THE MODEL HEALTH SHOW

EPISODE 746

How Time Controls Your Brain, Body & Health

With Dr. Amy Shah

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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. Have you ever wondered how our body knows when to do what it does? What I mean by that is, how does our body know when to produce human growth hormone or estrogen or testosterone or certain digestive enzymes, hunger and satiety hormones. Certain neurotransmitters that helps us to focus versus other neurotransmitters that help us to sleep. How does our body know how to do what it does? That's what we're gonna be talking about on this powerful episode of the Model Health Show. And we have one of the world's leading experts in circadian medicine to help us to unpack and understand this powerful circadian system that's regulating all of this. Now, to just give you a little glimpse into how all of this works, we have a circadian pacemaker effectively that's located in our hypothalamus, in our brain, this master gland in our brain.

SHAWN STEVENSON: And this is located specifically in something called the Suprachiasmatic nucleus. And this part of our body, this part of our brain, is entrained or connected to the 24 hour solar day. Alright. It is entrained with what's happening in our solar system. We are a part of all of this, but sometimes of course, we feel like we are so disconnected or detached, especially in today's world. We're outsourcing so much of our energy and our intention and our attention externally. We forget, we kind of go into this slumber, this hibernation as an individual, and we forget that we are part of something grand. We are connected to it. We cannot not be a part of it. And so it's something really special. And also researchers at the Salk Institute for Biological Studies have uncovered that our biological clocks are themselves functional genes and proteins that are controlling other genes and proteins, these circadian clocks within all of our cells and the governing clock in our brain, the Suprachiasmatic nucleus, is telling our bodies when to do what it does.

SHAWN STEVENSON: Now we can support these clocks and set them accurately, or we can essentially come in and smash a smash these clocks and mess everything up and wonder why we're having such poor results with our health. And so very, very excited about this episode. We're going to hear from Dr. Amy Shah. And not only is she a double board certified medical doctor and nutrition expert with training from Cornell, Columbia and Harvard, but this is somebody who's been passionate about digging into the research herself to help heal her own struggles. Because going into the field of medicine, it's usually a badge of honor to run yourself into the ground. And as a practicing physician, many years ago, this was about eight years ago for her now, seven, eight years ago, she was running a practice as a physician. She was a mom with two small kids, a wife, and somebody who's trying to just find a way to succeed.

SHAWN STEVENSON: And one of these days, again, burnt out, stressed out, getting pulled in all these directions, she ended up having a pretty horrific car accident. Now, it wasn't horrific from the perspective of she was badly injured, but it was just so shocking to her. It really shook her awake to realize that her reaction to all of these things were really disturbing her health and she was not okay. And she went in and started looking for and researching in particular how to help her sleep quality because she was not sleeping. She was not sleeping well. And that's when she shared with me years ago that she found the Model Health show. And this was about, like I said, seven or eight years ago. And this is the power of this platform to be able to influence influencers, people who are in really incredible positions to help and serve other people, to change what's happening with our education systems because she should have been taught this to be able to empower herself and to serve her patients.

SHAWN STEVENSON: And thankfully with our community here, to step up and to say enough is enough. And to get this education and share it with people passionately to help and serve our community, to help people to get well, and to stay well, and to feel well. This is how we're gonna solve a lot of our problems as a society. But as with anything, this starts with us. Change starts with us, be the change you want to see in the world. And in this first segment, she's gonna start off by sharing what our circadian timing system actually is. How much the time of day is influencing our gene expression and so much more. Check out this first segment with the one and only Dr. Amy Shah.

DR. AMY SHAH: We are a different person at different times of the day. Can you believe that 80% of our genes have this circadian on and off pattern? So in the morning you turn on the genes of metabolism and you turn on the genes of thinking, concentrating, you know, all the things that your body knows to do during the day and at night, two to three hours before bed, our body knows to turn off those genes, to turn off the metabolism, to turn off the genes of daytime and to concentrate on repair and renewal, which is equally as important to us as, you know, for aging, longevity, disease, and even energy. You need that counterbalance. But our society, we have flipped this completely upside down. We pay no attention. And all of our societies are built on this system of light all the time, eating all the time, and thinking that we need to be doing complicated tasks all the time. So one of the biggest things I discovered is that not only do we have a clock in our brain that kind of looks at light, but we have one in every single one of cells. We have a clock and our skin is protected against sunlight and light during the day, but they put that guard down at night. And so if you are getting a ton of blue light later in the evening, your skin is aging and getting damaged at higher rates than it would during the day.

SHAWN STEVENSON: Yeah. This is bananas, you know, our skin, like you mentioned, our skin has photoreceptors that literally is communicating with our other organs. Same thing with

our eyes telling each cell what time it is and what to be secreting. Yeah. You know, different neuropeptides, neurotransmitter hormones, all of that stuff is happening and it's based on this circadian clock. And now circadian medicine is really becoming a big place of emphasis in research.

DR. AMY SHAH: Yeah. Blood pressure medications, certain blood pressure medications are two times or three times more efficacious when given at night versus given in the morning. Because if you think about it, 80% of our genes are turning on and off. Our body's function is different at different times of the day. So when I say you're a different person at different times of the day, I'm not even kidding. Like your thoughts, your body's functions are all different at different times of the day.

SHAWN STEVENSON: And also our gut.

DR. AMY SHAH: Yes.

SHAWN STEVENSON: As well, the microbiome changes as well.

DR. AMY SHAH: Absolutely. And not only our gut, the bacteria in our gut, those little guys that actually have personalities and they have food preferences, they are on a circadian pattern. Every single organism and cell in this world, even mitochondrial species before we were even humans, like if you look at the back to the very first cell, has a circadian clock, and gets and needs sunlight and darkness. So it's really fascinating that we've completely disregarded this in designing our society. So, one of my hopes from this book is that these smart entrepreneurs, these tech guys, they say, oh, you know what? Let's do stuff to optimize our thinking power and our health by maybe designing things that help us with these circadian patterns.

SHAWN STEVENSON: Yeah. Okay. So a big summation here, and this is a big statement, our bodies, every cell in our body is trying to be in sync.

DR. AMY SHAH: Yes.

SHAWN STEVENSON: With nature, basically, you know, this kind of diurnal nocturnal patterns. So it's running different processes at different times. Now when this body clock gets screwed up, I would imagine this is when problems start to happen.

DR. AMY SHAH: Absolutely. And you can break them actually. So as we age, our circadian clocks become a little weakened. And so you'll see, you know, as people get older, they have a little bit more trouble sleeping and they have a little less energy sometimes, you know, if

they're not really optimizing their energy patterns. But we can also break them by constantly eating and seeing light at the wrong times. And so what we are doing is not only are we feeling jet lagged perpetually, and feeling tired but we're also causing ourselves disease and we're breaking these clocks over time.

SHAWN STEVENSON: Okay. So we are recording this right now around a time when daylight savings happened. All right. And I know you're from Arizona. Yeah. Which is one of the, I believe two states that doesn't accept this changing of our clocks, our entire, what do you think about daylight savings time?

DR. AMY SHAH: I am not a fan of daylight savings time. I think it's an antiquated, old thing that they decided many years ago that we could reverse easily. It causes so many problems around not only do we have confusion, but we also have people who are jet lagged, perpetually feeling exhausted for a week every time this happens. And so we really don't need that anymore. I'm a fan of getting rid of that.

