THE MODEL HEALTH SHOW

EPISODE 641

These 5 Things Can Shrink Your 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. Although the human brain only accounts for 2% of our body's mass, it actually consumes about 20% to 25% of the calories that we consume. It's a staggering amount. It's a very, very hungry organ and this is largely because of the metabolic needs of the neurons. The crown jewel of our nervous system. Our brain is buzzing with about 86 billion neurons and trillions of processes that are happening each and every second. So, it's going to require a lot of fuel to run these processes. Now, our brains are always working to grow and evolve and to create new connections, but there are some things that we can do today that is actually shrinking our brains. That's blocking this connectivity and making our brains get that teeny tiny.

Today we're going to through five specific things that can shrink your brain. Now, obviously this is going to be a huge problem because our brain is controlling so much of what's happening with our biology. Our brain is dictating what's happening with our metabolism, with our gut function, with our nervous system and our endocrine system, and how we feel. Our cognitive performance, obviously. The list goes on and on and on. It's really the governing force of our system-wide function. So, we do not want a brain that is experiencing shrinkage. Now, a big part of the understanding before we get into these five specific things is that we talk about the human brain and what it's made of, a lot of people realize today that the brain is predominantly made of fat. This is the dry weight of the human brain, because truly the human brain is mostly made of water. But the dry weight of the human brain is predominantly fat.

Now protein is closely behind in second and then we'll sprinkle in a little bit of minerals, but again, most of the brain, the structural integrity of the brain is fat. So, this should give us a clue as to what number one here is, which is, the number one thing on our list of five things that can shrink our brains is deficiency in Omega-3 fats. Now, just because our brain is mostly made of fat, it does not mean that all fats are created equal. Omega-3 fats have a unique ability to cross the blood-brain barrier and to actually aid in building and supporting our brain tissue, because they are known as structural fats. So, the brain itself is not made of storage fats, like, what we find downstream on our bodies, on the back of our arms, on our legs, on our bellies. These are largely storage fats that are reserving and storing energy. Whereas the brain is made of predominantly structural fats. Now, these structural fats are important because it helps our brain cells. Again, we've got about 86 billion neurons.

It helps our brain cells to be able to talk to each other, Which is obviously kind of important. Now, this is called signal transduction. If we're talking about one brain cell being able to talk to another and allowing this kind of electrical capacity as well, but also the structural fats,

Omega-3 specifically, help with kind of insulating and protecting our neurons as well. So, they're needed to constantly help to rebuild our brain cells, because what's largely known in neuroscience is that the brain cells that we get when we're much younger, many of them we have to sustain throughout our lifetime. Alright? We don't get a lot of new brain cells. There is neurogenesis, the creation of new brain cells, but most of the science that we have today has found that it's relegated to specific parts of the brain, namely the hippocampus or the memory center of the brain.

So, we've got to take good care of the brain cells that we have. Now, Let's get more specific on how these Omega-3s work and why they matter. Omega-3, specifically DHA. So, this is docosahexaenoic acid and EPA eicosatetraenoic acid, these Omega-3s get VIP access into the brain and they're used as building blocks to make up some of the main tissues of the brain, like, phospholipids. Now, this is why they're so important for the structural integrity of the brain. A study that was published in the journal neurology using MRIs revealed that people consuming the lowest amount of EPA and DHA, Omega-3s had the fastest rate of brain shrinkage. Again, people who are consuming the lowest amount of EPA and DHA, looking at their brains through MRIs they had accelerated brain shrinkage. This is why a deficiency in Omega-3, specifically DHA and EPA is one of the leading causes of accelerated brain shrinkage.

The researchers noted that lack of EPA and DHA in the diet was particularly harmful to the memory center of the brain. Again, we're talking about the hippocampus, which lost neurons at a rate equivalent to two additional years of abnormal aging. So, their brains were functionally and physically, actually looking at the brain structurally, two years older than what they should have been when the person was deficient in DHA and EPA. Now, does this dysfunction of the hippocampus, the memory center of the brain, does it show up when we're deficient in DHA and EPA, when we look at clinical data? Well, a study that was published in the American Journal of Clinical Nutrition discovered that increasing dietary levels of DHA was able to improve both memory and reaction time in test subjects.

So, we know that these Omega-3s have a direct impact on our memory and on our overall cognitive function. It is that important. Now again, we're talking about the building blocks of what the brain is made of and what we have some input on. Now the scientist who published the data on DHA and the brain shrinkage that we talked about a moment ago, stated that people who ate less than four grams of DHA per day showed the highest rates of brain shrinkage. While those who ate six grams or more had the healthiest shrink-proofed brains. Now again, this is something that we can create an insurance policy around and protect our brain from shrinkage. And the mission here is to make sure there were consuming adequate amounts of these Omega-3s daily.

