THE MODEL HEALTH SHOW

EPISODE 695

Use These Daily Hacks To Increase Your Lifespan

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SHAWN STEVENSON: Welcome to the Model Health Show. This is fitness and nutrition expert Shawn Stevenson, and I'm so grateful for you tuning in with me today. A recent article published by Harvard University is titled, "Has The First Person to Live to Be 150 Been Born?" And the researchers contributing to this article attest that, yes, the first people that are going to live to be over 150 years old are already walking around. We've already got the technology to make this happen and really deconstructing what these researchers are calling "the disease of aging". They're looking at aging as something that can be treated. Now, this is a very interesting paradigm, of course, but the proof is in the pudding. And so for me, at this time, currently, we have to maintain a sense of logic and one of the most logical things that we can do if we're talking about longevity, if we're talking about healthy aging, not just being 120-years-old and being relegated to a wheelchair and not being able to operate our bodies in the way that we want to, but we're talking about vitality, and being able to extend not just our lifespan, but our healthspan.

And in order to do that right now, the most logical thing that we can do is to learn from people who've already achieved that longevity. Or are well on their way to achieving that longevity. And that's what I have for you today. On this episode, you're going to hear from seven of the leading experts in the field of longevity and anti-aging technologies, anti-aging medicine, and anti-aging nutrition. Now, some of these insights are probably going to blow your mind. We're going to be talking deep, deep science, and we're also going to be hearing some of the most obvious, logical things that we commonly overlook. And so I think you're going to take away a ton from this powerful compilation. Again, we've got seven world leading experts for you. And to kick things off for me, this is one of the low hanging fruits. This is one of the things that we all have access to, if you put a little bit of insight and a little bit of intention into this.

And according to this researcher, this is the number one thing, the number one thing, not number two, not number 77, number one thing that's correlated with extending your lifespan. And he should know about this because he is the lead researcher of the longest-running human health study ever conducted. And I'm talking about Dr. Robert Waldinger, who's a professor of psychiatry at Harvard Medical School. And he's also the director of the Harvard Study of Adult Development at Massachusetts General Hospital and the co-founder of the Lifespan Research Foundation. And in this segment, you're going to hear what he discovered and his team of researchers, to be the number one thing that's attributed towards longevity. But again, not just lifespan, but healthspan. Without further ado, here's Dr. Robert Waldinger.

DR. ROBERT WALDINGER: So, when I had the opportunity to take over this study that had tracked hundreds, now thousands of lives for so many years, I thought this would be the

coolest thing to devote my time to. This is so unusual that a single study of the same people has lasted 85 years. But the thing that surprised us was that the people who stayed healthy and lived the longest were the people who had the warmest relationships with other people, and when we found that, we didn't believe it at first. So, we thought, how could this be? I mean, okay, having good relationships could make you happy. That makes sense. But how could it get into your body and predict that you'd be less likely to get coronary artery disease or that you'd be less likely to get arthritis or that you would live longer? How could that possibly happen?

The best hypothesis with some good data is that it's about stress. That good relationships seem to be stress relievers. And I'll explain. So, when something happens to us, you have a really upsetting thing happen during your day, you get a ticket, or some medical crisis happens, you can literally feel your body change, your blood pressure goes up, your heart rate goes up. It's called fight or flight mode. And we want our bodies to respond that way. But then when the threat is removed, we want our bodies to come back to baseline. And one of the things you'll notice is that, if you have something upsetting happen in your day and you're thinking about it and you're upset about it, if you have somebody at the end of the day, you can talk to about that, and you're able to talk to them, you can literally feel your body calm down and go back to that equilibrium.

What if you don't have anybody you can talk to like that? And so, we think what happens is that people who are more isolated, lonely, less connected, that those people stay in a kind of low level fight or flight mode of chronic stress. Higher levels of stress hormones circulating in their bodies, higher levels of inflammation all the time, breaking down body systems slowly but gradually. And so that's what we think is one of the main drivers of how relationships can either improve our health or the lack of good relationships can break it down.

SHAWN STEVENSON: So very powerful. This is what I love about this, is that it's powerful and practical, and it's just understanding that humans are social creatures. We might be a little bit more introverted, more extroverted, we all exist on that spectrum, but when it boils down to it, we need each other. We can't get here without other humans. L And to sustain our livelihoods, we require, our genes expect us to connect with other people and to have healthy, fruitful relationships, is one of the hallmarks of longevity. Again, this is from the longest running well constructed human trials that we have, and so to hear that, this should really perk up our ears and understand that this is something that we need to put some intention and investment into. Our relationships truly, truly matter. Now moving on, one of the other things that's seen, if we look at degradation, as we age, is a loss of our valuable muscle tissue. And that comes along with a loss of function, but also an increase in things like insulin resistance, because our next expert is going to share with you how our muscle is the primary spot of glucose absorption for human beings.

We think about insulin resistance, we think about the accumulation of body fat, we think about that cell signaling for our fat cells to open up and to take in the glucose we're consuming, but our muscles are consuming the majority of glucose. Now, what if we don't have a lot of muscle? What if we're unintentionally losing our muscle because we're not aware of this information? Well, in this next segment, you're going to hear from Dr. Gabrielle Lyon, and she is a muscle-centric physician with a specialty, with her training in geriatrics, so working with elderly populations and really being able to see firsthand how this information is put into practice and practicality. And also, she's one of the leading experts in understanding these mechanisms by which muscle building, maintaining and protecting our muscle is absolutely critical to longevity and healthy aging. Here's Dr. Gabrielle Lyon.

You literally called something out that most people are just kind of ignoring and not really understanding the science behind in this longevity equation, and it has to do with muscle.

DR. GABRIELLE LYON: Yeah.

SHAWN STEVENSON: So, having you back to talk more about muscle is so exciting, as I flex a little bit as I say it. So, let's dive in deeper today and really talk about this connection with muscle and longevity.

DR. GABRIELLE LYON: Yeah, I can't wait, and I really appreciate this conversation because what we're hearing right now is that in terms of longevity, we should reduce our protein intake and that seems to be the overarching narrative. And what is so surprising to me as a trained geriatrician, and for people that don't know what that is, that's specializing in individuals over the age of 65 and end of life. Part of my job is managing individuals in nursing homes and part of my job as a fellow is looking at their brain health, running a brain clinic at Wash U, that is no small task as a geriatric fellow.

And one of the things that we always look at is strength, capacity, and activities of daily living. When we think about that, arguably we think about skeletal muscle. So right now, the conversation is geared towards longevity, which, by the way is not defined. When we talk about longevity, specifically as individuals talk about reducing dietary protein, are we talking about reducing longevity by six years? Are we talking about living six hours longer? There is no hard endpoint in this nebulous concept of longevity. When we think about survivability, you have to think about skeletal muscle, and skeletal muscle in an aging population is critical. It is the pinnacle. It's not the peripheral discussion, it's not we should eat this, maybe our carbohydrates are too high, it's none of that. Skeletal muscle is an endocrine organ, it is our body armor. You have to protect it as you age.

SHAWN STEVENSON: Okay. You just said something that really jumped out at me, you said body armor.

DR. GABRIELLE LYON: Yeah.

