

THE MODEL HEALTH SHOW

EPISODE 642

Why Fertility Rates Are Rapidly Decreasing & How to Naturally Boost Testosterone

With Guest Mike Mutzel

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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. Total fertility rates worldwide have dropped by nearly 1% per year from 1960 to 2018. This is according to a new report in The Scientific American. The researchers stated, "When people hear of this there's often a natural instinct to shrug it off believing that 1% per year Isn't really a big deal But it adds up to more than 10% per decade and more than 50% over 50 years". There are a few things in our reality that are more important than this issue. We're talking about the rapid and shocking decrease in the ability of our species to reproduce.

And even miscarriages have also been increasing by about 1% per year in the same time span, as well as a 1% decrease per year in testosterone and average sperm count. A recent meta-analysis published in the journal Human Reproduction Update found that sperm counts have declined by 50% in just 40 years. Something is severely wrong, we already know what it is. But many people are continuing to place their trust in the very same entities that are causing the problem and profiting from our collective suffering "Big Pharma" and "Big Agriculture", have raked in trillions of dollars feeding our citizens poison and then profiting mightily from treating the symptoms of the dysfunction and diseases caused by our stress and our poor diet.

Not only are we not getting well, but virtually every chronic disease that was rare just 50 years ago has now reached epidemic proportions. On today's episode We're going to dive in and break down how this rapid and shocking decline in our fertility rates here in the United States and really in the developing world period has been unfolding. We're going to look at testosterone and some of the secrets to helping to reverse this that shouldn't be secrets. And we're also going to look at some of the hidden influences that are impacting our hormones every single day that the average person is interacting with again unknowingly that's contributing to this issue. But most importantly we're going to lean into empowerment and some of the things we can do that are clinically proven to optimize our hormone function and to improve our rates of fertility.

This is information that we all need personally, but also extending this to our family members. To our extended family, to our community, and to our culture overall. Most people have no idea that this issue is going on, because simultaneously we've reached another landmark in our overall population reaching eight billion people here on planet earth. So it's just how is fertility going down when that's happening simultaneously? And A big part of that story is the extended lifespan we've been seeing. So there are more people that are just sticking around. However, even that just a few years ago our growing lifespan that has been going up each and every year each decade has now reversed.

For the first time in documented human history, the most recent generation is going to be the first to not outlive our predecessors. And so, the potential here is seeing a rapid and shocking decline in our overall population if we don't become aware of this issue and also start to implement things so we can help to protect our bodies, protect our biology, turn the situation around and most importantly again to get our citizens empowered. So I'm very, very excited about this episode. We've got one of the most brilliant people in this field on for us today to really help us to dive into these issues And so get ready because this is going to be an absolutely mind-blowing episode. Now one of the most important inputs for our testosterone, and this is also something we do touch on in this episode, but to just expand on it a little bit more. This was published in the Asian Journal of Andrology.

They found that testosterone is not subject to circadian variation in the same way that cortisol is or other hormones. Where they're just getting produced at certain times and when we're healthy and things are synced up, it is what it is. Testosterone was found to have a very sleep dependent nature and in fact the researchers called it, "A sleep dependent factor in producing testosterone itself". They found that testosterone remains elevated for the duration of sleep. Then the subsequent decrease in testosterone depends on how long we're awake. Essentially testosterone decreases more and more the longer that we are awake. When we go to sleep, we're plugging into a testosterone refilling station.

Alright, we're getting it topped off if we're getting adequate amounts of sleep. But again, as we're up walking around just doing the life thing the testosterone is just going down further and further. However, there are of course, there are implements that we can do in our waking hours to help to nudge along testosterone, but there is nothing more remarkable than our sleep quality for our testosterone levels. In fact, if you want a real world example of what can happen when we're not getting adequate sleep, a study that was published in 2011 in the journal of the American Medical Association confirmed that even young men who are sleep deprived over the course of just one week getting five hours per night over the course of just one week study period, their testosterone levels plummeted by up to 15%, now that might not sound like a lot but the researchers equated that to your testosterone levels dropping as if you were suddenly 10 to 15 years older. So again, we're talking about sleep and testosterone, and fertility and overall metabolic health.

This is no joke. It's something important for us to put some more focus into, obviously having a great evening routine and healthy sleep inputs are incredible. There are also things we could do with our nutrition and I really love in my kind of evening wind down practice to have a cup of reishi tea. And this was because research that was published in, Pharmacology Biochemistry and Behavior, found that reishi is able to significantly decrease sleep latency, meaning we fall asleep faster. Increase our overall sleep time and also increase sleep efficiency by improving

our non-REM and our REM sleep, pretty remarkable. Again, it's been utilized for thousands of years now. We have new clinical efficacy on the benefits of reishi mushroom. But you need to make sure that it's dual extracted, this is important.

And this is going to be coming exclusively from Four Sigmatic. Go to foursigmatic.com/model, that's F-O-U-R-S-I-G-M-A-T-I-C.com/model get 10% off the incredible reishi elixir. They also have a really nice reishi hot cacao, all organic ingredients, tasty super delicious and helps to get this incredible source of nutrition into our bodies. And also, again just a huge fan of the way that they do things, because they do a dual extraction of the medicinal mushrooms. Hot water extract, alcohol extract to make sure we're getting all these compounds that can improve our sleep, but also our waking performance as well. Head over there to foursigmatic.com/model for 10% off store-wide. Now let's get to the Apple Podcast review of the week.

ITUNES REVIEW: Another five-star review titled “Number One Source To A Healthy Lifestyle” by Amber Drysdale. “Listening to you for several years and you still put out the most top-rated material time and again, easy accessible information for our health and wellness backed up by scientific research and practical tools that you can implement in everyday living. Love, love, love this podcast. Shawn's voice and humor are so enjoyable coupled with his extensive knowledge and background, I'm able to learn from him effortlessly and share it with others.”

SHAWN STEVENSON: Incredible. Thank you so much for leaving that review over on Apple Podcast, man that means everything. I truly, truly do appreciate that. And if you're yet to do so please pop over to Apple Podcast and leave a review for The Model Health Show and on that note let's get to our special guest and topic of the day. Our guest today is Mike Mutzel and he earned his Bachelors of Science in Biology from Western Washington University in 2006 and completed his master's in clinical nutrition from the University of Bridgeport in 2015, he's also a graduate of the Institute for Functional Medicine and he's been applying these functional medicine technologies into his clinical practice.

And in addition to his clinical work he's also a best-selling author and one of the most incredible teachers right now on metabolic health. And again, we're going to dive in right now and talk about metabolic health in association with our hormone health and fertility rates and again this is incredibly important information that every single person should know. So, let's dive into this conversation with the amazing Mike Mutzel. We've got one of my favorite people in the health and fitness space Mike Mutzel back here in the studio.

MIKE MUTZEL: Thanks for having me, bud it's always great to be with you.

SHAWN STEVENSON: Yeah, my guy man, you just, again I was just sharing this off-camera, just your ability to analyze data, to perspective take to look at things from multiple sides. It's really a gift man.

MIKE MUTZEL: Thank you.

SHAWN STEVENSON: And I'm so grateful for that. You sent over some data recently on something that should have everybody's eyes open wide which is, "Declining fertility rates". Now, ironically, we just passed 8 billion people here on planet Earth. So, it's just there's this counter story, counter narrative happening, because again, we've seen this really notable decrease in fertility on many levels. So today I want to talk about that, and also talk about one of the contributing factors, which is a plummeting in our testosterone levels. So, let's dive in, let's talk about it.

MIKE MUTZEL: Yeah, it's so concerning. We were kind of joking offline, if the change in fertility that we're now seeing the decline in humans was happening in bears or cats, animal activists would be all over this. But because it's happening in humans, it's like people just say, "Oh, it's normal". It's becoming normalized, I'm sure you have friends or people that you know who have tried to have kids in their late 20s and early 30s. I would say the majority of the time now these people have to go to fertility clinics to get help, whether it's on the female side or the male side and I know we're going to probably talk about birth control and low T and all these things. But for me, it's pretty concerning.

We both have kids, so we care about the future of our world and... Yeah, it's really concerning. So, you know these numbers get thrown around in terms of like when human beings will no longer have functioning sperm and so forth and a recent... It was a BBC article just a few days ago found estimated by 2050. Sperm motility is going to be like 0%. So, majority of the human species will be infertile at that point, which is absolutely insane.

So, we can talk about the persistent organic pollutants, endocrine disruptors, which I think are a big one. I think birth control use in women starting at an early age when they're teenagers. It's taking testosterone and that's impacting then fetal growth development. So, there's so many factors, but what's cool about the science is the research clearly shows that it's modifiable, it's our environment and when we make small changes with sleep, that you talk a lot about with nutrition, with exercise we can talk about DHEA, detox, sauna all of these things. They have a powerful influence on fertility and testosterone levels. So, it's scary on the one hand on the other hand, it's modifiable, which is really important.

