

# **THE MODEL HEALTH SHOW**

**EPISODE 540**

**Fat-Burning Brown Adipose  
Tissue – Clinically Proven  
Strategies To Boost The  
Production Of Your Brown  
Fat**

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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. On this episode, we're going to be talking about up-leveling a hidden dimension of your metabolism. We're looking at the field of metabolism, the field of obesity and treatments for obesity, insulin resistance, and things of the like. We tend to have tunnel vision in our modern way of viewing these things. We often look at what are we doing proactively. For example, we tend to think that we're burning a lot of fat when we're getting out there and exercising our tushies off. Shout out to tushies, that's something my grandma used to say. But we're just out there getting after breaking a sweat, going hard, and we think that we're burning a lot of fat then, and of course, we do know that there's a metabolic uptick that takes place post-exercise but still what's going down for us psychologically is when we're hitting the exercise really hard, or even when we're modulating and constantly managing our diet, but cumulatively, even for folks that are doing this stuff at a consistently high level, you combine your exercise time and the time that you're eating, for example, together, that's just a couple hours of the day tops, for most folks.

We'll just say two hours. That leaves another 22 hours that you're not tinkering around with those things. And what healthy metabolism, healthy metabolic function is all about, is what's happening in those other 22. It's not just about the two, which of course, we know that exercise and we know that having optimal nutrition is going to be a major player in our overall metabolic function, in our health, our body fat ratio, and the like, but it's really about what's happening all the time when you're not proactively doing those things. So, we're talking about having an optimal metabolic rate. This is the rate at which your body is expending energy, whether you're doing activity or whether you're at rest. And that's the key, it's what your metabolism is doing when you're not "doing" anything. And a major overlook factor that you're going to be able to up-level in your own life, in your own body, is the overlooked science and understanding of our brown adipose tissue, brown adipose tissue or BAT for short, brown adipose tissue. Now, what is this miraculous, seemingly miraculous brown adipose tissue, what is it actually? Well, brown fat cells are a type of adipocyte. Most folks think about adipocytes in terms of, our white adipose tissue, our energy-storing cells that we have, so our white fat can turn up as our subcutaneous fat that's located just beneath our skin.

This is what we largely see on thighs, butt, back of the arms. And also, you can have some on your belly as well, but it's the kind that you can get a grip on. Then we have the visceral storage fats or visceral white adipose tissue, which is more the deep abdominal type of fat. We also have intramuscular storage fats or white adipose tissue that really function as on-site resources for our muscle to function, but they still have this kind of dichotomous action of one being fat, and one being muscle and muscle doing the thing of movement, burning energy,

and the fat providing that energy. Now, brown fat cells are again, adipocytes whose metabolic machinery is geared towards burning fat instead of storing it. So, it's a type of fat cell that is geared towards... Again, it's a metabolic machinery, which you're going to learn about today, is geared towards burning energy rather than storing it. The main function of brown fat is to generate heat, that's what it's there for. And actually, this is why babies, this is why infants have a significantly high level of brown adipose tissue, and also a little fun fact, hibernating animals. Sorry, or animals. Sorry.

So that's how I used to say animals when I was a shorty. So hibernating animals. So, when a bear is going to getting his snuggle on, up in his bear cave, he has a lot of brown adipose tissue. We'll just call him Smoky. Alright, we'll just call him Smoky the Bear. He has a lot of brown adipose tissue, so he's able to sustain that optimal thermic regulation or that thermic level so that it doesn't die. So, it's keeping the body heat at the right temperature to sustain life. And so, for human babies, as infants, we have a much more substantial ratio of brown adipose tissue to protect us from hypothermia, yet as we grow older, that ratio tends to diminish quite a bit. And another little fun fact is that babies, a big reason that babies also have a high ratio of brown adipose tissue is they can't shiver to generate heat. Alright, that's right.

Many times, people don't think about stuff like this, but babies can't shiver as far as shivering to warm themselves up or to indicate that they're cold. Whereas for us, we get these muscle contractions, these on and off contractions taking place to spark and generate heat when we are shivering, but babies are yet to lay down the muscle necessary to trigger this reaction. So, we've evolved to have a higher ratio of brown adipose tissue to keep us at that right temperature to help to regulate our temperature when we're little babies, little babies. According to a collaborative study conducted by researchers in Australia and China, brown adipose tissue is a major thermogenic site in humans and other mammals, and it's estimated that the heat produced by brown adipose tissue is up to 300 times higher than what's produced by most other tissues of the same weight. That is nuts. Alright, again, when I'm saying that brown adipose tissue has this role, this thermogenic role in regulating temperature and expending energy, creating heat, I'm not exaggerating in the slightest.