SHAWN STEVENSON: Yeah. And you just said it, it could be some, this was based on a time when we needed daylight savings. Like we, because we didn't have lights for real. You know, like we've got a lot of folks doing the candle thing now we can literally, like you mentioned, we can manufacture our own daytime whenever we want, but also just throwing off that clock, and if you look at the data, it's kind of really shocking, but then again, it just makes sense. We see an uptick in heart attacks. We see an uptick in traffic accidents. The list goes on and on. And the question is why? And it's really because it's throwing off this kind of chronobiology.

DR. AMY SHAH: If you look at shift workers, like people who are working overnight and some of our first responders, people who have helped us so much this year, their longevity, their health is being affected by their jobs when they're working late into the night. So I've been talking a lot with someone about creating some improvements for these people. So you can, your body is still on a light and dark cycle, whether you work overnight, it doesn't matter. You still have to get some sunlight during the day. You still have to limit how much you're eating overnight. So some of these tenets that we can give to our first responders, there's actually a big study with firefighters going on at the Salk Institute, which where they're doing a lot of this time restricted feeding, trying to figure out what are the optimal times that people who don't work regular hours could do so that they don't end up with diseases and death rates that are far higher than the regular population.

SHAWN STEVENSON: It's shocking. It is absolutely shocking. But then again, if we, these things would seem obvious on the surface what you're talking about, but because our culture is so in a big sense, not really associated with what health looks like. You know, so even in my

book, “Sleep Smarter”, I talked about this massive nurses study and seeing shift work 30% greater incidence of breast cancer. We see higher rates of insulin resistance. We see high rates of obesity. Just about everything. And then you come to find out one of those circadian controllers, which I wanna ask you about next being melatonin. Which we just kind of glorified as a sleep hormone, but it does so much more. It's also a very potent kind of anti-cancer operator in the body as well. And so what happens when we throw that off? So let's talk about some of the things we can do to start to address why we're so effing tired. And a big part of that is our hormones.

DR. AMY SHAH: Well, one of the things I wanted to follow up on what you were saying is the Ruth Patterson study, she took breast cancer survivors and she said, you know, I think there's something to be said about the circadian rhythm thing. I'm gonna have these breast cancer survivors fast overnight, just, you know, as darkness to light. So she just told 'em to 13 hours, 13 and a half hours, they didn't wanna do something too stressful for these breast cancer survivors. And they found some amazing results. I mean, 34% less cancer rates, recurrence rates in the group that was fasting for a moderate amount of time, 13.5 hours on average. This is something that I think is so promising. I mean, if we can, like you're saying, melatonin has a lot more to do, than just telling the brain to go to sleep. It's doing a lot of other things in our bodies.

DR. AMY SHAH: And if we optimize that we can really improve our rates of cancer and all kinds of metabolic diseases. I was so shocked to find out that your body's actually more sensitive to light and to food cues late at night because your body wants to know, okay, is it okay to go to sleep or is there some danger? Do you need to stay up because there's something bad happening? And so it's very tuned into the light that you see and to the cues that you're giving it. So if you're telling your body, Hey, I'm watching the news tonight and there's all this craziness happening in the world and I'm eating all this food late at night, you're basically telling your body there's an emergency. Like you can't go to sleep. And so that's why people could not sleep at night. They were having stressful thoughts because your body's literally in its fight or flight state at night when it should be going into its repair renewal mode.

SHAWN STEVENSON: Right. Oh, that's so important. And there's an important tenet here too. Even if you do pass out, you're unconscious, this can also disrupt your sleep quality as well.

DR. AMY SHAH: Yes. The sleep quality is so important. I think we all talk about sleep hours as something, but sleep quality is important. If you go to sleep and you're able to fall asleep, even after watching all those negative news stories and getting all that blue light, think about the quality of your sleep. One bout of blue light delays your melatonin production by 90 minutes. And so you're basically telling your body, Hey, don't start all those repair renewal

processes yet we're not ready. And so that gets delayed and then you shortchange it because you wake up in the morning.

SHAWN STEVENSON: Yeah. That's so important because, I think, again, I wanna reiterate this because it's so important that even the same thing goes with our food. You know, there's this paradigm which is the calories and with sleep it's the minutes. You know, it's not just the calories, it's not just the sleep minutes. The quality of each. And you can have, you know, same thing with your calories. You know you've got Twinkie calories and you've got, you know, broccoli calories, same thing. You could have Twinkie minutes of sleep where you are unconscious just because of exhaustion, but you're not going through your sleep cycle efficiently. And like you just mentioned, if we're turning off the news or just turn off the tv, even if it's something you know, that is enjoyable, it's still stimulating these, as you're talking about this, if we're looking at circadian medicine, these programs for daytime is basically telling your brain, your entire physiology, that it's a different time of day than it is. So how can you expect you to go through your sleep cycles normally.

DR. AMY SHAH: That, and I feel like, you know, shouldn't we be doing things in society and shouldn't there be inventions now that can help us now that we know this knowledge to help us with this? Because I think that if we just change a few, so in my book, I basically talk about changing a few habits that I didn't know. I mean, I went to school for nutrition. I got a double board certification from the top schools in the country. I didn't know how important circadian biology was to our health and how changing a few things about my daily routine could actually help me. If I had known that earlier, I probably wouldn't have gone through my burnout journey like I did.

SHAWN STEVENSON: We've obviously had this big skyrocketing rate of advances in technology, but it's paradoxically come along with a decline in our health. Like how if our technology's improving, why is our health devolving? Right? So let's talk about what are some things that we can do? Like why is this and what are some things that we can do for the purposes specifically having you here of improving our energy in relationship to our technology.

DR. AMY SHAH: That's such a great, that's such a great analogy. Like overpowered over, there's too much information, we're overwhelmed, yet we're tired and we're underpowered and we don't have the energy that we should. And this is such a big problem. In fact, I think the rates went up 33% in the last year of burnout and stress related problems. And it was already in epidemic proportions even before this last year. So we know we're doing a lot of things wrong. And some of those are technology, technology to be able to eat at all hours of the night, to work at all hours of the night. And the technology to create an indoor environment that does not require natural light during the day. Las Vegas for example, the

casinos, they create a scenario so that you of a light so that at all hours and so that you never feel tired and ready to go to sleep so you can gamble more. Right. So they're manipulating that aspect of our brain at what we're, what we did to ourselves is that we created an environment where our body doesn't really know when it's daytime, when it's nighttime, it has to guess. And that's where I think the technology could help us and not hurt us.

DR. AMY SHAH: Right now, the way it's built is that all this blue light at late into the evening is hurting us to the point where we're getting sick and we're getting tired and we're getting burned out.

SHAWN STEVENSON: Yeah, so what are some things we can do? Obviously, there's blue light-blocking technology, but I think there's a step that's even better.