SHAWN STEVENSON: So, I've been thinking about this from an evolutionary perspective, like why would we have the capacity to build and put muscle on our frame?

DR. GABRIELLE LYON: Muscle is the amino acid reservoir. Every time you are not eating, your tissues, your brain, your liver, your kidneys all require amino acids, a steady state of amino acids in a facet state. The place you're going to get that, skeletal muscle. The body is constantly going over a process of turnover. You don't stimulate muscle and that tissue stops being active, this is a constant process. Skeletal muscle is really what is going to maintain you in times of fasting, it's going to maintain you in times of injury, illness. Cancer, we know that survivability of cancer is increased with the amount of skeletal muscle you have. And these are really big factors, and we're totally avoiding the fact that skeletal muscle is the primary organ system of protection.

SHAWN STEVENSON: So, this is looking at what's happening internally, what about externally?

DR. GABRIELLE LYON: Yeah.

SHAWN STEVENSON: If I think about it, when there was a time, I'm conjuring up images of swords and shields and these kinds of things, and so when you said body armor, that really jumped out as literally kind of like a protective mechanism, like, why am I able to grow these pecs? To maybe protect my heart or something like that.

DR. GABRIELLE LYON: Yeah. Well, I think that the concept of skeletal muscle is really all encompassing. We can never say... I mean, listen, take out the body building community, which perhaps is a bit at that cusp end of intensity in terms of skeletal muscle, but the body was designed for movement, and right now we have an opportunity to not move, but we're a human machine. The human machine was designed for hard physical labor. Does that protect us? It definitely protects us in a multitude of ways, balance, strength, flexibility, survivability. If you go back to the times of swords, I'm sure the guy that had the most well-conditioned muscle was the individual that was going to survive. I, of course, wasn't... This is just my perspective, I wasn't around during that time, but when we think about survivability, skeletal muscle, while not easy to put on. Requires time and attention and dietary changes.

You can't eat the way you did in your youth when you are primed for anabolic growth, that does transition, which we will definitely talk about, and that goes to the point of why protein

restriction is so dangerous for an aging population, because as we age, as we think about protecting our body, our body armor, that amino acid reservoir, and there's so many things that we're going to talk about as it relates to skeletal muscle. Number one, the fact that it allows us to aid in protein turnover, which is ongoing, but also skeletal muscle, there's so many things... Skeletal muscle is one of the primary sites of insulin resistance. And we cannot go one day without hearing about insulin resistance.

SHAWN STEVENSON: Yeah, it's an epidemic, absolute epidemic.

DR. GABRIELLE LYON: And we think about it as it relates to obesity, but insulin resistance, there is evidence that insulin resistance begins in healthy 20-year-olds that are sedentary. A decade before we're seeing changes in liver abnormalities, a decade before we're seeing changes in triglyceride levels, blood glucose, insulin. Insulin resistance of skeletal muscle is one of the primary defects of, I don't want to say all, but nearly all the diseases that we're seeing, heart disease, cancer, obesity. Skeletal muscle needs to be our focus as opposed to looking at the periphery, which is adiposity.

SHAWN STEVENSON: This brings us back to... You mentioned cancer earlier and being a protective mechanism there, so I was just wondering in my mind like what are all the pieces that could make that possible? I'm sure that of course insulin is going to be one of those factors.

DR. GABRIELLE LYON: Well, obesity is a known risk factor for cancer. And cancer is very broad, cancer is a disease of the genome, there are multiple different kinds of cancer, but the things that we can do something about really relate to getting our body composition in check. Not only that, not just that skeletal muscle is going to protect you with cancer cachexia, which is cancer can be a very highly catabolic state, and we've seen individuals who are going through chemo or have cancer. In a clinic when someone has rapid weight loss, one of the things that you think is cancer. It is a highly catabolic state, it destroys skeletal muscle, and an individual survivability is going to be better if they have healthier skeletal muscle. I also want to mention something else, not just that skeletal muscle is protective from the mechanical aspect, from the amino acid reservoir, but exercise. Exercise is, I don't want to say broadly anti-cancer, but it definitely can interface with the immune system, and it can definitely help protect against certain kinds of cancers. Exercising skeletal muscle increases natural killer cells. It increases an interface with the immune system and with the inflammation in the body, it counterbalances inflammatory mechanisms in the body.

SHAWN STEVENSON: That's so powerful, and it's so simple.

DR. GABRIELLE LYON: It's so simple. And you know what we really need to do, is how do we bridge the gap between fitness professionals and medical professionals. Right now, zwhen we think about skeletal muscle, oftentimes we think about physical fitness. Physical fitness is incredibly important, and the way I think that we think about it is a bit simplified because we really need to bring it into an interface of medicine. Movement is medicine, muscle is medicine. Do we have an obesity crisis? Yes. But what we really have is a muscle crisis.

SHAWN STEVENSON: All right, I hope that you're enjoying this longevity compilation. Now, we cannot talk about longevity without talking about the things that fuel us, we cannot talk about longevity without talking about nutrition. And one of the places on planet Earth that have the most centenarians are regions in China. And there's a particular substance utilized by centenarians, by long-lived cultures for thousands of years and today we have some clinical data to affirm why it's so incredible. And what I'm talking about was featured in a study published in the International Journal of Molecular Medicine, and they found that... Now, this isn't a human study yet, we're going to get to that, but utilizing fruit flies given Cordyceps medicinal mushrooms enabled these fruit flies to live 32% longer than the controls who didn't. Now fruit flies live a very, very short time, 32% longer lifespan is like 30 human years.

It is a significant jump in their lifespan, which is like what is keeping them alive and keeping them going? Well, to take a step up in the animal kingdom, a study published in the FASEB Journal found that mice given Cordyceps lived several months longer than the control group that didn't receive Cordyceps medicinal mushroom. Again, do how long that is in mouse years? We're talking about going from your regular shmegular mouse to Master Splinter. All right, there is a hell of a evolution that takes place with living months longer simply by introducing Cordyceps medicinal mushrooms. Now, what's going on here? Well, human studies, and this was published in the American Journal of Chinese Medicine, found that Cordyceps protects our mitochondria. Our mitochondria is where fat is "getting burned." But that's just one job of the mitochondria, our mitochondria really creating and managing energy, but also producing other things that our bodies need.

And we're talking about, in particular, the maintenance of our cells and tissues, our mitochondria are very, very important. They're critical in being able to do that. And this study found that cordyceps protects our mitochondria by scavenging reactive oxygen species. Several other human studies have found that cordyceps improves cardiovascular function, VO2 max, and insulin sensitivity as well. Now, the key, when you hear something like this does not mean to run out to the black market and get cordyceps. You want to get it from a reputable source, organic, dual extracted, so it's a hot water extract and an alcohol extract, so you're actually getting all the nutrients, the nutrient profile, the complete nutrient profile, that's covered in these various studies, because they're using different extraction methods. Most companies, organic cordyceps are not doing a dual extraction of these mushrooms.