Now, here's another big insight for today that we're going to be talking about. Adults with higher levels of brown fat tend to be slimmer, having a lower ratio of white adipose tissue than those adults who have low levels of brown fat. And the great news leading into our topic today is that our ratio of brown fat that we carry is changeable. This is something that we can have an influence on. Now, let's talk about why brown fat is brown. Brown fat achieves its distinguishing brown color thanks to its extremely high concentration of mitochondria. Mitochondria are really regarded as these metabolic power plants within our cells that are there creating energy for all of our cellular functions. And brown fat is just teaming with mitochondria. Now, let's actually compare the composition of a brown fat cell to the

composition of a white fat cell, or again, a brown fat adipocytes or a white fat adipocytes. Within a white fat cell, there is a single large lipid droplet. This lipid droplet is essentially a reservoir for storing energy. And in a white fat cell, there's one big old lipid droplet. And in fact, this lipid droplet is so big within a white fat cell that it essentially doesn't leave room for much of anything else. And it even crowds the nucleus of the cell to the edge of the cell.

And the nucleus is actually flattened in a white fat cell. Now, also, there's relatively few mitochondria present. Very, very few. Now, instead of having one large lipid droplet, a brown fat cell has several tiny lipid droplets that can hold energy. It also has more of a normal-shaped nucleus because it's not getting smushed by an extra thick lipid droplet. But unlike a white fat cell, a much larger portion of a brown fat cell is made up of heat-generating mitochondria. It actually expends a tremendous amount of energy, a tremendous amount of energy, compared to a white fat cell. Because of its ability to expend energy, to expend caloric energy, to burn energy or fuel, burn fat for fuel, brown fat is being studied like crazy right now for its metabolic effects. Maintaining a healthy amount of brown fat can be a key ingredient in a robust metabolism. Research published by the Garvan Institute of Medical Research found that once activated, just 50 grams of brown fat on your body could burn an additional 300 calories of energy in a day. That's without you doing anything different. Again, just 50 grams of brown fat on your frame can burn an additional 300 calories a day. 50 grams is right in the ballpark of about one-tenth of a pound of brown fat.

And you could be burning an additional 300 calories a day on automatic. Now, what if it was two tenths more or three tenths more? That's where we see this difference that we can recognize experientially, where somebody appears to have a "fast metabolism." We might have a friend or a family member that has a fast metabolism. It seems like they can eat what other people can't eat. They can exercise less, whatever the case might be, and they seem to have a different metabolic blueprint, a different out-picturing of their body. Why is that? And also, we might have noticed this phenomenon in our own lives, as we get older, it becomes increasingly more challenging to do the things that we once did as far as eating certain things or "getting away with getting less sleep" and all kinds of things that tend to happen as people age. For example, somebody might feel like "When I was 16, I could eat whatever I want. I barely exercised. And I had this figure that I wanted. And now if I even look at my DoorDash app, I start feeling my butt get bigger." So, there's some kind of change that happens overall with our endocrine system, of course. Because our hormones are controlling much of this. But another one of those things that again, it's creating the metabolic fingerprint that we all have and how much energy we're expending, just on automatic, has to do with our brown fat ratio.

Also, just a little shout-out, and we're going to talk much more about this in upcoming shows, but the relationship of our muscle in this equation as well, and having more of a muscle-centric approach to our lifestyle versus trying to constantly battle fat. We need to focus more on

adding muscle and adding brown adipose tissue. There are several factors that influence how much brown fat we actually have and how well it does its job. And what you eat, and other lifestyle factors definitely play a part in this, which we'll get too soon. But first, there's another interesting thing that you need to know about brown fat cells. You can actually induce the creation of brown fat cells from other fat cells. There are actually precursors of brown fat cells inside of other fat cells. And you can induce them into becoming brown fat cells. Now, that's one aspect. Additionally, we have the more recently discovered beige fat cells. So, we got the white fat cells, we got the beige in the middle here, and then we've got the brown fat cells. There's diversity. Beige fat is fascinating, in that it appears to have the flexibility to act like either white fat or brown fat, depending upon environmental inputs.