DR. AMY SHAH: Yeah, I think getting some natural light during the day, even at the beginning when you're burned out, and I know there's people who say, well, I don't have time. Just step out for one minute twice a day is what I ask because the lux of light that come from the sun or even a cloudy sky are far higher than what you would get through a window or just in passing or whatever. So you want to have 10,000 lux of light. For example, when you turn on your light in the morning, that's like one or 2000 lux. So you're not getting the light that you need to send a signal to your brain and to all of your cells that it's daytime. So you really do need to get that natural light and that comes with getting outside. So getting outside free easy one minute, twice a day that's like a first step and you're gonna feel so much better just doing that I tell people they can multitask so people feel stupid just walking outside and just standing there, right? So maybe you do a little bit of mindfulness or maybe you take a look at your life for just a minute. And a lot of things happen when you just take a minute to kind of get out of your to-do list.

SHAWN STEVENSON: You can listen to a podcast.

DR. AMY SHAH: Yes.

SHAWN STEVENSON: When you step outside.

DR. AMY SHAH: I love podcasts. I used to listen, by the way, just on the side, I used to listen to you, I'm thinking now, when I first was going through my journey, which was like seven, six, seven, eight years ago, I listened to your podcast. I was so into reading and listening. That's when I started to really understand, okay, I need to get outside, I need to get out of my to-do list, I need to work on all of these things that are actually hurting me in the long run.

SHAWN STEVENSON: Yeah, that's so powerful. And this is the beauty that we have. It's using technology like that in a positive way, but not being inundated, not using it in a way that's kind of counterproductive to our natural human state. So you just mentioned stepping outside, getting a little bit daylight, helps to set those circadian clocks in our cells. And I know when you've experienced the same thing, you mentioned this in your book. How you would go in, is because I'm from Missouri, from St. Louis, same thing. I would go in for school and for work it would be before the sun comes up, and then by the time I'm done, I come out and the sun's down already. And it's just like basically a 5-5 thing. So having that experience not getting dialed in with like what's nature doing, but then what's on the other side? So you mentioned getting a little bit of sunlight, but what about in the evenings? Of course, again, we've got great blue light blocking tech. It's wonderful. I've been one of the people to really push it into public awareness, but maybe we could do something a little bit stronger.

DR. AMY SHAH: Yeah, better. So first of all, when you look at sunset versus sunrise, your body actually can tell the difference. We have brain patterns of photoreceptors, it's so fascinating to me, that know the difference between a sunset and a sunrise. So they know sunset means, okay, time to get that melatonin ready, time to do all these things. So having an evening routine is, everyone's so fascinating with morning routines. But having an evening routine is just as, if not more important than having a morning routine.

SHAWN STEVENSON: That's so good, thank you. [chuckle] And if you think about it, when we're kids, a lot of us like we have a evening routine. It's like a bedtime routine for our kids and including myself. It was like one of the best times of my life. My grandmother, we had our little evening routine take a bath, we say our little, now I lay me down to sleep, read a story, that kind of thing. And now as adults, we just kind of fall [laughter] into it. It kind of like, I should probably get to bed.

DR. AMY SHAH: Yeah, sometimes fully clothed. There's no pattern. There's no...

SHAWN STEVENSON: There's no, nothing like sleep when you fall asleep with some Timberlands on. [laughter] Now, with that said, one of our top five, I know it's definitely in the top 10, but I think it's in our top five most popular episodes is the episode we did on evening routines. So we'll put that in the show notes for everybody. But I love this conversation so much, and I wanna talk more about how our nutrition plays into this, but not just the food itself, but also when we're eating and this incredible framework that you have and one of the things that you talk about that not a lot of people are mentioning this dynamic is circadian fasting. All right, so fasting has become something is a part of the popular lexicon in the health of space but doing this based on our circadian clock. What are these timing system is and all of ourselves are expecting from us? So let's talk a little bit about that and why you made that an important tend to talk about.

DR. AMY SHAH: I think we're, it's the science is brand new. I mean, we've known for thousands of years that we have these circadian rhythms, but the Nobel Prize in medicine a few years ago went on to researchers looking at circadian biology because now we're realizing, Oh wait, it's not just sleep and wake. It is everything. Everything can be, and I don't want to overstate it. You can't say, Oh just eat junk food and as long as you watch your circadian clock, that's fine. But I do think it's equally important to time things during the day as it is the quality of your food. And so it's that important up to 80% of our genes work on a circadian pattern. So You really want to be eating sleeping and getting light at the right times of the day.

SHAWN STEVENSON: This isn't to just restrict yourself and to punish yourself and to get your body to do something that it doesn't want to do. The way that we really evolved, we had times when we were eating and then we had times where we were not eating. And now today, like you mentioned, with technology, now we have 24/7 access and we're also not sleeping well. So this is just creating this feedback loop where we're constantly eating.

DR. AMY SHAH: In fact, I tell, somebody said that they wouldn't about my book because anything that had the word fasting in it signals disordered eating. What I said is actually what we're doing right now in our society is disordered. So when you eat up to 16 hours a day and you only take a break overnight for eight hours, that's disordered. For thousands of years. We know we have very good data, historical data that we are not supposed to be eating late at night, that most cultures stopped eating either at sundown or shortly after sundown because you didn't have that option to have refrigerators, microwaves, drive-throughs and there was no light. So you pretty much wrapped it up around sunset and then in the morning probably didn't just roll out of bed and eat your toast and muffin. You would go out, get some food and maybe there's a little bit more of a break. So what I'm talking about is taking a very natural break. That we were actually programmed to do and putting that back into our lives.

SHAWN STEVENSON: So that's what circadian fasting is?

DR. AMY SHAH: Circadian fasting is exactly that. It's taking a break between 12, 13, 14, even up to 16 hours, but doing it in a way that optimizes our biology. So we see intermittent fasting all the time in our lay culture and it's almost like, you can mean anything by saying intermittent fasting. People eat late at night and then they don't eat all day and they're eating their meal super late and they're really kind of doing the wrong timing in my opinion. If you're doing it for metabolic health, you really do wanna match it up with the right timing. So if you look at cultures all around the world, there's fasting in every single culture and it's usually based on the circadian rhythms.

SHAWN STEVENSON: Yeah, this is so good. For me, I would always hear this, just in the so-called health sphere, the gym science, and just these different domains about not eating late at night. And I was in one of the fittest conditions that I was in, and I ate late at night. And now this not to say that I didn't have issues that I can now pinpoint like that weren't things, certain things weren't necessarily matching up. We can quote get away with different things and it doesn't mean that you can't have a late-night snack. However, when it becomes habitual, so one of the things that I came across was, especially once we venture into obesity, we have a much bigger uptake, like over 50% greater increase in the secretion of cortisol eating a meal. When we venture into being overweight. And now have that happen at night? Now we start to understand why eating late at night can contribute to obesity because guess what? That cortisol is gonna be pretty unfriendly to melatonin and messing up your sleep cycle.

SHAWN STEVENSON: And we know that sleep deprivation is a contributor to obesity and body fat gain and it just gets into this terrible feedback loop. And so my point being this, so having a little bit of space there from the time we finished our meal, and also just even metabolically speaking when you go to sleep, your body wants to do so many other things, but digesting food requires a tremendous amount of energy. So what I want to ask you about is, when people are thinking about having a little bit of structure just say I'm done eating at 8 p.m. At night, and then I don't have breakfast until 8 AM The next day. That includes my sleep, it's not that big of a deal. But just that little bit, that 12 hours, you start to really engage some really seemingly miraculous benefits with health.

