

# **THE MODEL HEALTH SHOW**

**EPISODE 653**

**7 Mind-Blowing Benefits of  
Coffee – Fat Loss, Focus,  
Performance, & More**

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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 Seven Mind-blowing Benefits of Coffee. We're going to be talking about its impact on fat loss, cognitive performance, and so much more. Coffee is actually the most commonly consumed beverage in the entire world, yet there is so much uncertainty about its benefits and potential downsides. So, we're going to dissect all of that today. Now, this is coming from someone who was definitely not interested in coffee, personally. I was simply going by what the science was saying. For years, I kept putting the stiff arm to coffee, the Heisman Trophy vibes on coffee. And my earliest memories were my grandparents making instant coffee to start the day, and there were the commercials.

The best part of waking up, is Folgers in your cup.

The Folgers "best part of waking up." Those commercials were ringing true, because it seemed like it was one of the first things that my grandparents were doing each day, and I took a sip from my grandmother's cup one morning and I was mortified. I was just like, "How are these old people drinking this stuff? What is wrong with my grandparents?" And it shifted my reality in that moment, I just thought they were really into drinking nasty stuff, alright? But also, there was some beauty there because, when I was around nine or 10 years old, I'd saved up my own money and I bought my grandmother her favorite coffee, their Folgers Instant Coffee. And it was like a mini container, and I gave that to her as a Christmas gift, put a little bow on it, and she actually kept that container for over 20 years. And I remember seeing her not too long before she passed away, and she showed it to me, she pulled it out of the cabinet, it was there. So, there's a deep connection to coffee in my life personally, but still at that point, I was still not interested in drinking it, and definitely not the dinosaur version of coffee that my grandmother was holding on to. But what is it about coffee that creates so much intimacy and so much love, and why is it the most popular beverage in the world?

And let's start off by talking about, what is coffee anyways? Where did it come from? Where's its origins? Well, coffee beans are not actually beans, they're the seeds of a remarkable shrub that also bears coffee fruit or coffee cherries, is another name for them. And the origins of coffee traces all the way back thousands of years, to Ethiopia, where neighboring areas began crushing coffee beans and combining it with fat and making an ancient form of power bars. And eventually, it made its way to Yemen where making a coffee beverage from roasted beans was first documented.

Eventually, coffee became so prized that it sparked the opening of thousands of cafes in a remarkably short time span. For instance, England's first cafe opened in 1652, and by 1700, there were over 2000 cafes in London alone. An insane number of business ideas and businesses themselves were born from cafes, even the London Stock Exchange began its history in the offices of Jonathan's Coffee House in 1698. So, the story runs very deep, is cross-cultural. Coffee is transformed in its use and appearance over time, and now it's one of the most integrated parts of our culture as far as nutritive things that we're consuming as a people. And so again, asking the question, why is there such a resonance for this substance? Is it purely an additive factor, or is there something that's health affirmative about it?

And we're going to look at both sides of the conversation, we're going to take a look at some of the potential downsides, but I think you're really going to be shocked by the benefits that coffee holds within it. Now, we're going to start with the number one here. Again, on this list of seven mind-blowing benefits of coffee, number one is that coffee supports fat loss and metabolic health. After adjusting for a variety of confounding factors like age, alcohol drinking, smoking and physical activity, a study published in the Journal of Nutrition found that light to moderate coffee drinkers, this is one to four cups per day, had the lowest amounts of visceral belly fat compared to non-coffee drinkers and compared to heavy coffee drinkers as well. Drinking coffee appears to have a clear U-shaped curve of benefits, with a couple cups a day being good for your waistline.

Now, targeting visceral belly fat is something very specific that jumped out to these researchers. Again, they accounted for confounding factors like how much activity a person is doing each day, their age, their drinking habits. I'm talking about specifically drinking alcohol, smoking. And after adjusting for those things, coffee jumped out as something that has this propensity towards reducing visceral belly fat. So, the question is, what's happening? What's going on behind the scenes that can make something like this possible? Well, another study, this was cited in the American Journal of Clinical Nutrition, found that the caffeine in coffee can increase our metabolic rate by 3% to 11%, and most of the increase in metabolism is caused directly by an increase in the burning of fat.

Now, the interesting thing about caffeine is that it appears to work like exercise to our cells, and that it triggers the release of catecholamines that spark the release of stored fat to be used for fuel. So catecholamines include things like adrenaline, for instance, that has this ability to really open up our fat cells, trigger lipolysis, but also shuttle them to the mitochondria for them to be used for fuel. Now, this is just one of the ways that coffee encourages fat loss, again, in small to moderate amounts, but too much can downregulate the communication that we're talking about here with our fat cells, and you could see diminishing return in benefit. So again, a U-shaped curve of benefits.

Now, here's where it gets really interesting, in that one of the nutrients found in coffee called chlorogenic acid has been found to increase the breakdown of stored body fat while increasing the protection of our muscle tissue. Now, that combination is very unique because what tends to happen when we go on a conventional weight loss diet, for example, is that we're going to be, yes, using some stored body fat, but we're also going to be losing muscle tissue as well. So, there's a protective aspect here if we're including coffee on a reduced caloric intake or during intermittent fasting, there's a potential benefit here, so that we can retain our valuable muscle tissue, which carrying muscle is expensive for our bodies; our muscle tissue is very energy-intensive, and it's very expensive for our metabolism because muscle tends to burn a lot of energy. So, it's very metabolically active.

