

EPISODE 369

## 8 Ways To Build A Better Brain

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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.

Listen, every day is not going to be our best, we're going to come up against opposition, we're going to have trials and tribulations but our goal really is to try to stack conditions in our favor and try to do the best that we can with the cards that we've been dealt.

And a big part of that is really taking care of our amazing brain. Now, I've been under a pretty big amount of stress the last few days, one of the toughest transitions taking place in my life personally.

And right now we're getting close to 400 episodes of The Model Health Show, it's been a really consistent part of my life and something I'm very passionate about. I just moved my family to another state while working on something that is really, really important to me and I'm passionate about to help to try to transform our food system.

And with that, again, every day is not going to be perfect; all the stars I'm going to align for things to really work out in my favor, but again, we just do the best we can, stack conditions in our favor.

And so with that said, I really want to put together some of the very best advice that we have so we can still be operating to the best of our ability even when those tough times come up.

And so with that said, we've got 8 of the top experts talking specifically how to optimize your brain health. So today we're going to be talking about exploring specifically brain health and also brain anatomy and a little bit about optimizing your overall brain function.

And again, these are some of the world's foremost experts and so having so much incredible access over the last few years to some of these experts and having them on the show, I wanted to take some of their most powerful morsels of brain food and package them up for you to share today. I think you're absolutely going to get a ton from it, it's a really powerful, actionable things that you can employ in your life starting right now.

Obviously a big part of taking care of our brain and our mental function is optimizing our nutrition. And so for a lot of us to get our brains going to start the day we turn to El Coffee, all right. It's a big part of our culture and for me, this was something that I was just like, I couldn't really get into because of all the negative press about coffee.

But then once I started to really dig in and look at things from a meta-perspective I found out that first of all, coffee is the number one source of antioxidants in the Western diet.

And so thank goodness for coffee, because a lot of folks are getting some antioxidants in their bodies to start the day and to kind of really just handle a lot of the things that antioxidants are needed for, whether this is protecting against inflammation, whether this is to buffer against the accelerated aging process.

And this is one of the most interesting things, so listen to this. Stanford University recently deduced that caffeine in coffee is able to defend against age-related inflammation. The research revealed that light to moderate coffee drinkers live longer and more healthfully, thanks in part to the protection that caffeine provides in actually suppressing genes related to inflammation.

That's crazy, that's so crazy, because we don't really hear about that, we just hear caffeine is a stimulant and it's bad or it's helpful, but the reality is that it's neutral, it's really in how we use it.

And also the source that it comes from matters. And so if you're getting caffeine from pesticides sprayed, herbicide, fungicide, rodenticide, moldy coffee, it probably isn't going to do you that much good.

And so really taking all this into perspective, I was seeking out, "Okay, so what is the best source of coffee, if this is something people are going to utilize?"

Well, for me, it's not just coffee, it's also going to be married with, something that also helps to take it up a few notches and balance out the potential acidity of the coffee. And that would be the alkaline nature of medicinal mushrooms.

And so Four Sigmatic did that and they put Lion's Mane mushroom together with coffee, creating a really remarkable neuroprotective beverage. So we know some of the benefits with coffee, but also with Lion's Mane mushroom, this is one of the few things proven to have neuroprotective benefits and also stimulate neurogenesis.

And so Lion's Mane is currently being researched for helping folks who've experienced a traumatic brain injury, so it is that powerful. And this is stuff that should make front-page news, but this is why we do what we do so the more people can know about this.

And so with Four Sigmatic you're getting a dual extracted medicinal mushrooms, so it's a hot water extract and an alcohol extract, infused with the coffee, so you're actually getting all of the nutrients that you're looking for.

So for me, Four Sigmatic coffee to start the day, a little bit of healthy fat, so for you this could be anything from maybe a little unsweetened almond milk, maybe a little bit of grass-fed butter, ghee, coconut oil, MCT oil. I put that together with the coffee and that's really a great way to start your day, to fuel your brain.

And so pop over there check them out, it's [foursigmatic.com/model](http://foursigmatic.com/model), you get 15 percent off everything that they carry. It's so, so awesome that they provide that. [Foursigmatic.com/model](http://Foursigmatic.com/model), that's F-O-U-R-S-I-G-M-A-T-I-C.com/model, for 15 percent off everything. Now let's get to the Apple podcast review of the week.

**iTunes review:** Another 5-star review titled "If Oprah Met Shawn" by Midlife Lady. "I feel like if Oprah still had her daily talk show and she met Shawn, he would be her new favorite thing to share with the world. You get it Shawn, and you get it Shawn."

Seriously, if you know Oprah, you need to hook the girl up with this life-changing man. I love his approach to wellness and his focus on physical health, nutrition, preventative care, mental health and emotional intelligence.

He brings knowledge from traditional and alternative medicine and can speak about it so intelligently but also in a very engaging and entertaining way. You can feel his genuine motivation of wanting to help others come through in his words. Thank you for sharing your gift with us, Shawn."