According to scientists at Georgia State University, beige fat has potent potential to fight obesity in much the same way as brown fat by burning fuel rather than storing it. But beige fat, this is important, it's actually genetically distinct from brown fat cells. Brown fat cells are born from stem cell precursors that also produce muscle cells. Again, there's that connection there. While beige fat, on the other hand, forms within deposits of white fat cells from beige cell precursors. So, it's distinct. And again, it appears that certain lifestyle factors can influence the "browning of our cells" within our fat cell community. So essentially, we can help ourselves to get a tan. But this is getting away from the cookie-cutter understanding of metabolism, where we're trying to "burn fat and build muscle." There's so much more to this picture than this dichotomous thinking. Fat's the enemy. And we need to just get rid of it. And we need to build as much muscle as possible. We have all of these things for a purpose. We evolved to have healthy ratios of a variety of different types of fat cells and a variety of different types of muscle as well. And so, the closer that we can engage our bodies in our environment to get in alignment with this template of the human design, and this is going to do nothing but move us forward, not just with our body composition, but also our health overall.

Now, another question might come up, where the hell is brown fat located? Where is this brown fat? Well, brown fat on an adult human being is primarily found around the neck, around your clavicles, aka your collar bones, around your upper back region, and along your spine. Now that's where it is primarily going to be located. Now, let's talk a little bit about how does it actually work. Brown fat's ability to burn energy for heat is partly accomplished through a special protein called thermogenin. There's a special protein that's pretty unique here that is credited with some of its ability to do the magic that it's doing. So again, this being a special protein, when you hear the word protein, hopefully, it's conjuring up the understanding of how important our diet is because these things are literally built from the amino acids that we provide our system. So just put that in your back pocket. Now, in addition to the role of thermogenin, the major role player, again, is that brown fat contains a large number of mitochondria, which... And this is important. These mitochondria are enriched in uncoupling

protein 1. Uncoupling protein 1 or UCP1 is a transmembrane protein in the mitochondrial inner membrane and is exclusively expressed in brown adipocytes.

This is a magic that only brown cells, that brown adipocytes, brown fat cells have. Now, what does this mean? This uncoupling. Are we talking about breaking up? Kind of. The interesting thing about uncoupling protein 1 is that it can actually uncouple ATP, which is adenosine triphosphate. This is the energy currency of the human body, produced by the mitochondria. UCP1 can uncouple ATP production from lipid and carbohydrate catabolic pathways. So, both are the pathways that our cells are able to extract from our bodies and make energy. UCP1 can jump in here and uncouple from both of these processes. And again, this is largely happening in our brown fat tissue, because UCP1 is uniquely expressed here. And this leads to the conversion of chemical energy into heat. So, it's a little bit complex, these steps involved in this process. But just understand that uncoupling protein 1 is able to uncouple ATP in both processes, the process involved in glucose metabolism and fat metabolism. So, it's pretty cool. Now, let's move into what all of this actually does for us. We know that brown adipose tissue has this unique impact on our metabolism and can up-level our metabolic rate. But what does that mean for us?

Superficially, we've already talked about the overarching benefits that brown fat can have on our metabolism and fat loss. But the benefits actually go much, much further than that. The largest study of the effects of brown fat ever conducted was just published this year. The study published in the journal Nature Medicine examined 52,000 participants and found that those who had a detectable amount of brown fat were significantly less likely than their peers to suffer cardiac and metabolic conditions ranging from Type 2 diabetes to coronary artery disease, both of which are leading causes of death in the United States. They found that brown fat has this protective effect against some of our leading killers.

Now, to extract a study like this, the researchers wanted to be able to get a large data set. But they know that the average physician is not doing scans to try to analyze people's brown fat levels. So, the researchers found a center that was doing scans for cancers and were just like, "Hey, we know that you guys can also see brown fat ratios." Because they actually have to try to make sure that they are able to distinguish between the two, with brown fat having a certain appearance and cancer having a certain appearance. And so, while they were doing that, they went just like, "Hey, while you guys are doing that, can we just get some data on the brown fat while you're at it?" And so, they were able to put together this big data set. And we can extract the value from it. The study also noted something else really surprising, which was that brown fat may actually mitigate the negative health effects of obesity.