SHAWN STEVENSON: Let's talk about one of these really interesting inputs which is new for our species. Which is the chemical compounds in our personal care products, in the air that

we're breathing, from various factories and let's talk about that. And how is that affecting our hormone?

MIKE MUTZEL: Yeah, that's a good point. So, most of these persistent organic pollutants or EDCs endocrine disrupting chemicals, they mimic or bind to the estrogen receptor in the body, and they also can augment sex hormone binding globulin. So, if you think about your hormones, they're sort of driving around on the seat of a bus on binding globulins or albumin. And that's how these persistent organic pollutants impact that, they also impact the brain to gonad connection. So up at the hypothalamic pituitary adrenal gonad axis. So, they're impacting our hormones in a in a negative way all throughout the body.

And particularly when we're exposed to these in utero like if mom or dad... So parental nutrition before conception is really important. I think as society we put a lot of onus on moms, "Oh mom has to detox, mom has to get healthy", and dad's over there smoking cigarettes and drinking whiskey. It's really important for both parents to improve their diet lifestyle before they even think about having kids. But yeah, unfortunately these things are everywhere Shawn. Even some of the clothing that we buy at the grocery store, they put flame retardants in them, our children are playing with stuffed animals and so forth and they have endocrine disrupting chemicals. And so, these things are everywhere and it's not to create this fear-mongering message. It's that we need to minimize the exposure, because we know they're everywhere. So, you talk a lot about food, and you have an upcoming book.

That's going to be amazing. So obviously there's the environmental working group ewg.org great resource for people just to know, especially now with food prices being so expensive which foods should be a... Like it's a non-negotiable, should be organic strawberries, raspberries. Those are things that are heavily sprayed, because bugs love them. Cauliflower broccoli, I've tried to grow cauliflower all I attracted was a bunch of bugs, forget it, because I'm not using like, herbicides.

So those I think are really important for people to minimize their exposure to. Another non-negotiable is filtered water for the family, the household, because commercial water is now tainted with industry runoff, which this is crazy. There's this book called, Fateful Harvest, I don't know if you've heard about it. I'll send you a copy as a Christmas gift. You're going to dig this book. Have you heard the story before?

SHAWN STEVENSON: I haven't.

MIKE MUTZEL: Alright this is the craziest thing that... And this book has been out for about 20 years. So, companies that are making like aluminum smelter plants and these companies that are you know, using industrial chemicals. It's very expensive for them to dispose of them in an

environmentally friendly way. So, they thought, "Okay, well, what if we just sell these or pay fertilizer companies to take this stuff and sort of dilute it? So, when they're spraying the fertilizer that they have to spray in the land anyway, it's perfectly legal for them to literally sell arsenic lead and mercury cadmium atrazine and to put it in fertilizer".

SHAWN STEVENSON: Wow.

MIKE MUTZEL: So, this stuff even if you're getting potatoes or that's non-organic, it could have levels of cadmium and mercury and so forth that are way higher than we would ever be considered healthy, but there's this little loophole. So, I think we really need to start becoming more connected with our food, go to the farmers market as a family with your kids get your kid involved maybe get a little garden bed in the backyard and try to grow it yourself a little bit.

So, the point is, we're constantly exposed, and we need to be detoxing every day. Exercise moves our muscles; it moves our lymph our body's sort of garbage system. Sweating is really good, so going in the sauna, doing hot yoga. Just hanging out in the beach, we feel good on vacation, part of that might be the sun, yeah, but we're sweating, we're getting rid of these compounds. So, they're really disruptive and I don't want to get too much into the details, but I think this is an important point, because people say, "It's just a little, Mike come on, it's just little cosmetics or lotion, it's like a small amount". And it's the dose that makes the poison that people say.

But as I mentioned in our body, we have thyroid hormone, we have testosterone, we have estrogen. But those are bound to binding globulins either albumin or sex hormone binding globulin. When we get these things the parabens the BPA and so forth, they're free floating, they're no... They adhere to what's called nonlinear pharmacokinetics. So, they're just floating around hitting the estrogen receptor or hitting progesterone receptors. And so, it's not so much about, "Well It's just a small amount", because they... Again, they're not required... It's just how the function of which they're not bound to these binding globulins, they're not on the bus like testosterone or estrogen is. And so, I think that's important for people to recognize that, even if you're getting trace amounts in cosmetics or in food packaging, fast food packaging is another big no, no, because of all the slippery stuff in there, coffee cups, disposable coffee cups.

I know it sounds nerdy, but like bring your own coffee cup or ask for their for here mug if you're going to have coffee out. One study recently found, they quantified how much microplastics is in a cup of coffee delivered hot from like a commercial coffee place. It's in the orders of millions of pieces of microplastic because you have that hot liquid. There's that kind of slippery lining inside the cup, that's getting into your water. Again, those little pieces of microplastic

are going around, hitting the estrogen receptor, binding up your hormones, stimulating growth, with regards to estrogen receptor binding. So, the stuff is, it's real scary.

SHAWN STEVENSON: That's bananas. That's going to hit a lot of people in their in their daily gel right there, wow, that is fascinating. And here's the thing, again, this is... All of this stuff has been normalized, but it's new, these are newly invented habits that we've taken on, it's just again to take a step back and really analyze things. And when you talked about pesticides, this is particularly pervasive in our culture. And the pesticide itself, -cide means to kill by the way. And what... We're doing it, when we have a rodenticide or an insecticide or herbicide, the intention is to kill this pest of some sort and the vast majority of the tons and tons and tons, we're talking about hundreds of thousands, millions of tons that are pumped into our environment.

They're either to disrupt the nervous system of the pest or it's being neurogenic or having those kinds of qualities to them or estrogenic, right? So, disrupting the reproductive cycle of the pest, right? So, disruption to the brain and nervous system, so they can't reproduce or so they die just outright kill them or making it so they can't reproduce, right? And the thing is about us too as you know, like stuff kind of bio accumulates in our tissues, especially if our body isn't really apt to eliminate these things our body does the best that it can. As a matter of fact, it might use our fat tissue as a little bit of a trash can.

MIKE MUTZEL: Well, there's this whole... Yeah, this whole field known as this contamination theory of obesity. So, you talk a lot of... And over the show with interviews and podcasts and so forth, calories in calories out. There's a carbohydrate insulin model of obesity. There's these different models and paradigms to explain the obesity epidemic. And so, scientists are saying, "Well hold up both of those models are kind of flawed, calories in calories out and also the carbohydrate insulin model of obesity. What about this contamination theory?"

Because as it turns out there's a saying the solution for pollution is dilution. So, if you can dilute the toxins, that's why you know, if we have food poisoning, we have diarrhea, right? Your body's dumping water trying to get rid of whatever is in your gut. Well, what if all this obesity that we're seeing now in children... Even the obesity epidemic is hitting dogs and household pets. So how could you really explain that with just calories in calories out or carbohydrate insulin model?

So, this contamination theory of obesity model is explaining or sort of characterizing how these environmental chemicals are changing. We talked about hormones, but the adipocyte the fat cell and the sort of genetic metabolomic aspects of the fat cell are being augmented with these chemicals and stored within them within the lipid droplets, which is like the functional unit of the fat cell. And to me that's... On the one hand it's kind of empowering,

because some people say, "Look I'm eating really well, I'm..." We've heard these stories, like you get DMs all the time about this.

It's like well, what else could it be? It could be your hormones and/or it could be persistent organic pollutants endocrine disrupting chemicals. So, I think that should be another proxy that people should look at and consider. And there's a blood biomarker, the category of test... Liver function tests, most of the time doctors will just run two of the three. AST and ALT.

These are the common ones. But there's a third one called GGT. And this is not esoteric, any physician or naturopathic doctor runs these all day long. GGT, is increased when there's a need for more glutathione production. And churning of and creating more glutathione within the cell it starts to increase.

And so, in alcoholics when you're drinking a lot of ethanol glutathione is needed to help combat some of that toxin from ethanol. But it's also been shown to increase with people who have high exposure to these endocrine disrupting chemicals. So, if people are wondering, what's my body burden of this? If they're kind of curious next time they do their annual physical they can look at their liver function, test and make sure the doctor includes GGT, 'cause it's frequently neglected for whatever reason.

A GGT over 30 has been shown to correlate... It doesn't mean it's directly causative, but it's correlated with higher body exposure to these compounds. Again PCB, styrenes, BPA, microplastics and some of the cosmetic parabens and things of that sort. So that's a good way to sort of figure out...

