunter-gatherer ancestors, lived in impermanent shelters.

So extremes of heat and cold were a way of life and that is true for all of these hormetic stressors and it's been in the last two to three hundred years that we have indoor air conditioning, heat, etc.

## Heat, Cold, and Sauna Benefits

So as kind of crazy as it sounds to expose yourself to extremes of temperature When you look at our human history, we realize that it may seem crazy today, but over the two million years plus of our human history, crazy is actually modern day.

For two million years, we've lived a different life. So I think culturally, we've come to view these as, quote, interventions for most of our human life.

This was normal living. Do you just turn your shower to cold? Are you talking cold plunges? What is the minimum effective dose here? Yeah. So the key with all of these again is what is uncomfortable for you, right?

So you want to go a little bit past your point of comfort. So there's some discomfort, but not to the point of overwhelm. More is not better. Our biology just does not work that way because you just want to activate the stress response and then you want to recover.

It can be something as simple as at the end of a shower, do 30 seconds of cold. If you have access to a cold plunge, certainly that is a wonderful and fabulous way to do it, but you can do this without the equipment.

If heat is an easier entryway for you than cold, which it is for most people, a hot bath, clinical studies they've looked at between 102 to 104 degrees Fahrenheit, which is quite hot, but it's enough to activate our heat shock protein response, which is one of the cellular stress responses that begins this whole housekeeping process.

So just even if you can do a few minutes, I think that that's a great place to start with using temperature. And if that's even too difficult to do, there are studies just bringing down the thermostat in your home can start to make a difference.

For example, one study they brought down the thermostat to 60 degrees Fahrenheit had people in a shorts or t-shirt for six hours a day for 10 days and over the 10 days their brown fat volume increased 37 percent.

And brown fat is like your internal space heater. So unlike white fat, which we know too well, right? It's how we store energy, the brown fat, we use it to burn energy to generate heat.

And we don't have a whole lot of it. And so the fact that cold can increase brown fat and raise our metabolism, not by much again, because we don't have a lot of brown fat, but it's hugely exciting that that is one more lever by which we can affect our metabolism.

In sauna, there's so much intriguing literature around sauna, whether it's for a detox mechanism or this hormetic effect that we're discussing, increasing heat shock proteins.

I think there's a social component to it in some cases when you're getting in there with someone else. There's a lot of very compelling research around how great sauna therapy can be for people.

Do you have any recommendations there? Most of what we know about sauna comes from the Scandinavian countries. So probably one of the longest studies that is frequently referenced is the QPO ischemic heart disease study and in that one four to seven times a week of sauna compared to a control group that only use sauna once a week because it's Finland.

That's the best they could do with the control group. They followed people over two decades and mostly men, but that reduced dementia, Alzheimer's dementia, by 65%. Again, it's a luxury to be able to do four to seven times a week there.

It's part of culture. It's part of socializing. It seems like the more frequent, there's quite a bit of benefit. Okay, so we've got fruit and veggies, we've got exercise, we've got hot and cold, you mentioned fasting.

I'm gonna use the term fasting, but really, again, what I think I'm describing is normal eating, but it's eating in a 12 hour or shorter window. and the simple reason for that is that our bodies are optimized to do certain things at different times of the day.

During the daytime hours when we're exposed to sunlight we're optimized to digest, to think, to exercise, to do a lot of these active functions and overnight we are optimized to repair, to heal.

and it takes about 12 hours of not eating to turn on these repair mechanisms that our bodies have. So the 12 hours is just so you can help your body maintain balance and what's really happening today because the average person is eating over a 15 hour or longer window is that our bodies are falling out of balance where we're incurring daily damage from pollutants, microplastics, processed foods, being sedentary, chronic loneliness, and we're not activating our ability to heal that damage.

So we're tilting the scale so that we're accelerating our risk towards these chronic diseases and we are accelerating the aging process.

## Fasting and Circadian Eating

So I think it's hugely important that we help restore the balance to help our bodies do what they're naturally capable of doing in terms of healing and eating in that shorter window 12 hours or less.