**Shawn Stevenson:** Holy guacamole, that's so powerful, thank you so much. You get it Shawn, you get it Shawn. That's just so awesome, thank you so much for taking the time to leave me that review over on Apple podcasts.

And listen, if you've yet to do so and you're on the Apple podcast app, please pop over and leave a review for the show. I appreciate it so very much. And on that note, let's get to our topic of the day.

Today I'm sharing with you 8 of the top experts on the planet for helping to explore your overall brain health, brain anatomy, some the cool things about your brain and also how to optimize your brain function.

Your brain is literally controlling everything about you, it's kind of important but it's also pretty mysterious. Up until recently, we really didn't know a lot of stuff that was going on with the brain, but now we have technology where we can get a peek inside and see what's going on, but also now we've got research indicating that certain things that we do on our lifestyle, can either help or hurt our amazing brain.

To sort of kick things off, I'm going to go to a conversation (I'm going to kick to a conversation) that I had with New York Times best selling author Dr. David Perlmutter. And he wrote the epic treatise "Grain Brain", and they just kind of took the world by storm.

But he's somebody who's been studying brain health for a very long time, inspired by the condition overtaking his father and seeing that really impact his family and it really set him on fire to find out how to help other folks to protect themselves against the ravishing effects of dementia and Alzheimer's.

And so it's super-valuable information, very, very intelligently constructed data that he's put together for us. And in this clip he's going to be sharing the surprising way that exercise influences your brain and also how not regular sodas, but diet sodas can negatively influence your brain function. So check out this clip from the incredible Dr. David Perlmutter.

**Dr. David Perlmutter:** So we're in a place of discovery, and having discovered some things in the past couple of decades. The idea that, for example, we have a second chance and can grow new brain cells.

I would have probably been thrown out of medical school had I voiced that idea. I didn't have the idea back then, though I was starting to think about it, I have to say. And the other idea is that our gene expression can be changed under our volition.

We have the ability to change our gene expression, and these two things come together like a Reese's Peanut Butter Cup with chocolate and peanut butter. Meaning that yes, we can change our gene expression, and we can change our gene expression to turn on the growth of new brain cells.

So both of those ideas were very much a kind of classic for us, as clinicians and researchers, not that long ago. Meaning we get a second chance. Dr. Erickson at the University of Pittsburgh, Dr. Kirk Erickson, began to really make us aware about 8 to 10 years ago of how powerfully we can affect this type of change in gene expression and bring about the dramatic growth of new brain cells exactly where we need them in the brain's memory center. Who knew?

We've known for quite some time that people who exercise have a lower risk of Alzheimer's disease. More exercise, less Alzheimer's disease. Well, those are dots that are kind of far apart, and we wanted to fill in the middle part.

Okay, why is it so? What is the mechanism that relates to getting on the treadmill to improving my brain? And Dr. Kirk Erickson, University of Pittsburgh, really helped us understand that because he showed that in a group of individuals who exercise aerobically for one year in comparison to a similar size group of individuals in their sixties, not young people— well, yeah I guess I should say young, I'm 64, who just did stretching but nothing aerobic over the one year period of time.

Many things happened. First, they produced more of this chemical that you mentioned BDNF— brain-derived neurotrophic factor, which is like growth hormone for brain cells. So it turns on the growth of brand new brain cells, we call that neurogenesis. I love the sound of that word.

And where it happens is in the brain's memory center, and what he also showed after the one year, he showed three things. Number one, exercisers had higher levels of BDNF. Number two, on MRI scans, exercisers had a bigger memory center.

And number three, on neuropsychological testing, exercisers had a better memory. Man oh man, why would you not do that? You do have to buy something, and here's the pitch.

People need to know they've got to buy something; you've got to buy a new pair of sneakers. That's it.

You've got to get out and you have to pound the pavement, or swim in your pool, in which case don't wear your sneakers. Get on a treadmill, do elliptical machine, whatever you have to do to get your heart rate up for 20 minutes a day.

That's all— t's not all I'm asking, but that's a big player here. What did he show? Those people who exercise become more resistant to developing Alzheimer's disease— dare I say again, a disease for which there is no treatment.

Now his research was followed up by a study in the "Journal of the American Medical Association" that correlated higher levels of BDNF with a lower risk for Alzheimer's in a perfect linear relationship.

So to focus on BDNF for a moment, you've got to do everything you can to have higher levels of BDNF. The most powerful thing you can do is exercise. But the herb turmeric, for example, is a powerful upregulator of BDNF. Whole coffee fruit concentrate, now in the health food store, turns on BDNF.

We know that CBD — we're hearing so much about CBD these days, the non-psychoactive extract of marijuana turns on BDNF as well. What that means in the long run, we don't know, but at the very least, we want to exercise.