In general, obese individuals have an increased risk of heart and metabolic conditions. But the researchers found that among obese people in their study who actually have notable amounts

of brown fat, the prevalence of these conditions, heart disease, metabolic conditions, the prevalence of these conditions was similar to that of people who were not obese. Dr. Paul Cohen, one of the authors of the study stated, "It almost seems like they are protected from the harmful effects of white fat." They found that this brown fat, folks who are in a state of obesity, who have a notable amount of brown fat, are essentially being protected from the negative effects of carrying excessive white fat. It's pretty interesting. Another mechanism that they noted in this study was that brown fat cells consumed glucose in order to burn calories.

Again, that's that glycolytic, that's that carbohydrate metabolic process pathway. And it's possible that this automatically helps to regulate blood glucose levels. So, they're trying to find this tie-in, like, is brown fat one of the ways that we're able to modulate and manage blood sugar levels better? That's what the data is indicating. Another hypothesis that was being explored here in this data is that brown fat participates in hormone signaling to other organs, which could be optimizing system-wide metabolic performance. Which leads to another analysis that was published by researchers at the University of Michigan, the paper titled, The Brown Fat Secretome: Metabolic Functions Beyond Thermogenesis, analyzes the now established wide range of positive impacts brown fat has both locally and systemically in the body.

They detailed the influence brown fat has on the endocrine system overall, on the cardiovascular system and its protective effects there, and even the immune system. It's really remarkable, all the different areas that having a healthy ratio of brown fat can have an impact on. And so, looking at this again, this secretome is what brown fat is secreting. It's what it's...

Sorry. Shout out too Little John. It's what it's releasing and shooting out everywhere all over the body. And again, this is one of the most overlooked aspects of metabolism today, is not just targeting fat and trying to do away with white adipose tissue, but what are the underlying mechanisms that actually help to support and regulate our metabolism overall to have a healthy metabolic rate at rest and during activity? And also, the practical functionality of brown adipose tissue being able to keep us insulated and to keep us warm and to be able to adapt to our conditions. That's what it's about at the end of the day. And what have we devolved from being able to adapt to our conditions? Humans today, we're all about our creature comforts. We're hiding out from change. We're hiding out from environmental influences.

Even when we are eating healthy, we tend to eat the same stuff over and over again. And so that diversity when it comes to nutrition, the diversity in temperature exposures. All the things we naturally would have had, we don't have no more. So, these are things that we evolved to evoke. Our genes really expect us to activate this brown adipose tissue. And also, through

movement, through activity, as we're going to talk about. And I wanted to share one other little fun fact with you. Because when we think about the normal modality of "burning fat," it's a process because it's sort of like in my college accounting class, there's this acronym LIFO FIFO, Last In, First Out, First In, First Out, as far as inventory. I have no idea why I was taking this class, by the way. But when it comes to our metabolism, it largely functions as LIFO, Last In, First Out.

So, the thing that is readily available when you eat a meal is that food. Your body hasn't done all the work to try to convert that into human tissue. And so, it's broken down. And it can be used right there. So, it's the last thing in, versus the stuff that's already stored in your body, stored in your liver, glycogen, stored in your muscle, stored in your fat cells. So, Last In, First Out. What you bring in is going to get used first. So, if you're exercising to lose weight, to burn fat, you got to burn through the food that you ate, that was most recent. You got to get through that. Then you got to deplete the liver glycogen. You got to deplete the muscle glycogen. And then you get to fat. Now, there are some forms of exercise that can kind of bypass and get to stored fat faster, which is generally low impact, low-intensity cardiovascular exercise.

Like walking, for example, is a good way to access... Your body can actually access that because it's not needed for something that's very glycolytic and intense. So just a little fun fact there. But here's what's also important in this context. Because brown adipose tissue can immediately start to burn white fat, it doesn't have to go through the process of trying to deplete everything else. It just burns fat. This is another primary advantage and why this masterclass on this subject is so important. So, this can get right to that stored fat, that stored energy that a lot of folks are trying to get rid of today because here in the United States, I've cited this many times, we got upwards, it's getting close to 250 millions of our citizens are overweight or obese.

And nobody signed up for us to be in this position. It's just the way that things have devolved. And being more empowered and learning about things like this, like activating our brown adipose tissue and just improving our metabolic makeup, our metabolic machinery overall is a huge path to future success.