So ideally 10 hours would be optimal from a metabolic health standpoint. and trying to have most of your calories earlier in the day so that it aligns with your circadian biology.

Our bodies have a natural rhythm of when we secrete like our digestive enzymes when we're primed to break down sugars and when we release the highest amount of insulin and that tends to go down in the evening.

So front loading your calories where you're trying to eat at least more than half in the first half of the day is very helpful. Starting to eat about an hour or so after you wake up, ending two to three hours before bed and front loading your calories is really the best way to honor how your biology is and honor your body to function its most efficient.

I love that reframe around how we say fasting and I think some people have, right, it's that restriction. It's like, oh, I can't eat. And the reframe that I heard you give us was, no, you just return to normal eating, right?

We've been socialized. I think we need to have ice cream while we're watching TV at 10 PM. And that doesn't serve us, right? So it's like, hey, let's hit reset on what normal eating is.

And think about it as a resource, right? Where we're getting nutrients and energy that we need to go about our day. We don't want to be digesting while we're trying to get into that repair mode of sleep.

And so it's just a recalibration and a reframe that I think is so refreshing. And so underestimated the harms of not honoring our circadian biology. When you look at it from neurodegenerative disease, alterations in your circadian biology increase or are associated with an increase in beta amyloid and tau proteins.

certainly in metabolic risks like increased risk of diabetes, of obesity. We underestimate what we are doing by having that midnight snack and doing what we're culturally being told.

I mean I think a lot of it is marketing. So right now 45% of calories in this country are consumed at dinner or later. And there are studies now following people longitudinally for years finding that men who eat late dinners and after dinner have twice the likelihood of obesity and women it's threefold.

Eating the same meal, the same calories earlier in the day, our bodies can break them down more efficiently. We have a better insulin response so we don't see the blood sugar spikes when we have that same meal earlier in the day.

completely underestimate what we are doing to our bodies. I mean some of it is simply lack of awareness because this isn't communicated enough, right?

And it's just what people do because our lives are just structured. You come home from work and you want to sit down with your family and you want to have a social meal.

By all means, I think dinner in that time with family is really important, but that can be a very light meal and your lunch can be the bigger meal. And after dinner, you really don't need to keep eating and snacking all the way to bed.

In fact, it's beneficial not to eat or snack. Alright, so we've been through four of them. What is the fifth Hormesis is the science of good stress and hormetins are these five components of lifestyle that work through hormesis to build our resilience.

Okay, so will you spell that because I think some people are gonna want to Google this real quick. Hormetin, H-O-R-

M-E-T-I-N, Hormesis, H-O-R-M-E-S-I-S.

So I think it's a really powerful science because like I said, it's a science of self-empowerment of how we can naturally be healthy, live to our human potential, live longer, improve our mood, our entire quality of life.

So I think this is hugely important because I think so much of the future of where science and healthcare is going is towards cellular health and this unlocks our ability to optimize our cellular function to the degree we can, certainly aging alone can affect our cellular function, but this really gives us a ton of control.

And this fifth stressor, as I kind of clump two into this fifth category, it's mental and emotional challenges. So by mental challenges, I think of things like critical thinking, really pushing ourselves to problem solve.

And by emotional challenges, it's putting ourselves in situations where we feel stressed, but it's in the service of something that is valuable and meaningful to us or contributes to something that's bigger than ourselves.

The reason for that is when we do critical thinking, so right now with a lot of technology, I think our need to think critically, we can substitute it.

I mean, we all do it. I do it too. Like we'll give GPS as the example. Before I had GPS in my car, I would, you know, take out a map, get oriented north, south, east, west, really kind of study where I was headed and try and just kind of figure out how to get there.

And, you know, you have to actually think your way. now I just get in the car put the dress in and oh goodness if my GPS goes out I don't even know what part of town I'm in.

## The Fifth Hormetin: Mental and Emotional Challenges

So I think this critical thinking is so important because when we think hard and we actually make our neurons think we release growth factors like brain derived neurotrophic factors.

that help us create new brain cells through neurogenesis and create synaptogenesis which is making the connections between our brain cells more in numbers so a single neuron can have up to a thousand synapses or connections so it's really just incredible how intricate our brain is and the connective creativity in the brain helps us become better at decision making.