Also, if people have body odors, if they go to the gym and they smell really bad, they start to sweat. Some of that... It sounds weird, but the excretion of that could be linked to build up of these chemicals in the body. For example, I stopped wearing deodorant back in 2016. And at first, I noticed like a nasty smell, but I've been... A big part of my lifestyle is sauna therapy. And you're sweating a ton. And in that sweat, you're getting... Releasing, lead, cadmium, mercury, all the heavy metals, plus these persistent organic pollutants. So, I think it's a good thing to sweat. Make sure people sweat every day.

SHAWN STEVENSON: Yeah, and by the way fun fact my guy's not funky. Alright, and this is person-to-person analysis here. This is possible, it's just like, again what did humans do prior. But this also speaks to the interaction with those things and the microbes that we're carrying, right? And also, the loss of species and how all this stuff is getting processed.

You just brought up a really important point which is the health of our organs is going to... And just our cell... Cellular function overall. But to be able to "detoxify" these compounds and

process them and to get them out of our system, if our organs aren't healthy, if our liver is not healthy, if our lymphatic system isn't functioning properly. And so, this goes right back to your initial point, which was... I was like, "Why is he mentioning sauna therapy specifically, like repeatedly?" Because it's such a great tool for you to use one of your largest organs of excretion to help your body to process and get this stuff out of your system. 'Cause your body is always trying to find a safe way to manage things. Where our bodies are intelligent, but part of the problem I think is we think our bodies are stupid. Like why are you stupid... Blood sugar, why are you doing this?

It's the input, it's the adaptation. When you have insulin resistance your body is adapting to abnormal conditions. Dis-favorable conditions to keep you alive. It's changing the way that it functions. It's pivoting, like, "Okay, that I keep getting this exposure. I'm going to operate like this."

And so, helping to create conditions to where we detoxify these things. And by the way, I got to mention this because this is what this episode is really about. We talk about the declining fertility rates. This was published in the Scientific American. And they were looking at fertility rates from 1960 to 2018. And they found that total fertility rates worldwide have dropped nearly 1% per year since 1960. Here's a direct quote from them, "When people hear this there's often a natural instinct to shrug it off, believing that 1% per year isn't really a big deal. But it adds up to more than 10% per decade and more than 50% over 50 years". This is where we're at with fertility rates dropping. We're talking 50% in the last couple of decades. That's insanity.

MIKE MUTZEL: That's insane. Like I said, if this was happening to squirrels' people would be outraged like, "Save the squirrels." It's wild. A lot to unpack right there, but you brought up something that I wanted to mention and that's the microbiome. So, another mechanism, we talked about hormones. These microplastics they disrupt both the gut barrier and the ecology of our gut microbiome. And so that's another big aspect. How many people do we know that have digestive issues. They have asthma allergies, gut related complications of dysbiosis or leaky gut. So, exposure to that is unfortunately, that's another mechanism. And so, we need to be aware of where we're getting these things from. I mentioned food packaging, a big one. Antibiotic residues and pesticide residues in the food itself. So, the organic, farm-to-table sort of approach is really good.

And then the cookware. A lot of people don't think about this. I go to Airbnbs when I travel, I was just actually at one this morning and I was like, "Alright if I was going to make eggs in this Airbnb there's a Teflon pan with all these scrapes in it". So that Teflon it does have aluminum and aluminum is linked with Alzheimer's, but it also has these these perfluoro compounds. I think PHAs one and PHA... So, there's a bunch of these long names. The Perfluoros are really problematic.

They're what's also in the flame retardants, which is also in unfortunately our furniture, it's in clothing now. But we want to make sure that we're cooking our food in like stainless steel or cast-iron skillets and not cooking... What you don't want is heat and plastic together. And that's why we mentioned the microplastic in the coffee cups. That's what is going to leach these things out. And so, it's important that if you do get takeout, don't warm it up in the microwave, put it on a plate and then warm it up, or put your food into a cast-iron skillet or a stainless-steel thing, so that you're not absorbing those or increasing the absorption.

SHAWN STEVENSON: Yeah. Yeah, that's a big marketing ploy, is the microwavable. Like we want that. But that convenience it's... Essentially, it's a deadly convenience, especially when we're talking about long-term effects of keeping our species here on the planet.

MIKE MUTZEL: Yeah.

SHAWN STEVENSON: So, let's talk a little bit more about this side with testosterone because you also had a really great recent study on walking, and how that can affect our testosterone. Let's talk about that.

MIKE MUTZEL: Yeah. No, so important. So, the... It's impossible to disentangle the decline in fertility with the commensurate decline in testosterone. They're totally related, in both men and women actually. So, fertility is impacted by testosterone in both genders. But yeah, a recent analysis in 102 thousand people in Israel, men over the past 16 years found testosterone levels... And this is... It's important to recognize this. Age and obesity independent, right? Hat there was a 37% decline in testosterone levels of men in their reproductive years. So, men between the ages like of like 15 and 30. So that's almost a 50% drop, 37%. And I think it's important for people to recognize, sometimes when we speak of testosterone, there's this association with like toxic masculinity and this, we're not promoting that we're promoting health. For men testosterone is linked with muscle mass.

If you don't have muscle mass, where's the glucose that you're having in your kombucha going to go? Like muscle is a major glucose sponge. It's where 80% of post-meal glucose is deposited, in muscle. Muscle is what's going to help you get out of bed when you're older. Muscle is going to help your heart, is the muscle. So, if you don't have healthy muscle, you don't have a healthy life for both men and women.

And so, I think this is really important. Low testosterone levels are linked with Alzheimer's, dementia in men as they go get older, cardiovascular disease all-cause mortality. So, it's impossible to disentangle healthy normal testosterone levels from health. And again, we're

seeing this massive decline. And I think part of it of course is the environment. A big part of it is obesity and so forth. But there is this other sort of what factor.

What is it in the literature. Because again, there's this obesity independent effect. All that being said obese people, diabetic people, people who unfortunately suffer from chronic diseases like, sleep apnea and sleep disorder breathing have lower testosterone levels than people who don't. But as you talked about a simple fix that all of us should be striving for is just walking, both men and women. But this study found... I want to say it was like 400 men, or maybe it was more like a thousand, in that ballpark. The study just came out in the summer of this year, found that men who walk north of 8,000 steps per day, and they controlled for all these other variables in the statistical analysis have higher levels of testosterone compared to men who don't walk 8,000 steps per day.

And there's like a linear progressive stepwise increase. So, let's say one day you only walk 4,000, but try to get at least 8,000 steps per day. And mechanistically, they don't know why that is. Is it because walking is linked with less belly fat better insulin sensitivity, who cares? But the point is that you need to walk. And that being said there was another study that just came out in 329,000 people. And they looked at all sorts of diseases and found again walking is one of the best ways to prevent obesity, hypertension, sleep apnea, type 1 and type 2 diabetes. There was... Depression was a big one. So again, people who walk between eight and 10,000 steps per day have a significantly lower chance of developing the most common conditions and ailments that people go to the doctor for. So, it's like how many physicians are writing a prescription, "Hey Sally, I know you have sleep apnea, I know you're depressed, I know you're obese. Here walk 10,000 steps per day."

But literally the scientific research in 320... This wasn't like 30 people, 329,000 people in this particular study and it was published in Nature. So yeah, I think... You know, my general rule is space out the walking as well. So, two thousand steps before breakfast, which is doable. Even if you have kids bring your kid with you. My daughter and I we walk to school and she loves it. She's talking, "Dad, dad... " You know?

SHAWN STEVENSON: Yeah.

MIKE MUTZEL: It's just great. You're in training, your body circuiting clock system, getting light into the retina all of that. And so, just space it out. Do three thousand... Or sorry two thousand before breakfast, after lunch is a good time to walk. Especially if people feel that post-meal kind of lethargy and they get tired. Part of that is the reactive hypoglycemia. Blood sugar goes up, insulin goes up and then blood sugar goes down and you feel lethargic. And so, a great way to sort of blunt that is just to take a walk.

SHAWN STEVENSON: Wow. You just said it man. You know this being prescribed is for me at this point it's negligent, is pure negligent. Because how many studies do we need to affirm like your genes expect you to walk, your DNA requires you to do this movement. It's what we're designed to do. And so, if you can give a prescriptive thing like, hey if your doctor prescribes you four thousand steps, like that carries so much more weight psychologically for people today. But we have this knee-jerk reaction where we say, "Well, they won't do it anyways."

MIKE MUTZEL: Right.