Now, let's dive into some clinically proven ways to improve the production and activity of your brown adipose tissue. Here we go. A study cited in the New England Journal of Medicine found that brown fat activity was activated in 96% of test subjects during cold exposure versus when they were in thermoneutral conditions. Thermoneutral being that "room temperature" where we always want the conditions at. Just them being exposed to cold, 96% of test subjects had their brown fat active. They got switched on. This is one of the primary things that folks know



about today. And one of the major benefits of cold exposure is improving the activity and production of our brown adipose tissue.

So, there are many ways to engage with this phenomenon. And we're going to go through a series of them. One of them is the el natural cold plunge. Finding a cold place and getting in that water. So, this is something that people would do historically. And a lot of folks, they're taking trips to go to the different places, maybe like Finland, for example, and to embark on a... In a lot of cultures, it's a part of tradition, it's a part of celebration, to go and take that cold dipper. So, cold plunge. And so, for example, if you got a swimming pool and maybe you got a little in-ground or the above-ground, whatever it is, and it's a little bit colder during certain parts of the year when you might have a heater to heat it up, don't. Just let that bad boy stay cold and use that for your cold plunge or cold dipper, replicating what would happen in the environment.

And also, you can do a contrast, where you're doing the cold then going maybe right to a sauna or going right to a hot tub for some added benefits there. So, there's also, in the data, some significant benefit seen with contrast of cold and hot. But cold plunge number one. Number two, ice bath. So, you can get all kinds of contraptions to take an ice bath. It's another way to engage with this, very, very popular now. There's even a show called Cold as Balls with Kevin Hart on YouTube. So, Kevin Hart. Shout out to Kevin Hart, Cold as Balls. He does an interview with people in the ice bath. It came out, I think a couple of years ago. But he's just trucking along. I don't know if he's still doing those shows. But they're very entertaining, to say the least.

And another way to engage with this is something that we talked about with Neuroscientist, Dr. Andrew Huberman, and the work that he's doing at his lab at Stanford University, in simply utilizing a cold shower, that can help to engage and activate this brown adipose tissue as well. In addition, there are whole body cryo chambers, so the WBCs out there where people can... You get into this contraption. It might be like literally a... They put you into a box and close the door. And you're like in the freezer or there somewhere. It's just basically from the neck down. And they're dousing you with nitrogen. So, it's colder than freezing water, than ice water. But it's not as visceral. It doesn't feel the same. It is definitely extremely cold. And it's for a shorter duration as well, generally, that you'll be able to handle this.

And so, you can extract some benefit there as well. There are several studies for... Everything that I've cited, we have multiple peer-reviewed studies citing the benefit of all these things, including there, was a study that was titled Salivary Steroid Hormone Response to Whole-Body Cryotherapy in Elite Rugby Players. 25 professional rugby players underwent a seven-day cryotherapy protocol consisting of two daily sessions. Saliva samples were taken each morning and evening. Here's what they found. Cortisol levels reduced after the two whole-body cryo sessions just after the first day. And after 14 consecutive days of the whole body cryo sessions,

cortisol, of course, was noted to decrease. But also, testosterone increased, as well as the testosterone to cortisol ratio. That's pretty remarkable.

The study stated, "We found that whole-body cryotherapy acutely affects the salivary steroid hormone profile. And the results are evident already after only one, twice daily session. Most significantly, after one week of consecutive twice-daily whole-body cryo sessions, all the hormones were modified that they were tracking. So, they were also tracking DHEA, estradiol, and other things. And they went on to say, "This is the first experimental report that links changes in the hormonal asset to whole body cryotherapy." Again, remarkable. And I love that people are asking these questions. Scientists are asking these questions. And actually, "Let's do some trials and figure out what it do."

Now, long-term mild cold exposure rather than just the intense cold plunge, cryotherapy, whole-body cryotherapy box or with water, long-term mild cold exposure can stimulate brown fat growth and activity in humans as well, simply just being in a cooler room throughout the day. Research published at the joint meeting of the International Society of Endocrinology and the Endocrine Society in Chicago detailed this experiment. The scientists explored the impact of controlled temperature acclimatization on brown adipose tissue and energy balance by following five men between the ages of 19 and 23 over a four-month period. So they're following them long-term over a four-month period.

The volunteers engaged in their usual daytime activities but slept in a private room in which the air temperature varied monthly, from 66 degrees Fahrenheit, which is 19 degrees Celsius, and 81 degrees Fahrenheit, which is 27 degrees Celsius. Personal temperature detectors monitored each volunteer's exposed temperature continuously over the entire four months. At the end of each month, the researchers measured the men's brown adipose tissue and energy metabolism and found that mild cold, so when the temperature was down closer to that 66-degree Fahrenheit level, increased the men's brown fat amount and activity. While mild warmth, so when it was up around 80 degrees, actually suppressed it.