So, you might not be getting the thing that you're looking for. The company that does this, and not only can you get an incredible cordyceps elixir, but they also imbue their cordyceps into coffee. For example, organic coffee or hot cocoa. All right? So, lots of ways, fun ways, that we can enjoy the benefits of cordyceps mushrooms. I'm talking about the folks at foursigmatic.com. Go to foursigmatic.com/model. That's F-O-U-R-S-I-G-M-A-T-I-C.com, and you're going to get 10% off storewide plus access to some exclusive bundles as well. One of them includes a hand frother which... Having a hand frother changed my life. All right? Every day I was making either tea or coffee for my wife and I, and I used to have to put everything into a blender and then I got to wash the blender, or I was like using a spoon or a fork to try to whisk it real fast. That's just, that's so putting me in the mindset of Fred Flintstone. We've moved beyond the bedrock paradigm. We have hand frothers now. You don't have to struggle out there on the streets. So definitely check out their incredible bundles as well. Go to foursigmatic.com/model. That's F-O-U-R-S-I-G-M-A-T-I-C.com/model for 10% off storewide.

Now, next up in our incredible longevity compilation, we're going to be hearing from, if we're talking about examples of people maintaining mobility and functionality as they're getting into their "senior years" listen in closely to Dr. Kelly Starrett and Juliet Starrett. This is one of my favorite episodes of the last couple of years, being able to spend time with both of them who I love very much. Whenever something happens in my life, if I'm dealing with an injury or an issue, I hit up Dr. Kelly Starrett. All right? And he's just been a wealth of knowledge and insights for me personally. And Juliet is an absolute powerhouse. We're talking about a world champion in her sport, which is one of the craziest sports, whitewater kayaking and all that craziness with the... Like, you could die competing in your sport, like on any given day kind of thing.

And together, Kelly and Juliet started one of the first CrossFit gyms in the country. I think it might have been like the second one ever, but I know it was like one of the first 10, and running his physical therapy practice out of there and Juliet being a absolute industry leading coach. And their recent book is, "Sitting On My Couch," all right? Built to Move. I refer to it frequently, but when they kicked the book off, and also in this conversation that we had, they shared an insight, a simple mobility test that's correlated with our lifespan. And so, in this segment, you're going to hear why sitting on the floor, as crazy as it sounds, it might be one of the most practical things you can do to increase your longevity and long term durability. Let's jump into this conversation with the incredible Dr. Kelly Starrett and Juliet Starrett. Esquire.

One of the things you should talk about in the book is that we need to spend more time sitting on the floor. Talk about that. Why does that matter?

JULIET STARRETT: I mean, we started the book, that's chapter one. We started that for a reason in part because we love the test that's associated with it. And the test that's associated with that chapter is, you just get up and down off the floor without putting your hands...

KELLY STARRETT: Crisscross applesauce.

JULIET STARRETT: Crisscross applesauce. And the backstory on that test is there was a study done some years ago that people who could get up and down off the floor without putting their hands down lived longer.

KELLY STARRETT: And lived better.

JULIET STARRETT: And lived better, which I think is what we're all really looking for. And so, what we realized is that people don't sit on the ground enough. In our culture, we're always chair-bound. We're driving, commuting, sitting in chairs at our offices. Our whole environment is set up to be sitting in chairs all the time. And so, we've literally lost the ability to both get up and down off the ground and sit comfortably on the floor. It's really interesting when we suggest to people like, oh, okay, well you need to start this test by being crisscross applesauce. And a lot of people will go, "Crisscross applesauce? What? I can't sit like that." And so, it's just an ability that we've really lost, that's so fundamental as humans. And you know what we've recommended to people is that they just had more sitting on the floor while they're watching Netflix, which is something that we know everybody's doing at least three hours of the day.

And so, we just think it's so fundamental as a human to be able to get up and down off the ground. And also it makes us more durable, and I think the word we like and we're fans of all things longevity, and obviously this book is connected to that, but I think the word we prefer is durability, because really, Kelly and I don't care if we live to be a hundred, we want to live as long as we live, but feel good for as long as possible, and then just like fall off a cliff and die.

That's our goal. Like we just kind of want to be like this and then fall off the cliff and die and feel as good as we can and live independently and be able to move with our body and hopefully keep our mental acuity. That's really our goal. And to us, that's more durability, because if that means we live to be 85 or 90, like great, we would rather feel good and then just fall off the cliff. So, I think that sitting on the ground thing is so fundamental to this book, and it seems so straightforward, but really, it's strangely revolutionary since we never do it.

KELLY STARRETT: The first order of business for anything is to do the thing you want to get better at. Not a correlate, not a test for it. So, this first opening chapter is a little sneaky because what we do is we get people in with something that they can wrap their heads around, which is... Which we'll do this. I watch kids do it, like, sitting on the ground, and quickly you're

confronted with "Wow! I really struggle with that or that was harder than I thought." And it's a nice test 'cause it illuminates this idea that, "Hey! We're not interested in gymnast level mobility; we're interested in this central idea of can you move and own your way through your world?" "What is it you want to do?" And a lot of times because the body is so durable and because our world is shaped a certain specific way, we're not really confronted with limitations until you go to yoga and you're like, "Wow! I can't do that" or "I want to learn a new skill and that was really challenging. Keeping my arms over my head and we're going to climbing today." So, one of the things that we try to do with this book is create this language of vital signs, because you're not going to die tomorrow, if you can't get up off the ground, that's not what it is, but it helps you begin to establish some benchmarks around how you move and some of your other behaviors.

And the follow-up to that is, the first order business to get better at this is to sit on the ground, right? And we're realizing that instead of applying some fancy tool or here's our 10-day optimize sit on-the-ground program for watching the TV, let's see if we can work this into your life where we can begin to work on your hip range of motion in the background. The mobilizations in there, are something we call position transfer exercises, they're just sneaky ways to give you a window of opportunity so that you can move more freely. And in this situation, the expression of mid-range, hip range of motion and flexion is getting up and down off the ground. So we've got some tools in there to help you restore those positions, but the first thing is knowing that, "Hey, that was a little bit trickier than I thought, maybe I should spend some more time doing it" or be a, crush that I don't need to worry about it 'cause I sit on the ground all the time, and my hip range motion is good.

SHAWN STEVENSON: Yeah.

JULIET STARRETT: Well, and also some of those positions, you mentioned like 90-90 sitting and long sit, for most people who don't spend a lot of time sitting on the floor, they will naturally need to change positions. For most people sitting cross-legged for an hour is not possible. Most of us who have spent a lot of time sitting, it's just not possible or comfortable to sit that long. So, the cool thing is your body will actually kind of give you these cues to move and you're like, "Alright, well, I'm no longer comfortable sitting cross-legged, so I'm going to move to 90/90 or I'm going to move to long sit." And if you just watch someone sort of practice sitting on the ground, it's actually subconscious, you naturally just move from position to position. And so, without even thinking about it, you're getting all this work on your hip range of motion, and most of it is just subconscious, and the only real conscious thing you've done is decide to sit on the floor, versus sit on the couch.