So, this is one of the factors that as we put more muscle onto our frame, our bodies are automatically expending more energy than a version of ourselves who has less muscle. So, chlorogenic acid is one of the components in coffee that is found, if we're looking at how is this happening, how is this metabolic benefit taking place, how is fat loss taking place? Chlorogenic acid is one of those components. Now, in addition to this, according to data published in the journal, *Biochemical Pharmacology*, coffee is able to accomplish this feat of protecting our muscle tissue while boosting the rate of fat being burned through the action of something called AMPK, or I call it AMP-activated protein kinase, or AMP-K for short.

AMP-K has several remarkable influences on our health, including improved glucose transport to our brain cells, which might lean into some of the cognitive benefits that we see with coffee, that we'll get to in a bit, but also AMP-K helps to regulate inflammation and to reduce inflammation in the body. And also, it enhances something called autophagy, to clear out metabolic waste products from our cells. Anything that can help to maintain our valuable muscle tissue is especially significant for our metabolic health. And coffee... Again, we're talking about coffee here, we're talking about coffee, we're talking about practice, we're not talking about the stuff that's added into coffee. Alright? All of the sugar and artificial sweeteners and artificial creamers and all of these things. We're talking about coffee. Now, coffee without all the problematic additives like, again, artificial sweeteners, sugar, these highly processed creamers. Coffee itself supports the action of AMPK, assisting in energy utilization, cellular homeostasis and preventing the haphazard loss of our valuable muscles.

So again, this is just number one of the seven mind-blowing benefits of coffee. Coffee has a remarkable benefit to support fat loss and metabolic health. Now, we're going to move on to number two on this list, and number two is that coffee significantly increases the likelihood of physical activity. A recent study conducted by researchers at the University of California, San Francisco enrolled 100 adult volunteers, and they were assigned to wear continuous recording ECG devices to track heart rhythm, wrist-worn devices to track physical activity and sleep, and continuous glucose monitors to track blood sugar levels for two weeks. The participants were

an average age of 38 years. 51% women were enrolled into the study. Researchers also obtained DNA saliva samples from the participants to assess genetic variations that may affect caffeine metabolism.

Now, here's what happened at the end of the study. Participants who consumed coffee logged more than a thousand additional steps per day compared to days when they did not drink coffee, alright? So, they were stepping it up literally when they had more coffee in their daily routine. Now, on the days that the participants drank coffee, they were found to have 36 fewer minutes of sleep per night according to their Fitbit devices. Got a little red flag here, what's going on? We'll get to this in a moment. The researchers also noted that drinking more than one cup of coffee, again, more than one cup, doubled the number of regular heartbeats arising from the heart's lower chambers. We know we got that four chamber, we've got a four-chambered heart. The two lower chambers doubled the number of regular heartbeats. In contrast, drinking more coffee was associated with fewer episodes of abnormally rapid heart rhythm arising from the upper heart chamber, so it seemed to have this really interesting balancing effect in the study participants. And we're also going to look at long-term, because this is an acute thing, this is just a very short study period of just two weeks. Now, also, each additional cup of coffee consumed was associated with nearly 600 more steps per day and also 18 fewer minutes of sleep per night.

So, we got one thing that appears to be really remarkable and one thing that appears to throw up a red flag. And also, the impact on blood glucose in the short stint, this two-week study period, was negligible as noted by the researchers. Now, again, we've got something that is affirming that coffee has this ability to significantly increase the likelihood of us being physically active, and we need that. We're the most sedentary population in the history of humanity. We are well-endowed in sitting in chairs, we are highly skilled in chair sitting and being sedentary, and our bodies are going to adapt to those conditions. That's one of the things about our species, we're very adaptable. And so, this sedentary behavior is then leading to this adaptation and all kinds of metabolic adaptations as well, because we're not using our bodies. And so, we're seeing these sharp increases in obesity rates, in cardiovascular problems, in mental health issues, the list goes on and on and on, and they all tie together. And one of the biggest changes as far as our genetic inputs is our sedentary behavior. And so, this beverage that's been, again, utilized for thousands of years has this propensity towards getting us up and getting us stepping in the name of love. All right?

Now, we cannot ignore the potential red flags here, and this leans into the potential problems with coffee that should not just be brushed under the rug. What about this heart arrhythmia thing? We got the two chambers doing something a little different, the other two chambers are acting even better than if you didn't have coffee. Well, additionally, looking at a longitudinal study, so longitudinal data, so this is being tracked over 12 months of a study

period by the same researchers, rather than this acute two-week study that we were looking at. And this 12-month study includes over 1,300 participants with 61% of them having more than one caffeinated product daily. The study stated, "The researchers found no difference in the number of premature atrial contractions or premature ventricular contractions per hour across levels of coffee, tea, and chocolate consumptions. More frequent consumption of these products was not associated with extra heartbeats." All right? So, looking at the data over a long term, our bodies make this really interesting adaptation.

What we might not see in an acute circumstance where we're bouncing around to having some coffee or maybe introducing coffee for the first time or having it in short stints and then not having coffee, our bodies seem to have this resonance to adapt, and any kind of heart arrhythmia appears to be null and void. So, the bottom line is that we've got to consider for ourselves, we've got to consider a variety of data, how the coffee is used, and we've got to consider our own individual metabolic health when choosing whether or not we're going to utilize coffee. So, let's break these down, because there's going to be some more valuable data contained within each of them. And so, for example, what about the negative impact that coffee can have on our sleep? Well, an interesting study looking at the effects of caffeine on sleep quality was published in the Journal of Clinical Sleep Medicine. Scientists at Wayne State University School of Medicine had test subjects to consume caffeine at various intervals of either six hours before bed, three hours before bed, or immediately before bed, and tested their objective and subjective sleep results.