DR. AMY SHAH: There's something called the metabolic switch. So in the New England Journal of Medicine paper about intermittent fasting, they said that Dr. Mattson was the lead author. He said, "The magic of intermittent fasting is not just caloric restriction". So of course, if you're like, honestly, if I told you, you can't eat late at night, you're probably going to eat less calories overall. So that's going to be beneficial for you. So he said, it's more than that. There's also other beneficial things that are happening. It's like exercise. You get benefit from your muscle getting the exercise, but there's all these downstream benefits of exercise. So something called the metabolic switch is something that I talk about as being one of the magics of intermittent fasting. Taking a break between your dinner and your breakfast can help deplete the glucose in your bloodstream and then it helps deplete the glucose in your liver. And once you start getting low on that glycogen from your liver, you start to activate these pathways. And that metabolic switch going back and forth between using glucose for fuel and using fatty acids for fuel. That's the magic. This metabolic switch is what you need to be turning on. And most Americans never turn on that metabolic switch ever, because you're never getting to the point where you're depleting the glucose that you have overnight.

SHAWN STEVENSON: And so that's, we're going to see uptick in obviously insulin sensitivity, autophagy, BDNF, everything's gonna start working better in a sense.

DR. AMY SHAH: Inflammation, cholesterol, blood pressure, diabetes, so insulin dysregulation improves, and brain health, yeah. So one of the best things, and gut health. So all the things that we're talking about here, the energy trifecta, gut health, hormone health, and immune health all improve from doing this kind of circadian style intermittent fasting.

SHAWN STEVENSON: All right, I hope that you enjoyed that first segment. We've got so much more good stuff in store. And keep in mind, one of the primary influential factors on the circadian clocks and being in alignment with that has a lot to do with our sleep quality and adhering to certain practices that support healthy sleep. Now, if we're living in natural conditions, there's going to be a natural drop in our core body temperature at night as we shift from day to evening, no matter where we are on the planet, no matter how cold it is during the day or how it is during the day, it's going to be cooler in the evening. And our bodies evolved to drop in temperature along with that. And this activates certain hormones, neurotransmitters, certain enzymes that support our sleep quality. But today, again, living in abnormal conditions and a lot of times fighting with our biology by doing certain things, we can cause a disruption to this.

SHAWN STEVENSON: And a growing data of body has shown that insomniacs and this is folks who have clinically diagnosed chronic sleep issues, they tend to have a significantly warmer core body temperature than normal right before bed. To help combat this, a study was published in the peer-reviewed journal, Brain, and the scientists had these folks with sleep struggles to wear these thermo suits that lowered their skin temperature less than 1°C to measure its impact on their sleep quality. The study results show that participants didn't wake up as much during the night and their amount of time spent in stages three and four, deep sleep had actually increased. Now, we don't need to get a thermal body suit to sleep at night to support this. This is something we could simply do by addressing our bedding and not having bedding that overheats our bodies. In a recent study, this was a three-week clinical trial, looked at folks using conventional sheets, just the regular run-of-the-mill cotton sheets, and this was a randomized trial.

SHAWN STEVENSON: Other participants were sleeping on organic bamboo lyocell sheets from Ettitude. At the end of the study period, the researchers found subjectively and objectively study participants were sleeping much better and feeling better sleeping on organic bamboo lyocell sheets. The study found objectively using sleep tracking technology, study participants had a 1.5% improvement in sleep efficiency, meaning they're going through their sleep cycles more efficiently and getting more from the time that they're actually asleep. Now that might not sound like a lot. That's about 7-8 more minutes of

restorative sleep per night. But you add that up, that's about 43 extra hours of sleep per year with the same amount of time in bed. Incredible. Subjectively, participants found that their mental alertness during the day improved upwards of 25% and 94% of people preferred sleeping on ettitude sheets.

SHAWN STEVENSON: These are the only sheets that I've been sleeping on for years unless I'm traveling. It is a true lovely, I can't even put into words, experience. You have to try it for yourself. Sleeping into ettitude sheets is like nothing else. I didn't know that it could feel that good slipping into bed. Now these sheets are antimicrobial, self-deodorizing, they're breathable, moisture-wicking, and they support natural thermal regulation. Get yourself this incredible gift of wellness. This is a great time to get a gift for somebody that you care about. Give them this gift. This is going to knock their socks off. It's a gift that is truly unique and it's going to feel good. They're just going to be raving about it when they actually sleep on these sheets. And also this is a good gift to give for yourself as well during this time of year. Go to ettitude.com/model. Use the code MODEL15 at checkout and you're going to get 15% off. That's E-T-T-I-T-U-D-E.com/mode. Again, you get 15% off plus they have a 30-night sleep trial. You get to sleep on them, think on them, dream on them. If you don't absolutely love them, you can send them back for a full refund. Go to ettitude.com/model today. In this next segment with Dr. Amy Shaw and our focus on circadian medicine, circadian wellness.

SHAWN STEVENSON: She's going to be talking about how circadian patterns influence our gut bacteria, how this influences our body weight, and much more. Check out this next segment from the amazing Dr. Amy Shaw. These bacteria, these trillions of bacteria we carry in and on our bodies, they have genes as well.

DR. AMY SHAH: Yeah.

SHAWN STEVENSON: Right, and so we think about the human genome as determining our fate, but if we go gene for gene, 99 plus percent of the genes that we carry are microbial.

DR. AMY SHAH: Yeah.

SHAWN STEVENSON: And they obviously have a huge influence. And another thing that I picked up from our earlier conversation was, even when we're talking about our circadian clocks, these themselves are genes, these are clock genes.

DR. AMY SHAH: Yeah.

SHAWN STEVENSON: That are determining when our body's doing everything that it's doing, but our microbes, our bacteria, have essentially clock genes as well and circadian rhythms as well.

DR. AMY SHAH: Yeah, they need to sleep too. And they need time, they follow day and night cycle, and we were talking about it, but basically, if they don't see light and dark for 24 hours, those clock genes in their body gets damaged, and they don't function the way they're supposed to. So not only are we damaging our gut bacteria by eating horrible foods with high sugar and preservatives, emulsifiers, et cetera, we're also putting them in a dark place for over 24 hours where they don't know what night and day is, and they're dying off that way.

SHAWN STEVENSON: So we need that exposure to natural light, to sunlight.

DR. AMY SHAH: The natural light is absolutely necessary for the functioning of not only our clock genes, but also our gut bacteria's clock genes. 80% of the body's functions, at least, that we know of, work on circadian input. And so one of the easiest interventions people can do is start getting more natural light in the day. And I know for me, that was like the first thing that actually made me feel better. And so people are always like there's so many things you guys talk about, but if you really just started with getting some natural light in the morning, and then maybe some natural light in the evening, you could really start to change so much of your body without changing one thing in your diet.

SHAWN STEVENSON: So what is it about getting exposure to sunlight in the morning that actually helps to kind of set your circadian timing system?