SHAWN STEVENSON: I hope that you enjoyed that segment from Kelly Starrett and Juliet Starrett, and just reference of study again, The Sit and Rise Test. This is published in the

European Journal of Preventive Cardiology, demonstrating, how this simple test of being able to get up off the floor to sit down on the floor and get up off the floor without using your hands is correlated with how long you're going to live. Now, it might seem strange, again, but they looked at a bunch of other confounding factors that could be contributing to this, eliminated those and looked at like, this is telling the story of something about your reality, if you're able or unable to do this act. And it has a lot to do with the other things that being able to sit down and stand up off the floor without your hands is enabling you to do in your day-to-day life.

So, it's not just about the test itself, it's about what that test says about what you're capable of, and also the environmental signals that you're emitting and also the environment itself, what it's feeding back to your body and how you're engaging with the world around you. So, it's a lot to unpack, but it's not just about the thing, but the test is something that we could get some insight from, and also, we can work on it. As Kelly shared in that segment, the best way to improve at a thing is to work on the thing. So, we've got all these different exercises we could do. We could sit on the floor, crisscross applesauce. We could sit in a 90/90 angle with both of our legs, one leg is going to be in front of you at 90 degrees, the other one is kind of behind you in a 90 degree angle. One knee up, leg extended, just sitting with a split kind of stance on the ground. There's so many different ways that we could sit.

We could lay on the ground, by the way, on our back, lay on our belly for a bit, move around, becoming more mobile, getting more movement inputs, but again, most importantly, if you want to get good at the thing, do a thing. So, if you want to get better at the sitting rise test, work on the sitting rise test. Alright, now, moving on, we've got another best-selling author, but when I'm thinking about longevity, when I'm thinking about peak performance in our later years, this is the person for me. He's jumping up and he's at that number one spot shout-out to Ludacris. Alright, Mark Sisson, bestselling author, and creator of one of the most popular health websites ever in the history of the internet, Mark's Daily Apple. And in this segment, he's going to share another incredible insight about why muscle is required for longevity and healthy aging. Plus, his three top foods for longevity. Checkup this segment from the incredible Mark Sisson.

SHAWN STEVENSON: On the topic of nutrition, I want to ask you what are the three foods that we need to target overall for the average person, if we want to contribute to more longevity?

MARK SISSON: Like anything we talk about in this realm, it's a nuanced question with a complicated answer. And I would preface everything by saying, the best thing you can do would be to avoid certain foods in terms of longevity. So, if you can avoid industrial seed oils, if you can avoid sugar beverages, added sugar to whatever it is you're eating, if you can avoid processed grain products, those are sort of the first... That's the first level of being on the road

to longevity. Three foods that you can eat, I would say always, number one, a quality source of protein. Whether you're into carnivore and you're eating a lot of steak, lamb, pork, or you're a pescatarian and you eat fish, that's a great source, eggs are a great source of protein. Even if you are a vegetarian, you could probably mix and match some of your bean sources and your rice things, and that's not my area of expertise, and I don't highly recommend it. But if that's your thing, there's a way to optimize protein intake in that regard.

SHAWN STEVENSON: Can you talk a little bit about why that's so important for longevity?

MARK SISSON: Well, I think we can take a step back and say that my idea of longevity is like, How can I live the longest, thriving? I don't want to just live long and be sitting in a wheelchair, drooling and wondering who it is that I'm talking with. So, I want to define longevity in certain regards with mobility, I want to be mobile throughout the rest of my life, not just to be able to get around and leave my apartment, if you will, but to travel the world and to experience face-to-face interactions with people. And then access to cognition, to memory, so if I'm able to access thought and respond to questions and have mental pictures of things that happened to me, not just last week, but 40 years ago. So, mobility and cognition are the two big issues there. Once you sort of get over that first kind of goal, check that box off. Muscle mass is the big determining factor of whether your body can keep up with those goals.

Whether your body can produce enough energy to move around and to be able to maintain a strong, active, lean muscle mass to pump blood to the brain, so that the brain works sufficiently and so that the capillaries within the brain are not clogged up with plaque or whatever. So, muscle mass becomes an object or an objective. And how we get muscle mass, is by doing work, by creating the need for the body to want to build muscle, or at the very least to want to hold on to muscle. So, typically our bodies want to be lazy, they want to conserve energy, they want to sit around all day and do nothing, they don't want to burn fat stores, our bodies are kind of these survival packages that we have with us. And we sort of have to trick them, if you will, into doing things that take energy, because we know that energy is available. So, if we can say, "I'm going to go to the gym and lift weights." That's going to prompt my body with certain biochemical responses to the workout, whether it's lactic acid or whether it's metabolites of any of the high-intensity workout.

The genes that I have, the genetic recipe that I have within me, will respond by building more muscle and maintaining muscle mass or getting stronger. So, the challenge is to figure out what signals are going to optimize my muscle mass, and certainly eating protein is an integral part of your body's ability to repair and build muscle once you've done the workout. So, doing the workout, step one... And a lot of people... And you and I know a lot of people who work out too much. They think the workout is what's causing the body to respond and build muscle, but it's a combination of that hormetic event, that short-term stress and a little bit of rest and

nutrition, and that's where the protein comes in. So now, we want to lift weights, we want to increase the amount of protein we take in so that the body responds by either maintaining or building more muscle mass and more strength.

Certainly, protein is involved in enzyme creation as well, so all the enzymes that are controlling the different biochemical processes going on in the body involve amino acids and protein. So, it's a complex equation, and the muscle mass thing, people don't quite grasp, like, "Why would muscle mass be so integral to longevity? I know old people who are skinny, and they've lived a long time, and they don't appear to have much muscle mass." Well, muscle mass, that part of the equation combined with strength and power is what causes the rest of the organs in the body to have a reason to keep up with the muscle, so it's a little bizarre. But the brain says, "I'm going to go to the gym and I going to lift weights, and I'm going to do curls, or I'm going to do squats." And then the signal goes to the body to build these muscles up to get stronger to keep up with the amount of work that the brain is choosing to do.

But in the process, the body is trying to figure out how best to utilize all of the organs to achieve this goal. So, when you say, "I'm going to lift heavy leg day." The heart goes, "I guess I got to beat faster to keep up with the demands that this clown is putting on me right now in the gym." So, the heart has to beat stronger. Or if you say, "I'm going to go for a hike or whatever." The heart has to beat stronger. If you are doing intervals, if you're doing high-intensity intervals, the lungs have to breathe deeply, and so they have to inspire, and they'd have to take in oxygen to provide that oxygen to help fuel the muscles to do the work that you're choosing to do. The liver has to process fuel more efficiently.

And so, by choosing to do the work and by choosing to use muscle mass and muscle strength as sort of the focal point, everything else comes into play here. And you get this complete individual that is now not just strong and able to move around the world and do the things that people who are older want to do, travel the world, and have access to memories. But is also in a situation where you get up in the middle of the night to take a leak and you trip, and if you're strong, you trip and you laugh it off and you walk over and you go back to sleep. But if you don't have the muscle mass, if you don't have the balance, if you haven't worked all these systems, the typical sad scenario is that the old person gets up in the middle the night, trips, falls, breaks a hip. The hip breaks, by the way, because the bone is not strong enough, the bone density has been compromised because the person didn't do enough weight-bearing activity to cause the body to want to build stronger bones.