Where are we going to find these? Well, researchers at Rush University Medical Center found that seafood is indeed the most dense source of DHA and EPA. And they found that adults who eat at least one seafood meal per week do in fact perform better on cognitive skills tests than people who eat less than one seafood meal per week. So again, just one serving per week helps us to hit that kind of minimum effective dose. Additionally, you're going to find these Omega-3s and grass-fed beef, pastured egg yolks, and fatty fish, like mackerel, trout, and salmon are all viable sources of brain healthy Omega-3s. Now, this brings in a point of clarification that we've got to talk about, because for years in my clinical practice as a nutritionist, I had folks coming in, I would have everybody coming in, get on to some dense sources of Omega-3s, largely plant forms. So, chia seeds and flaxseeds and hemp seeds and hemp seed oil and flaxseed oil and my intentions were good. Alright?

I knew the Omega-3s were there. It was very simple to see. But when I finally looked at the peer-reviewed data and the efficacy of those Omega-3s versus animal forms, I found something really shocking. The Omega-3s that were found concentrated in those plant forms were not DHA or EPA, they were ALA. Now this particular type of Omega-3 fat is more akin to what will be used as energy for the body, right, a storage type of fat, not used as a structural fat for the human brain and this is why it's not used as a structural fat for the human brain. This is why we can have as much chia and flax as we might want to, but this is not going to protect our brain from experiencing that shrinkage. And this is also why it's so important, if we're on a plant-based protocol to make sure we're getting in DHA and EPA the best way that we can.

Now, here's something else that I did learn as well, is that our bodies can convert... Because the body is always trying to find a way to evolve and adapt. The Omega-3s that we consume from plant versions, the ALA our bodies can actually convert some of it into DHA and EPA, but it's a tiny amount. We're talking about upwards of 5% at most. So, you'll have to consume a buttload of Chia seeds, flax seeds, hemp seeds and the like, to try to meet the amount of DHA and EPA that we truly need. It is not very efficient in doing so. And also, even that 5% is going to depend on the health of our microbiome, it's going to depend on our unique metabolic fingerprint and how our bodies kind of make these conversion processes happen, based on our genes. So, this is not a surefire thing that we want to rely on. And so, if we're dedicated to doing a plant-based protocol, we want to make sure that we're looking towards algae oil or maybe even what has some clinical efficacy would be something like, krill oil, which is a microscopic shrimp. But even more than that, looking at Omega-3s overall for everybody, most studies are actually done utilizing fish oil.

That's what the majority of peer-reviewed studies are done on. Now, I had a conversation with NYU neuroscientist Dr. Lisa Mosconi, who's actually looking at the brain and studying the nutritional impacts on our brain health. And she shared with me that the very best natural

source of DHA is actually going to be found not in fish, but in fish eggs. So, this is why something like caviar is so prized for so many cultures. And also, of course, it can be pretty extravagant and expensive as well. But here's what you shared with me, is that... And this is called fish roe. If we're talking about fish eggs, again, like caviar, it's called fish roe. Fish roe have upwards of three times more DHA per gram than the best fish sources out there. That's pretty remarkable. Smaller amount, much more bang for our buck. Metabolically speaking and also again for our cognitive health.

Now, the big thing here is when we're talking about getting viable sources of fish roe, it is finding something that's cost-effective, but also, being able to maintain quality and freshness. Now finally something that I'm taking advantage of, it's actually made from 100% wild-caught fish from fish runs and pristine waters. And is sourced from sustainable-minded fishermen and they're committed to preserving fish runs for future generations. And their wild-caught fish roe is actually gently freeze-dried to keep the full range. Because these Omega-3s are also fragile. So, it's actually protecting them and helping to keep the full range of nutrients and omegas intact and undamaged. And plus, this is what's so cool about fish roe, wild-caught fish roe, specifically, is that it also contains choline, selenium, vitamin E, C, D, and also phospholipids. These are all brain building and brain protecting compounds and it's all in there together naturally in wild-caught fish roe. And I'm talking about the incredible wild-caught fish roe from Paleovalley.

It's 100% pure. No fillers. No binding agents. And again, they're doing stuff the right way. Go to paleovalley.com/model, you actually get 15% off their incredible wild-caught fish roe. It's a game-changer, when it comes to DHA and accessibility of the highest densest source of DHA that most people again, have never had access to, because it could be so expensive. They found a way to make it cost-effective and also, maintaining the integrity and the quality. So again, go to paleovalley.com/model. That's P-A-L-E-O-V-A-L-L-E-Y.com/model, 15% off. Alright? So again, this is what's in my cabinet right now, highly, highly recommend it. Now when talking about the importance of these Omega-3s, I mentioned earlier that they used to make one of the structural fats of the brain called phospholipids. Now this is a category of fats that are present throughout our entire body, but much more so inside of our brains.