The researchers discovered that consuming caffeine even as much as six hours before bed was enough to have a measurable detrimental impact on their sleep quality. Now, this is important. This is objectively monitoring what's happening with the test subjects. But subjectively, again, according just to the study participant's own beliefs, subjectively, they might have thought they got seven hours of sleep, for example, but objectively, their sleep cycles were demonstrated to, again, in consuming caffeine, lose about an hour of their actual sleep quality. So, they could have been unconscious for seven hours and believed that they slept for seven hours, but they only got the accumulative benefit of six hours of sleep because the caffeine disrupted their sleep cycles. Now, the researchers noted that moderate to large doses of caffeine commonly found in increasingly popular energy drinks and supercharged coffee products are the particular culprit. Because in the study, 400 mg of caffeine was used, which is just above the amount you'd find in a Grande cup of coffee at a Starbucks, for example. Now, though many people wouldn't down a Grande close to bedtime, even having a smaller amount can be sketchy for some folks depending upon our unique metabolism of caffeine.

So, we're going to circle back and talk about our unique caffeine metabolism in a moment. But what's important to understand here is that if we're going to utilize caffeine, we want to utilize it earlier in the day. Alright? So, for some folks, caffeine can have a half-life of about five hours.

And this is according to the American Academy of Sleep Medicine. They're noting that the average person has a caffeine half-life of about five hours. Now, this can vary significantly because other reputable resources say that the half-life for the average person is closer to eight hours. And so, what that means is if we consume, we'll say, 200 mg of caffeine, and we have a half-life of five hours for our unique metabolism, that means after five hours, 100 mg of that caffeine is still active in our system. Then after another five hours, half of that is still active in our system. So, we're talking about 50 mg is still active in our system, five hours later, 25 is still active in our system, and so on. Alright? So that's what it means by having a half-life of five hours.

Now, some people have a caffeine metabolism that's faster, some have a caffeine metabolism that is slower. It's just going to depend on us. But the bottom line is, keeping that in mind... And also, the researchers utilized 400 mg of isolated caffeine. That's far different from what you find in coffee, in just an average cup of coffee. We're talking maybe 75 mg, 100 mg. And also, it's embedded with a lot of other micronutrients and other co-factors that help our bodies to associate with the coffee better, the caffeine better, rather than this blunt instrument of taking a caffeine supplement. So, keep that in mind as well.

Now, with that said, ideally, you want to have a caffeine curfew. It's going to be based on you. Some people need to leave it alone, maybe even just for the time being. If your sleep quality is being disrupted, if you're not waking up feeling refreshed, maybe that coffee that you're having in the afternoon or even early in the day is a potential culprit here. But for the average person, I like to set the bar... If you're waking up between 6:00 and 8:00, maybe having a caffeine curfew of noon to 1:00 PM, maybe 2:00 PM at max if you're trying to get to bed, let's say 10:00, 11:00 PM at night. Alright? So, give yourself a caffeine curfew, and you'll find over time... Because a lot of people lean on caffeine to try to get that energy boost in the second half of the day, but then that's disrupting their sleep quality and creating this vicious circle. And also, it's disrupting their natural release of catecholamines and cortisol rhythm, for example.

And so, when you start to have coffee in the morning and allow your body to adapt in this interaction that it has with adenosine... So, essentially how coffee... It is a nervous system stimulant, but it also is interacting with our endocrine system. And as we're going through our day and just doing stuff, just being human, being alive, and our bodies are building up adenosine. For a long time, scientists looked at adenosine as just like a metabolic waste product, a throw-away thing to not even consider. More recently, we've uncovered that adenosine really functions as... As this build-up is happening, it's fitting into adenosine receptor sites, and as this is going on through the day, the more adenosine that is getting latched into our receptor sites, the more biologically we're starting to get nudged into sleepiness. So, adenosine, this build-up is nudging us into going to sleep. Alright?

Now, coffee, one of its modes of action is that it's able... This caffeine is able to fit into adenosine receptor sites so that the adenosine might be building up, but it's not able to latch into the receptor sites, and thus this nudge to go to sleep isn't taking place. Alright? So, our bodies can be physiologically getting tired because of this build-up, but we don't know it, because that signal is getting blocked. Alright? And so to allow adenosine to get normalized, our cortisol rhythm, if we start to have our coffee or caffeine in the early part of the day, the morning, ideally, and then allowing our systems to balance out over time, it might take a few days, it might take a couple of weeks for some people if they've been hard-charging with caffeine for a while, but everything is going to get sorted out. Alright? But it is not a good idea to try to power through the second half of our day by getting a Grande cup of coffee or even an espresso or just hitting our body with a significant dose of caffeine. So, this is number one. This is the impact that it's having on sleep, is usually due to having caffeine too late in the day. Alright.