We know - and this is a very important bullet point, that inflammation reduces BDNF formation. So inflammation works against your ability to grow new brain cells. It's probably why being a type 2 diabetic, higher blood sugar, higher inflammation is associated with as much as a fourfold increased risk for Alzheimer's disease.

By and large, type 2 diabetes is a lifestyle choice. It's a manifestation of a diet that is higher in sugar or a diet that has no sugar in it at all but a diet that's higher in artificial sweeteners. Now that sounds ironic, doesn't it?

But what the research is showing us, most of it coming from France and Israel, is that a diet higher in artificial sweeteners dramatically increases the risk for diabetes.

With all these people having mild elevations of their blood sugar, suddenly drinking diet soft drinks, thinking they're doing the right thing, they've got to know that's the absolute worst thing that they can do.

**Shawn Stevenson:** All right. Next up in this compilation focused on optimizing the health of your brain is the person who got me interested in brain health in the first place, many, many years ago, and his name is Dr. Daniel Amen.

He said things in a PBS special, which is a whole story behind how into watching PBS, it was like the only station I can get where I was at. But, it just captivated me, I was trying to get

dressed to go, I had to be somewhere, and I literally stopped in my tracks to watch this man speak about the brain. And it just blew my mind.

And so I'm definitely going to have Daniel back on the show sometime here in the near future, because he's got some new insights, new technology, awesome stuff to talk about.

But this is from a few years back and it's one of my favorite all-time episodes because number one, really getting to interact and connect with one of my mentors who I end up speaking on the same stage with him right around this time period, but also the amount of insight and value that he delivers.

And so in this clip he's going to be sharing with us how miraculous our brain actually is and also how miraculously hungry it is. So check out this clip from Dr. Daniel Amen.

**Dr. Daniel Amen:** Yeah, it's really an energy hog if you think about it. It is 2 percent of your body's weight, it uses 20 to 30 percent of the calories you consume, 20 percent of the oxygen, 20 percent of the blood flow compared to the rest of your body it's just where it's at, it's the most expensive real estate in your body.

But it's amazing, even though we have 100 billion nerve cells, trillions of supportive cells and more connections in the brain than there are stars in the universe. So if you take a piece of brain tissue the size of a grain of sand, it has 100 thousand neurons and a billion connections talking to one another.

So it's a very special organ and it's really where our soul is. I mean, the deepest sense of meaning and purpose and we can transplant just about any other organ, we cannot transplant the brain, that's still a long ways off.

**Shawn Stevenson:** All right, next up in our healthy brain compilation is one of my all-time favorite episodes, all-time favorite experiences. I jumped on a plane and headed to New York City and hung out with Dr. Lisa Mosconi.

Now she's a neuroscientist but she's also an integrative nutritionist and she's one of the people who actually taking a look at the brain and seeing what nutrients can actually cross the brain's very protective blood-brain barrier and actually get to your brain.

And this episode, just time after time it just began to surprise me and reading her book as well, of the things that are just kind of misnomers that are out there in the media. And the things we really do need to focus on to really fuel our brains.

And so in this clip she's going to be sharing with you one the most important things that your brain needs nutrients for it, needs food to be able to do this particular thing. And also she's talking about how the brain itself can't actually feel pain in the way that we think.

When we have a headache or a migraine it's not actually our brain that's hurting. And so really, really fascinating stuff, so we're going to kick over to this conversation with Dr. Lisa Mosconi.

**Dr. Lisa Mosconi:** Well, the brain is not able to feel pain because the brain is in charge of feeling pain everywhere else in the body and making sure that we address that pain. If we had pain receptors in the brain, we would be really in trouble because we just couldn't think straight most of the time.

The problem with that is that it's very hard to understand the health status of your brain, that we have no access to what's going on inside the brain, so if the brain is in trouble, we don't know, and we will not know until there are symptoms that become evident in terms of behavior, or movement disorder, or insomnia.

Basically we need a deficit to know that the brain is in trouble, and that also speaks to prevention really. We should not wait that long because that means that whatever is going on in the brain that's causing the symptom has reached an impasse, a threshold that just makes the brain itself unable to deal with that.

So by the time you get to that point, you have a disease, or you have a condition that is severe and its attention.

**Shawn Stevenson:** And now we're able to look- again, look at the organ that was so hidden and so protective, and you can see where the potential areas might be, or potential areas of trouble, and you can prescribe a certain plan of action based on that.

**Dr. Lisa Mosconi:** Yeah, for sure. We do, the Alzheimer's Prevention Clinic that I'm the Associate Director of, we do brain imaging on all the patients in my studies, and those I used to do at NYU for 12 years before I moved to Cornell.

And in younger people it's rare to find like an actual severe problem, but it's very common to find aneurysms that are growing brain tumors. They're so common. They're so much more common than anybody would imagine. And they're not necessarily malignant, you know?