DR. AMY SHAH: So in your eyes, you have direct receptors that go to your brain, to the suprachiasmatic nucleus. And so when your retina sees natural light, so it's different than this indoor light that we're in, it will send signals. And it will say it's daytime, time to focus, a time to process complex thoughts, time to get your digestion going, time for the metabolism to start working. There are signals that get sent all over the body, and it's coming from the suprachiasmatic nucleus. So your hormones and all of those processes start to calibrate, and we need that. So each cell has its own clock, but it gets input from this master clock so that it can start working properly.

DR. AMY SHAH: That's why you feel so much better when you go outside, your brain works better, your mood is improved. And that's why we've kind of ignored this for too long. And we were talking about Vegas before. Places where you're spending a ton of time indoors without natural light is going to damage your body in ways that we're just starting to understand now. Of course, it's great for the casino owners because we're discombobulated. We kind of don't know when to sleep, when to wake up, what we don't feel good. So we're just kind of

eating and drinking more to see maybe that makes us feel better. And really that kind of, you can actually damage the clock genes in your cells to the point where they don't work anymore.

DR. AMY SHAH: And so this is not just about, oh you went for a day or two, that's fine. But people who are doing this all the time. And during the pandemic, what I noticed is a lot of the children were indoors all the time. And I had to tell my kids, you have to go outside, even though everything's online. And you know during their breaks, they would be on their iPad or on their phone. You have to go outside. It's so important for children to get that input of circadian rhythms. And that doesn't come from even a window. It comes from natural light.

SHAWN STEVENSON: Yeah, thank you so much for sharing that. Because this is the collateral damage that's not getting talked about, especially for children. And the CDC published a report looking at some of the outcomes. Just recently, even one came out last week. And we'll put a couple up for people to see if they're watching the video version they were looking at the mental health outcomes for children, adolescents. And almost half of the children analyzed teens, had depressive thoughts. Thoughts of, and also like one out of five had thoughts of suicide, suicidal contemplation. The numbers just jumped up mightily. It had already been climbing in recent years, but just took this mighty jump.

SHAWN STEVENSON: But I'm bringing this up to say another CDC report looked at childhood obesity. And I want to ask you about this as well. And what they found was that childhood obesity took a gigantic leap during this time of shutdowns and mandates. And children who are moderately obese, and again, we'll put this study up for people to see. Published by the CDC, children with moderate levels of obesity, their annual rate of weight gain doubled. So it went from around six pounds annually increase to 12 pounds in just that short span. And it's just again, we're getting this feedback that something is seriously awry here. And we might say, oh, it's a short term thing. But then we have recidivism, where like you pick up these things when you're a child, it becomes increased, like ridiculously, exponentially more difficult to address than when you get older.

SHAWN STEVENSON: I wanted to ask you about this because part of regulating our metabolic rate and our insulin sensitivity comes from being aligned with a certain clock and sun exposure and those kind of things. So how has thrown off our children's rhythm been playing into challenges with body composition and obesity?

DR. AMY SHAH: Absolutely. Obesity is so closely linked with circadian rhythms as well, insulin levels. So we know that our ability to process sugar changes throughout the day, and we need those circadian rhythms to kind of help the body know that you should process sugar during the day. And usually around 8 o'clock, we notice that your ability to process sugar goes much

lower. And so if you are following circadian rhythms, you can actually improve blood sugar control and reduce obesity by educating people on this circadian pattern. But there's so much that goes into obesity. So one is these brain pathways that are getting set.

DR. AMY SHAH: Like you said, things that we are doing as children get set as neurological pathways. Our brain wants to be efficient. And so it figures out, oh, when you're hungry, you have this junk food, and it satisfies this craving, it's going to become a pathway. And so a lot of people will notice when they're adults, they still kind of go back to those comfort foods of childhood and as go-to's when they're stressed or when they're not feeling good. And it's because these pathways were set as a child, and it's really hard to break it. And that's what we're doing when we're increasing the amount of drive-thrus and processed foods that we're having. We're setting these patterns that are often lifelong for people.

DR. AMY SHAH: So we talk about trauma as child that carries through the years. It's the same thing. Of course, not to minimize trauma, but you can actually program your brain to want certain foods, to go to certain things for comfort, because the brain wants to create easy ways to comfort our bodies and our brains. And so we end up creating these horrible habits. 56% of Americans say that they have problems with their mental health right now. Anxiety medication prescriptions have gone up 30%. Antidepressant prescriptions have gone up 26%. We are the unhappiest we've been in 50 years. So we're definitely noticing that there's something beyond just the external events that are happening to us.

DR. AMY SHAH: So not only are we getting fatter, but we're also getting sadder. Our bodies work on this day and night cycle. And so much of our metabolism, how we digest food, how we process medications. We have talked about daylight savings a little bit before, but one shift of one less hour of sleep. That Monday, there's a spike, 22% spike in heart attacks and car accidents. We know that our body really is finally attuned. One hour of lost sleep, and we're doing this on the weekends with three, four hours of shifting our sleep. So you can imagine what havoc it's wreaking on all of our bodily functions when we're shifting our rhythms all the time. We're not getting enough sleep. We are not sleeping at the right times.

DR. AMY SHAH: We're not eating at the right times. We're not getting enough input to our brains. And it impacts not only our insulin, it impacts our brain function. It impacts, as you knew, the heart attack and our ability to have higher reflexes. I kind of remember this feeling all the time when I would work an overnight shift, and then you'd come back home, and then you'd wake up, and you were completely disoriented. And I remember that I was literally had, people got into accidents all the time, both car accidents and physically, your reflexes are just not working when your circadian rhythms are disturbed. Reflexes, heart disease, insulin levels, you name it, and it gets damaged or disrupted by circadian rhythm imbalance.

DR. AMY SHAH: So that's something that we've left on the table. Only in, I think it was 2017, the Nobel Prize in Medicine went to Jeffrey Hall and colleagues about their circadian rhythms, the molecular effects of circadian rhythms. So literally, it's brand new science that we're just learning about now. And ever since Jeffrey Hall and his colleagues kind of came out with this information, it's just opened this whole new world because now like we're oh, wait, it affects your gut health. Oh, wait, it affects your brain health. Oh, wait. Every single thing can be linked back to circadian rhythms.

SHAWN STEVENSON: That's so powerful. So the timing of things affects everything, basically. So when you're taking even medication, there are ideal times to take things that's now being addressed and affirmed. Our food, when we're eating, it's going to influence everything about us. But also our bodies themselves can essentially, and I want to ask you about this, our individual template is going to determine when's the best time for us to eat. I think it goes both ways, I would imagine.

DR. AMY SHAH: Yeah, you want to use the sun. I always tell people, it's like you don't have to go back to hunter-gatherer days and pack once the sun goes down, you're done for the evening. It's just not practical in our lives right now. But use it as a rough guide to kind of think about it evolutionarily. We're learning more and more that, hey, when the sun goes down and it's late in the evening, you probably want to wrap up and not have your huge meal like at 10 PM Probably want to have your biggest meals during the daytime when your digestion is strongest. Eastern medicine knew this all the time, right? They always talk about eating your meals in midday.

DR. AMY SHAH: Ayurveda talks about midday meals, trying to be your biggest between 12 and 5 should be kind of where you eat the most food. So they knew that intuitively thousands of years ago and we're starting to learn that again now. And so you can see, it's like waking, if I woke you up in the middle of the night and I asked you to do a complex math problem, you may not get it right or you may get it right and then you're pissed because I woke you up in the middle of the night. And then when you wake up the next day, you're exhausted because you got woken up in the middle of the night. That's how our body, our metabolism works when you try to feed, try to have that huge meal late at night.