Now, also, another potential culprit here we got to look at is the amount of caffeine that we're consuming. So, I just mentioned 400 mg synthetic caffeine versus 200 mg in a high-quality coffee. Very, very different metabolic impact. Now, there's a bell-shaped curve of benefits with 1-4 cups, as far as the data is concerned, even 1-3 cups in a bunch of other studies is showing a tremendous amount of benefit. Whereas, when we start to get into more of that, diminishing returns, possible negative side effects taking place. And not having coffee, so be it. And too much of... Again, one of the things that coffee is noted for, caffeine, which coffee has... Coffee is probably the highest source of antioxidants of anything that the average person is consuming out there. Coffee is saving lives, in a way, by giving people much needed antioxidants that are on a highly processed food diet overall. But caffeine is just, again, one of the components here that's most connected cognitively to coffee. And too much caffeine is likely unhealthy as well, as the data is indicating.

For example, headaches. Caffeine is actually used medically to treat headaches in some instances. But too much can potentially be a cause of headaches. Caffeine can act as a vasodilator or a vasoconstrictor, depending on how it's used and what area of the body is being analyzed. A vasodilator is something that widens the blood vessels. It results from the relaxation of our smooth muscle within the vessel walls. Vasoconstriction is essentially the opposite, it's the narrowing of the blood vessels resulting from the contraction of the muscular wall of the blood vessels. Now, generally, caffeine is noted to have a vasoconstrictor effect initially for a brief amount of time, but the predominant effect is a vasodilation or a relaxation of the smooth muscle cells within the vessel walls and a widening of the blood vessels.

Now, fooling around with this, with having too much caffeine consumption can, again, have some diminishing returns and negative downsides. For instance, a population-based study



published in 2004 in the journal, *Neurology*, looked at the connection between caffeine and headaches. Now, the data isn't conclusive because it's self-reported use and doesn't account for a variety of confounding factors, but it does make the association that some folks can have headaches induced by caffeine usage. In particular, the researchers stated, "Chronic daily headache cases were more likely overall to have been high caffeine-consuming people before onset of daily headaches." Alright? So, again, this was high caffeine consuming folks.

So, we got to keep this in mind. This can be a pretty remarkable, again, nervous system stimulant and cardiovascular stimulant. It's not just something to just brush under the rug that this isn't having an impact. But at the same time, again, we've got to honor the potential benefits here and utilize this, if we're going to utilize coffee in particular, not just caffeine. It's not a good idea to have a synthetic form of caffeine or an isolated version of caffeine. But in particular with coffee, we've got to honor the fact that we have a unique caffeine metabolism. And using... As a study that we started off with, using genetic analysis, those who metabolize caffeine more quickly actually experienced heightened effects of coffee initially for the heart rate changing, but they also had less effects from coffee on their sleep. So, high caffeine metabolizers, they might get a little bit more of a jolt, but also, their body processes it a lot faster.

So, we got to keep all this in context for us. And as mentioned, according to the American Academy of Sleep Medicine, caffeine has a half-life of approximately five hours. Now, again, the second benefit seen with coffee in peer-reviewed evidence that we're highlighting today is that it significantly increases the likelihood of physical activity. And we've got to pay attention to our own unique metabolism when utilizing coffee for that benefit of really getting us up and stepping up our game, stepping in the name of love, stepping over the haters, stepping into our greatness. Alright. Now, we're going to move on to number three on our list of the seven mind-blowing benefits of coffee. And number three is, coffee increases the activity of brown adipose tissue. Our brown fat cells are a type of adipocyte whose metabolic machinery is geared towards burning fat rather than storing it. The main function of brown fat is to generate heat, which is why high levels of brown fat are found in newborn babies, and also in hibernating animals.

Alright? So, it's helping to keep that insulation popping. Now I'm just thinking about various bears out there on the street. There's so many versions of bears. But a koala bear. I just seen a koala bear video family, took the little ones, "Oh, it's a cute little Koala bear." It's tiny, it looks like Ted, from the movie, *Ted*. This little bear, little Koala bear ran up, just got after trying to take the little kid out, little 5-year-old... He looked like he's about 5 years old. Koala was like, "Oh, you're my size. What's up?" Just went after him. So, again, we got to respect the bears out here. Alright? And we've got to respect brown adipose tissue and its benefits with hibernation. Now, 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. It's estimated that the heat production of brown adipose tissue is up to 300 times higher than what's produced by most other tissues of the same weight.

There's a huge thermogenic impact that brown adipose tissue carries. Now, also indicated in the data, adults with higher levels of brown fat tend to be slimmer than those with low levels. Now, here's the thing. The ratio that you have of brown fat is changeable. Brown fat achieves its distinguishing brown color because it is so concentrated in mitochondria. Now, we hear about mitochondria being this kind of cellular power plant, energy exchange of the body. But one way to look at mitochondria is that they are cellular furnaces where fatty acids actually get burned. Alright? So, the mitochondria are the end destination for fatty acids to actually get burned. Lipolysis is the cell releasing the fatty acids. That doesn't mean it's getting burned. It's got to be shipped to the mitochondria, and the mitochondria is doing the burning. Alright?

And brown adipose tissue is brown because it's so dense in mitochondria. That's what makes it so remarkable. Now, maintaining a healthy amount of brown fat, or again, brown adipose tissue, AKA brown fat or BAT, Brown Adipose Tissue, maintaining a healthy amount of brown fat can be a key ingredient in having a robust metabolism. Research published by the Garvan Institute of Medical Research found that once activated, just 50 grams of brown fat could burn an additional 300 calories of energy in a day. That's about one-tenth of a pound of brown fat, and it can burn an additional 300 calories per day, if that was on your frame. Now, in addition to brown fat, which again, we've already highlighted how remarkable it can be for our metabolism, there's also another type of fat that can have some of the same metabolic potential. So, we've got brown fat, we've got white adipose tissue, which this is more of the storage fats. This is what most people, when they're trying to lose fat, they're trying to get rid of or target their white adipose tissue. But in between both of them, the brown and the white, there's the beige. There is the beige fat.