They could be benign but it's something that requires attention, and if you have some symptoms of memory loss and confusion, it's very likely because something is pushing against your brain and it's creating issues. Or hydrocephalus, when you have too much fluid inside your brain. Or brain inflammation, that's a problem. Or brain atrophy is something we need to address.

And a lot of things that happen in the brain are really related to food and to food choices because the brain uses neurotransmitters to communicate- for brain cells to communicate with each other.

They use neurotransmitters like serotonin, which I'm sure you talk about in your book, dopamine, acetylcholine, which is the neurotransmitter that makes memories inside your brain. And they're all built on food, on very specific nutrients that the brain needs in order to make these neurotransmitters.

**Shawn Stevenson:** I hope that you're enjoying his compilation this far, and we are just going keep taking it to another level. Next up, we've got New York Times best selling author Max Lugavere.

And Max just really hit the scene with a passion and a mission to really help to educate the public about brain health. And again this was really inspired by dealing with a really tragic situation with his mother and her being stricken with a neurodegenerative condition. And so his research and his ability to communicate is really world-class.

And in this clip, he's going to be talking about why cognitive decline does not have to be your fate highlighted in the finger study, alright, the finger study. What does a finger have to do with the brain?

So this was an incredibly well done study and this finger stands for the Finish Geriatric Intervention study to prevent cognitive impairment and disability, that's why we say Finger, it's like Shield, right if you're a Marvel fan, it's like Shield is a Strategic Homeland Intervention Enforcement and Logistics Division, just what is called Shield. Alright, so the Finger study. So check out this awesome clip from the incredible Max Lugavere.

**Max Lugavere:** Yeah, so the Finger study is the world's first-ever large population, about 1,200 people enrolled in that study, and it's ongoing, long-term randomized controlled trial which really provides the best evidence to date that cognitive decline needn't be an inevitable aspect of aging.

And in my book, I'm not just reporting on research that I've read, I actually have been to both the Karolinska Institute in Stockholm, Sweden where the study is run out of, as well as where the intervention is being run in Helsinki, Finland.

So I've been there, I've interviewed patients that are enrolled in the study, I've interviewed the lead researcher.

And what's so fascinating about this study is that it shows that even in old age, if you have at least one risk factor for the disease, by adhering to a full battery of dietary and lifestyle interventions, so cleaning up your diet, exercising more, engaging socially with other people, you can significantly improve the way that your brain works.

Again, even in old age. So I mean this population in the intervention group compared to the control group, there was an 83 percent improvement in executive function, which is one of the most important aspects of our cognitive processes.

Probably more important to a person's overall success than IQ. And then there was a 150 percent increase in processing speed, which is one of the earliest domains to be affected by aging.

When I first started to notice these symptoms in my mom, it was very clear that processing speed was affected, and it was affected dramatically in my mother.



But everybody typically to some degree has a decrease in processing speed as they age, and what's very interesting is that when you're young, and you take these steps, you can significantly improve your processing speed, which is again so critically important.

I mean, I highlight- just to make the leap to another study that I talk about in the book, from University of Georgia, they found that when giving young college students, who are already thought to be at the peak of their cognitive prowess, certain nutrients— lutein and zeaxanthin, which are two carotenoids, they were able to achieve a 20 percent increase in their visual processing speed.

So our brains are so plastic, we know this, you've talked about this on the show many times, but rather than kind of keeping this notion of neuroplasticity within the realm of abstraction, I think it's like so important that people realize how this can actually improve their quality of life and their efficacy as people in the here and now.

**Shawn Stevenson:** With all this data so far we see that we are very powerful and capable of impacting positive change with our amazing brain. Now with that said, just going back to the conversation with Dr. Lisa Moscone, she's one of the people who found out, "Okay, what foods, what nutrients can actually cross the blood-brain barrier and feed our brains?" And it's just a couple dozen.

You know, we've got hundreds if not thousands of different nutrients but the brain itself is very, very choosy. It's a choosy lover— what is going to be able to cross over and actually feed your brain?

One of the things that she shared on that episode, and by the way, all of these episodes will be there for you in the show notes if you happen to miss any of them and you want to get the full meal. But one of the things that she shared was saturated fat.

Obviously in the media-saturated fat has been drug through the mud, we know that that story is wildly incomplete, but jumping to the other side and saying that eating a bunch of saturated fat is going to feed your brain isn't accurate, because even though your brain does have a nice percentage of saturated fat most of that saturated fat that makes up your brain is developed in adolescence and in infancy and also when the brain is developing in the womb.

So your brain is very hungry for saturated fats, in fact breast milk can be somewhere in the ballpark of 30 percent up to upwards of 50, 55 percent saturated fat, because the brain does need it so much, until we reach adulthood.

And those saturated fat gates that open up and let it in, are closed and they get locked. And so very little of the saturated fat that we eat makes its way past— with the exception of this special category.