DR. AMY SHAH: And I know personally, I have experienced this and I don't know if you have. Eating super big meal late at night right before bed, it is terrible for your sleep, for your digestion and you wake up the next day almost like hungover and your insulin levels are really disrupted. So just learning these things and people probably can relate, but they were never told to do anything differently.

SHAWN STEVENSON: Yeah, you're bringing up so many things that we've all experienced, but we don't really put language to. So we're looking at circadian medicine, really paying attention to when our genes, which again, we have these clock genes that are now being affirmed that control what other genes do, that control what our proteins do based on the time it is or our body trying to sort out what time it is. Because that's the thing about humans. We can just manufacture the time of day we want in a superficial way. It's not true. We can try to hide out basically from nature, but your body's always trying to get synced up again with life itself. And so again, even our inputs with exercise, with sleep, our genes are expecting certain inputs that will give us certain outcomes based on when we're doing these things.

SHAWN STEVENSON: And really this interesting phenomenon, and you mentioned this, what happens with this daylight savings phenomenon we've been experiencing for, it's been about a hundred years now that it's been something utilized in popular culture. Specifically we're talking about here in the US, World War I, towards the end of that was implemented, but then it was taken away. And in World War II, same thing. It was under the guise of saving energy was what it was supposed to be for. This was never about human biology and health, and it was actually deemed to be, "wartime." That was what they called it, these time changes, because it was implemented during these times of war.

SHAWN STEVENSON: And it's just we've been at war with our health ever since. And you mentioned this uptick when we go to daylight savings time, we're losing an hour in traffic accidents. We're seeing over 20% increase in things like strokes and heart attacks. But another thing is this increased incidence of adverse events taking place in healthcare settings. More mistakes with, whether it's a procedure or medication, again, because we really are throwing off the system and we're not showing up as our best self. And oftentimes we're proactively doing this to ourselves and don't realize it. I think the reason it's getting tracked is because it's a societal, big societal database. So I want to ask you about, recently there's been litigation pushed through, it's already passed the Senate, the Sunshine Protection Act to abolish this time change, which is a great first step. But you live in Arizona, where it's one of the two states that are just like we're not participating in this time change in the first place, the other place is Hawaii. But you have more access to sunlight at a longer span than a lot of other places in the US. So I want to know your thoughts on the Sunshine Protection Act and yeah.

DR. AMY SHAH: Yeah. Thanks for articulating it so well. Our bodies, no matter what your job is, whether you work night shift, day shift, and we live in a 24/7 society now, your body still works on circadian rhythms day and night. So people always say to me, as night shift workers oh, well, can I just shift my circadian rhythms? No, like you will never be able to shift your body's entire genome into a nighttime animal. It will never, you'll never get adjusted. Every

time you see that sunlight, natural light, you get readjusted to day and night. We're just built that way. So you have to work around that. And so...

SHAWN STEVENSON: Wait, so you're saying we are not in fact owls?

DR. AMY SHAH: Yes. We cannot switch, like people will say can't I switch my circadian rhythm? And you cannot. You can shift it slowly, right? But you really can't go from, become a nocturnal human. So when it comes to daylight saving time, it is very, it's a very, like you said, when travel time zones, it's a huge hit to your body in so many ways. So we're basically doing that purposely when we shift the time for people with daylight saving time. So I'm a huge fan of keeping the times stable throughout the year. So that's one thing. Because you really don't want to be shifting people's time zones twice a year, more so than they're already experiencing through travel, through disrupted circadian rhythms of their daily life.

DR. AMY SHAH: Once we understand the science, we have to make better options in society. It's only been 24/7 drive-throughs weren't even available even when I was a kid. I don't remember that. There's very few things that were open all night and there wasn't Uber Eats all night long. And so we have to remember that this circadian disruption has been so rapid and so life changing in the last 20 years. And then we're adding to that a stress of daylight savings time.

DR. AMY SHAH: And that can be so disruptive. So I'm a huge fan of not doing any time changes. But when it comes to what time is appropriate, why are we sticking to a daylight saving schedule? It's just puzzling to me because biologically that makes no sense. We should be staying on the circadian day and night standard time that our bodies are attuned to so that we can have health outcomes that are better than we had. If you tell people that you are perpetually going to be in a different time zone than your body, that's going to create health problems and problems that we won't even see for many years now.

SHAWN STEVENSON: Yeah. Yeah. We were talking about this before the show a little bit, but during the shortest day of the year in New York City, if we, as of now, with the times changing and having standard time and daylight savings time during the shortest day of the year, December 21st, the sun would rise currently at 7:30 AM in New York City. If this bill passes through its completion and we stay on daylight savings time, the sun will now rise on that same day for New Yorkers at 8:30 AM and under the guise of like, oh, we're gonna get an extra hour of sunlight after work as we're sitting in traffic on the way home. But then I get it, like, of course, like it's a socially accepted thing. We want to have a little bit more daylight to do stuff. I understand that, but biologically we need more light in the morning. And less light in the evening, and we're altering our clocks to stay on that time, which is, again, it's pushing

us more into abnormality. But the ultimate thing, I really appreciate the fact that we're looking at stopping, switching times, but we're not looking at what's ideal.

DR. AMY SHAH: Right. And the biology of circadian rhythms, like I said, it's such a new, but kind of blew this world open the science. And now that we understand what an impact it has, we really need to listen to what the science is telling us, which is very clear that our reflexes, our metabolism hormones are going to be impacted in a negative way. If you keep switching our circadian rhythms, some of it's under our control and some of it, comes from external governmental sources, like time changes like this.

SHAWN STEVENSON: Yeah. So if everybody listening, if you can, if you can contact your representative, implore them to, yes, let's keep the time from changing, but let's go with standard time versus daylight savings time. I want to ask you about this, because I know a lot of folks want to know this stuff from the person themselves, but what does your morning routine look like for Dr. Amy Shah?

DR. AMY SHAH: I have really refined this over the years because, oh, I didn't allow myself, so I used to, one day I had off in the morning and I went to a morning workout class. It was at 9:00 AM and I said to the people exiting that class, you're so lucky. I mean, I wish I could work out in the mornings, like, but I can't, I might have to go to work. And one of the women in that class said, well, aren't you a doctor? Like, couldn't you change your schedule? Couldn't you tell your admin or your front desk or just maybe leave a little time for a workout in the morning? And it was so eye-opening to me. I was like, wow, you do have the power. If you wanted to say, okay, I'm gonna get up.

DR. AMY SHAH: Either you get up an hour earlier or you make time in the morning. So it's not at 9:00 AM but it's early in the morning that I get up. First thing I do after I wash my face, I do look at my phone because I'm a mom and I'm a doctor and I have to check for any emergencies overnight. So I usually just check to make sure that there was no serious things, family, friends, everybody's safe. Then I put it away. Then I go and get some natural light first thing in the morning. And that's a time to do some mindset work, because mindset work doesn't need to be 60 minutes of meditation. I think that was like a mind blow, like a revelation to me that, oh, I don't need to sit down for 60 minutes, can just do like two, three minutes in the morning and get some natural light.