And 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. Alright? Epigenetic influence. Things that we're doing within our bodies and what's happening in our environment. 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 is genetically distinct from brown fat. Brown fat cells are born from stem cell precursors that also produce muscle cells. Beige fat, on the other hand, forms within deposits of white fat cells from beige cell precursors. And it appears that certain lifestyle factors can influence the browning of cells within the white fat cell communities. Alright? So certain lifestyle factors can influence whether we're having our white fat cells, these kind of beige fat precursors within white cells, the browning of that cell, so that it leans towards burning fat rather than storing it.

Now, what are one of those lifestyle factors? And this is where coffee comes into the conversation. A fascinating connection between coffee and metabolism is highlighted in a recent study featured in the journal, Scientific Reports. Scientists from the School of Medicine at the University of Nottingham discovered that coffee may be able to influence the activity of your brown adipose tissue. Now, what the researchers found was that coffee appears to nudge our beige fat cells into the fat-burning brown fat side. Plus, the researchers used thermal imaging and found that drinking coffee actually lights up brown fat dominant locations on our bodies, indicating increased thermogenesis. Alright? So, we've got brown fat as we mature into adulthood. Most of it that's still hanging around is going to be around our sternum, so around our chest, around our clavicles, our collar bones, around our shoulders, down our spine. This is where we're going to have these different pockets of brown adipose tissue. But again, we can influence how much brown fat we're actually carrying.

Now, to reiterate, what we're doing here is we're altering our body composition, targeting adding more brown adipose tissue, we're helping it to mobilize in an intelligent way by utilizing coffee, and understanding that this is going beyond just micro-managing what we're eating and how much exercise we're doing. We're changing our metabolic rate. We're changing how much energy we're expending in a healthful manner when we're at rest. So rather than, again, the "You've got to do this, do that," trying to lose fat, we're altering the way that our body is working by leveraging brown adipose tissue. Now, this might sound wonderful already, what we've gone through, and inspire us to utilize coffee to support our metabolic health, but there's a big distinction that you need to know about. Being that coffee is one of the most popular beverages in the world, it's also one of the most pesticide-laden crops in the world. Only about 5% of coffee is grown without pesticides. There are a variety of pesticides used in growing coffee today. And by taking a look at just one of them, you'll find a documented obesogen.

This is an obesity-causing agent that depresses our metabolic health. This pesticide used in growing coffee is called chlorpyrifos. It is one of the most widely used pesticides in the world. In a recent study cited in the peer-reviewed journal, Nature Communications, stated, "Chlorpyrifos suppresses diet-induced thermogenesis and the activation of brown adipose tissue, suggesting its use may contribute to the obesity epidemic." That is a big statement. That's a big statement, to call out this particular pesticide and say, "Hey, this might be contributing to our obesity epidemic". Right? So, this is in this category of obesogens and it's just getting sprayed all over so many different crops, utilized as a pesticide/insecticide.

Now, to take this another step, actually backwards, a recent study published in the journal, Chemosphere, uncovered that the intake of Chlorpyrifos can promote obesity and insulin resistance through influencing gut and gut microbiota. And this was a mouse model for this particular study, but these negative effects are seen in both humans and in lab animals as well.

Now, Chlorpyrifos was actually invented as an alternative to the deadly pesticide, DDT, which DDT itself was used as a substitute for toxic Lead arsenate. And this trend, toxic Lead arsenate to DDT to Chlorpyrifos has become something that's called a pattern, that's well noted in science, called, "Regrettable substitution." Regrettable substitution. Alright? "Okay, this thing is causing harm to humans, let's do this thing instead." "Oh damn, that hurts us too." Right? Regrettable substitution. Now, Chlorpyrifos works by attacking the pes, the "pest nervous system," and it's been repeatedly shown to create side effects in people working on farms.

According to researchers at Columbia University, one of the most devastating issues seen with Chlorpyrifos is in pregnant women exposed to it, finding that it led to significant impairment in the development of their children's brain. This is real. This has been happening for a very long time. This is why Chlorpyrifos was in process of being taken out of the food supply many years back, but then they got caught up in legislative red tape because these companies that are utilizing this very cheap pesticide, and again, making so much money on the back end through their farming practices, they don't want to lose out on this. So, they're going to fight it. And they have so much power to influence government regulation. We think that we can just decide like, "Oh, something is bad for us. We shouldn't have this. We shouldn't be exposed to this. This is hurting our bodies; it's hurting our babies. It should be stopped." Hmmm. You don't have that much influence as far as what's happening out there. We have influence over what we're doing, what our families are doing. But bigger picture, drug lobbyists, food lobbyists are some of the mightiest influence powers in the United States, by far. By far.

And we've, of course, talked about this multiple times on the show in the past, but the amount of money, we're talking the magnitude of billions of dollars have been doled out to influence politicians. As a matter of fact, in 2020 alone, two thirds of the United States Congress members received a check from the pharmaceutical industry. It is very pervasive. And then couple that again with Big Ag, food industry as well putting money into the pockets of politicians, who they might start off with this hope and this altruism and wanting to do right and uplift their communities, but if you're going to be a part of the system, you're going to be impacted by these industries who are making outrageous amounts of money through the farming of sick people, the creation of sick people, and the farming of sick people, and doling out medications. And so, again, Chlorpyrifos should not be used in the growing of food, but it still is today. And also, what I mentioned earlier about the impact it has on the gut microbiota, chlorpyrifos works by attacking the insects' nervous system.