So we've got a long chain, medium-chain, short-chain. The medium-chain fatty acids are still capable according to research at Yale University, they publish data purporting that MCTs can actually cross the blood-brain barrier and be utilized by brain cells.

That's one way that the brain is able to utilize that fuel. Another way is the fact that MCTs go directly to the liver and then spark the creation of ketones which that is able to cross the blood-brain barrier and feed our brain cells to the degree that a study published in the annals of the New York Academy of Sciences sought to find out that MCTs can actually have an impact on improving the condition of patients with Alzheimer's disease.

Now this is something that's said to be incurable and also you can improve from it, once it gets its grips on you. But this is just not true. It's now well noted that Alzheimer's disease is consistently accompanied by an impairment of glucose uptake into the brain, it's kind of insulin resistance in the brain.

This is why some experts are calling Alzheimer's type 3 diabetes. And so what the scientists discovered was that MCTs are quickly metabolized and they found that the consumption of MCTs directly led to improved cognitive function in mild to moderate forms of Alzheimer's and cognitive impairment.

We got improvement by utilizing MCTs. So clearly this is something that is fuel for the brain and it's been found to actually help and support aging brain cells and to improve their function. So, with that said, where do you get MCTs?

So obviously, there are MCT products out there all over the place, I'm a huge fan of the emulsified MCT oils from Onnit, because they're kind of like a coffee creamer, they just make stuff taste good. They can be added to smoothies, to your coffee, to your tea a really simple and remarkable way to get these inside of your body so they can work their magic.

And so I'm a big fan of the Almond latte flavor, my wife loves the vanilla, they also have strawberry, coconut they've got savory ones that you can utilize for salads and more savory dishes and things like that.

So pop over there, check them out, its [onnit.com/model](http://onnit.com/model) that's [.O-N-N-I-T.com/model](http://O-N-N-I-T.com/model), you get 10 percent off everything they carry, including the MCT oils which I literally use every day, I even travel with it, I love it so much. So pop over there, check them out [onnit.com/model](http://onnit.com/model) and take advantage of these MCTs, because it's real brain food.

All right, so let's move on with our compilation. Next up we've got a conversation with somebody who just had a big impact on my thinking the last couple of years as well Dr. Steven Masley.

And he's a medical doctor who's just really stepped forward as somebody who's helped to restructure our cultures thinking around fat and the importance of fats in the diet for your brain, for your heart and for your metabolism.

And so in a recent conversation we really focused more on brain health and we talked about food but we also talked about how chronic stress can impact our brain and that's what he's going to be talking about in this clip. So check this out from Dr. Steven Masley.

**Dr. Steven Masley:** Well when we're stressed out, and I'm not talking about good stress like

getting on a show with somebody, or something. That gives us a challenge, and I like that. Those kinds of short-term things we get to do.

But the stress I think of is harmful is that day after day, chronic stress. You know, we're in a bad relationship, or we hate our job, or something's just driving us nuts, and it's all the time. When we're stressed out like that, our cortisol levels shoot up really high, and cortisol can literally shrink the memory center of your brain.

So what we want is good quality sleep, and we want to work out to burn off some tension. And we need some peace and calm to raise our endorphins. So I like purpose and challenge in our life.

So some stress, but we have to proactively manage it by a good workout each day, a good night's sleep, and some peace and calm that we schedule every day and make sure they happen.

**Shawn Stevenson:** Next in our compilation, I can't do a show about brain health and a compilation of experts without having one of my favorite people of all time Dr. Wendy Suzuki.

And she's a neuroscientist, and she's working currently at NYU and she's been one of the people really pressing into popular culture the connection between exercise and brain health and also meditation and brain health.

And so in this clip with Dr. Wendy Suzuki, she's going to be sharing with you 3 profound ways that aerobic exercise affects your brain and admittedly, this is something that we're talking about aerobic exercise I was a little bit allergic to for a while but just hearing this information and understand that even one dose of some kind of "cardiovascular driven exercise" each week you can get a lot of really potent brain benefits. And so we're going to kick to this conversation with one of my favorite people Dr. Wendy Suzuki.

**Dr. Wendy Suzuki:** So cognitive enhancement refers to the good stuff that the brain does. Can we make that better? And so what does exercise do in that realm?

Well, probably number one it is improving your ability to focus, focus and shift your attention, an issue for anybody that struggles with ADHD and just anybody, because we're just bombarded with so many different things.

And it's a great value to be able to choose what you focus on and let everything else go. That is enhanced with exercise. Why?

Because the growth factors and the hormones and the endorphins that are surging in your brain after exercise and that go up as you increase your cardiorespiratory function, help the prefrontal cortex work better.

They help the synapses make new connections, and some studies show even that the axons are growing and are getting stronger and you're basically strengthening these neurons in the prefrontal cortex. So that's one area of cognitive enhancement.