Creativity helps with our mood through this increase of the brain drive neurotrophic factor. So essentially it's giving our brain miracle grow and the way we make ourselves, our brain cells kind of secrete this is by thinking and really making our brain cells work again.

This is all use it or lose it. And emotional challenges, what we're doing is we're training ourselves to handle future stress situations better. So to me, there's a paradox in stress where we know that chronic stress can hurt us, but when we do deliberate forms of emotional stress and all of these hormetic stressors are deliberate, they're a choice.

We're adding stress and we can add as much or as little as we want. But when we do and we follow it by recovery, we are building connections in our brain that help us handle the stress situations because just as with critical thinking, we release trophic factors like brain drive neurotrophic factors from the stress response.

We also secrete growth factors in neuro steroids like DHEA that help us remember how we handled the stress. So we are rewiring our brain circuits in a way where we are literally getting better at stress and by doing this through things that are meaningful and generative, we are releasing a biochemistry that actually mitigates cortisol.

That biochemistry has so many beneficial effects on our body. and it's helping us build the adaptation so that we can handle more stress better in the future so that when we do get these dreadful diagnosis, when we are in situations that are really challenging like being a caregiver, We're again building the muscle literally.

We are making our brain and our body more capable of handling stress. So the emotional stress is uniquely beneficial as is the critical thinking stress.

But I think the theme here is that embrace discomfort because that is the gateway towards becoming a resilient self. I want to talk about some examples of this because I hear you say, choose emotional stress.

And I'm like, okay, does this mean like choose to have a child, right? Like that is a very emotionally stressful thing to go through. But again, like people wouldn't give it up for anything, right?

Your child, but choosing to be a caregiver might be a way to do this. But we want to build probably this muscle before those big life events. And so what would that look like?

What would these short duration, fitting in the category of these positive stressors, what does that look like? I think it looks like asking yourselves some questions.

Ask yourself, how do I want to influence my friends, my community, my workplace? What would I do for free? Like what What is it that speaks to my values?

What matters so much to me that I am excited and energized to do this work? And for some people, they may say, well, that's not stress, but I would say it is stress because it challenges our body and it challenges our brain.

come to think of stress as something that is if we don't have the resources to meet it then it's stressful but even if we have the resources to meet it we don't perceive it as being stressful it is still having this growth response in our body.

So I would really start by asking what matters to you and and sometimes if that's hard to answer because you know if you sit down with pen and paper and say okay what's my purpose in life okay A lot of times you're just staring at that pen and paper.

These are really, really hard questions. But one way that I think is helpful to kind of back into that is to start with what frustrates the heck out of you.

And through that, you will learn what matters to you, right? Like if you say, I am so frustrated when I have to call a place six times to get one person to pick up the phone.

Okay, so you realize from that that you value people who are dependable. You value people that have a certain sense of commitment, loyalty, customer service.

Like you just start to really understand what your values are and how you can build on them. So good stress is choosing to put yourself in a situation of stress that aligns with that.

And I think it's really giving yourself permission to experience stress knowing that that opens possibility for you. So what that can look like is putting a post on social media like LinkedIn about some career that you're maybe interested in because you aren't content with where you are at with your career today.

It could be sending an email to your boss asking for a promotion or raise or just a meeting to discuss these things like they are uncomfortable but that is how we grow and it's growing in the service of trying to reach that greater human capability so this is not just stress for stress sake saying I'm tough and I can handle This is really something that I think gives us permission that not all stress harms us.

## Finding the Right Stress Level

And when we take on these stressors and grow from these stressors, we're doing it in a way where we're actually becoming more resilient while we are building that muscle.

That's helpful because it leads into my next question, but how do we know where the scales tip, right? Like how do we know where a stress, you know, maybe it started out as a good stressor and then now it's becoming potentially a detrimental one.

How do we evaluate where we are on that continuum? that is such a key part because any one of these good stressors taken to the extreme can become harmful right like a little cold excellent too much cold you can get hypothermic you can die a little fasting good too much fasting you can die of starvation so the same applies to good mental and emotional challenges and The way to know is really kind of an intuitive check-in.