SHAWN STEVENSON: This is the problem and unfortunately it becomes integrated into the culture with physicians, and they start to parrot that to themselves, you know, "I advise them to have a diet, and to eat good and exercise, but they just don't listen, so I write this prescription for a drug". When in reality it is your job to help to find that psychological pathway to inspire them to do the thing, that's the best use of your time. But unfortunately, the field is not trained in that and it's structured in a way where you don't even have the time to do it if you wanted to. And so, what we have is a system of sick care where we're just churning out incredibly sick people and creating this false belief that we're living longer when in fact we're dying longer. We're just extending people's suffering. And so, this input... And by the way, so with this I was just thinking like how does this impact testosterone so mightily? One of them is the opposite of the testosterone tanking because of our epidemic level of sedentary behavior in our culture today, right?

So that is anti-testosterone. The lymphatic system which you mentioned earlier being it... Like walking is the best thing for your lymphatic system. There's nothing even close. And then, also bone health, there is this correlation with our bone health and sexual function and testosterone as well. And this here, this is the one. And I don't think I've ever even said this term on the show but... In this context with this, but you are walking is an environmental signal. It's an environmental signal that you are a person of vitality. You're a person that needs the hormones to be able to do this task. You're somebody who's functioning and adding to society. All these ancient programs in our genes that say, this person needs this juice, because they're out here living and adding to humanity with those steps. They're walking towards something, let me assist. If you're not doing that, why would life give it to you.

MIKE MUTZEL: Beautifully said. I think it's a great way to reframe that. And of course, also, if we think about these sexual organs, they depend upon a healthy cardiovascular system. You know to get an erection it's 100% contingent upon you know vascular health. Like ED, erectile dysfunction is linked with endothelial dysfunction which you talked a lot about on the show. The endothelium of course, is the functional unit of your vessels. And walking is so good for the endothelium, for the heart, for the cardiovascular system, especially in the post-meal

window. Because... You know eating is... We all love eating, we all love food. It's a mild stressor, eating raises cortisol. Eating raises counter-regulatory hormones.

And so, if you can walk and mitigate that, that's such a good way. So, in the post-meal window, that's just a good reminder and it's just like a habit. A lot of us get in the habit of like, "Okay, I'm going to eat dinner and then watch Netflix." Get in the habit of, "All right fam we're going to eat dinner and then we're going for a walk." And trust me your kids will... Unless it's raining and there's a bunch of snow, most kids love it. My daughter now we get the dog out and we're walking and she's talking, and she's running, so make it a family thing. And yeah, kids are not walking that much unfortunately now.

SHAWN STEVENSON: Oh, man. And this is what we see, and course obesity in children has tripled since 1980 which is not an accident. This is again, we're creating a culture of sedentary behavior. And I can affirm this same point because it might seem... Especially if the family culture isn't such where... Or we might fall into a window where we're not getting out or being active together and so it's just a little bit more of a pull to, "Talk our family members into doing anything without fail". When we're walking together, my youngest son and I, this is when he is the most talkative, this is when he's sharing the most of what's going on in his life, his ideas. And we also... I've found a creative input for him like which for him was... Just a couple years ago. If we can walk and he brings a weapon with him.

MIKE MUTZEL: Nice.

SHAWN STEVENSON: So, I'm not talking about like a switchblade or whatever, but like his little ninja bow staff or like a sword or something. And he's just out there like doing his ninja moves or whatever and he's talking to me and telling me all the things going on in his incredibly growing mind. And so, again, but we get to create the culture. And these... Our devices are so attractive. So, him gaming with his friends like and getting into that mental loop it can be difficult. But we got to be aware of this, and we can bake in this movement. Like you've baked it in to walking your daughter to school each day. That is so amazing, so amazing.

MIKE MUTZEL: It's fun, she likes it. And then this is where I think wearables can be helpful. You know like getting a little Fitbit for your kid, and we did that. And so, she's always tell me, "Dad I got 10,000 steps. I got 12,000." So, I think that is helpful for people so that they can enumerate or quantify this. And then the other... Something to strive for. We all need goals, and we need benchmarks, and if you just say, "Hey look I'm going to commit to walking 10,000 steps per day." Then what you're going to do is... Like if you haven't... Maybe it's 8:00 o'clock and you have to go run to Target for some toilet paper, you're probably will park your car a little bit further away and then you'll get in an extra 400 steps. And that might not sound significant, but if you do that a few times throughout the day, that's an extra 2k or 3k.

And again, we're just moving. And so, I think, like you said stimulating the muscle throughout the day as well. Telling the muscle, "Hey..." And every time we move muscles we release these hormones called myokines. And they go into our brain, they affect memory, cognition. One study in 2021 found that myokines from weightlifting actually tells the fat cells to release stored lipids, so they help directly burn fat. So, there are so many benefits. And we just need to reshape our habits. That's all it comes down to is just make... Just committing to this. I know it's... January's coming up and I think a lot of people will be like, "Okay, what could I do?"

I'm going to go to the gym and do 45 minutes of cardio. It's probably better to do three 50-minute walks as opposed to just hammering out 45 minutes. So that's what I'd encourage people to do is just break this up throughout the day.

SHAWN STEVENSON: I love it. I love it. And also, we're looking at it through the lens of not just physical outward appearance of fitness but functionality and health.

MIKE MUTZEL: Yeah.

SHAWN STEVENSON: So, tying all that together. Because that's really at the end of the day that's what it's really all about. We do have these superficial metrics today more than ever again because of social media. But ironically while we might have that we also have the sickest most sedentary and obese society we've ever had. So, there's this little pocket of window and showing people what you're not doing and what you can't be and all this stuff. And we get into this hyper glamorized thing with physical fitness. Now not to say that we can't be inspired and have something to strive for, but I think sometimes depending on our mental state we can disempower us when we're looking at it depending on our... This even gets into our health coming into going on these apps, and it creates this learned helplessness. Or like, "I'm never... I'm not the type of person that can do that." Or "I'm... I don't have the willpower". Or "I don't have what it takes to have this consistency or discipline".

We create this narrative that moves us further and further away. So, I highly encourage you to follow Mike on social media with these empowering messages and also, these are things that are doable. That's the thing, when you share 8,000 steps like... And we again... But we can still have our stories around how it's not possible. But instead of walking our kid to school in the morning, how about after we pick them up or when they get home off the bus. Like you guys, the first thing go for a walk together... So... Or for myself and my youngest son, I'll pick him up we'll go right to baseball practice or batting cages, or we'll go to do some field work, or... I just kind of find ways to bake it in.

MIKE MUTZEL: Totally.

SHAWN STEVENSON: Because dude, when everything was shut down it changed the dynamics where... Okay, well right after the school, "School time." We get outside on the block; this is physical fitness time. Like we're going to do some stuff, we're going to run some football patterns, saying you're going to need you to run a slant, have your friend run an end or we're just going to get out here and create ways to have fun, interact. Now a question is you live somewhere where it can get a little nippy, right?

MIKE MUTZEL: This is true.

SHAWN STEVENSON: There are places they got 18 feet of snow. Like now what about during the cold weather Mike? What do we do as an alternative?

MIKE MUTZEL: It's a great question Shawn. I was just in New York this weekend and it was super cold. I think you got to embrace it. There's something to actually being in the cold weather and being outdoors that has some benefits. So, invest in a jacket and just go outside and do it the best you can. Because, when the weather is cold like that, and people stay inside they get depressed. And then, there's your kid and rhythms get all screwed up and then they're on screens. So, I think we need to just learn to embrace it and like you talked about with walking and you're telling your body like you are a person of purpose of meaning and vital if you're not out embracing the cold and if you can't tolerate any cold, that's a sign that you're missing some resilience. I know that might sound harsh, but I have family members who grew up in London, in the UK long, long time ago, 56 years ago and they didn't have central heating and they had... In houses back then I might describe this a little wrong, but there was no furnace, right?

What was in the middle of the house was this tube where it was on fire so to speak. And then, so, if your bedroom happened to be... If you have multiple siblings and your bedroom happened to be away from the central of the house, you just had to tough it out. And we're so acclimated to saying Alexa turn on the heat or Siri turn on the air conditioning. But this temperature fluctuation...

SHAWN STEVENSON: You know you just turned some people stuff on right now.

MIKE MUTZEL: I know people like, "What?" TV's going on. So yeah, I think it's really important for people to recognize it like having some variability in temperature which also by the way, if we look about where the most obese people are in the US? It's in the South. Where in the winter there's heat and in the summer there's air conditioning. And so, there is this lack of thermal stress. It's an adaptive stressor that is helpful for people. So, you embrace it the best you can.

SHAWN STEVENSON: Thermal stress. That's another key word for today, lack of that which it's the ability of our bodies to adjust and if we just live in this So-called perfect little pocket of comfortability. That's not normal, and if not to say we can't have times of comfort and being nice and cozy and all the things. But there's so much to be said for resilience especially today to build up our stress resilience. And you find it bleeds over into every other part of our lives making us more resilient against... Fill in the blank. Now, but what about when we got the 18 feet of snow? Can we do, can we throw on Shaun T's workout video at home and do it with the kids?