The second is what you mentioned is the hippocampus. So the hippocampus is one of only two brain areas in the adult where brand new brain cells are born in adulthood, and the only thing that you can do today that will enhance that is to up your physical aerobic exercise.

Because aerobic exercise enhances growth factors and it's those growth factors that really seem to go up specifically in the hippocampus, and they help the brand new neurons that will grow even if you're a couch potato, but they'll help more of them grow and integrate and those new neurons work better than the old neurons that have been in your hippocampus since you were born.

They're kind of like teenager neurons. They're all excited and they get all into joining different memory circuits and they help your memory work better. So you want as many of those as possible. And the third major area is mood, and mood is one word.

Of course, mood is positive mood, negative mood, everything is going on there. And what exercise is doing is stimulating the release of serotonin, dopamine, adrenaline, endorphins that are all hormones and neurochemicals that are enhancing good mood. And so who doesn't want more of that?

**Shawn Stevenson:** Next up in this compilation on how to support having a better brain is one of my all-time favorite episodes. This is one that I put together as a master class on the muscle brain connection.

I couldn't just leave it to the conversation of aerobic exercise, cardiovascular exercise being the only good thing for the brain. I really dug into the research to find out there's got to be some other benefits for different forms of exercise with improving our brain function. And so wow, it blew my mind.

And the folks who are to listen to that episode, it blew their minds as well just to hear all the incredible impact that various forms of exercise can have on a neurological function in our brain health.

And so in this clip specifically, I'm going to be sharing a part where I talked about the importance of balance training, doing different forms of exercise that focus on balance and the influence that it has on your overall brain function. I think you're really going to enjoy this clip so let's jump to this clip from me on the solo episode talking about the brain-muscle connection. Check it out.

**Shawn Stevenson:** And this is another big part of the muscle brain connection and what type of exercise our brains crave in order to be the fittest, healthiest that they can possibly be. And this is highlighted by a 2017 study published in The Journal scientific reports that reveal that balance training, balance training improves memory and spatial cognition in healthy adults. Balance training.

Have you ever thought about that? Is that something that you proactively are engaged in, balance training working on your balance? Because there are some big benefits.

Now, we mentioned the hippocampus earlier, the hippocampus belongs to this ancient part of the brain known as the limbic system and this plays an important role in the consolidation of information helping to convert things from your short term memory to your long term memory, as well as spatial navigation. Okay, spatial navigation.

So this has to do with you being able to navigate your body throughout your house, to move around the coffee table, that kind of thing but also to be able to navigate your car throughout your city, the spatial navigation, we have these this internal Google Maps, all right, and it's constantly being upgraded or downgraded based on our lifestyle decisions.

One of the things that have been found to improve that map system is doing balance training, your brain needs this.

So basically study participants who did balance training twice a week for 12 weeks with a trainer had significant improvement in memory and spatial navigation than the control group who did not do anything.

Now this includes single-leg exercises for example, a dual leg exercises also, both feet on the floor on various surfaces. You can have resistance incorporated so maybe you're doing one leg stance and you've got some resistance, maybe it's a band pulling you in a different direction, but being able to engage with those types of resistance and that kind of stimuli literally improves your memory and your spatial navigation.

And so this can incorporate things like wobble boards that are kind of popular right now, bosu balls, different pieces of equipment as well. But it just gets me thinking again, what does your brain expect? It doesn't just look for that same push-pull motion that we find in typical gym equipment, we need to be more functional, more adaptable.

Through our evolution we are balancing on things, maybe you're walking across a log to cross a creek or a small pond or something like that or climbing trees or just needing to be able to be kind of light on your feet an agile and balance through different terrains.

Maybe you're climbing mountains and things like that, gathering herbs, I don't know, but the thing today we don't have that. And a lot of stuff that we do is very typical, push-pull motions which is all good, but we need to think about balance training as well because there are some huge benefits again activating these genetic, these kinds of epigenetic triggers in our brain for better results.

**Shawn Stevenson:** Alright, we've reached the final part of our better brain compilation and this is from a conversation I had with Dr. Robert Lustig. And he wrote one of my— it just changed my thinking, *The Hacking of the American Mind*.

And he was really known prior to this book for being the physician who is really out there, purporting the powerful impact that sugar has on our brain and on our metabolism.

And so he shifted gears and looked at some of the other lifestyle factors that really affect our cognitive function and also just the development of our brain itself. And so one of the things that he's talking about is that we're currently living in a very dopamine-driven environment.

And so dopamine is really about seeking pleasure and that's not a bad thing, it's just when that button keeps getting pressed over and over again, what tends to happen is the pendulum swings the other way and we find a lot of unhappiness and discontent and really a state of the opposite of driven is lethargy and being complacent.

And so how do we address this, how do we not just seek pleasure but how do we actually find overriding happiness? And that is more driven by a different neurotransmitter called serotonin.