If you emerge from that experience, feeling energized, rewarded, just feeling more capable, like that is a good stress. If you emerge from it, feeling fatigued, depleted, exhausted, burnt out, that is either too much stress or the wrong kind of stress.

Okay, asking for a friend. What if you go back and forth? Between the two, you know, I think in reality that is what life is like, right? There is this little bit of finding out what is too much for you and then using that as feedback and then saying, okay, this is the zone that I function optimally.

It's all about finding what I call the Goldilocks zone. Too much is overwhelming, it's harmful. Too little is actually just as harmful for us. There's no growth and we actually don't exercise our ability to become stronger.

And right in the middle is that Goldilocks just right zone. So there's a little bit of trial and error and it changes for the same person over time, depending on your recovery, depending on how much stress you have already kind of done and grown from.

So I think it's a very hard thing, but I think what's helpful is to take all the stress in your life, do an inventory, and then put it in categories of stressors that deplete you and stressors that energize you and you get the sense of reward and excitement from.

And when you look at your buckets, see how much you have in each bucket. I think a lot of us associate stress as something we want to avoid because our kind of bad stress bucket is too full and a lot of good stress works in a way where we're talking about adding good stress as a way to become resilient against the harmful stressors.

So in the medical literature when you look at physician burnout and right now over 50% of doctors are burnt out, there's a lot of literature on how full these buckets should be and if a physician has less than 20% of their time doing things that are rewarding or meaningful, whether it's research or some type of work that really matters to them, that increases the rate of burnout.

There seems to be a ceiling effect at around 20% where doing more does not further reduce burnout. but think of your week as structuring it where you know there's always going to be things that are going to be stressful that you can't avoid and they're hard and you can't just choose fun good energizing stress all day.

I mean maybe one day but um not for a lot of us for most of our lives but try and have at least 20 percent of your week structured so that there is something that sings to your soul that aligns with your beliefs that makes you feel alive and that will carry you through the other 80 percent You haven't talked about the role of therapy.

In my clinical practice, I sometimes see people who seem to be like looping. There's a story that they own as truth. And sometimes it's around stress.

There's a negative patterning there. And when they can break free of that, sometimes with support, there seems to be a shift in their relationship to stressors.

They have more capacity. So I'm curious about the use of professional support through navigating our relationship with stress I think.

## Therapy, Recovery, and Non-Sleep Deep Rest

I think that you know therapy always has a really important role because sometimes being guided through or having somebody who is more objective and not in our own head can help us through the process and sometimes there are different types of rumination but you can ruminate in a way that is counterproductive right you replay something over and over and catastrophize and you can ruminate in a productive way like if you just gave a a great speech and it went really well you want to spend a minute thinking what did I do that made this successful right so there's some beneficial rumination but I think there are tips and tricks to kind of break that constant catastrophic rumination and that sometimes takes some professional guidance to increase your toolkit of how to approach that.

I think there's a lot that we can all do simply by recognizing that stress just means we care deeply, that what we are doing is meaningful enough, we're remounting a response to it.

And that is already a huge needle driver in terms of changing our mindset around the fact that we're not trying to live a stress-free life or get rid of stress from our lives because if we did, we would take away any situation that was meaningful or mattered to us.

And who wants to live that life? I mean, it's really virtually impossible. the simple mindset of changing that and understanding that when we respond to stress in a way where our heart's pounding and you know we get cold clammy sweats that this means that this matters my body's rising to the occasion and the reason I have this stress response is so that I can cope that I can build adaptations and become stronger as a result of it the stress response is there to help us it's not there to hurt us So, that I think we can all learn and understand by listening to a podcast like this or seeking this type of information and I think for a lot of people that alone if we internalize that, it will affect how we welcome stress into our life.

And again, this is all back to mindset, how we think that stress affects us, right? If we think that this is beneficial, this means that my body is coping and I'm becoming stronger as a result of this and I am deriving meaning, It's a very different response that somebody says, okay, this is harming me.