You know what, you got to take, that if you don't go to the gym and you don't do this work, the body goes, "Hey, don't need to build muscle. Don't need the heart to beat that fast. Don't need the lungs to breathe in that much. Don't need the bones to be that strong. Why would I waste valuable resources building strong bones if we're not going to do anything with it?" So

now the person winds up with a broken hip in the hospital, and the sad trajectory is typically they get pneumonia in the hospital, and they can't cough well enough to get rid of the sputum. And then the heart can't beat enough to keep up with the demands of the infection because you've only been working at 10% of capacity for the last 15 years.

And so, you die of congestive heart failure, you die of pneumonia, you die... And ultimately people die of the, basically organ failure. People don't die of old age, they die of whatever organ says, "I'm out" whatever organ taps out first. So, longevity is really this sort of game we play of how to maintain muscle mass, how to maintain aerobic capacity, how to maintain liver strength. We call it vital capacity of the different organs, and vital reserve. And if you understand this basic concept, then it makes sense that you would go to the gym and do squats once a week and do pull-ups and do some, a little bit of sprinting. Sorry for the long-winded explanation.

SHAWN STEVENSON: This is fantastic. I mean, 'cause, you know, our culture is so focused just on the aesthetic part of it.

MARK SISSON: Yeah.

SHAWN STEVENSON: And not really looking at the fact that... We should have known this decades ago. And I think our ancestors did, that muscle is really an endocrine organ, and it's releasing all of this chemistry. And now we know things like myokines, for example, that when you mentioned somebody going in and falling ill with pneumonia, and we think about how our muscle even influences our immune system, the list goes on and on and on. And the coolest thing about it is that this is something that we can create.

MARK SISSON: Yes.

SHAWN STEVENSON: Like we actually can make more of it and we can maintain it and care for it, but it becomes even more, in a sense, important as we age.

MARK SISSON: Yes. Yeah. No, it becomes your number one job as you age. I would think anyone over the age of 45 would be well served to consider fitness and health job number one. And you hear these stories about all these people who spent their prime years from 25 to 50 building a business and making a lot of money and sacrificing their health and sacrificing their relationships with their family. And I'm like, "Dude, life is about enjoyment in the moment." And the number of people who... You ask them if you could... Like, people spend a lot of their lives making money and losing their health, and then they're like, "I would give out all my money to have my health back." Well, that's not necessary. So, you should really think of your health as job number one after the age of 45.

And that means when somebody says, "Well, I can't get to the gym every day because I just don't have the time. I'm working too hard." No, job number one is to get the gym or go outside and walk and make your business calls while you're walking or do micro workouts throughout the day where you drop and do 50 air squats or 20 pushups every once in a while, or do a plank for two minutes. All that stuff counts. But if you cast it all aside and say, "I'll wait till later to do that." I'm not going to say it's too late because we see a lot of people turn around at age 50 and 55 and start to get healthy again. But the good news is, I know you know this, as a former athlete, you can coast on that the years that you spent working out between the age of 20 and 45, you can coast. You have to do the work, but you can coast for the next several decades. Right? But health has to be, it has to be job number one.

SHAWN STEVENSON: Yeah. Yeah. So powerful. It's just building a healthy foundation. And in particular, my son... My son and I say this all the time, my oldest son, "If you don't eat, you don't grow." And so, in particular, we're talking about having that stimulus with the training, protein is that foundational building block. And so, as we age, there's conversations about whether or not we metabolize protein efficiently, but we know that if it's available, your body's going to do the best job that it possibly can. And so, making it available. So, we got protein is number one.

MARK SISSON: Then we only got the number one so far.

SHAWN STEVENSON: Let's go to number.

MARK SISSON: We got three, we got two more number.

SHAWN STEVENSON: Number two, if we're looking at longevity, what should we be eating?

MARK SISSON: I mean, I would say healthy fats. I'd say, a good source of energy would be healthy fats, avocados, avocado oil, olive oil. Certainly, the fats that come built in with salmon and certain types of fish, fatty fish, even with steak and beef and with lamb and pork, those fats all count. This fear that we've had of saturated fat over the years is unfounded. Now, I wouldn't say find ways to add saturated fat to your diet over and above your protein sources, but, macadamia nuts, coconut, they have a certain amount of saturated fat. They're healthy, they're good. So, protein first, fats second. And then you and I talked offline about this. I think berries would be the third kind of interesting longevity food to include in moderation.

And when I say that I have in mind this notion that I don't eat that much bread. I don't eat a lot of carbohydrate in general. I'm just not a carb person. So, I don't eat a lot of rice. I don't eat a lot of beans. I don't eat a lot... So, what do I eat and what would I choose if I got... Again, if I had

to choose three foods to live on for the rest of my life, it would be steak and it would be probably avocados and blueberries. If I had to pick three individual kind of foods and that... Somebody said, "That's it, that's your menu for the rest of your life." Now, having said that, I try to be as inclusive as possible in what I eat, 'cause I love to eat, I like crunchy things. I like crunchy, fatty, salty, sweet. So, I'm not suggesting that these three foods should form the cornerstone of your diet. What I'm suggesting is that, when you put the pressure on me, Shawn, I'll come up with three. I'm going to say, I could maybe narrow it down to 20 foods that I would eat if it was limited to just that. And those 20 foods would be enough to satisfy me.

SHAWN STEVENSON: All right. When it comes to longevity, yes, our muscles are critically important, but so is our cognitive function, and what can be regarded as our most important muscle, which is the human brain. Now, the brain might not be made of muscle tissue in a conventional sense, but it's something that we are able to literally build, and we have this incredible aspect of neuroplasticity where the brain is able to create new connections, to adapt and to change and to evolve from the moment that we are conceived to the end of our lifespan. This process is always happening depending on the inputs that we give it. So, we're talking about experiential inputs, thought inputs, but also nutritive inputs as well. And also, don't get it twisted, building muscle helps to build your brain as well. We've done masterclasses on this subject of the mind-muscle connection. We'll put one of those episodes for you in the show notes.

But when we're talking about the cognitive performance itself, and longevity, I've got one thing in my secret stash. This is something that I utilize multiple times a week, in particular on recording days of the Model Health Show, and it's a nootropic based on royal jelly. Now, how does this tie to longevity? Well, the queen bee, I'm not talking about Beyonce. I'm talking about the real queen bee. No disrespect, by the way. No disrespect. She is the real queen bee. Okay, slow your roll. Stance, slow your roll. The queen honeybee. Let's be clear, let's put honey on it, lives an average of 1-2 years while worker bees live an average of only 150 days in the winter, and just 15-38 days in the summer. Crazy. That averages out to be about a hundred days that worker bees, which are still the female bees. The male bees are called drones. All right? They're just basically for reproduction, and then go kick rocks.

So, it's a different kind of structure that the bees have. Maybe we could, I don't know, take on some of that. I don't know. Maybe a blend. But the queen bee, again, lives 1-2 years versus a hundred days. The queen bee lives more than seven times longer than the worker bees and exclusively eats royal jelly. A study published in Advanced Biomedical Research found that royal jelly has a potential to improve spatial learning, attention, and our memory. In addition, they found that it's antimicrobial, anti-tumor, and anti-inflammatory. While royal jelly was found to differentiate different types of brain cells and from researchers in Japan, they discovered that

royal jelly is a power to stimulate neurogenesis in the memory center of the brain. Pretty freaking amazing.