And so in this clip, he is talking about how we can optimize our serotonin level so we can experience more happiness and not just be driven to experience pleasure and then these recurrent crashes. And so specifically he's got 4 key elements that he's sharing to fortify your serotonin. So check out this clip from Dr. Robert Lustig.

**Dr. Robert Lustig:** So the goal is to tamp down your dopamine. I mean dopamine's okay, I mean pleasure is alright, it's not like I'm against pleasure, but not all the time. I mean make it special.

Constant consumption, constant searching for pleasure makes people very unhappy. Ask any addict. So tamp down your dopamine and up your serotonin, and hopefully lower your cortisol.

Those are the three things that we want to sort of do to try to preserve our brains, our function, our lives, our families.

And it turns out that the things that do that, the four things that do that are things your grandmother told you, and they're all free, and anyone can do them. But you have to do them. They're all active.

You have to perform them, you can't just let them happen. So you have to be aware of them, you have to understand them, you have to understand why they work, and that's the point of the book.

So I call them the four C's, each one starts with a C, we'll start with number one. Connect. Interpersonal connection. Eye to eye connection. Not phone to phone, not computer to computer.

It has to be eye to eye, and the reason for that is because there is a set of neurons in your brain called mirror neurons that actually read the expressions of the people that you are talking to and translate it into empathy, and empathy is read out by a specific area of the brain which drives serotonin production.

So in the process of achieving empathy, we ultimately achieve happiness. So visiting a sick friend, helping a colleague with a problem with eye to eye contact. It's one of the reasons religion works. So there are a lot of religions, and they all work.

If it was about religion, then only one religion would work, or none of them would work depending on how you feel about God. They all work, and the reason is not because of the religion per se, but because of the interpersonal interaction that occurs when people get together around a common interest and belief. So it is that interpersonal interaction that drives the contentment of religion.

Here's the problem. Facebook does not drive contentment. It does not drive interpersonal interaction. You can not have a relationship with anonymous. And those 'likes,' all they do is generate dopamine.

So it's almost a trap, if you will. So understanding connection, and if you don't understand that and you think that somehow using your devices provides connection, basically you are what Sherry Turkle at MIT calls "being alone together", and I couldn't agree more. So that's number one.

Number two, Contribute. Now, contributing does not mean to your bank account. Okay? You have to contribute to outside yourself. You have to contribute to making your world in some fashion a better place.

Can you get contentment from your job? And the answer is absolutely 'if,' and there are two 'ifs.' If you can see your work helping others, and if your boss can see it too, then you can derive contentment from your work. And hopefully people are gravitating toward jobs where they can do that. But otherwise, you have to find some other mode of the contribution that will work for you.

And it can be various things. It can be volunteerism, it can be philanthropy, it can be manifestations of self-worth. Saving leads to contentment, spending leads to reward. So being able to save, and use cognitive restraint and being able to actually amass a bank account will actually provide contentment rather than spending it, which ultimately does not. So the concept of contribution.

Third, Cope. And cope is three specific things— sleep, mindfulness, and exercise. Each of those tamps down cortisol. If you are sleep-deprived, your cortisol is going great guns, you are basically frying your neurons and you're getting hungrier because cortisol is a direct stimulator of appetite. Therefore driving all of the diseases of insulin resistance, driving diabetes, hypertension, cardiovascular disease, etc. Not good.

So getting enough sleep, and the problem is that if you sleep with your cell phone in your room, you're getting 28 minutes less sleep than if you charge your cell phone out of your room. Cell phones are a slot machine in your pocket.

They are driving dopamine, they are not helping you cope. Mindfulness. So we all prize this phenomenon we call multitasking where everybody has to be able to do ten things at once. Well it turns out only 2.5 percent of the population can actually multitask.

Everybody else is just unitasking and just changing gears in the middle. And what that does, is that drives up your cortisol, and you end up doing none of your jobs well, and all you do is hurt yourself in the process.

So the idea that you can actually dissociate your different responsibilities and bend them so that you can accomplish each one in turn, and not looking at your cell phone, because that's the ultimate distraction. To keep your cortisol down in order to be able to keep your neurons working, that would be a really good thing.

And then finally, exercise. It turns out exercise has many benefits, none of which have anything to do with weight loss. There is not one study, anywhere on the planet that shows that exercise causes weight loss. If anything, exercise causes weight gain because exercise builds muscle, and muscle weighs more than fat.

So you can lose fat, gain muscle, build mitochondria, thereby improving insulin sensitivity, improving mitochondrial function because now you have newer and more mitochondria. All good, but not because you lost weight.

And this is the biggest myth in this whole business. It is that you can somehow use an app to try to increase your level of physical activity. None of them work. So this is another sort of rabbit hole that people have gone down and can't get out of.

So the concept of using exercise as a mode of improving contentment and improving your serotonin is very, very important.