Our microbiome, our bacteria is smaller than these tiny pests that Chlorpyrifos is trying to kill. What do you think is going to happen? It's designed to destroy and disrupt very, very small things, the survival of very, very small things. And if we're talking about the nervous system, our gut is often referred to as the enteric nervous system or second brain. And it's only second to the brain as far as its concentration of neurons. We've got about a hundred million neurons

in our gut. This is more than our spinal cord and even our peripheral nervous system. And again, these pesticides are designed to target the nervous system. And as I stated earlier, this is just one of the pesticides that's used in the growing of coffee. So, organic coffee is a must. It's a must. If you're going to drink coffee, get the good stuff at least, because you don't want to do something that is potentially good for your metabolic health and health overall, and then having it along with something that is incredibly detrimental to our health. All right?

So, having organic coffee plus having coffee that's combined with the balancing effects of something like medicinal mushrooms, puts it in a league of its own. It helps to ratchet down what we might consider to be this kind of blunt impact of a caffeine source. And this is something that I utilize pretty much every day. And now, my mother-in-law is in town, and so even this morning, every morning, I'm making my wife... And now that my mother-in-law is in town, a cup of Four Sigmatic medicinal mushroom-infused coffee. Again, organic, plus the infusion of lion's mane medicinal mushroom, which researchers at the University of Malaya have affirmed that lion's mane is one of the most remarkable things studied for protecting our brains and our nervous system. And also, they're studying it for its neuro-regenerative effects and its ability to actually stimulate neurogenesis and repairing the brain and assisting in neuroplasticity.

And also, we've got data affirming how it has anti-anxiety effects, and the list goes on and on, helping us to really cope and modulate stress. So, this is in the coffee blend that I made for myself, my wife, my mother-in-law. And it's a really special part of our day. Again, this is coming from somebody who is not an advocate for coffee in any form or fashion, but the data was just so robust. And having that along with, again, organic coffee infused with medicinal mushrooms, wow, you got a seriously powerful combination. This is coming from Four Sigmatic. For my coffee, they're doing stuff the right way. Go to [foursigmatic.com/model](https://foursigmatic.com/model). That's F-O-U-R-S-I-G-M-A-T-I-C.com/model. Get 10% off all their incredible mushroom coffees. Another one has L-theanine and cordyceps, and the blend that I had today was lion's mane and Chaga. And they've also... If you're not a fan of coffee, they've got amazing medicinal mushroom elixirs that are dual extracted. They're doing stuff the right way. They're actually getting the nutrients out that other companies might say they're doing, but they're actually extracting it in time-honored methods.

And again, everything is organic and done the right way. And also, there's Reishi Hot Cocoa as well that is really popular. So, huge fan, highly recommend. They've got instant coffee packs, they've got ground coffee, they've got whole beans, they've got everything that you're looking for. Go to [foursigmatic.com/model](https://foursigmatic.com/model) for 10% off everything. Now, again, understanding the potential benefit that we have with coffee on brown adipose tissue, yes, I like that. Versus the potential downside with pesticides coming along with coffee, I don't like that. All right? We've got to make a choice here. And if we're going to use coffee, avoid the stuff that's sprayed with

pesticides. You got to go organic if you're going to do the coffee. Now, we're going to move on to number four here on our list of seven mind-blowing benefits of coffee. Number four is that coffee improves endurance. A double-blind randomized crossover study cited in the European Journal of Applied Physiology analyzed the impact caffeine had on cycling performance of study participants. After compiling the data, and again, this is a crossover study where test participants experienced the caffeinated condition and the non-caffeinated condition in their cycling test. After compiling the data, they found that consuming caffeine increased time to exhaustion during exercise by 12%.

So, they were able to go 12% longer before reaching exhaustion, and significantly reduce subjective... So, looking at objectively what they were able to do, but subjectively reduced their levels of fatigue for each individual study participant. Alright? So, really, really remarkable. So, we've got a greater output in the real world, and also subjectively not feeling as fatigued, by utilizing caffeine found in coffee. Another double-blind placebo-controlled crossover study with skilled golfers analyzed their performance during an 18-hole round of golf on two consecutive days, with and without caffeine. Again, this is in a blinded condition. The study was published in the journal, Medicine & Science in Sports & Exercise, and here are the results. The golfers' total score, greens in regulation and drive distance were statistically better during the caffeine condition compared to those during the placebo condition.

Subjectively, the golfers also had statistically significant perceived feelings of energy and less fatigue when in the caffeine condition, and there were no substantial differences in heart rate or breathing rates, peak trunk acceleration or putting posture between conditions, or over the round when compared to the placebo condition. Yet another study, this one was published in aging, clinical and experimental research, and this study was analyzing the physical performance of elderly men, and found that, "Coffee consumption was independently associated with better physical performance reflected in a faster gait speed in old men." They were out here with that gait. They were striding. They hit that stride by having coffee in their bodies. So again, from multiple perspectives, in a variety of performance conditions, coffee is clinically proven to improve our endurance and overall athletic performance. Now, we're going to move on to number five on our list of seven mind-blowing benefits of coffee.