So just being in a colder room over that period, even just sleeping in a cooler room can increase your production and activity of your brown adipose tissue. Pretty freaking remarkable. So cold exposure, that's number one, looking at what can we actually do to proactively increase our body's ratio and activity of this remarkable brown adipose tissue. Next step, we're going to look at how our nutrition impacts our brown adipose tissue. And this should be just a logical jump because what we're eating literally is what's making our brown adipocytes. It's what's making our tissues. It's literally made from the foods that we eat. And of course, the engagement with other cells is going to be heavily influenced by what we're making those cells out of, what's flowing through our digestive system, flowing through our veins. A fascinating study looking at the connection...

But by the way, I want to preface this by saying there's already been many notable aspects looking at coffee's benefit on human metabolism. But this study was published in Scientific Reports. And the scientists discovered that coffee may be able to influence the activity of our brown adipose tissue. Now, what they were detailing is, again, this potentiality of "browning of our other fat cells." And drinking coffee appears to actually nudge other fat cells into the fat-burning brown fat side of things. And if you just... For me, as soon as I read this study, I was just thinking about how brown coffee... You understand? Just that connection there, if we're looking at the doctrine of signatures, the sign of nature. And maybe it's indicating what it might be affecting in the body. This brown liquid substance, that's like one of the, of course, most consumed beverages in the world.

But also, when we're talking about coffee, we're not talking about the frappeed mapper slappachino or whatever is coming from that, with all the sugar and all that crazy stuff. We're not talking about that. We're just talking about coffee. That's what we're talking about here. Now, again, in addition to that, drinking coffee appears to nudge other fat cells into that brown fat cell category. Drinking coffee was also found, through thermal imaging, it was found to actually light up brown fat dominant locations on the body. So, they used thermal imaging, had folks drink coffee, and they could see brown fat lights up. Pretty remarkable. Pretty remarkable. Now again, the quality... And you're going to find out exactly why. Matter of fact, I'm going to tell you right now. I'm going to just tell you right now.

Part of having a healthy ratio of brown adipose tissue is avoiding things that suppress our brown adipose tissue. One of those being pesticides. This was published in the peer-reviewed prestigious journal, Nature. And they found that the pesticide Chlorpyrifos promotes obesity by inhibiting diet-induced thermogenesis in our brown adipose tissue. Not good. I'm sick of it. With the pesticides. How many bad things can they do? We got all this data, mountains of peer-reviewed evidence on these insane chemicals that are designed to kill stuff.

Now we found that it disrupts our metabolism through suppressing our brown adipose tissue. So even with your coffee, where are you getting your coffee from? Are you getting a piping hot cup of that Joe along with some steamed to perfection Chlorpyrifos? That's not good. It's taking the medicine with the poison. We got to upgrade things here, number one. Number two, we can upgrade our coffee by having it infused with other things that have benefits to our metabolism, like Cordyceps medicinal mushroom, like Lion's Mane medicinal mushroom. The University Of Malaya found that Lion's Mane is actually able to stimulate neurogenesis, the creation of new brain cells. Just remarkable.

You can have that together with an organic coffee. But the key here is, of course, as you know, if you've listened to The Model Health Show for any time, it's the dual extraction of the

mushrooms. So, one extraction method is not enough, hot water or alcohol extract. We need a dual extraction to actually extract the triterpene compounds, the beta-glucan compounds, the hormone side, and the antioxidant side. You want all of it. And there's so much goodness to behold when we're talking about these incredible medicinal mushrooms. This is what I have every day.

Today, I had Four Sigmatic Mushroom Coffee, organic coffee infused with... Today, I actually had the Lion's Mane Coffee Blend. So, it's the Lion's Mane and Chaga Organic Coffee. Now, of course, they have the instant mushroom coffee that comes in these little packets. I always travel with this. I got to be honest with you, it's been years. And I just recently, I just recently experienced the ground coffee itself, the ground mushroom coffee, using the slow drip.