And then lastly, the fourth one, Cook, for yourself, your friends, your family. Number one, it's connecting because you're sitting down with your family or friends at a meal. That's connection. It's contribution because you're contributing to something outside yourself. And it is coping because you are not eating something out of a box, and you should have to be mindful in order to be able to prepare a recipe.

So sitting down with your family and friends, and cooking food where you know what went into it, and there are three items in food that matter. Tryptophan, because it's the precursor of serotonin. Omega-3 fatty acids because they improve neuronal health, because they are important parts of the white matter that surround nerve cells called the nerve sheath.

And finally, fructose which there's too much of, that's the sweet stuff in sugar which actually depletes serotonin, ups dopamine, and drives metabolic syndrome. So if you cook a meal for yourself using real ingredients, you'll be getting more tryptophan, more Omega-3's, and less fructose, therefore more contentment, more happiness, more health, more life, more everything. And hopefully, we can turn this around.



**Shawn Stevenson:** I hope that you enjoy this compilation and that you got a lot of value from it. One of the things that Dr. Lustig shared was the importance of sleep for balancing our brain chemistry. And obviously this is something we've talked a lot about on The Model Health Show and I just want to reiterate a few key reasons why sleep matters so much for our overall cognitive function and our brain health.

And one of those reasons is because sleep is one of the most powerful ways that support your lymphatic system. And so remember we talked earlier about the blood-brain barrier, and the fact that certain nutrients can't make their way into the brain, it's very, very protective because something floating around in your bloodstream, getting into your brain could literally spell disaster and take you out.

The brain is such a sensitive organ. But in the same regard, getting toxins out of the brain is also not an easy job, because we don't want any kind of back loading happening with that detoxification process.

And so the brain has its own almost closed-loop system of detoxification and eliminations, it is called the glymphatic system run by the glial cells in your brain. So sort of like the lymphatic system for your body is kind of your extracellular waste management system, your brain has its own.

And it's 10 times more active when you're sleeping than when you're awake, that's when your brain really does its deep cleaning and getting rid of all, there is a tremendous amount of metabolic waste because your brain is firing, there are billions of things taking place in your brain every single second.

So with that said, this is one of the reasons why sleep matters, is that it's helping to clear your brain of all these metabolic waste. And looking at Alzheimer's, we're also seeing this parallel between that condition and an inability of the brain to detoxify itself, not just the insulin sensitivity of the brain, but an inability of the brain to clean itself.

And obviously sleep and sleep deprivation is a huge issue today in our culture. So another reason to really focus on optimizing our sleep. So that's one reason, it's the glymphatic system.

Another reason is that during sleep is where we get a lot of our memory consolidation and so specifically for our short term memory, so our events right now, things that you're learning and picking up really good consolidated and place into your short term memory in a stronger fashion when you get some sleep.

So specifically it's during REM sleep, a rapid eye movement sleep when we're often doing a lot of our dreaming is where we're actually consolidating our memories.

So it's pretty cool, and if you're missing out on sleep specifically REM sleep, it can be harder to remember stuff, you can even forget what happened prior to you going to sleep, this is why alcohol has such a huge impact on our memory and also our recovery is that it damages specifically our REM sleep and creates what's known as a REM rebound effect.

And so this is why we get to a place where straight just don't remember what happened. I know it's probably never happened to you, but maybe a friend of yours or a family member or something, but somebody might not remember what happened because of that break in taking what is occurring and consolidating it into your short term memory.

So that's another way that sleep is really a huge impact, a big player in our brain. And also improving their glucose metabolism, and so we know that just one night of sleep deprivation can lead to a heightened degree of insulin resistance in the brain and also reduced ability of glucose to actually reach the brain itself, so we'll see right around at least 10 percent drop in glucose reaching your brain, specifically from your prefrontal cortex, and that's a part of the brain responsible for social control, distinguishing between right and wrong, for executive functions, decision making things like that.

And that part of your brain literally starts to starve and we can find ourselves making poor decisions and being more stressed because that part of our brain is literally just tired and not getting fed. And so our brain can become crabby baby, if we're not taking care of it and optimizing our sleep.

And so again, I hope that you enjoyed this episode and that you got some new powerful insights that you can employ in your life.

And if you've enjoyed this, please share this out with the people that you care about on social media, you can tag me at shawnmodel S-H-A-W-N-M-O-D-E-L on Instagram, on Twitter, I pop in there from time to time. On Facebook it's at the model health show.

You can share the show with the people that you care about, you can even send them this episode via your phone or you can just text them the episode, there's a little button there that you could share the show with someone that you care about who might be interested in brain health, who might be interested in just getting a little better and feeling better, so share this out.

And also if you're watching this on YouTube leave a comment below and let me know what's the number one thing that you do personally to take care of your brain each day?

What's the number one thing that you've employed that you found to help you to have a clearer, sharper mind and just a better working brain?

Share with me below and I'll make sure to check it out and leave you response. I appreciate you so much for tuning into the show today, take care, have an amazing day, and I'll talk with you soon.

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