And it's an invaluable structural fat. It helps to give our brain cells shape, strength, and elasticity. And phospholipids are made almost entirely out of Omega-3s, EPA and DHA. Again, echoing how important this is to protecting our brain and making it shrink-proof. Alright, so that's number one on our list these five things that can shrink our brain. I'm going to move on to number two and number two on our list of things that are clinically proven to shrink our brains is, carrying excessive amounts of belly fat. A brand-new study published in the Journal of Neurology found that as the size of our waist gets bigger the size of our brain tends to get smaller. Specifically, they found that the grey matter of our brains shrinks considerably as

we're packing on more belly fat. The authors of the study noted that this area of our brain that's getting shrunk is responsible for things like, self-control, muscle function, and sensory perception. These things are kind of important, if we're going to be living and thriving in the world.

Now, again, as our waist size expands, the size of our brain shrinks. Now, let's take a peek behind the curtain and see what's going on here, and what can be the mechanism making this happen? Well, scientists at the Albert Einstein College of Medicine reported that inflammation in the brain and belly fat are intimately connected. They reported that, as our waist is expanding, as we start to grow excessive body fat, that can lead to more brain inflammation. And inflammation in our brain as the researchers indicate can actually cause metabolic dysfunction leading to excessive body fat growth. So, it can become this vicious circle. Specifically, the author has noted that it's hypothalamic inflammation. So, this is inflammation rooted in the hypothalamus, which is often considered to be a master gland in the human body.

Now, why is this so important? Because the hypothalamus is an integration spot in our bodies for our endocrine system, our system of hormones and our nervous system, right? So, what is allowing us to modulate and monitor the environment, both internally and externally. So, these are marrying each other the data is in the hypothalamus. This is why it's so important and this getting set ablaze can start to cause all of this downstream stuff to happen, right? It can create a wildfire in the body. And so, if we're looking at what is a potential mechanism here, as to why the brain is shrinking? And it has a lot to do with inflammation. Now, what's one simple thing that we can do to help to supplant this issue? Well, we know that again, excessive belly fat is leading to inflammation in the brain, inflammation in the brain can lead to excessive belly fat. We need to put the fire out. Alright? So, start to heal a spot in that vicious circle, so that it's no longer a vicious circle.

And one of the things that has been found to actually help to reduce neuroinflammation and repair this communication is rooted in a time-honored fat as well. Researchers at Auburn University found that oleocanthal rich extra-virgin olive oil is one of the few foods ever discovered that can help to reduce brain inflammation and also repair the blood-brain barrier that is degraded through our modern diet and lifestyle. So, there's something really remarkable about olive oil. Go figure. Again, it's been utilized by humans for thousands of years. And it's such a prized and deeply understood oil that our ancestors would actually store it in dark containers. Even today, when you buy olive oil, it's very likely going to be in a dark glass bottle. You're not typically finding it in plastic unless it's extremely low quality, because of course, it's the nature of the plastics itself and fats being able to leach off some of the metabolic disrupting hormone, disrupting compounds that are in that plastic, but also the fact

that if it's not a dark bottle that oil is also going to be exposed to things that can break it down, because The olive oil is also photosensitive.

This means that light can break it down and cause it to oxidize. And when we have an oil that is oxidized, it's going to be just overflowing with reactive oxygen species, these pro-inflammatory compounds and start to increase the incidence of oxidation within ourselves and inflammation within ourselves. Now what other oils do you tend to see out there on store shelves that are bottled in clear plastic bottles? It's going to tend to be "vegetable oil" and much lower quality oils that are... Is as well the same as olive oil, they're light and heat sensitive. But even to create a vegetable oil out of something like corn or soy or canola oil, they have to be processed at high heat. Already reactive oxygen species, oxidation, inflammation, all of these things that that very delicate oil is going to be degraded and damaged before we even get it in front of us. And then we consume that, it might be a problem.

And one of the studies that I mentioned in my book Eat Smarter was published in the Journal Inhalation Toxicology. And they found that even smelling the fumes from vegetable oil while cooking is enough to damage our DNA. Alright? So, it's not just the consumption via our mouth, but even inhaling these very, very toxic compounds can start to create some abnormalities. If we're talking about our DNA and we're looking at our genetic blueprint, what we're doing is, is we're seeing a shift, an epigenetic shift that is causing some degradation, alright? So, we want to careful about that stuff and we had an incredible episode talking about vegetable oils with one of the leading experts in the world on the subject Dr. Cate Shanahan. We'll put that for you in the show notes. It's one that you do not want to miss. She's going through study after study after study and also looking at how the very makeup of the human fat Cell has changed dramatically in the last few decades because of our rampant consumption of this newly invented highly refined oil source. Okay?

So that is versus what's been used for thousands of years, processed at low temperatures, and bottled with intelligence and efficacy. And that's what we get with something like olive oil. Now, being that it is light and heat sensitive, do we want to cook it at high temperatures? No, no, we don't. We might not want to cook with it very often at all. So, how will we use it? Well, this is going to be utilized for finishing dishes, you know, drizzling some olive oil on after the dish is completed or plated, making salad dressings, drizzling some on, you know, some sourdough or something like that, but just finding other ways to have it in its natural state.