MIKE MUTZEL: I think so for sure or go snowshoeing, right? Go skiing like if people live in that environment, become one with your environment. I think that's something that we also don't do. So yeah, I mean if you live in Wyoming or Montana a lot of those people will cross-country ski or go get some snowshoes and do some things like that. I think that would be a good... Find a winter activity that you enjoy, it could be gardening, it could be housework and whatever. But one thing that I wanted to mention, 'cause some people will say, "Well, I have bad knees? So I can't walk, I've osteoarthritis, Mike like 10000, 8000 steps, there's no way."

Well, osteoarthritis is actually a metabolic disease. There's a lot of research to show this. So people with achy knees, achy hips when you start to become more metabolically healthy, you have more leptin sensitivity, you reduce your levels of leptin. And it's been shown that when people lose weight the arthritis in their hands goes away. You're like, "Well, how could that be?" People are not doing handstand walking, they're walking on their feet, right? Well part of that is because their inflammatory tone has decreased, because they're more leptin sensitive. So as people become healthier by way of walking their arthritis symptoms will improve.

So again, the people that have that perceived hiccup or that excuse, they're saying "Hey, I can't do this because of my knees." Your health will improve, because you're moving more synovial fluid in those joints. You're lubricating the joints and by becoming more metabolically healthy losing the fat. Guess what? There's less inflammation there, so it doesn't hurt as much. And lastly, a lot of people recognize that Steve Jobs who's an amazing entrepreneur and innovator. He took his meetings walking, instead of just sitting around... I like going out to dinner going to lunch with people but sometimes with my friends I'm like, "Hey, let's meet at the beach and go for a walk, let's walk and talk". And this, if you look at one of the pivotal people in last 50 years who have changed the course of humanity with iPhones and technology all those meetings many of them were done walking. So, there's some of that creative process is stimulated. So, a lot of us are working from home, doing Zoom meetings, and let's take the Zoom meeting when you're out on the walk. Just wear an earpiece or get a set of headphones.

SHAWN STEVENSON: Yeah, yeah. It's again there's so many different places through our day where we can bake it in right? So that's my tendency, is if my phone rings and I get on a call, I

just, I start walking, I just pick it up and I walk. I go outside and also, it's probably a little bit more quiet than inside of my house as well. But just finding creative ways to implement more movement into your life. That's the overall mission and just take a step at a time literally, literally.

Got a quick break coming up we'll be right back. We're knocking on the door of a complex cold and flu season. We're probably going to want to skip out on popular cough medicines. Here's the ingredients in one of the most popular conventional cough medicines FD&C Blue 1 FD&C red 40, flavor, high fructose corn syrup, propylene glycol, saccharine sodium. Do any of these things speak health? These conventional cough syrups are the very definition of taking poison that's glamorized as medicine. Whereas we have real sustainable time-tested things that we can turn to. A randomized, double-blind placebo-controlled study, revealed that honey, high quality honey was able to outperform a placebo and significantly reduce cough frequency and severity at night and even improve sleep quality. When it comes to cough syrup, my family uses Beekeeper's Naturals. Try their incredible propolis cough syrup today.

Make sure that it's in your cabinet for when you need it. It's also naturally powered with immune supporters like, pure buckwheat honey, elderberry, chaga mushroom, bee propolis and olive leaf extract. And speaking about one of those other ingredients, a double-blind placebo-controlled study published in the peer review journal *Advances in Traditional Medicine*, found that after 48 hours of treatment with elderberry, coughing was relieved in 31% of patients versus the placebo. The study also noted significantly reduced fever, headache muscle aches, and nasal congestion within just 24 hours of utilizing elderberry. Beekeeper's propolis cough syrup, contains no drugs, no dyes or dirty chemicals or refined sugar. Head over right now to beekeepersnaturals.com/model you get 25% off. Automatically taken off at checkout go to [B-E-E-K-E-E-P-E-R-S naturals.com/model](http://B-E-E-K-E-E-P-E-R-S-naturals.com/model) for getting 25% off of their incredible propolis cough syrup and also their superfood honey. And I'm a huge fan of their propolis spray, especially for the immune system. Go to beekeepersnaturals.com/model for 25% off and now back to the show.

Let's circle back with testosterone because we're not just at the mercy of this. So, we've already talked about some proactive things that we can do, and actually this ties in a little bit, too. Well, you mentioned osteoarthritis, but we also have rheumatoid arthritis, which is the autoimmune flavor that we're looking at here and the interaction with gut health and our microbiome and how that can lead into molecular mimicry and the kind of onset of autoimmune conditions and symptoms.

I want to talk a little bit more about the microbiome here, because it's not just our human cells that we're reproducing, right? It's our microbes as well and having healthy microbial communities, whereas today we have a lot of species that have gone extinct or they're an

endangered species list, but nobody's advocating for them either. They're... Save the turtles, they don't really care about our microbes though. So, let's talk a little bit more about the microbiome interaction with our hormone health.

MIKE MUTZEL: Yeah, that's a good question. I don't know a lot about that to be honest. I do know that exercise is a great way to improve the diversity and the function of the microbiome. But I'm not totally familiar with the connection with hormones in the microbiome. But there was several studies in rugby players and athletes and in comparing them to sedentary control. So, these are people that are exercising a ton and their stability and diversity of the microbiome and levels of keystone species that keep the microbiome intact. So, if you have to take antibiotics because you get a cold or something like that it was much more stable and diverse.

So, this walking everything we've been talking about does tie in directly in that way. And so, I think that's a really cool things like if people are taking antibiotics or they have some gut issues or indigestion like staying active is really good for keeping that stability going. And also, improving the levels of these gut hormones that impact metabolism, appetite satiety, they're intimately connected to exercise. There's this drug, I can't remember the exact name, but it's been making some... It's a GLP-1 agonist, it's popular here in LA. A lot of actors are taking this. So, this is a gut hormone, that's actually been used to treat diabetes. I think you inject it single-mind or something to that effect. Have you heard of this?

SHAWN STEVENSON: I haven't no. I don't think so.

MIKE MUTZEL: A lot of people are talking about it now and prescribing this. But one way to increase this gut hormone is to chew your food, to eat mindfully and exercise. And of course, protein and macros come into that, but people are paying hundreds of dollars or even thousands of dollars for this drug, 'cause you have to get it injectable, you got to use an insulin syringe and all that. Well, you can actually just increase levels of this hormone with simple lifestyle strategies and it's a great way to curb appetite. And that's why sometimes when you exercise, you're not really hungry right after, why is that? Well, it's these gut hormones have been increased and there is crosstalk with the gut hormones and the gut bacteria. So to me, it's all connected and that's why it's not just one thing We have to think about how holistically how we live our life.

SHAWN STEVENSON: Yeah, so powerful. And I remember when leptin hit the scene and it was just leptin versus ghrelin it's very kind of superficial look at hunger and satiety. There's so much more than we know today, with our satiety signals and hunger signals and GLP-1 and adiponectin. But the crazy thing is so many of them have to do with the gut by the way, but also specifically what you're putting in there are going to influence the output and

performance of these various hormones. And so, with this association with satiety with metabolic performance with our hormones, this is an intimate connection with what we're putting into our bodies. Now with that said there's another precursor with this conversation about testosterone that we can put a little bit more attention on as well. Let's talk about DHEA.

MIKE MUTZEL: Yeah, I mean this to me, taking DHEA has changed my life so much, maybe that's why I'm like a little biased here. But this is a fascinating hormone that's made by our own adrenal glands and it's a precursor to testosterone to dihydrotestosterone which helps us with muscle mass and so forth. It's also the precursor to estrogen and estrogen derivatives. And it turns out that there is a guess what? Surprise, surprise a decline in DHEA levels. And I think this is really important for people to consider, because it's not on the radar, a lot of guys even they start to feel like, "I have low T, I go get tested. Okay, I'm going to jump on testosterone". This should be addressed long before anyone considers that and also peri and postmenopausal women should really consider testing their DHEA levels, because it's the sole source of androgens for women as after menopause. Because the ovaries do make a little bit of androgens, but DHEA is the main androgen, it's an androgen precursor in both men and women, really important. I've been running this on clients for a number of years and levels are just in the tank. Just like with testosterone like we talked about with that Israeli study.

So please go to your doctor next time you do labs run your... It's called DHEA sulfate, so that's the form that is enumerated on the tests and so forth, if you do a serum test. And most people are below the midline of the lab range and again, that's a problem because if you don't have DHEA... It's a little bit downstream from cholesterol, right? But cholesterol goes through these precursors progesterone then you have DHEA. It's going to be hard to make those androgens the testosterone that we're talking about. But the cool thing about DHEA is it not only is it indirectly impacting hormones?