Number five is coffee increases longevity. A meta-analysis of 40 studies published in the European Journal of Epidemiology revealed that regularly drinking coffee was associated with a lower risk of death from cardiovascular disease, from certain types of cancer, and from all-cause mortality, although this is a notable association. Association, not causation. The researchers did a great job in adjusting for a variety of confounding factors like age, obesity, alcohol consumption, smoking status and more, and still found that drinking coffee stood out as a strong element of longevity. Another study, and this one was published recently in 2021, in the journal, Nutrients, and tracked over 1500 test subjects for 18 years to identify the impact

of coffee consumption on mortality. What was interesting is that they looked at the impact of both caffeinated and decaffeinated coffee consumption.

After compiling the data, the scientists found that drinking one or more cups of coffee per day was associated with a lower risk of all-cause mortality, versus not drinking coffee. A lower cancer mortality was observed among drinkers of more than one cup per day compared to non-coffee drinkers. And notably, only the consumption of caffeinated coffee was associated with lower all-cause mortality. So, this might be speaking to the fact that some people might be drinking coffee, the decaf, and really missing out on the bang for the buck they might want to be getting. So, we might be shooting blazanks. And this also reminds me of a decaf coffee commercial featuring the one and only Chris Farley getting served some decaf.

So, you got to be careful because you might be doing this process and missing out on the thing that provides the most value. But some folks just like the taste, but they might be missing out on something that's actually extending their lifespan. Now, in addition to these studies affirming coffee's benefit on reducing all-cause mortality, one of the potential elements in coffee's connection to longevity was uncovered by scientists at Stanford University, who recently deduced that the caffeine in coffee is able to defend our bodies against age-related inflammation. The research revealed that light to moderate coffee drinkers live longer and more healthfully, thanks in part to the protection caffeine provides by suppressing genes related to inflammation. Now, we are well aware today that excessive inflammation can tear our bodies down from the inside out. There are huge implications with inflammation and obesity, body fat, cardiovascular problems, the list goes on and on. We did a master class on inflammation, we'll put for you in the show notes. I highly encourage you to check that episode out next. But just know that coffee has this protective mechanism that defends our bodies against age-related inflammation, acting as an epigenetic influence over genes that control inflammation.

Really, really powerful. So, again, number five on our list of seven mind-blowing benefits of coffee is that coffee is clinically proven to increase longevity. We're going to move on to number six on our list, and number six is, coffee improves cognitive performance and protects brain health. A study featured in the journal, Psychopharmacology, uncovered that drinking one large coffee a day, which is 200 mg of coffee, or four smaller cups of coffee in a day, 65 mg of caffeine each, had some remarkable benefits on mental performance. The researchers found that both methods of coffee intake led to equal improvement in alertness, improved reaction times, as well as enhanced performance on cognitive vigilance tasks, including activities involving multitasking and tasks involving deep concentration. Drinking coffee has this really remarkable effect on performance with our cognition. Also, coffee has been found to have mood-improving effects.

A meta-analysis of seven studies titled, Coffee and Caffeine Consumption and Depression, found that each cup of coffee people consumed per day was linked to an 8% lower risk of depression. So, we've got cognitive improvement and performance, we've got mood-enhancing benefits, but also coffee is shown to protect our brains from degradation. Regularly drinking coffee has been shown to help prevent cognitive decline and reduce the risk of developing Alzheimer's and Parkinson's disease. This attribute referenced in the journal, Practical Neurology, is yet another reason why smart coffee consumption makes the list of neuro-nutritious beverages. Now, as phenomenal as this is on its own, what if we can up-level the cognitive benefits of coffee?

Now, dating all the way back to coffee's origins, before anyone roasted it, before it became a beverage, ancient traditions were combining coffee, coffee "beans" along with fats and making these power bars. Why did they do that? What did they know? Well, combining coffee with high-quality fats is something that's a time-honored tradition, but we've gotten away from it today where we have these highly refined "creamers" that people are adding regularly to coffee. And if you look at the ingredients in these things, the artificial colors, artificial flavors, the highly refined seed oils, this is not the fats that were intended to be combined with coffee for their neuro-protective benefits. The type of fats that are remarkable in its combination with high-quality coffee would be something like MCT oil. Researchers at Yale University published data purporting that MCTs, medium-chain triglycerides, can readily cross the blood-brain barrier and be utilized by our brain cells for energy.

The remarkable study published in the Annals of the New York Academy of Sciences sought to find out if MCTs could have an impact on improving the condition of patients with Alzheimer's disease. Alzheimer's disease is currently the sixth leading cause of death in the United States. It's an absolute epidemic that almost nobody, unless you're directly impacted by this, or a family member, is talking about. It's quickly going to find its way in the top five causes of death in the United States, and it's largely considered to be non-reversible. There's nothing you can do. You could try to find various combinations of medication, try to slow it down, but as far as improving it, this is not something that's seen in the conventional medical paradigm.

Now, it's well noted that Alzheimer's disease is consistently accompanied by an impairment of glucose uptake into our brain cells. And there's a form of insulin resistance that's taking place in the brain and is accelerating the degradation of neurological function. Now, the scientists in this study... Again, this was published in the Annals of the New York Academy of Sciences, they discovered that since MCTs are quickly metabolized by the liver, prompting the production of ketones, those ketones were then able to easily cross the blood-brain barrier and provide an alternative fuel source for the glucose-impaired brain cells of Alzheimer's patients. The scientists found that the consumption of MCTs directly led to improved cognitive function. This isn't supposed to get better. Improved cognitive function in mild to moderate



forms of Alzheimer's disease and cognitive impairment. There's something about these fats that make our brains work better, that protect our brains. So today, actually, I did a cold brew vibe. I did a cold brew vibe with the coffee, again, Four Sigmatic organic coffee, lion's mane blend, and I added in some emulsified MCT oil from Onnit. So, this emulsified MCT oil is like a coffee creamer, but it's using high quality fats.