And of course, we can cook with it, but we want to be very mindful of the temperature. We don't want high heats for sure. But in my personal opinion and experience, if we can get in some olive oil that is not denatured in any way, it's going to be better for our brain. Alright? So, just wanted to add in a little bit of an action step that we can do today to help to kind of reduce that neuroinflammation and again, this brain shrinkage that happens via excessive

body fat growth. It's helping to create a break in that vicious circle. All right, now we're going to move on to number three on our list of five things that can shrink your brain and number three is, dehydration. According to data cited in the Journal Neurology even short-term dehydration, literally reduces our brain volume. Now this makes sense, because upwards of 75% to even 79%, 80% of the human brain and also depending on where we are on our lifespan is going to be made of water.

Alright? It is the substance that literally makes up the majority of what you see when you look in the mirror. We're mostly made of water. We are water beings. Alright, we're out here Aquaman, Little Mermaid-ing it up. Alright? We've just kind of evolved and put the aquarium inside of ourselves versus walking around in one... In a way we still are because even the air itself of course, carries moisture. And so, just understanding, we are water-based beings and water is critically important to maintaining the structural integrity of our brain and also our cognitive performance as well. Because good news in that study, they found that proper rehydration, keyword proper, I'm going to talk about that, is able to rapidly restore our brain volume.

Now, let's talk about the cognitive decline that can happen, again, just as a result of dehydration. A recent study that was cited in Medicine and Science and Sports and Exercise found that just a 2% drop in your body's baseline hydration levels can lead to impairment in tasks requiring attention, motor coordination and executive function, which... This includes things like, grammatical reasoning, proofreading, mental math. Alright? That's already hard enough, but when we're dehydrated, we start to lose the capacity to make executive decisions, executive functions. And this is also leaning towards if we're talking about our choices in life. Our executive function helps with decision-making from distinguishing between right and wrong for social control. When we're dehydrated, it's a time when we're much more likely to make a poor-quality food choice.

And so again, this is just getting back to why water matters so much. It just really helps to keep the lights on, it helps to make everything work better. Now, I mentioned that proper rehydration helps to rapidly restore brain volume that is lost when we're dehydrated. And what I'm talking about is water that has structure, water that has electrolytes, because electrolytes are minerals that carry an electric charge. And this goes back to signal transduction and our brain cells being able to communicate and share data. It's highly based on Omega-3 fats and electrolytes. And the brain is critically dependent upon electrolytes just for basic functioning, let alone when we optimize our electrolytes, things start to work a whole lot better. For example, take sodium, one of the most important electrolytes. Not only does this electrolyte help to maintain proper water balance in our brain, so it helps our brain to stay hydrated, we need sodium for our cells to be able to maintain hydration.

A study conducted by researchers at McGill University found that sodium functions as an "on-off switch" in the brain for specific neurotransmitters that support optimal function. And sodium is required to help to protect the brain against numerous diseases, like, epilepsy. Now, let's take a look at sodium downstream. Again, this is deeply connected to our brain if we're talking about our metabolism. A study conducted by researchers at Harvard Medical School and published in the Journal Metabolism, found that a lack of sodium intake directly increases insulin resistance in healthy test subjects. Now, how could that happen in our society when we have so much highly refined low-quality salt in our foods? This is because most people are eating according to the BMJ, about 60% of the average Americans' diet is ultra-processed foods. That's where they're getting all this low-quality salt.

When you shift gears and you start to eat more real foods and not fake foods, you can start to have a decline in the amount of sodium that you're getting. Now, there is a difference of the source of sodium as well, by the way. Alright? Sodium itself is not one thing. There are different versions of different salts. For example, there are sodium salts, there are potassium salts. There are magnesium salts. These are all electrolytes and there are many different versions of those depending on where they're coming from. We tend to think very black or white, very... Just the chemical makeup of the thing and we don't look at the natural source and the cofactors that come along with that specific electrolyte. Another critical electrolyte. This was published in the Journal Neuron. Found that magnesium is able to restore critical brain plasticity and improve cognitive function. Now neuroplasticity is essentially the ability of our brain to change and adapt.

This is obviously something that we want to maintain the capacity to do. And so, this is why magnesium is so important. So, the three major electrolytes and deficiencies We're looking at, are sodium, magnesium, and potassium. And I'm saying deficiency, specifically, because of the quality, high quality sources of these things. And this is why for myself, just about every day, hardly a day goes by that I'm not utilizing the electrolytes in that specific combination, but also the ratios of each of those are based on hundreds of thousands of data points and also, now they're working with all these different professional sports teams and all this stuff and they're getting all this incredible data on performance, not just cognitive performance, but sports performance. And I'm talking about the electrolytes from LMNT. Go to drinklmnt.com/model. That's drinklmnt.com/model and you're going to get a free gift with every electrolyte purchase.