Stress means that I'm getting sicker and I'm going to die young and that mindset actually makes stress more stressful. So I think we all have that ability to work on our mindset and I think therapy is the next step when you need a little bit more reinforcement, encouragement, something more structured, more tools in your toolkit and I think it is a very wonderful idea for a lot of people because this is hard work.

No doubt. So I want to shift the conversation to your personal experience. What are some of your favorite stress buffering activities? What do you do in a weekly rhythm?

Of the Horned Metons, I actually practice all of them, again back to practice what I preach. I think exercise is probably the most powerful and I think it's a non-negotiable.

Again, I think what we're talking about are foundational lifestyle pillars and they are non-negotiable because our entire genome was built around these stressors to help us deal with our environment and cope with our reality.

Exercise is just probably I think the most powerful. It also releases this brain-derived neurotrophic factor it actually mimics the way a lot of serotonin reuptake inhibitor medications, a lot of antidepressants work in our body.

We release a slew of chemicals called myokines, many of which help us reduce our stress exposure. And following exercise, we have a lower cortisol level, we activate our parasympathetic nervous system.

So exercise to me is a non-negotiable And then the other part that for me is also non-negotiable is this recovery piece. So we haven't talked enough about that.

We've focused a lot on what makes stress good, what makes stress not good. But to benefit even from good stressors, we need adequate recovery. And for me, that is how I prepare for more stress in my life, be it the kinds that I welcome and are deliberate or the kind that finds me.

And recovery for me, so recovery is different than relaxation. Relaxation is reading a good book, laying on your

sofa, watching a good movie, but your mind is active during relaxation.

And to get to the type of recovery that increases neurogenesis and helps your brain actually grow from the experience, you want to do more like a non-sleep deep rest type recovery.

One way I like to get into that state is by being out in nature and for me that's another absolute non-negotiable where I spend at minimum and now there's such a thing as a nature prescription of spending at minimum two and a half hours a week outdoors that awe and wonder and complete immersion in nature with all of your senses is one of the most powerful ways to reduce the stress in your life and get the recovery you need so that you can continue doing this pattern of stress, recover, repeat, stress, recover, repeat and become your most resilient self.

So to me, those are, they're all non-negotiables, but those are the ones that I find are the biggest levers And sleep, so you mentioned non-sleep deep rest.

What about actual sleep and how crucial is that? Yeah, sleep I think is so central to every part of this. Every piece of this needs that recovery and sleep is really that big driver in helping us do so many critical functions that we are now just appreciating.

We don't even fully understand all the incredible things that happen to our brains in terms of consolidating memory, clearing out different toxins. The amount of work that our brains are doing when we're sleeping is so hugely important.

It is not just the quantity of sleep. I think a lot of us have heard we should aim for that seven to nine hours.

## Sleep, Aging, and Healthspan

It's the quality of the sleep and that also doesn't get communicated enough during the REM sleep. We are doing a lot of the memory consolidation during the deep sleep.

We're doing a lot of the clearance of different chemicals from our brain that are helping our brains become stronger and kind of healthier. So we need the quality of the sleep and I don't think that gets talked about enough.

It's not something that you can just quantitate in a simple way to tell about the quality of your sleep. Do you wake up refreshed? If you have cool gadgets, I think you can actually measure these now.

There's so many wearables that are helping us understand our bodies in a way that we couldn't have imagined even a decade ago. And I think they're hugely powerful.

But there's a simple way to just tune into your body with all of this and ask yourself, are you refreshed? How do you feel when you wake up? How do you feel later in the day?

Are you tired later in the day? And that will tell you if your sleep is adequate. From your research, from your experience as a clinician, as a researcher in your profession, how have you been impacted personally in terms of how you're aging?

I foundationally believe that our lifestyle is medicine. And if you look even at clinical studies and the reason I have that belief, it's because 80% of disease is preventable through lifestyle of chronic disease.

And when you look at the hallmarks of aging, which is what happens to our bodies at a molecular and cellular level, when we are getting wrinkles and gray hair, The very processes that we're talking about that we're regenerating through good stress are the ones that happen as we're aging.