Now, concern might come up, "Well, what's the queen bee eating? Are we taking away... " No, no, no. We're talking about regenerative beekeeping. We're talking about expanding populations of bees by doing stuff the right way and having this kinship, because what we've done to our planet and bee populations in recent decades is put them on, in some ways, an endangered species list because of our degradation of the soil, and our land in general. And so incredible companies, like Beekeepers Naturals, are dedicated to regenerative beekeeping. Plus, they're doing something that's above and beyond, testing for toxicants for over 70 pesticides through third-party testing to make sure there's no contaminants coming along with your bee products that are commonly found in other companies' bee products, unfortunately. They're making sure that you're just getting all the good stuff.

And right now, you're going to get 20% off their incredible royal jelly formula that's called Brain Fuel when you go over to beekeepersnaturals.com/model. That's B-E-E-K-E-E-P-E-R-S Naturals.com/model. 20% off Brain Fuel, and also their incredible superfood honey, their propolis immune spray, and everything storewide, 20% off. Incredible, incredible value. Go to beekeepersnaturals.com/model. And now moving on and talking about something attributed to longevity that appears to be more mind-based, mindset-based and brain function based, we're talking about the science of flow states as an anti-aging technology.

Have you ever experienced being in flow? This could be while you are participating in sports, while you're writing, while you're creating art, while you're dancing. There's so many different ways that human beings throughout our evolution have experienced these cognitive flow states. And one of the pioneering voices when talking about the science of flow is Steven Kotler. He's a New York Times bestselling author and leading researcher in this field, and in this segment, you're going to hear how flow states, again, act as an anti-aging technology. Check out this segment from Steven Kotler.

STEVEN KOTLER: The other thing you need to know about flow as an anti-aging technology is whenever we produce really positive, powerful emotions, have health benefits. So, the most powerful, positive emotions that a human can encounter, love, connection, a sense of control. We love being in control. And a sense of mastery. And flow, because it advances our skills, you're getting mastery. Flow states have... One of the things we get is it gives us a feeling of control. It's one of the... How do you define flow? How do you know if you're in a flow state? One of the things you have is this feeling of, "Oh wow, I can control things I can't normally control." From the outside I look in, I see you in a flow state. You look like you're performing at your best. That's not what it feels like on the inside. Maybe it feels a little bit... What it really feels like is, "Oh, I can control things that I can't normally control." This could be me as a writer.

My words are doing things like at 6:00 in the morning on a Tuesday that they don't normally do. It could be a basketball player or something. The hoop looks as big as a hula hoop and they can't miss, right? You said that's a sense of control. When we feel that, that boosts the production of T-cells, which boost the immune system and natural killer cells, which target sick cells and tumors.

So, when we're in flow, and all the neurochemicals that show up in flow that I mentioned, they also boost the immune system. So, you're boosting the immune system, you're boosting the production of t-cells, you're boosting the production of natural killer cells, you're lowering stress levels, et cetera, et cetera. So, it makes for a really potent anti-aging medicine, and obviously flow underpins happiness and well-being and meaning and purpose and those things really matter, and they definitely matter over time.

SHAWN STEVENSON: One of the coolest things about longevity science is that we're now able to measure and monitor certain facets of human cells of our DNA that can essentially inform us on how long we're going to live. And this has a lot to do with our telomeres. Now, the person along with her co-author who literally wrote the book on telomeres, it's called The Telomere Effect, is Dr. Elissa Epel and her co-author on that book, Dr. Elizabeth Blackburn, won the freaking Nobel Prize for her discovery of an enzyme that can essentially add the length back on to our telomeres that burn down or get clipped away as we age. So being able to learn from Dr. Elissa Epel and to hear her work, because she's looking at the practicality of Telomeres and this particular enzyme. What are some things we can do in our lives that can slow down that aging of our cells, protect our DNA and extend not just our lifespan, but our health span. And in this segment, you're going to learn what telomeres are and how they determine our longevity. You're going to hear the Nobel Prize-winning discovery related to our telomeres. You're going to learn a specific thing we can do to increase our longevity and resilience that Dr. Epel found in one of her clinical trials. Here's a segment from the incredible Dr. Elissa Epel.

DR. ELISSA EPEL: Telomeres are these caps at the ends of chromosomes that are critically important to our longevity. And they, as we age and our cells divide, they get shorter. And in our... If we're lucky, in our 80s or 90s, they're getting too short all the way back then, or 100... Maybe in our 100s, right? We want them to last that long but they do, at some point get too short, the cell can't divide, it dies, or it turns into a pro-inflammatory little machine creating disease states. So, we really want to protect them. They're sensitive to what chemicals are in our body and we can create the healthy chemicals with lifestyle and with well-being, or we can create the toxic stress soup with chronic stress when we're not managing it, we don't step back and take breaks and take respite and really temper the chronic stress, it can just go on and on, it could last a lifetime, that we don't realize that we're spending each day in this kind of hyper-aroused state and rushing and not noticing the beauty and the joy. It's a big deal. We got to manage this better. Everyone feels too much stress. Most people... There are some people,

we're going to talk about you, [laughter] who've made it their job to build the healthy lifestyle and to keep balance and manage it. And it takes a lot of effort, but as you and I have been talking about, there are... We can all do better with simple daily practices. We just got to find the right ones that we need.

SHAWN STEVENSON: Yeah, you can create your own little mini snow globe inside of the larger snow globe, in a sense.

DR. ELISSA EPEL: Yeah. And I like that.

SHAWN STEVENSON: So, what was the discovery that your co-author, Dr. Blackburn, she won the Nobel Prize for this particular discovery regarding telomeres, what was that?

DR. ELISSA EPEL: Yes. So, this cell aging system, it doesn't just shorten, it can actually lengthen, too, because there's a anti-aging enzyme called telomerase that she and her colleagues discovered about 30 years ago. And this enzyme is kind of the thing that changes in the moment, or within minutes, we can actually boost our telomerase. When I stress people out in the lab, their telomerase goes way up immediately because it's protecting the cell. It's like, "Hey, there's... " It's calling out, "There's some danger, let's protect the genes." They are the some of the most important biological material that protect, besides the brain. Like, "We don't want damage to our chromosomes. We don't want cancer. We don't want cell death," et cetera. So, the telomerase protects the telomeres, rebuilds them, and we have found all sorts of lifestyle factors related to dampened telomerase: Smoking, low exercise. And the good news is we and others have done mind-body interventions and have found that it can go up as well.

SHAWN STEVENSON: That's wonderful.

DR. ELISSA EPEL: So that's what it's looking like, we can build... We can increase our intracellular levels of telomerase, and that is leading to sturdier telomeres in a dose response fashion. And if we keep that up, we are allowing ourselves to keep replenishing into those later years and renewing tissue.

SHAWN STEVENSON: You shared this great study, and this was a study that you conducted with some colleagues on women who had never meditated before, split into two groups at a luxury resort. Can you talk about that study?