Now, LMNT is absolutely in a league of their own. There's no nefarious sugar coming along with the electrolytes. There are so many different electrolyte products and of course, like, the old-school stuff, the Gatorades and Powerades, all that stuff, but even now people that are trying to do... Companies that are trying to do stuff the right way they're still adding sugar. Why are you doing it? That's not what we need. As a matter of fact, sugar... We're going to talk

about in a moment. Let me... I'm going to pump my brakes on that, because I don't want to even get into it yet, but the bottom line is, that's something that we don't need with the important electrolytes that we're trying to get. And so, also, you know, artificial flavors and artificial colors and all that. None of that stuff with LMNT. They're doing stuff the right way and the sourcing of their electrolytes is what's most important, from earth-grown sources.

So, again, go to drinklmnt.com, that's drinklmnt.com/model. You get a free gift, free sample pack with every single purchase. Right now, I'm vibing with the raspberry, but they're going to give you a sample pack, so you could find out what your favorite is. Alright? My wife really likes the chocolate salt. Alright? So again, go to drinklmnt.com/model. And now we're going to move on to number four on our list of these five things that are clinically proven to shrink our brains. And number four is, excess alcohol consumption. It's well documented that long-term heavy drinking can cause higher rates of brain shrinkage. But a 30-year analysis published in the BMJ found that even moderate drinking can have similar effects.

The researchers used MRIs and uncovered that even moderate drinking over the long-term causes shrinkage in the memory center of the brain. Now, the amount of shrinkage the researchers found was directly related to how much the person drinks. They were just going parallel with each other. The more we drink, the more shrinkage happens in the brain. Now, I do not want everybody to get up in arms, if you're into getting your sip on. It's not about that. It's about being informed and being empowered, because it's just something that's normalized in our culture to drink alcohol, absolutely. And there is some efficacy there if we look at again, long-term use by humans. But what can happen obviously today? There's such a variety that the excess, the access and the cultural pressure and acceptance is one of the reasons that people tend to not think about the issues that alcohol can have. That's a very, very powerful psychoactive substance.

And just because it's legal and you can get it, you know, when you go out or when you go to a sporting event or whatever the case may be, when you go out to eat, we don't really think about the fact that this is a psychoactive substance. Very, very strong and actually more people die from alcohol related dysfunction and damage than many of the most criminalized narcotics that are out there, like, put together. And so, we need to put this in a proper perspective and my main point today is just giving us this insight, because this is what the data indicates is that it's one of those substances that can very easily shrink our brains. And part of this is that alcohol is able to cross the blood-brain barrier and enter the brain very quickly, thus the psychoactive effects of it. Now alcohol is also in a category of documented neurotoxins. So, it's known to be toxic to the brain.

Now, this isn't stacking up. It sounded very good for alcohol, but again, keep this in perspective. A little bit occasionally, it's not an issue, you know? But that's not what tends to be seen in our

society right now. A meta-analysis published in the Peer-Reviewed Journal Brain Behavior and Immunity had the scientists stating, "alcohol abuse not only induces inflammation in the body and brain, but it also causes significant changes in immunity and Increases susceptibility to a variety of infections." So, it even damages our immune system, which again, if we're going back and talking about the importance of our brain health, our brain has such a huge impact on our immune system function, it's all connected. But we tend to separate things into parts, in modern science, which is so, so lacking efficacy and it's literally tearing our bodies apart, literally.

Because if we look at an immunologist, very rarely do they understand that the neurologist and what's happening with your brain, these things are intimately connected. As a matter of fact, if one thing is happening with one of those, it's happening with the other. If one of these are getting damaged by inflammation, the immune system is experiencing dysfunction, it's definitely happening in the brain as well. Alright? We can't isolate ourselves into parts and we tend to look at where we're having a problem, we just focus on that thing. We have thyroid problem, thyroid, let's go ahead and cut it out, provide a drug, whatever the case may be. I have a thyroid issue. Your thyroid is connected to everything else in our bodies. And so, it can be something that's upstream or downstream that is contributing deeply to the thyroid dysfunction, right? The thyroid is along this hypothalamic pituitary adrenal axis, which is also, along that axis is our ovaries and our testes.

And when we have dysfunction with the thyroid, all of these other organs, every cell in our body is affected. But also, when we have dysfunction in just about anywhere in our bodies, our thyroid is going to be affected as well. So, we've got to start to think of ourselves more holistically. And that word holistically, unfortunately in our society today, it has been turned into a kind of soft science or soft way of articulating things. But in reality, it's the way that nature works. It's the way that humans work. We are a whole being, holistically, we are a whole entity. And to isolate us into parts is negligent. And so, again, getting back to this point with alcohol shrinking our brain, yeah, if we test for it, we're going to find that there's going to be immune dysfunction as well. Whatever we test for and look at from this thing that can deeply damage the function of the brain, we're going to find evidence for it. The thing is, today, are scientists are asking the questions. Are they getting backing and funding to actually research this stuff, which today it's very difficult?