So for me, it comes back to what I eat, when I eat it, when I exercise, the sleep component, the thermal stress, and creating a life of meaning and critical thinking.

So to me that helps slow the aging process. I'm not going to be immortal, none of us are going to be immortal, live indefinite lives, but when you look at the gap between life expectancy and human lifespan, so the oldest living person lived up to 122 years, life expectancy is roughly in the 70s, differs by gender, There's clearly a delta between the two and when we do all of these lifestyle components We know that we can increase our life expectancy by 10 years, right?

So I'm doing this because there's so much data that This actually does add years to life. But more importantly it adds healthy years to life. It's improving our health span and I want to continue doing things I love.

I don't want to live a life where I'm dependent on people, on medications, on procedures. I want to live a life where as long as possible I want independence.

I want the quality of life that I can experience. So to me this is such a small investment in terms of time and effort relative to the rewards At this stage in your life, what is bringing you the most purpose, meaning, and joy?

Particularly like highlighting if it's changed as you've gotten older. At this stage in my life, I think what gives me the greatest joy is adding meaning and value to other people's life.

And where I think I've changed over the years is I would say my younger self had more of a gap between what mattered to me and what I believed in and my actions and part of that is because I think by nature I am a rule follower.

I'm a pleaser. I worry about other people's feelings or disappointing other people. So I think there was a greater gap between what mattered to me in speaking my own truth and what I was doing day to day in terms of my actions.

And as I've gotten older, I have realized how detrimental not doing things that align with your belief system is at a health level, but then also in how we live out our life.

When we're talking about chronic stress, we've talked about stress as something external, as a situation like financial hardship or caregiving. I've come to believe that the biggest source of chronic stress is actually internal.

It is how we don't always follow through with what we believe in. Our bodies perceive that as lying to ourselves.

## Purpose, Alignment, and Closing Remarks

That is a state of chronic stress that leads to low-grade inflammation and sometimes are so busy focusing on the external stressors that we don't realize the internal stress we create.

And so I have grown so much more confident speaking my truth, aligning my actions and how I spend my day to live out my purpose and my beliefs. And for me, I get great energy and reward for doing things that help enrich other people.

and doing it in a way that I believe is helpful, which sometimes aligns with a healthcare system and sometimes it's more forward thinking than what we can do in our health system, but being very comfortable with taking that forward thinking approach.

This is such a rich topic of conversation, right? That incongruence is something I've heard that called where what your actions, your day-to-day experience doesn't align with your values and beliefs.

And I'm curious, it sounds like you've done a lot of work on this and you are now in that alignment, you are congruent. And I think this is a practice, right?

A lifelong practice of staying there. Are there any practices or resources that you found were particularly helpful in realigning that? For me, it has been much more of paying attention to emotions and letting emotions be your guide.

We have emotions like anger, sadness. There aren't ones we should suppress. When we feel those emotions, not just saying, oh, well, let's find happy. I think I've found my way to what matters by really doing these gut checks driven by emotions and having them be my true north.

If your emotions are sad, disappointed, upset, angry, It tells you so much about what you believe in, right? And instead of ignoring them and thinking, Oh, I shouldn't be sad or I shouldn't be angry.

I think if you just named those emotions, you learned a lot about yourself. That's beautiful. Sharon, thank you so much for being here with us. I feel like we could talk for hours.

I've learned so much and really, really just genuinely appreciated this conversation. I know our listeners are going to have so many takeaways that they can get started putting into action straight away here.

Thank you for taking the time to join us. Your book is The Stress Paradox, which is available wherever books are sold. Where else can people find out more about you?

You have a clinical practice, can they sign up to be a patient? Share a little bit more so that they can learn more. I do have a clinical practice, but you'd have to live in the same city as I do, which is Atlanta, Georgia, but you can find me on my website DrSharonBerquist.com, so D-R-S-H-A-R-O-N-B-E-R-G-Q-U-I-S-T.com.

I'm also on social media, on Instagram as The Good Stress Doctor, and also on LinkedIn as DrSharonHoreshBerquist, and I would love to hear from you. Any comments, feedback, criticism, I welcome it all.

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