But it directly impacts the brain it impacts mood cognition. There's DHEA receptors on immune cells. So, surprise, surprise people with low DHEA levels have autoimmunity have higher prevalences. You mentioned RA rheumatoid arthritis also Hashimoto's. So this is a very powerful immune modulator, low DHEA levels are linked with depression linked with cognitive decline in elderly people. And so, levels start to decline around age 30. It just naturally go, it's like we talked about with fertility, it's like 1% per year decline, doesn't sound like that much year-over-year, but you go 40-70 your levels at 70 are about 10% of what they were when you were 20. And The nice thing about DHEA is you can buy this over-the-counter, at least in the US. For some reason it's illegal in Canada and in Australia in the UK. But the cool part about DHEA in addition to all the other things that I mentioned from cognition and all that, is it can affect sleep in a favorable way, because the ratio of DHEA to cortisol changes and as we get older... Here's what's interesting about the adrenals is our cortisol levels actually increase over

time and our DHEA levels decrease, and it's the ratio that that kind of creates the anabolic catabolic balance in the body.

And so, by maintaining and optimizing DHEAs you can preserve your lean muscle mass and have better sleep. And so, there's some interesting research showing the difference between evening and morning cortisol impacts sleep quality, so if you have really high evening cortisol and low morning cortisol, you're going to have like crappy sleep. And DHEA has an ability to sort of antagonize cortisol signaling or decrease it. This is really common as you know women going through menopause or postmenopausal, sleep is a major problem for them, taking DHEA at night can improve sleep by potentially decreasing this cortisol at night. I don't know I get super excited about this and it's not like it's expensive. There's all these supplements that people take NAD, resveratrol you fill in the blank with all these, they cost 100 bucks a month. DHEA it's like \$9 a month at that. So, it's something that you can test, directly assess and then start taking.

And there's a little sort of formula for men, it's about 10 milligrams per decade of life, 40 years old 40 milligrams. For women it's 75% less, so 40-year-old women would take like 10 milligrams of DHEA, start there. And I don't know, I notice like with muscle mass and strength like I just turned 40 in August I'm stronger now than I was when I was 18. And of course, that's my diets better and this and that, but I really credit a lot of ability to recover from exercise with DHEA. So, it's exciting stuff and no one is talking about it. It's weird that it's not out there.

SHAWN STEVENSON: And you know what's so interesting... And by the way DHEA not DHA keep in mind, there's a distinction here, which that's the fatty acid omega-3. This is something that's more involved in... You even said another dirty word in there, you said cholesterol, right? That conversion into our sex hormones. So, this is along that pathway, but cholesterol is a seed kind of ingredient in this equation. So, would we see any issues if somebody's on a statin?

MIKE MUTZEL: I think so. Yeah, there's a lot of downstream consequences, right? As you know, I know you've talked a lot about this. So yeah, people on statins... And that's why a lot of NFL players don't take statins, because of this, 'cause they know their testosterone is going to go down. They might notice compromised sports performance rhabdomyolysis in the muscles and everything. So yeah, anyone who's been on like a vegan vegetarian diet or has adrenal fatigue or adrenal issues it's probable that their DHEA levels are going to be low. And again, this is linked with recovery linked with libido, all of this, it's all connected memory. And so, I think that if people are trying to proactively lower their cholesterol whether medications or diet. They might want to also test their DHEA levels to see where those are at.

SHAWN STEVENSON: There's something that for us to think about and I want to ask your opinion on this. Being that DHEA is a precursor for testosterone and estrogen as well, you said

something that jumped out to me that made me think of this question, which is you are already healthy. You're healthy, you eat healthy food, you're doing things that your genes expect you to do with your movement inputs your sleep all of these things. Now what if we're unfortunately, which we have this paradigm as a society looking for that pill like this DHEA is my thing but I don't have these other lifestyle factors in place and knowing that this a precursor, what about aromatization what about it going in the direction that we don't want it to go because we're eating a diet that's high in sugar and driving up insulin?

MIKE MUTZEL: Amazing point. I'm so glad you addressed this, because yeah, there's a subset of people for example women with PCOS, polycystic ovarian syndrome there's a lot of underlying insulin resistance and those elevated levels of androgens are causing the follicles to, the ovarian follicles to contain water, they get these cysts and so forth. So that's a subset of the population that you definitely would not want to give DHEA to, because their levels are already high. And like you said men who are insulin resistant, overweight, they're eating crappy food, their levels of aromatase are increased. So yeah, you can yank that DHEA down the wrong pathway. So maybe I did sort of make it sound a little bit easier than it really is. But this is something that... For people should consider when they're... And this is why you need to consider the whole picture, right?

Diet exercise nutrition and all that and I guess maybe it's a good time to disclose. The reason why I'm taking, is I did anabolic steroids in college. So, I did two cycles and so since then, I've done everything I could, but my testosterone levels never got back to optimal, just because they're really suppressive on the whole HPA axis. And so, that's why maybe I am an outlier in the sense that at 40 I really benefit from this, if someone doesn't have that experience maybe they wouldn't need it as much or notice it. But I know a lot of guy friends who maybe they didn't do steroids, but they did some of the precursors back then there was all these pro hormones. Some of them actually had steroids in them remember at GNC you could get some of these things, and so there's a lot of that going on. And so, I think that's another reason why some men might just have low testosterone, because we've been screwing around with our hormonal systems. Sometimes, you didn't mean to you went to GNC bought the pro hormone and thought I'm going to get jacked with this. But those things are suppressive on the HPA axis as well.

SHAWN STEVENSON: Yeah, wow. You know and there's so many different things out there now that again there isn't a lot of really rigorous studies done on some of these compounds. Because again, we just want to get jacked and tan. And this is also another point that we can make decisions in college that affect our entire lives. And so, but a lot of young... Like my son, my oldest son, he's 22, he just turned 22. And so, like a lot of his friends are doing the thing, and he can see it, there's a, it's certain culture around it. But so often you only see a minority achieve their fitness perspective, but even then, you're always chasing the pump. Whatever...

You can never be as big as you are after post workout in the gym. And whenever you get to that place just walking around, then you got to... You got another pump and you're just chasing that pump. But the thing is so often, they're using it as a crutch like you just said, where we're leaning on this particular thing versus like you have all of these other pillars in place and then you add this thing in and it's like it's a difference maker. And so, I love that so much because I don't think a lot of us think about... I love the idea of giving our body the ability to do a step in the process right?

This is why I like DHEA as being a resource versus somebody jumping right to...

MIKE MUTZEL: T.

SHAWN STEVENSON: You know, yeah, just straight T. So, give your body an opportunity, but most importantly again, what are your life conditions to help to support your body doing what it already knows how to do? And so right now there's obviously a big movement of delaying aging, right? Extending our vitality and there's some wonderful examples of it happening right now being available. This episode is so important, because we're painting the picture like it's bigger than that. You want to be as healthy as possible to deal with all of the sh*t going on in our world. And the things that we're exposed to, this isn't just going to be a walk in the park. Well, we need a walk in the park, you know what I'm saying? But this isn't going to be a walk in the park for us to have that extended lifespan and vitality, because we're living in a culture that has normalized sickness, right? And so, we got to stack conditions in our favor for more than just that idealistic thing of living to 180 or whatever the case might be, but you want to be resilient right now.

And so, that's why I really love your work and another recent invention that we unfortunately do not receive the education and so many young ladies, young girls are not getting this education or like what are the downstream effects of this? What are some of the peer-reviewed data that we have on the likely ramifications on being on oral contraception, of being on the "The pill". It's just passed out, it's just a normalized thing. It might not even be for birth control purposes, it's for skin. It's for fill-in-the-blank, but it's just getting handed out, so often without the patient receiving true informed consent. Let's talk about this, in part of this overall equation. We're talking about hormone health and fertility.

MIKE MUTZEL: Yeah, totally connected and it's unfortunate how, pervasive pill use is in women of reproductive age and also women who have gone through menopause. I have some clients who have been on it because they just they don't... They're fearful of coming off of it because they think that it's going to impact their mood and before... Because they didn't address their diet, their lifestyle they had anxiety or mood swings and so they feel this crutch, they want to

stay on this. But it's important for women to understand that hormonal birth control is suppressing fertility.