I haven't... It's sexy. It's a sexy experience. I get it. I definitely get it. Now, of course, I still love my instant packs. And I'm going to ride with that. But it's a vibe. So, head over there. Check 'em out. It's [fourigmatic.com/model](http://fourigmatic.com/model). That's [F-O-U-R-S-I-G-M-A-T-I-C.com/model](http://F-O-U-R-S-I-G-M-A-T-I-C.com/model). You're going to get a very special discount, at least 10% off, maybe a little something extra. Pop over there, check 'em out. Coffee is one of those things. It has a resonance with our brown adipose tissue. It is what it is. Take advantage. What else do we have on the nutrition side? Well, a study cited in the journal *Frontiers in Physiology*, found that Capsaicin, an active compound in hot peppers was found to increase the activity of our brown adipose tissue. And it was found to also trigger the browning of white adipose tissue. Spicy.

Take advantage of little spiciness in your life. Add some spice to your life. These things, just thinking of these things logically, what would have this thermogenic effect? Well, we know that spicy foods have that effect, but also, we know that part of that experience is its interaction with our brown adipose tissue. So that one is pretty cool. Another one here is cholesterol. Cholesterol plays a critical role in the maintenance of your brown adipose tissue. Now, we talked about cholesterol in-depth in a master class that we did, looking at the form and function of the human brain because cholesterol is actually most concentrated in the human brain. But there's a lot of nuances here.

Now, cholesterol has obviously been demonized quite a bit. And there again, there's nuance here in understanding a potential downside. But overall, it's one of the most critical nutrients for the health of a human body. Because cholesterol is literally the precursor to making our sex hormones, for example. But also, cholesterol plays a key role in the maintenance of your brown adipose tissue. This is according to a large-scale study conducted at ETH Zurich. Now, again, there are many different types of cholesterol. We got to keep that in mind as well. And it's essential to know that cholesterol in food is not the same thing as the cholesterol that's in your blood. So that's a key distinction. But if we're thinking about cholesterol in food and its

resonance with the human body, one of these foods that might play a role here potentially with our brown fat is eggs.

So, I just want you to, again, keep that in your back pocket. This might be one of those things where... Again, several studies have demonstrated folks eating eggs for breakfast versus a carbohydrate meal... But again, it could just be the carbohydrate and the protein, and it could be a different type of protein, but specifically utilizing eggs in this study, found that folks being on the same caloric intake but having a different intake of eggs, or in this particular study, it was bagels to start the day, folks lost more weight, lost more body fat, lost more inches off their waist by having eggs to start the day versus the breakfast of the same amount of calories, but it was a carbohydrate-dominant breakfast. So, could the fact that the eggs themselves have this potential player here in brown adipose tissue activity?

So that's another food to keep in mind. But one of the things that... This is one of my all-time favorite things that I also have on a regular basis. I actually take this before the show, a lot of times. A study cited in the journal Obesity Research & Clinical Practice details how royal jelly, a phenomenal bee product reduces the harmful effects of diet-induced obesity and glucose intolerance by promoting brown adipose tissue thermogenesis in mice. This was actually done in mice. So really interesting research here. But couple that with another human study. This was published in Health Promotion Perspectives, demonstrating the effects of royal jelly supplementation on reducing body weight and dietary intake in Type 2 diabetic females. So, seeing this shift take place in metabolism versus when folks are not utilizing, just adding royal jelly to the mix does something positive with the metabolism. And it's likely pointing to its impact on brown adipose tissue.

Now, the reason that I actually utilize royal jelly and have been for years is based on the cognitive benefits. And this was published in Advanced Biomedical Research found that royal jelly has the potential to improve spatial learning, attention, and memory. Also, royal jelly has been found to facilitate the differentiation of all types of brain cells on top of all of that. And researchers in Japan discovered that royal jelly has a power to stimulate neurogenesis, the creation of new brain cells. But they found specifically in the hippocampus, which is the memory center of the brain. Again, there are a few things ever discovered that have all of these benefits. And the royal jelly that I have is from Beekeeper's Naturals.

They do stuff the right way. Again, the quality matters tremendously. And it is their B.Smart product. And it's amazing. B.Smart also has another one of my favorite things, Bacopa is in there as well. Go to [beekeepersnaturals.com/model](http://beekeepersnaturals.com/model), and you're going to get a very special 25% off discount right now. They just bumped it up. 25% off discount. Check out their B.Smart formula based on royal jelly. Their Superfood Honey is phenomenal. I can go on and on. Their Propolis Spray. Head over there. Check 'em out. [Beekeepersnaturals.com/model](http://Beekeepersnaturals.com/model). That's B-E-E-

K-E-E-P-E-R-Snaturals.com/model. You're going to get 25% off. Another easily accessible food today, and again, our ancestors were utilizing a variety of sea vegetables, sea veggies forever, for thousands of years.