DR. AMY SHAH: So most of the time I will get dressed and do a fasted workout outdoors, or I will do partially, my mindset work and a few minutes outdoors and then go to a workout indoors. And it's kind of an open air workout. And my whole goal is maybe to have a little bit of time after the workout to kind of reset my circadian rhythms and also reset for the day, do some that exercise of being in the now, in nature so that you can kind of, your creative

thoughts come when you're not distracted. And most of the day we spend distracted with our phones driving work, whatever it is, internet. And so I try to spend a couple of minutes. It's so hard, undistracted just in the moment, maybe just walking, something that doesn't require a lot of attention.

DR. AMY SHAH: And do that every morning. And I usually stay faceted with just water until that point. And so usually it's at least two hours into the day before I have my first meal. And then I know that study after study shows that the order of nutrients that you eat especially in the first meal, can really determine the path of your day. So I'm very intentional of not eating refined carbohydrates and sugar as my first food that I eat. I usually go fiber protein, forward along with my chai, because I love tea with spices. So I usually do. And it's, there's a ritual aspect to having tea. It's also reduces DNA damage by 25%. Actually, coffee does too. They're actually very, very healthy for you as long as you're not adding a lot of sugar and additives to it.

DR. AMY SHAH: And so I break my fast and then I'm off to the day and it just sets me up for a great day. Like, if I don't do that morning routine, and even when I travel, I do at least a shortened version. It's not an hour or two like it usually is, but it's a couple of minutes. But I do a mini version of that because I think that it sets you up, it prepares your mind and your body for the day, and it helps me show up as my best self. And like we said, sometimes these healthy habits and routines, it becomes so routine that some days when you wake up unmotivated to do it, you just do it because it's out of habit. And once I do it, I feel so much better. And then I'm setting up the momentum for the day.

SHAWN STEVENSON: Alright, we've got one more segment for you with Dr. Amy Shah. And keep in mind that all of these different cellular structures, whether it's the supra cosmetic nucleus, whether it's our mitochondria, whether it's ghrelin, whatever the case might be with our different hormones, neurotransmitters, and tissues, they're all made from the food that we eat, and they're all run off the fuel that we provide ourselves. And one of the most important nutrients for helping that cellular communication is this category called electrolytes. These are minerals that carry an electric charge and enable our body to do all the cool things that it does. In particular with energy transfer, it's not just ATP as this energy exchange or energy currency in our bodies. As I was taught in my very expensive private university that I went to, it's not just ATP. The active form is bonded with magnesium.

SHAWN STEVENSON: That is the key. Magnesium is responsible for over 650 biochemical processes that we're aware of, probably many more. But that's just for starters. And many of them involve energy. As a matter of fact, magnesium is literally required to make new mitochondria, which these are the glorified energy power plants of our cells making ATP. But keep this in mind though, magnesium is the number one mineral deficiency noted in

peer-reviewed data today, close to 60% of our citizens are deficient in magnesium. Now you combine this electrolyte with another critical electrolyte, sodium and potassium as well. These three are top tier in importance and high quality forms of these electrolytes are severely lacking in our diet today. This is why I'm such a huge fan of element, the incredible science-based electrolyte supplement free from unnecessary sugars and food dyes, just high quality electrolytes that our bodies need and really thrive on.

SHAWN STEVENSON: You notice a difference, you notice a difference when you're utilizing element. Go to drinklmnt.com/model and you're going to get a free gift pack with every purchase of electrolytes. So they're gonna send you a free sample pack of all the different types of electrolytes for free whenever you purchase any electrolyte products at all. It's really awesome of them to provide this incredible gift to us. But the most important thing is for us to provide ourselves this cellular gift of better communication. Go to drinklmnt.com/model. Get the very best electrolytes in the world. And now moving on to our final segment with Dr. Amy Shah. In this segment, she's gonna be sharing why we are in fact, creatures of rhythms. All right. Talking about El DeBarge, the rhythm of the night. I'm talking about all kinds of rhythms. Also how our primary hunger hormone ghrelin is impacted by these rhythms and much more. Check out this final segment from the amazing Dr. Amy Shah.

SHAWN STEVENSON: Let's talk about the cyclical nature of our hunger and also get into this topic of chrono nutrition.

DR. AMY SHAH: Yeah, we are wired to be creatures that are cyclical. We have circadian rhythms, which are 24 hours. We have infradian rhythms, which are like monthly. We have all ultradian rhythms, which are short, like heartbeats and ghrelin going up and down. So we're creatures of rhythms because our body needs to know when it should do what to optimize it. We need to focus on growth and repair overnight. We need to focus on metabolism and activity during the day. And so ll of our ultradian circadian infradian rhythms are geared for that. So even if you work night shift, even if you're night out, even if you're 20 and you stay up all night, you cannot switch those rhythms. Your heartbeat will always beat on a very similar pattern, right? There's obviously variance between people, but it's very cyclical and breath is very cyclical.

DR. AMY SHAH: These are all rhythms that no matter what you do, that stays stable. So ghrelin is one of those things. It's cyclical. It's a reminder that we should be eating and it's a reminder to keep us safe because it doesn't want us to in a time of war. Or you're busy, like in modern times you're doing podcasts all day. Shawn's like, shoot, I forgot to eat. It's been like 12 hours. Your body wants to remind you that it's time to get nourishment. That's what ghrelin is created for. And there's things that affect it like sleep, stress, trauma, emotions, all

of that stuff. And timing. So if you wanna switch your ghrelin release, first few days, it's gonna be really, really hard to not eat after dinner because that ghrelin is going at 10 o'clock, right?

DR. AMY SHAH: It's like, oh, I want that. I want that dessert. I want that wine. I want that popcorn with my Netflix. But over time, you can train it. So that's why people always say it's so hard to not eat after dinner. They say this whole thing you're talking about Dr. Shah, like this whole chrono nutrition, oh, don't eat at late at night, but I can't not eat. I'm so hungry. I'm like, just try it. Do it for a week or two, and watch those growing levels will start to change according to your lifestyle.

SHAWN STEVENSON: Yeah. And I love this because you unpack how to essentially reset these hunger and satiety cues. And you just mentioned sleep, for example. Like we often, we don't cognitively connect the fact that our sleep is impacting our cravings.

DR. AMY SHAH: Yes.

SHAWN STEVENSON: Right. Or the food choices that we're making. But you also, of course, I'm so happy you did, but you talk about this in the book as well because one night of poor sleep can not just cause issues with ghrelin, that kind of hunger hormone, but also suppress the function of leptin.

DR. AMY SHAH: Yeah. Leptin is our appetite satiation. When you feel full, that's because a leptin has released in your brain. So one of the things I think is really interesting is that sleep is something that really alters your leptin release. And there's multiple other things. People sometimes when they're stressed have altered leptin release also obesity. So what we've realized is that it's not okay. Lots of doctors will say to their obese patients, all right, just don't eat as much and you'll lose weight. And that's what we thought that was as easy as that. Not taking into account that when you look at the studies, there's altered leptin and ghrelin activity. They will try to willpower their way, but that leptin is not gonna keep them satisfied.