It's suppressing ovulation. It's taking the hypothalamic pituitary adrenal axis and turning it offline in a sense, because you're giving synthetic estrogens and progestins. These are not the bioidentical molecules that the body is making. So that in and of itself is a problem, because these things can more powerfully impact the estrogen receptor and progesterone receptor. They change mating behavior. This has been shown in animals and also humans, because by basically mimicking the hormonal environment they would be linked with pregnancy. Women choose different mates or would want to be around different people when they're pregnant compared to when they're trying to find a partner. And so, that's the craziest thing is it and we'll get into that in a minute. But it's important to understand that these are very suppressive on vitality that's the bottom line. And so if women are having any sort of symptoms. Well, first of all, I think women should get off hormonal birth control period end of story. Because of how they change the brain, how they change, they tank testosterone levels in women. Systemic a meta-analysis looked at all these different studies looking at women who are on birth control compared to women who are naturally cycling. Hormonal birth control users have a 67 or 61%.

I can't remember, anyway, significant decline in testosterone. Okay, so it's funny that you're taking this thing so you can have intercourse without condoms, but it's decreasing the very hormone that will cause you to have interest in intercourse in and of itself. And for women, muscle is important for women as well. Women lose muscle just like men and women... The more lean muscle mass women have the higher their basal metabolic rate is the more calories they'll burn at rest. So, they shouldn't be excited about having a 61 or 67% drop in testosterone. So those are really important factors that I think are important to recognize not only moreover, the link with strokes and also having blood clots significantly higher amongst oral birth control users compared to non-birth control users in women. And we've been hearing obviously a lot more about clots and so forth in the last couple years.

COVID is linked with coagulation disorder. So, it takes someone who might be already at genetically high risk, and you get them birth control, then they get an infection, they might be more prone to having a clot or having a stroke. And this stuff is really scary, so I think it's important for women to recognize this and make a concerted effort to transition off. It may not be easy, especially if you've been on it for 10 or 15, 20 years like some people have. But to get that brain to go and add connection working properly is very important. And again, the last thing that I think is pretty scary to think about is how taking oral contraceptives is changing the brain. We've seen viral videos of people who seemingly lack empathy and just say some crazy stuff. You know picketing on the streets and so forth. Users of hormonal birth control compared to normal cycling women this was just a study.

I'll send it to you. It just came out like a couple weeks ago in humans found that women on hormonal birth control, they don't have empathy or as much empathy. Parts of the brain the prefrontal cortex doesn't get the same stimulation or nervous system intervention innovation, and so, they don't have as much empathy or don't care as much. And I think that can impact your business, your relationships, your life. So, it's impacting the brain and the brain is so plastic and malleable, right? So, if you're impacting your brain negatively for 10, 15, 20 years, that can't be good in terms of preventing dementia, Alzheimer's, memory loss. So these things they're problematic and especially women who are thinking about marrying a man while they're on birth control. They should really go off beforehand to see if they are still feeling that person for lack of a better word, because the... It's called the Major Histocompatibility Complex. The way our cells are identified as our own cells, what research has actually shown is that when women on hormonal birth control they're more attracted to people who have very similar genetics to them.

Now some people might say, well what's wrong with that? That could be linked with higher reproductive challenges and in the offspring greater risk of health issues. So, it turns out that there's some evolutionary advantage to maybe if you're a Caucasian marrying someone who's of Asian descent or Latin American descent because there's so much genetic difference there that it will reduce the risk of having inbred related challenges that can lead to birth defects and lower survivability in the offspring. Now when women are naturally cycling, again, they're more attracted to people who have gender differences and genetics differences. And I think that's an important point, especially if you're in an intimate relationship with a partner while you're on hormonal birth control and you're thinking about committing to marriage to having kids, you would want to know if you are still attracted to the pheromones and the smells and the behaviors of that partner when you come off the pill.

So, this to me, I think has major societal implications that people should be aware of. And this is why there's a lot of great trackers like, natural cycle, like, Daysy that allow... They quantify daily fluctuations in body temperature that indicate when ovulation is happening. So that women can just use condoms, partners can use condoms during that period in their cycle.

SHAWN STEVENSON: Yeah, yeah. Listen, the bottom line here is again, we've normalized something that is not normal for evolution as a species. And now, here's the thing again this could be two guys talking about this.

MIKE MUTZEL: Yeah.

SHAWN STEVENSON: But in this chair you know having folks like Dr. Jolene Brighten who's written the book, Beyond the Pill and looking at all of the health ramifications that women are simply not informed about. Birth control is a right, but the thing is it's been flavored as kind of

this one size fits all thing, unfortunately which is what we tend to do. Instead of helping our young girls and women, because it's also a taboo subject as well to understand their bodies to understand how their cycle works. I've you know being in clinical practice I can't tell you how many times you know not even understanding just basics about the different phases and what hormones are being produced and the changes that are associated with that from just not just the physiology but mentally and emotionally as well depending on where you are. And what if you are educated about that and you can start to be... And start to work your life within that versus fighting against your body you know so often is what we have allowed to happen to our...

Our citizens overall. And so, this is... There's so many different options you just mentioned even just being aware of your cycle and when you're actually fertile, right? And so, or look at how often are women getting educated about that, young girls getting educated about that, because it just seems like, "This is all the time, it's just going to happen". When in the reality is very different. But again, having birth control that fits your life that you feel is viable and say for you, you have total right to do that. With that said we have to be provided more education and more options, because you said the thing that... When I even asked you the question that was the thing bubbling up in me the most. These young girls when they're getting put on hormonal birth control, they're not being told that you're going to have a significantly higher risk of having a cardiovascular event when I put this into your hand, stroke, heart attack this is not a f*cking joke, this is real like we're talking about manipulating the hormone pathways that control what your physiology is doing this isn't just a small thing in particular relating to your blood.

So, we can't just allow this to just go unchecked or without providing ample education around it. Can there be a place for oral contraception? Sure, everything has a place, but in our society, we keep leaning on the things that tend to hurt us in long term. By the way you mentioned this, is fascinating this is this another one here. This is Trends in Ecology and Evolution, this is a journal looking at ecology and evolution as a species, the study revealed, "Taking the oral contraceptive pill might significantly alter both female and male mate choice".

MIKE MUTZEL: This is wild.

SHAWN STEVENSON: Come on, we don't think about that, how's it affecting our psychology? And there's so much more that's happening behind the scenes for our reality. We just kind of go with what we're sensing with our basic senses, but with your biochemistry, there's so much going on. We tribute that to other species, right? That the species in is in heat or they're sending out a signal of fertility, right? The pheromones we talk about it in our context, and we think about Paul Rudd and Anchorman and Sex Panther, right? He's got this he's got this incredible cologne that has a tiny bit of panther in it. That you know 40% of the time it works

every time, right? And it's to trigger the pheromone response and the woman that he's looking for, right? We have this very superficial view of it that is just always just this thing it's that thing. What happens when we're throwing on all of these...

Exotic combinations of body sprays and colognes and you know and utilizing hormonal birth control is throwing off this whole pathway. So, it's just things to think about not to say you can't put on your Drakar Noir, no what. My stepfather used to use Brut. I don't know if you remember that it's like, it always come in this package like my mom kept buying him that sh*t, I don't even know if he liked it. But I just attribute that smell to him, but the thing is for us just start to inquire and question what we've normalized.

MIKE MUTZEL: Totally and this informed consent and knowing that there are these consequences. And if you know that... Like I fully recognize when I did steroids that you know I might not be fertile or might have these issues and so forth. But I think like you said a lot of young girls, young women that do this they're not told about this. Just like they're not told when they get breast implants that is linked with forming you know a biofilm and creating, all the scar tissue around the breast and it might be linked with chronic fatigue like symptoms and cancer and all of that we need to be fully aware and more transparent about...

In terms of before we decide to embark on these endeavors. But I think it speaks to a greater issue in society that I see, we're so good at masking our symptoms, "Oh you have allergies, take the antihistamine, like come on you can't sleep take the... Take the sleeping pill, oh yeah, troubles digesting food, just suppress the stomach acid". We need to look at these signs even depression if you're anxious or depressed. You don't let... You feel anxious at your job, it might not be the right job, you might not be in the right relationship, you might not be living your meaning and your purpose. And I think that is important for people to look at these symptoms even injuries. You have low back pain, okay, well you might be doing something wrong, what is that? That could be a... It's our bodies are trying to tell us something. So, if you're getting on a pill or whatever because you have headaches and bad menstrual cycle. And really heavy periods, okay there might be a reason why your periods are heavy, address the issue. Because masking it will only probably increase your risk like you talked about having a stroke or heart attack or...

Some other unknown health issue down the road. And that's where Western medicine is not really good at right. Western medicine is great you get in a traumatic car accident like, you want Western medicine, but trying to figure out after you've had years of masking symptoms it's not really good there. And so, reframing how we view allergies you know heavy periods, low libido, try to figure out what that is and what is your body trying to tell you? And make some tweaks in your diet lifestyle, sleep, nutrition exercise.