But one of the most fascinating micronutrients found in sea veggies like Wakame, Hijiki, and Kelp is a compound called Fucoxanthin. Fucoxanthin. Research cited in the journal, Food Science and Human Wellness researched that seaweeds have anti-obesity effects. It can improve metabolic rate and increase satiety, specifically the seaweed Carotenoid, Fucoxanthin was found to boost the activity of uncoupling protein 1, that, as we discussed, enhances the activity of our brown adipose tissue while simultaneously supporting the reduction of white adipose tissue, specifically, they found from the waistline.

Kelp. You can get a full variety of sea veggies now at even traditional grocery stores, health food stores, and the like. You can get them in little shakers where you could just kind of shake, sprinkle on some Kelp Flakes or Dulse Flakes onto your meals, your solids. Maybe sprinkle on top of your fish, whatever the case might be. So, pretty simple to add-in. Kelp is one of my favorites. And it's noted here in this particular research. I'll share one more on the nutrition side. A study cited in the Journal of Nutrition found that the inclusion of more fat, specifically essential fatty acids has a potential to increase the amount and activity of our brown adipose tissue. Remarkable. Super easy.

Again, targeting foods that have a palpable ratio of essential fatty acids, Omega-3s, specifically DHA and EPA, are the major key alert here. So, this can look like high-quality fatty fish. This can look like eggs is going to be another source. Again, make sure that they're pastured and high quality. And as we move on, we got to understand that our plant sources are not going to have DHA and EPA. But our body can convert some of the ALA found in plants into DHA and EPA, but we lose a lot in the conversion process, so I would recommend supplementation if you're doing more of a plant-based protocol. Or you can even look at Krill oil.

So, Krill is going to be a great source of these essential fatty acids. And it depends on where your spectrum is with your ethics, if it's an ethical approach, with your nutrition. And also, from there, we have... Fish oil has really all the data. All the studies that are done in this capacity are really done with fish oil. And we also have... I'll highly recommend if you're doing a plant-based protocol to you get yourself an algae oil at minimum. Now, the rub is we don't have a lot of peer-reviewed evidence. We do know that the DHA and EPA is found there. But just as an insurance policy, because it's so critical for cognitive function, but also as we're mentioning it's critical for our metabolism.

Now, one more area. We talked about cold exposure. We talked about nutrition. And we even talked about avoiding things that damage or suppress our brown adipose tissue, like

pesticides. But one final category that I'm going to add to the mix for you today is utilizing one of the most studied things that increases our production and activity of brown adipose tissue, which is exercise. Moving our bodies. Part of the reason that exercise increases your metabolic rate overall, even when you're not exercising, isn't just that exercise potentially increases your muscle development. It also increases your production and activity of your brown fat. Irisin, which is an exercise-induced myokine is released by our muscles. And that actually helps to convert white fat into brown fat.

So, whatever kind of movement you're into is going to help to engage this, strength training, whether it's high-intensity interval training, low-intensity cardiovascular exercise, playing sports, going roller skating, just being active. We're going to help to engage these things. These are things that our genes expect us to do, where we get all of these additional benefits that aren't often talked about. So, it's not just for this superficial thing, which we all want to look and feel good, but for our psychology. So, to get out and to experience joy, to do things that we love, that just so happened to be active as well, you get this added to the mix. But definitely, things that get your heart pumping and that get your body temperature going, maybe breaking a little bit of sweat, you can rest assured that brown adipose tissue is getting engaged as well.

I hope that you got a lot of value out of this. If you did, please share this out with your friends and family on social media. And please tag me. I'm @Shawnmodel on Instagram. And I'm also on Twitter as well @Shawnmodel. On Facebook, I'm @themodelhealthshow. And, of course, you could send this directly from the podcast app that you're listening on or directly from YouTube. And I highly encourage you to pop over to YouTube if you're not checking out the video version, because you get to see all the studies on screen as we go along. I appreciate you so much for tuning into the show today. We've got some epic things coming your way very soon. So, make sure to stay tuned. Take care. Have an amazing day. And I'll talk with you soon.

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