DR. ELISSA EPEL: Yeah, I love that study, and there are other retreat studies that show similar things. You asked about like, how is toxic stress getting into the skin and causing disease? And I think inflammation is a main highway of how it does that. But we can now look at all the different biological pathways with gene expression. And so, in this study, that's what we did.

We measured everyone on day one when they arrived, and then what their cells were doing on close to day seven. And what was so amazing is that there were such dramatic changes in what our cells were producing. The DNA readout was different. Different genes were producing different proteins because the stress response and the immune response, thinking that it has to fight things, were turned on very, very low volume. So very low activity there in all of those vigilant fighting modes that our body thinks have to be on. In urban living, they're probably on pretty high. So, at the end of the week, those were really low. And then we had more of these kinds of restorative genes, telomerase, mitochondria, growth factors.

So short term, both groups showed 60% reduction in stress, depression, increases in vitality and mindfulness. I mean I was like, "I've never seen this much change." You know, "This is like a real privilege and treat." If people can unhook and afford a retreat for a week, that's the peeling the layers of the onion, right? But the meditation group didn't look too different in the short run. They did look different 10 months later, and their depression stayed low. So that was like, "Okay, this is a building a skill that over time, is going to promote stress resilience."

SHAWN STEVENSON: Our final expert in this longevity science compilation is an experts' expert. He's the guy that the experts turn to when they're trying to figure things out. He's also an incredible conglomeration or collector of expert intelligence, being able to extract expert insights from the leading people in their respective fields and bringing it to everyday folks; packaging it up in a way that makes sense because the challenge with genius, sometimes, is that it's not easily communicated or replicated. And our next guest has a superpower in making genius accessible for everyone. Now, I'm just going to rattle off a few of the people and entities, companies that he's helped from the world of athletics and sports performance. He's been the go-to person for Serena Williams, for Conor McGregor, for the Golden State Warriors. The list goes on and on and on. In the music realm: Usher, Green Day, Aerosmith, Pitbull, Dale. And many, many more. That's an ad lib from Pitbull, okay? It's not somebody named Dale but shout out to Pitbull. And he's also been a consultant for incredible financial moguls, from Mark Benioff to Ray Dalio and many others. And I'm talking about the one and only Tony Robbins. And Tony has been instrumental in my own growth, success, and the health of my relationships. I mean he's just, he's that guy, he's that guy.

And so, in this final segment from this wonderful conversation that I was able to have with Tony Robbins, he's going to share how our epigenome is determining how healthfully we age. And also, he's going to talk about dealing with pain as people age, which is not talked about, unless you're in that suffering. People usually don't really think about it, but it's a huge thing that people battle with. Dealing with pain as people age, plus some insights about stem cells, pulsed electromagnetic field therapy, and more. And this was some of the incredible information from his latest book that was focused on longevity and the science, The Latest Science on Longevity. So, here's this segment with the one and only Tony Robbins.

TONY ROBBINS: First of all, you hit the nail on the head. There's both the emotional and physical, right? So, Jack Nicholas did one of the endorsements for the book and he was there at the Vatican, that's how we met, and we both had stem cell things. He was told that he had to do a spinal fusion, which you probably... You know, you were going down that direction yourself. And what most people don't realize, it doesn't work 50% of the time, but then you can't function the way you did. And less than 26% of the people can ever make it back to work. And the people that did nothing, about 76%, make it back to work. But instead of that, he did stem cells, and he couldn't stand for more than 10 minutes, he was in so much pain. And now, he's 82 and he plays golf and tennis again, right? I mean making changes in days instead of months or years. Christiano Ronaldo also endorsed my book 'cause he had the same problem. He was trying to do traditional care, taking forever. Pulled hamstring, that's a light one, no big deal. But one like he did? That could be two, three months. He was back on the field full force in two-and-a-half weeks. So, these tools are just priceless in that area.

But then there's also tools like Pulsed Electronic Magnetic and Frequency, it's a mouthful, PEMF. When I tore my rotator cuffs, I met this person who said, she's a surgeon, but she said, "Don't do the surgery, it doesn't work." It was amazing to have that kind of honesty. She ran a whole hospital wing. And she said, "Go get one of these. I think we can reduce the pain enough to create some healing and maybe even get you to sleep." And they came and worked on me, and that's how I got to sleep initially 'cause it took my 9, 9 pain down to 5. I have one today, use it every day. It's like a charger or biocharger for your body. It's pretty amazing. And so, there's 3,000 plus studies on it, to give you an idea.

When it comes to pain, I was hit at 65 miles an hour sitting at a stoplight at nighttime. I was talking to somebody on the phone, waiting for the light to change, and then all of a sudden, headlights coming, I was like, "That guy better slow down." Boom! And I remember everything in slow motion. They pulled me out of the car. The car saved my life. But I mean literally, everything crunched through. And they want to take me to the hospital. I was like, "No, I'll see my chiropractor." But the next day, I couldn't move. And for a year, I went through all kinds of physical therapy, and then I think I was doing better, and I go to run on stage. I hit second or third step and, boom! Snap on my hips, snap under me in pain. I'd be sitting in a chair at 26 years old, not able to move, and I'm like the one who takes over the room, right?

So, I met Pete Egoscue. And he's got books on Pain Free. And I show him in the book also because there... I give you dozens of scientific approaches. But he's a beautiful approach and he understands. He was a Purple Heart vet from Vietnam, told he'd never be able to walk again, never be out of pain. And he's just like you and I. He wouldn't accept that. And he kept looking and studying human physiology. And so, he gives you these exercises customized for your body to put your body back in alignment without anybody else doing anything to you. So, there's

physical things you do with technology. There's stem cells that you can make this process happen. There's structural things that you can do. But just accepting pain, like so many people are just living off of painkillers, and they think they have no other option. And then sometimes, there's some things that could be that far gone, but most of them are not. You just need a different technique. You need something scientifically proven. And the book is, we have an entire chapter just on pain.

But I want to touch on one other thing though, kind of you alluded to, too, which is I'm into performance and maximizing and energy and all those things. I know you are, too. But you also, you got to realize that today, there's so many things that can affect your health. And as you get older, the body accumulates breakdown in the DNA, as you know. And so, if you really want to make a shift, and I know you're familiar with this, Shawn, but maybe your whole audience isn't. I'm not going to try and be technical for them, but most people know at this point, your genome, your DNA is not your destiny. It's a plan. Which of these parts of the DNA, which of these enzymes get turned on or off, which of these genes get turned on or off is what determines how you're going to live. And as you get older, the wrong genes get turned on at the wrong timing, and vice versa. And so, what controls that is your epigenome, as you know, which "epi" means "above". So, think of like your genome, the plan is the piano, but the piano player is the epigenome. And that's affected by diet, by exercise, by being overweight, by smoking, by radiation, et cetera.

But your epigenome is still driven by sirtuins. Think of it as just seven genes, seven master genes that do two radically different things. Number one, they turn on and turn off what's happening in your epigenome, triggering genes. So, the right ones and the wrong ones. When your sirtuins are strong, everything runs great under your plan. They also formulate the impact on your mitochondria. They help you convert food into energy, into ATP, which is the basis of life. If you get cyanide, you die in 30 seconds. Why? 'Cause it cuts off the oxygen to the ATP and you can't make any and literally, there's no energy in your body, and you die. It's that fast. That's how powerful it is. So sirtuins keep those furnaces blasting. Sirtuins turn on and off the genes. And sirtuins, these seven master genes, they also reduce your inflammation, which is the basis of disease.