SHAWN STEVENSON: Yeah, yeah. And it's taking on the belief for the mantra, the modus operandi that everything is figure-outable and you know our bodies are intelligent and there is something far beyond the this just happens paradigm that modern medicine has ushered in. So, when we're having these abnormal symptoms that are inconvenient or painful, yes, they're absolutely happening but there is a reason, your body is intelligent. And so, having more inquiry, if they're telling you that it just happens. That's the problem, you need to find a new doctor. And this is part of being in this community and your community which there's some intermingling going on you know, of being empowered and educated. So that you can be informed, you can ask better questions, you can be empowered in your choices. Part of this process is we can no longer outsource our bodies to other people and the decisions about our bodies to other people based on what we talked... We were talking about this before we even got started, this perception of expertism, right? They got this particular education in this focused area of medicine. Well, in reality, this hyper focus on this treatment, we'll just say we... Both of us have colleagues who are world class cardiologists, and they know so much about the cardiovascular system and the arteries and veins and capillaries and the blood... The construct of your blood.

Within that education, were they taught that all of those things I just mentioned, your heart, your veins, your arteries, your blood, that they're made of food? That all of those things are literally made from the food that their patient is eating? If they don't... If they're not consciously aware of that, they're wildly miseducated about how to help that person. And so, this expertism, where we have this focus, or you went to school a long time to learn about a certain thing, what if you learn about the wrong sh*t for many years, and you become very good at that? With that said, also being world class at... If there's a breakdown, if there's a massive breakdown, that's what we want.

You want the surgery in those hands, or the medicine prescribed in those hands if there's a serious breakdown. But that's what we're good at, that's we're trained for, is emergency medicine, not for wellness, not for wellness, the results speak for themselves. We have the highest rates of heart disease, stroke, Alzheimer's, obesity, diabetes, lung disease, kidney disease, on and on, of ever seen before in recorded human history right now in the supposedly most advanced society. How are we the most advanced society on one hand, or have access to every bit of information at our fingertips, and yet we are the sickest, most dysfunctional? There's clearly a break here.

MIKE MUTZEL: Yeah, big disconnect. Well, it... I mean, the thing that I think people don't recognize is that information changes so quickly. And you could be the best cardiologist in the whole wide world, but that doesn't make you the best... That doesn't mean you're understanding of metabolic medicine is going to be the best it ever is, right?

So information changes so quickly in the practice of medicine. I used to sell products to doctors. And oftentimes, they're so busy. A lot of them have the best of intentions, they go to medical school to help people. But they're so busy charting, doing insurance reimbursements, dealing with Medicare and things like that, they don't have time to stay up on this stuff. And things change so quickly.

SHAWN STEVENSON: And patient volume that is put on them just to keep their doors open.

MIKE MUTZEL: Yeah.

SHAWN STEVENSON: Or to keep the standards or requirements for their hospital intakes, just so that they can remain insured and remain with the job or keep their office open, that's added to the equation as well.

MIKE MUTZEL: It's a big burden. So, it's important to have these types... Type of conversations, where we're breaking down recent studies. One thing I want to mention, 'cause you mentioned blood and the cardiology and so forth. One thing... We've talked about the problems with low T, but as men increase their testosterone, their blood might get a little thicker. It's natural. Testosterone... And this is why a lot of athletes will actually take testosterone in the Tour de France, it increases what's known as blood viscosity. That can be helpful if you're Lance Armstrong or racing in the Tour de France. But if you're just hanging out, you're in dad mode and not exercising a lot, that can increase your cardiovascular disease risk. So, for men, I... And postmenopausal women, donating blood once or twice a year, it's a really low input that you just go, and it's unfortunate you got to get a needle put in your arm and so forth to donate the blood. It takes like 15 minutes, but it can dramatically reduce your risk of heart disease by lowering iron overload and ferritin levels and decreasing the thickness or the viscosity of blood. So I just wanted to mention that, because it's related to this hormone conversation.

SHAWN STEVENSON: Absolutely. Absolutely. And I want to give a big thank you, first of all to you and you being a leader in this field. And both of us, we went through traditional education, going to university and also seeing the pitfalls and the miseducation that can take place, but also opening that up. And we have some wonderful people in the field now of health and wellness in medicine, physicians who are now shifting gears to looking at more functional means of medicine and integrative medicine and starting to understand, again like the body itself. When we're looking at my patient's liver or their brain, that it's made from the food that they've eaten, but more so understanding to stay up to date on where we're really at, it's another full-time job. And so, like you said, everything is changing so quickly, and this is why you are so important. Because there are many wonderful people who are in healthcare who rely on us to keep them up to date with this new information, right?

But here's the interesting part about all of it, it still... Time and time again keeps circling back to the principles that our genes expect from us, the movement inputs, the food inputs, the avoidance of toxicity, right? And we're just finding new and creative ways, great scientists are asking questions on how to adhere to these things and add another layer of belief to get modern medicine to employ those things. But here's the biggest catch, when we do that, we start to make pharmaceutical companies irrelevant. When we do that, we start to pull away the need for the sick care industry as it's constructed today to be as lucrative.

We have over four trillion dollar-a-year healthcare system here in the United States. Four... We can't even understand how much money that is. It's just... It's not even... We... It's so beyond our... Even just a billion, a billion dollars is very difficult for us to rationalize or understand as a human. And so, four trillion dollars, and yet we have the worst health outcomes, again, there's a mismatch. And I think the first step is being able to take a meta perspective and look at this mismatch, like, "Wait, what? How is that possible? How do we have so much invested, and yet we're so sick?" And are we... Is the job that we're doing right now as healthcare workers, is it showing good results? Are we... At the end of the day, I'm a huge... Thankfully, I don't know if it's nature or nurture, but I'm so... I'm a results-oriented person. I don't care what the thing is so often as... You know this as well. We get so caught up on the thing instead of the result and getting infatuated with the result. Because when we focus on the thing, I think that makes us more dogmatic.

MIKE MUTZEL: Mm-hmm.

SHAWN STEVENSON: Right? Because we get so attached to the thing that we'll justify and explain away the result, right? And so for me, I don't care if it's a pharmaceutical drug, or if it's olive oil. If we're getting this particular result, 'cause I have to be open to all of them being effective. That's another thing I admire about you too, is that you're cut from the same cloth. It's not about the thing, it's about the result and us being a healthy species. And so, I want people to get more into your universe. Of course, can you let everybody... You got one of the best YouTube channels out there, and let people know where to connect with you.

MIKE MUTZEL: Shawn, really appreciate that, and it's always great to talk with you about these issues and so forth. And all the curves that you've expressed over the last couple years to really speak your truth is really admirable, so appreciate you having me on. Yeah, so my channel is High Intensity Health. So, if people like breakdowns, I throw in a little satire here and there, but focus more on metabolic health and fitness and everything like that. High Intensity Health, if you... Yeah, if you want to check me out, that's the best place.

SHAWN STEVENSON: Awesome. Man, again... Just also what do you have in store, man? What are you focused on right now? What are you... What do you have cooking for us?

MIKE MUTZEL: Yeah, I'm kind of a nerd about muscle. I've been obsessed with... As a little kid, Arnold Schwarzenegger, Van Damme were my idols, right? So, I'm working on this book, All About Muscle. And I've been interviewing a lot more fitness people to get their perspective, like what is working for different people. And I think understanding the context, I've just come to realize after interviewing and talking with all these people that have... That... Like yourself, you get active with your kids, you're outside lifting, you got kettlebells on the deck, all of that, right? People who move their muscles are just healthier. And so, I'm trying to encourage people to get back to it, 'cause I see so many folks. And I love yoga and Pilates, but stimulating the muscle with resistant training. So really trying to unpack that, and that enables us to eat more calories, to have a little bit more flexibility in the diet, to go off the rails over the holidays and not gain 20 pounds a little bit. So that's what I'm excited about, have a lot of content in that regard coming out. So...

SHAWN STEVENSON: Awesome. More science of muscle, that's exciting, man. Well, again, thank you so much for being you. You're one of my favorite people in the health space, and can't wait to see what you do next, man. Of course, we're here to support you.

MIKE MUTZEL: Thanks, buddy. Appreciate you having me on.

SHAWN STEVENSON: My pleasure. Mike Mutzel, everybody. Thank you so very much for tuning in to the show today, I hope you got a lot of value out of this. This is one to share with your friends and family. You can send this directly from the podcast app that you're listening on. And of course, you could take a screenshot of this episode and tag me, I'm @Shawnmodel. And tag Mike as well, he's @metabolic_mike on Instagram, and just let everybody know what you thought about this episode, it really does mean a lot. And we've got some incredible master classes, world-class guests coming very, very soon, so make sure to stay tuned. Take care. Have an amazing day, and I'll talk with you soon.

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