Because most clinical trials are funded by drug companies today. If it doesn't have something to do with giving you a new pill, a new little, you know, little stabby, stabby, they want no parts of it. Why would they? They don't want to find out how to not need their sh*t. And so, again, our system has really become so dysfunctional, even predatory in the way that it's constructed. And we can take back our power when we understand information like this, when we understand that alcohol is in fact a neurotoxin, and if I'm going to expose my brain to this

neurotoxin, I need to do this in an intelligent fashion. I need to stack a lot of other conditions in my favor, and I need... Just need to be responsible, incredibly responsible when interacting with it.

Now, I actually think one of the things that can be empowering and understanding like, why do we have this attraction towards alcohol? Well, one of the first big effects when we drink alcohol is that it triggers the release of endorphins. You feel good. Feel good molecule. We feel good. And these feel-good compounds are the reason why light to moderate drinkers tend to feel more relaxed, sociable, and even happier when drinking. But as you know, depending on your alcohol metabolism, tolerance, the health of your brain, your microbiome, the list goes on and on, your psychological state going into it, that feel-good aspect can transition into darkness, right? And so, again, just being aware of, like, why does it feel good? It feels good because of those reasons. It starts to trigger the release, because of its impact on our nervous system, our brain and neurotransmitters and its interaction in the hypothalamus and the release of certain hormones, endorphins, makes people feel better, you know, more sociable, all those things.

Now, here's the rub. Even short-term, because that's a short-term benefit that we might experience, but even short-term overconsumption of alcohol can trigger alcohol poisoning and interfere with parts of your brain that are responsible for basic life support functions, such as breathing, such as regulating our body temperature and our heart rate. Every day around the world, a significant amount of people are dying from alcohol poisoning and it's a short-term overconsumption. Oopsie, accidentally had too much. It's because it has such a profound impact on our brain. All those things I just listed are regulated by our brain. So, I wanted to share this. I know that this one here can lean into a little bit of discomfort, because obviously it's such a popular part of our culture today, but I just want you to be aware that alcohol in and of itself, it is a very interesting compound, because it has such a vast array of effects on human biology.

Now, if you want to add another little bit of a leg under the belief of how alcohol is impacting our biology and our performance, let's talk about alcohol in relationship to our metabolism, because this loops into, you know, what they call it? They call it a beer belly, beer belly. Why? What's happening? Why is alcohol something that can contribute to that so rapidly? Well, the consumption of alcohol triggers a phenomenon called fat sparing. Fat sparing. This is because unlike carbohydrates, unlike fats, unlike proteins, right? These very popular macronutrients, alcohol is a macronutrient as well.

Your body can use it for energy, but unlike those other three, your body can't store alcohol, so it has to use it immediately, immediately. Alright? And it's dangerous to be circulating in the bloodstream and in your brain, so your body's going to use it very quickly. But it halts the use

of everything else. Stops it. Fat sparing. You're not going to be burning fat. If alcohol is on the scene, no, no, no, no. Spares the fat from getting used because alcohol is here and it's a little tipsy. Alright? So, the stacking conditions here, understanding, like, our intimate connection with this substance that again, it's just a part of our culture. We need to be more mindful of it, because the metabolic impacts, the cognitive impacts, the impact on shrinking our brain, a lot of people simply don't know about. So, now you've got this information in your hand and what you do with it is up to you. Alright, moving on. We've got number five here on our list of five things that can shrink your brain, and this one is sugar.

The brain operates on glucose. So many processes, we... Again, 86 billion neurons, trillions of processes happening in the brain. Glucose is needed to drive so many processes. However, too much of it, too much sugar, too much glucose can be devastating for our brain. Harvard researchers have found that high blood glucose levels can affect the brain's functional connectivity, which links the brain regions that share functional properties and our overall brain matter. The researchers found that it can cause our brain to atrophy or shrink when we consume excess sugar. Now, what's going on here? Why does sugar have such an impact on the brain? Well, I mentioned at the very beginning of the episode that our brain is only about 2% of our body's mass, but it can consume 20% to 25% of the energy that we take in via our food.

Specifically, researchers at Harvard also found that your brain will gladly confiscate about half of the sugar energy that you put into your body. Alright? So, we'll just say you drink yourself a 20-ounce bottle of Coca-Cola, getting 60 to 70 grams of sugar. We're talking, you know, 14 to 16 teaspoons. That's a lot of sugar. Half of that, your brain is going to confiscate. Alright, we talk about this phenomenon of a sugar high, but we don't really... We don't really get it. Like, no, for real, this is getting shuttled to your brain and it's changing stuff rapidly. And so, it's just understanding through our evolution as a species, we never had access to anything like a Mountain Dew, Code Red. We never had access to Skittles. We never had access to any of these things, these very, very dense, concentrated sources of sugar ever, ever.