But then, they have a separate competing job. Your DNA gets corrupted by environmental factors, radiation, bad diet, chemicals in the environment. And if you're 60 versus 20, you've tripled it, right? You've accumulated that. So those sirtuins go in and clean up the DNA. But at age 50, sirtuins are driven by NAD+, which is something most your audience probably knows about, has heard about. NAD+ is wonderful. Your sirtuins don't function without it. They're the fuel. But it drops by 50% when you turn about 50, right when you need it most. So, imagine you got this mansion, and you have this beautiful staff, and they're young and vibrant. Something breaks, they fix it like crazy, everything always looks perfect. But then they get

older and older and older and less energy, and then you have less resources, and things don't get fixed, the whole thing starts breaking down. That's basically aging.

So, the sirtuins need the NAD to do their job. And for NAD to go in the cell, you need the precursor called NMN, Never Mother Never, right? And most people have, maybe have heard of it, but if you go on the market, like our firm went out and tested six different products, there was no NMN in any one of the products. And they charge between $35 and $150 bucks. Most of it comes from China. I don't know if they're lying, but I do know one thing: NMN breaks down within 30 to 40 days. So, by the time you get it, there may not be any in it. And so, what's the solution? And this is the part that's so exciting. You can give NMN to an old mouse. An old mouse, like a 70-year-old mouse is like 20, 24 months. You give it to an old mouse... So first of all, an old mouse can, at best, run a quarter of a kilometer. A strong, young mouse can run a full kilometer, full tilt, no problem, but then they max out at a kilometer. You give the old mouse NMN that's actually active in their body for 14 days, and they run two to three kilometers, 200-300% more than the youngest, strongest mouse they're competing with. And they're in their 70s.

So, you go, "Well, Tony, does it really transfer? A lot of mice studies don't transfer to humans." So here's what's cool: There's a company called Microbiotech out of Boston. Amazing. If you saw the people on their board, it'll blow your mind. I interviewed 150 people for this book; 100 of them all are connected to this company directly. It just blew my mind. After I wrote the book, I count all of them in one place. And they're all working to create a series of products. But the most powerful one is a crystallized form of NMN, so it doesn't break down. It's its own molecule. It's called MIB-626. It's been top secret because they've been using it with the military for the last two years, testing it out on special forces.

And in Boston, the commander there, even though it's top secret, got so excited about the results, he spilled the beans to the media. And then two weeks ago or a week ago, it was on the Daily Mail as well. And they don't have all the facts 'cause it's still top secret. But the part I can tell you that's not top secret is simple: These are the greatest physical specimens in the world, special forces. Their endurance has exploded. I can't tell you the percentage 'cause they haven't published it yet, but I got to see it. Like the mice. But also, their muscle development from the same exercise is completely transformed because this NMN is going into the furnace of the energy base of the body. They even have the blood out of the muscles now to see what it does in the muscles, which they've never had before. And the cognitive building goes crazy. And that's what the army's and military is so excited about because when you're exhausted and you're in special forces, your ability to use this matter.

So, I got a chance to visit with this guy's... His best friend is 72. He had beginning Alzheimer's, he stopped. He's a world-class chess player, stopped playing when he was 60 'cause he couldn't

do it. He's back playing professional chess at 72-years-old because of this. This is not a nutraceutical. This is being taken through the FDA. Maybe we will have this out in 18 to 24 months, it'll be available to anybody. So, imagine something and it could fire the energy in your body, increase your endurance, increase your muscle strength, and clean up your DNA all at the base of your body. This is one kind of breakthrough that's coming now. So, I tell people what they can do right now, and then what they can also do within 12 to 24 to 36 months at the outside so you can take full advantage when it happens. But we're living in a time that blows people's minds.

You read in the book, there's a group right now, they're in stage three of the FDA. So, stage one is safety, you know that, but maybe your audience doesn't. Stage two is efficacy. Stage three is efficacy at scale. And then if you succeed, you get approved. So, at the final stage, they believe they'll get approval by the fall or by early next year. Single injection fires off what's called the Wnt Pathway. Your own stem cells actually create a new communication. If you have osteoarthritis, it regrows all your tendons in about 11 months. And it goes from the clean epigenome, like Dolly the sheep came from an old sheep, but the young sheep's perfect? Well, they have a copy of your original uncorrupted component. So, you get like 16-year-old tendons and you have no more arthritis. I mean these are the kinds of things that are coming on top of the things that are here right now. It's hard to sleep at night once you read this book 'cause you see both what you can do right now, what you can do in the near future, and also, if you've got challenges, what are the alternatives that really are now proven to make a difference, like CAR T-cells.

I don't know if you saw this week, Dr. June, who created CAR T-cells, it's an immunotherapy. People have been through all the radiation, chemotherapy, and they're dying. Immunotherapy's been around, it was around before chemotherapy, but it died. Some people died; they didn't know what to do. And this guy, Dr. June, courageous man, took on these patients that were supposed to die, did this therapy, it's a little drip therapy, immunotherapy. No radiation, nothing. He melted down six pounds of tumors in this man in less than two weeks, completely gone, and he's done it multiple times. But the article just came out last week, or two days ago, three days ago, said, they're calling it a cure now. 'Cause 10 years later, these CAR T-cells are still in people's bodies destroying cancer, they never dreamed it would last that long. And they don't use the word "cure" in the cancer environment. So, it's like you couldn't be alive at a better time, and we're at the beginning, the beginning.

The changes, again, in the next 5-10 years, will be more powerful than anything you've seen in 200 years combined. That's what's happening to our lives right now. But if you're in the normal public, you just see standard of care, and especially with COVID, looks like the whole world's coming apart, when actually, we're having a renaissance greater than ever. But you got to know. If you don't know, you don't know who to go to, and you're going to find yourself where

ignorance is not bliss, ignorance is disease, ignorance is pain, ignorance is low energy, ignorance can mean death.

SHAWN STEVENSON: Thank you so very much for tuning in to this episode. I hope you got a lot of value out of this, being able to learn from some of the best and brightest in this field of longevity. People who are demonstrating what's possible. It is absolutely priceless. We don't have to have a lot of theory. We don't have to go on a lot of hearsay and hypotheses. We can actually see first-hand people that are the living, breathing examples of what's possible as we age. So again, extending our lifespan, but also, importantly, extending our health span. Please share this out with the people that you care about. Send this directly from the podcast app that you're listening on. And of course, you could tag me, I'm @shawnmodel. Take a screen shot of the episode, tag me @shawnmodel on Instagram, and I'm @shawnmodel on Twitter as well. So, I'm out there in the Twitter space from time to time. But I'm most regularly on Instagram, and I love to see that. I always pop in when the new episodes come out. So, if you want to share the love over on social media, that's the way to do it. And I appreciate you so very much for tuning into the show today. We've got some epic master classes, world-class guests coming your way very, very soon, so make sure to stay tuned. Take care, have an amazing day, and I'll talk with you soon.

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