SHAWN STEVENSON: It's ironic when you look at the data on this, because leptin has to do with our fat cells. Our fat cells are essentially releasing leptin, and if you get into the state of obesity, you've got more fat cell, velocity happening. So you would think that leptin would just be screaming out and getting producing. It is, but there's another part of the equation that's, leptin sensitivity.

DR. AMY SHAH: Right. So just like insulin resistance, which I think most people are familiar with, like you in the beginning, you pump out insulin and your cells will take that glucose in. Insulin is like the key to let the glucose into the cell but then when the cell is really over full, they're gonna close the doors and they're not gonna even open it when leptin, when insulin is

knocking on the door, it's gonna say, what? We're full. So that's what's happening with leptin. The fat cells are releasing so much leptin that the cells are overwhelmed and they're like, we don't need anymore. Just wait. So we get something called leptin resistance. And that's something that adds a layer to all the different layers that we have working against us in this path to a healthy life. The thing I wanna say, Shawn, I think that really struck me to write this book is that I think a lot of people feel like YOLO, which for people who don't know, is like, You Only Live Once.

DR. AMY SHAH: Like eat the cookies, have the shake, go to Starbucks every day. It's YOLO. What I really struck me when I was reading the research is that it's not just about you're gonna die a year earlier. It's how you're feeling today, how motivated you are, how happy you feel in your relationships. It's about the energy you feel to do the things that you wanna do. If you don't have that, what else is there? Don't do it. If you don't wanna do it for living an extra few years, fine. But think about your mood, think about your cravings, think about your energy levels. Like don't you want those to be optimized?

SHAWN STEVENSON: Hmm. Yeah. Tying all this together, you really feature this science around psychobiotics. And this is obviously fascinating, but this is really getting to the heart of how a lot of this stuff is working.

DR. AMY SHAH: If people understood the concept even around psychobiotics, it would change how you live and it would change the things you eat. Because what we found out is that your entire mental state can be located in your gut. It's so wild, but I'll tell you this. You can transplant the gut bacteria, just the gut, nothing about the brain or the chemicals or whatever from one animal to another, and completely change their mental state from depressed to non-depressed. You can transplant gut bacteria from a depressed person into a non-depressed animal, and the animal becomes depressed. They did that with schizophrenia. Schizophrenia has an effect on the microbiome like depression, like anxiety, like autism, where if you just transplant the gut bacteria, you actually change the entire mental state. You take that gut bacteria of from the schizophrenic patient and you put it into an animal, a germ-free animal, meaning that they don't have a microbiome of their own. And that animal starts to develop traits of schizophrenia. I mean, the fact of, this is gonna blow the mental health industry and the way we think about mental health.

SHAWN STEVENSON: Yeah.

DR. AMY SHAH: Open, because psychobiotics is basically saying there's a group of bacteria that work with your own bacteria to completely change how you feel and think on a daily basis. I mean, that to me is mind blowing.

SHAWN STEVENSON: Yeah. Yeah. You just said it, there's so much data on this now. And even fecal transplants with humans changing the person's kind of mental state or their perception of things, not just their state of health and kind of fixing things they didn't even know were wrong or trying to fix, but also just changing their disposition by changing what's happening with their gut bacteria.

DR. AMY SHAH: What I find fascinating is that in a landmark study in nature, they found that it takes just three days to start to markedly change your microbiome. So say we don't wanna get a fecal transplant right now, it's illegal [laughter] in the US. It's not FDA approved even. It's just for a very small, tiny subset of patients who have Clostridium difficile. If you say, well, what's another way to change my microbiome? I'll tell you, it's rapidly changing your diet. Three days is all it takes to actually change the entire environment. These microbes, they're half-life is very, very short. And so you can really start to see changes right away.

SHAWN STEVENSON: So what are psychobiotics specifically?

DR. AMY SHAH: They're bacteria. They're bacteria that change your mental state, not through your brain, not through a pill, but they go into your gut and they work with your microbes in your gut, and they send the signals to the brain. And so what we are trying to figure out is, whoa, okay, this is happening, but what bacteria, which ones, who should we use this on? This whole world is exploding. Of course the pharmaceutical industry wants to get in on this. They want to create the right cocktail to make you happier to, obviously good things cure, depression, dementia, Alzheimer's. We know that there's in the models you can cure all of that. So there's potential there. So, so far what they found is when they supplement psychobiotics with medications, they work in conjunction. So if you're taking an SSRI, so a common citalopram, Celexa or a medication for depression and you take a cocktail of psychobiotics, your medication will work better.

DR. AMY SHAH: What they're trying to figure out is what is the concoction of bacteria that we don't even need the medication anymore. And we are still trying to figure out is it the same for everyone? Does it depend on your baseline microbiome? Probably it depends on how healthy your microbiome is in general, because we know that the better diversity you have in your microbiome, the more dopamine and serotonin and good feeling chemicals you get. So it depends on your baseline too. So maybe we just build up these people's, anyone who wants to change their mental state, maybe you start by just building up that diversity and that level of bacteria in your gut and see what happens. One thing you can do that is non-food is getting sunlight. And we know about circadian rhythms. It helps you become less tired. It helps your sleep the next night, but it also helps your satiety. And we used to wonder why, when you go on vacation, have you ever noticed you're just not craving as much, you're not hungry for the same bad foods. You're feeling a little happier.

SHAWN STEVENSON: Depends on what vacation.

DR. AMY SHAH: Yeah, Well, yes.

SHAWN STEVENSON: You're going on.

DR. AMY SHAH: Exactly. [laughter] But usually sunlight has people intuitively know that it makes them feel better, not as fiending for cravings.

SHAWN STEVENSON: You crave different things or you have hunger for different things.

DR. AMY SHAH: Right. So sunlight releases a hormone in your brain called alpha MSH, which is shown to actually help in satiation. And so getting some, especially in the morning, getting some morning sunlight could be an easy way for you to start stacking these habits to improve the things you crave, to improve your sleep and your mood and your energy levels all in one action.

SHAWN STEVENSON: Yeah. And it just makes sense biologically, just looking at human evolution, that sunlight is a cue. Right? Versus hiding out from the sun. We might be in a place, our biology is telling us we might be under threat. We might be in times where there isn't access to sunlight. So maybe it's a habitual winter, a long winter. We need to stockpile the calories on our bodies.

DR. AMY SHAH: Yes.

SHAWN STEVENSON: All of these things, again, it's getting us to realize that we are part of this. We're a part of nature. And I'm so grateful for you because you talk about circadian rhythms and circadian nutrition and really getting us to think about being more in alignment with the world around us. Thank you so much for tuning into the show today. Make sure to share this out with somebody that you care about. Share this out on social media. You can take a screenshot and share it out. And of course, you can send us directly from the podcast app that you are listening on. And it truly does mean so much sharing is caring. You've got some epic master classes, an incredible guest coming your way very, very soon. So make sure to stay tuned. Take care, have an amazing day, and we'll talk with you soon.

SHAWN STEVENSON: And for more after the show, make sure to head over to the modelhealthshow.com. That's where you can find all of the show notes. You can find transcriptions, videos for each episode. And if you've got a comment, you can leave me a comment there as well. And please make sure to head over to iTunes and leave us a rating to

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