And not just that, we're not talking about a whole formed version of sugar, naturally occurring like honey. We're talking about a highly refined sugar that we're extracting; we're putting through all these processes to extract from sugarcane or beets or corn. We've never... This is a new thing that's only happened in the last few decades, this rampant exposure. About a 100 years ago, the average Westerner was consuming upwards of about six pounds of sugar annually. Today, the average Westerner is consuming upwards of 80 pounds of added sugar, added sugar, we're talking about the refined sugar that's added to the foods. We're not even talking about the naturally occurring sugar that's found in all of the carbohydrate-based foods

that is the majority of the average person's diet today. So that's taken us well over a 100 pounds of sugar consumption per person each year.

And so, what is that going to do to our brain? Of course, it's going to start to change the way that our brains are actually made, the structure of our brains. It's going to cause rampant brain shrinkage and it's going to cause rampant dysfunction. Have you noticed some people out there, don't seem to... Like, their brain is just like, working right. Alright? This is not a joke. This is happening to so many people in our society wondering why we have rampant rates of mental... What we label as mental health dysfunction and dysfunction with each other and ourselves, how we relate to ourselves, our ability to think for ourselves, our ability to perspective takes, our ability to contemplate, our ability to take a meta perspective, to step out of our current situation, our current viewpoint and to look at the bigger picture. And to even put ourselves in someone else's shoes and understand others.

Have you seen a decline in recent years and humans doing that and us connecting with each other, right? So, this is not an accident. We're literally changing the way that our brains are working in just like, as instant. As far as our development as a species, it's such a tiny amount of times that we've been doing this and we're seeing the ramifications of it. It's not an accident. And we think that these people just have a problem. We're fine, whatever. So often we don't realize that we're a part of the problem. Like, we have difficulty understanding someone else, because we're not well. The healthier that we get as a species, the easier it becomes to have patience, to understand someone else's perspective, even if they're wrong. This is not giving people an out here, if they're doing criminal acts or thinking in a way that is not advantageous to us as a species and also themselves.

We're just talking about the ability for us to understand. Saint Francis of Assisi said, seek first to understand and then to be understood. But so often, we're just concerned about ourselves. We're just operating straight from that primitive part of our brain and wondering why. Because our brains are f*cked up. We're not healthy. We're not well. How are we going to solve our biggest problems when we are not well ourselves? Our outer world is a reflection of our inner world right now. It's always like that, but especially right now. And this is why this show, what I do, my lifeline is tied to getting our citizens healthier. And when I say citizens, I'm talking about our world family. That's how we solve our problems. When we are well, it's exponentially easier to solve our problems, to solve conflicts. If we're not mentally and physically well, we're going to struggle deeply to solve conflicts. It's just...

Listen, don't take my word for it. Researchers at Oxford University set out to find if providing more essential nutrients to young people who are in a construct of having a tendency already towards violent offenses, we're talking about people in a ward study as prison inmates. So they already have this apparent disposition towards doing what society considers to be wrong

activity. So, researchers again, at Oxford University set out to find if providing more essential nutrients to young male prison inmates would have an effect on violent behavior and misconduct? They completed a double-blind randomized trial that provided one group of inmates with essential nutrients, essential fatty acids, multivitamin, not the best, of course, the synthetic version of these nutrients, but key nutrients nonetheless, while the other group received a placebo. Here's what they found. After the four-and-a-half-month study period, the disciplinary offenses enacted by the young men receiving additional nutritional support dropped by 35%.

This was nearly 30% lower than the drop in offenses in the placebo group. And what was especially eye opening was that violent incidents in the inmates receiving nutritional support dropped by 37%. These findings were so remarkable that many people in the scientific community didn't believe that that was even possible. So, another group of scientists repeated the study, and this was published in the Journal Aggressive Behavior, and they found much the same results. Their results were right on par with the Oxford researchers. So again... And the reason was because, so-called rehabilitation programs, classes and therapy and different ways of punishment and forced behavior change, nothing, nothing was remotely close in all the decades of analyzing scientific approaches to rehabilitating inmates. Nothing was remotely close to what could happen with changing their nutrition. So again, this isn't just idealistic talk.

This is real, and we know it. We know that when we don't feel well, it's very difficult to do well. When we don't feel well, it's much more likely for us to be irritable, to be impatient, to lack understanding. And the opposite is true. When we feel good, it's much easier to be patient, to be understanding, to perspective take, to be able to look at the big picture and understand in the context of those inmates, for example, if I do this action, this negative thing is going to happen. I don't want that negative thing to happen. Let me not do that thing. This is why you see the violent offenses drop. This is why you see the behavioral offenses overall drop, because of the ability to perspective take, to have a meta perspective, to have forethought in all of these capacities that dramatically get suppressed when we're deficient in key nutrients.