If you want to do the cold brew vibe, you could even add in a little protein powder, a little emulsified... It can get special. But even on a daily basis, if I'm making a hot cup of coffee like I made for my wife and my mother-in-law today, I'm using the original MCT oil from Onnit. So, just the original version of it. So, there's an emulsified version, and then there's a clear version that is extracted from coconut. And again, something I use on a daily basis. There's something really special about it, there's just a resonance with my body, and again, if you look at the data, there's a resonance with human cells overall. So, I highly recommend checking them out. Go to [onnit.com/model](http://onnit.com/model), that's O-N-N-I-T.com/model. Get 10% off their MCT oils. And also, I use Onnit's protein as well, and their other human performance optimization supplements. And they do peer-reviewed studies for many of their products as well. They really have things in another league, it's just really, really special. I love those guys. So, check them out, [onnit.com/model](http://onnit.com/model), 10% off everything they carry.

So, to recap, number six on our list of the seven mind-blowing benefits of coffee is that coffee improves cognitive performance and protects brain health. Take your coffee, blend it with some high-quality fats of your choice and uplevel those benefits. Now, we're at number seven on our list of mind-blowing benefits of coffee. Number seven is coffee is clinically proven to support our satiety hormones. One of our body's major satiety hormones... Again, these are hormones that help us to feel more satisfied and in control of our cravings and hunger and things like that. One of the most studied is Adiponectin, and it's recently gained notoriety as one of the most potent hormones influencing your appetite and fat metabolism. Adiponectin, like leptin, which is kind of the glorified leader of the satiety hormone team, Adiponectin is primarily produced and secreted by our fat cells and our adipose tissue. This is where it derives its name from. So, adipose tissue, adiponectin. And it's been noted to help your body to move body fat, stored fat away from the visceral belly fat area to regions of the subcutaneous fat area where it's more readily accessible and also less dangerous, because the most dangerous form of storage fats is visceral belly fat.

And this is the type of belly fat that's more associated with insulin resistance, cardiovascular damage, cancer, the list goes on and on. So, Adiponectin has this really strange ability to get body fat to be ejected from our belly fat and shipped elsewhere. Now, low levels of adiponectin have actually been associated with insulin resistance, obesity, and metabolic syndrome. So, not having adequate levels of adiponectin. And researchers at the University of Pennsylvania recently discovered that optimal levels of adiponectin can potentially support fat loss without

increasing appetite. That's that super combination that we're looking for if we're targeting weight loss and fat loss, is to be able to do that process but still not have an increase in hunger and cravings. So just to be able to feel good while losing excess body fat. Now, how does coffee relate to Adiponectin? Well, researchers at Harvard Medical School discovered that test subjects who regularly drink coffee have higher levels of adiponectin and lower levels of inflammatory biomarkers to boot.

In addition to that, another study that was published in the American Journal of Clinical Nutrition revealed that coffee can also stimulate the release of another satiety hormone called CCK. When you eat a meal, CCK is called into action to help you to secrete bile, to assist in digesting dietary fats. Its release also increases satiety to help you feel fuller, faster. And CCK is produced primarily by cells in your gut. And according to research published in the journal, Physiology & Behavior, optimizing levels of CCK could play a key role in reducing levels of body fat. All right? Really, really cool stuff there with satiety. And a lot of people find this to be true. Having some high-quality coffee in the morning really helps to modulate and lower their propensity towards hunger and cravings. So, the quality matters. Also, combining coffee with high quality fats really does some wonderful things for our satiety. Now, one other hormone that's involved in our overall metabolic health, that coffee influences, is insulin. And insulin, glucagon, they're all tied together in this satiety equation as well. Has a lot to do with energy metabolism and how we feel.

A study that was published in the journal, Nutrients, states, "One major effect of coffee actions appears to be the liver, causing improved fat oxidation and lowered risk of cytolysis. Another major effect of coffee intake is preservation of functional beta-cell mass via enhanced mitochondrial function." Coffee has a remarkable resonance with human biology, and we have to make sure that quality is acknowledged. We can utilize this for the betterment of our health and wellbeing, and that is the mission moving forward. Now, today's episode is part of a new series that we're doing this year. Each and every month, we'll do a deep dive into an exceptional food or beverage, to deconstruct its potential benefits, modes of action, and how to best utilize them. Today's highlight is the much beloved coffee. And if you're watching on YouTube, make sure to leave a comment below. Let me know what was the thing that really jumped out for you as far as benefits from coffee, what really made you sit up and pay attention? And of course, make sure that you're subscribed to the YouTube channel. We've got some incredible content coming for you this year, it's really going to knock your socks off, so make sure to stay tuned.

I appreciate you so much for tuning into the show today. And if you got a lot of value out of this, please share this out with your friends and family. You can share this via social media, you could tag me. I'm @shawnmodel. Take a screenshot of the episode. I'm @shawnmodel on Instagram and Twitter. And of course, you could send this directly from the podcast app that

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