And also, again, fueling on the opposite side, fueling our biological and metabolic processes with abnormal, excessive, dangerous amounts of sugar. Now, looking at what is specifically happening with brain shrinkage in regard to sugar, recent research from the Yale School of Medicine revealed that a glucose rush can shrink mitochondria in our brain cells. This data that was published in the Journal Cell found that a heavy glucose load was, and here's what the researchers stated, we found that systemic glucose administration decreased mitochondrial size. Glucose also, excessive glucose, promotes mitochondrial fragmentation and also, glucose-induced mitochondrial fission in our neurons. So, this is like, again, the separation of them versus fusion, right? Fusion is coming together. And so, really looking at our mitochondria shrinking and also being fragmented. None of that sounds good, from this input with sugar.

And again, the only reason we're getting this data is because there are people out there, there are scientists, there are human beings who are asking these questions. And what they're doing is just revealing what we already know. We know that sh*t is not good for us, but now we're just stacking conditions on understanding why that is. To help the analytical part of our brain or the non-trusting part of the brain or the part of the brain that wants to deny. And so, we're doing whatever it takes for us to create a healthier relationship with our own minds and bodies, so we can make healthier choices. Because regardless of the circumstances we find ourselves in, which when I transformed my health, I was inundated with processed food at every turn. Every fast-food chain you can name was within a two-mile radius of my home in Ferguson, Missouri.

As soon as I walk out of my apartment complex, the very first thing that I see is a big ass liquor store with all processed foods up and down the aisles and obviously the liquor. First thing I see. And then as I walk on, more liquor stores, more low-quality food establishments, you know? And just other things that really create a culture of sickness. And so, even within that dynamic, I was able to become well. I was able to start to see that my conditions were deeply impacting my outcomes and I choose other than. And so, over the years, I worked to be in a position to change that. And that's so much again, a part of the work that I do is, I'm thinking about my friends and family, and the people who come from where I come from who simply don't know, we just... We don't know that this is happening to us. And so, again, this is about empowerment. This is about education. And what are a couple of things we could do here in this context with sugar shrinking our brain? Well, we can practice sugar distancing. Social distance.

That was brought into our lexicon recently. And what we know from the data from real heart tangible science, the most effective way of supporting our immune system and preventing infection is reducing our exposure to abnormal amounts of sugar. There's an entire field of immunometabolism that's demonstrating how our overall metabolic health is impacting our immune system. But also, even deeper than that, the fact that our immune system itself has a metabolism, our immune cells themselves have their own metabolism and it can be dramatically disrupted and become dysfunctional via this exposure to abnormal amounts of sugar. So, sugar distancing. Alright? This doesn't mean we've got to cut sugar out of our lives completely, but just minimizing our exposure, you know?

If we know, for example, that we're consuming maybe 200, 300, 400 grams of carbohydrates of sugar a day, you know, just being able to cut some of that down, right? Cutting it back to 300, 200, 100, depending on where we are right now, but just, keeping a little bit more distance between ourselves and our chronic sugar intake. Again, this does not mean that we have to eliminate sugar completely. This does not mean you have to take all of the sugar and sweetness out of your life, but we have to be aware of the impact that it's having on our species,

specifically on our brains. And also, there's this very unique compound that's found in many different plants. It's called Berberine and it's available in supplemental form. And it was found to, "significantly protect mitochondrial function by rectifying the imbalance of fusion and fission in mitochondrial dynamics." Now this was from a study published in Frontiers in Pharmacology.

So, this is one of those things if we're talking about shrinkage of mitochondria in the brain, it's a very interesting compound to be able to potentially protect the brain against that, but also potentially help to heal. So, I just want to throw that in there as well. There's so many wonderful things that are found in food. That's the bottom line. Food has it because we're making our brain cells out of the food that we eat. What if we eat higher quality stuff? We're determining the function of our metabolism, of our immune system by the fuel that we're giving ourselves. What if we start to provide ourselves with the very best stuff? And truly food is information, real food. And I hope that you got a lot of value out of this episode. And if you did, please share this out with your friends and family. You can send this directly from the podcast app that you're listening on. And of course, you can take a screenshot of this episode. You can share it out on social media and tag me. I'm @ShawnModel on Instagram and on Twitter.

I'm at The Model Health Show on Facebook, but the bottom line is, we need to get this information into more people's hands. And thank you so much for being on this mission with me. We've got some incredible masterclasses and world class guests coming up very, very soon, so make sure to stay tuned. Take care. Have an amazing day. And I'll talk with you soon. And for more after the show, make sure to head over to themodelhealthshow.com. That's where you can find all of the show notes. You can find transcriptions, videos for each episode. And if you got a comment, you can leave me a comment there as well. And please make sure to head over to iTunes and leave us a rating to let everybody know that this show is awesome. And I appreciate that so much. And take care. I promise to keep giving you more powerful, empowering, great content to help you transform your life. Thanks for tuning in.