Reverse Biological Aging? Discover the Cutting-Edge Longevity Secrets with Dr. Beth McDougall Transcript

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Introduction to Longevity and Functional Medicine

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And then other factors are really lifestyle-based, you know, like maintaining healthy muscle mass, improving how oxygen is delivered in the body, how it's utilized in the body, optimizing the utilization, and then improving your metabolic health over your lifespan.

So, in making sure that your insulin receptors stay sensitized, that your body can handle glucose properly, because if you develop insulin resistance, that really accelerates your aging.

This is Doctor Talks, real talk from real doctors on the issues that matter to you most. Welcome to the Functional Edge podcast. I'm your host, Dr. Julia Ward, medical director and founder of Balanced Body Functional Medicine.

Today, we're honored to welcome Dr. Beth McDougall to our show. In this episode, Dr. McDougall will be sharing insights on longevity and biooptimization, offering expert guidance to help you navigate your health journey with the latest advancements in functional medicine.

Stay tuned for an engaging conversation that promises to empower and inspire your path to wellness. Welcome Dr. McDougall. Thank you. So happy to be here with you.

Can you tell us a little bit about yourself and then we can get to some questions? Absolutely. So I've been practicing in the San Francisco Bay area since 1998. I'm trained in internal medicine.

But before I went to medical school, I was interested in what was then called complementary alternative medicine. And so came out of the internal medicine residency into one of the oldest integrative medical practices in the country in San Francisco.

Dr. McDougall's Background and Biooptimization Practice

and trained with Jeffrey Bland in the earliest days. It was the first crop of doctors trained in functional medicine in 1999. So I've been kind of doing functional medicine this whole time and really got immersed in bioidentical hormones and natural neurotransmitter balancing as well as the functional medicine approach early on.

I have moved more as I've aged and have moved more and more and more into longevity medicine and so have started practice in downtown Mill Valley, which is in Marin County back in 2001. And then I moved my practice into a much larger facility.

and co-founded a bio-optimization facility with a few other co-founders. And we're right on the San Francisco Bay. And we have the largest suite of technologies for health under one roof in the world.

Oh, that sounds amazing. Yeah, that sounds great. Awesome. Okay. Well, so what are the fundamental factors that can reverse biological aging? Well, there's so many, but what I find is that there's different lifestyle factors that can help to optimize mitochondrial health.

We really age because our mitochondria age, the little energy factors in the cells that manufacture energy from

oxygen and glucose. So we want to try to optimize mitochondrial health.

And as we do that, we can actually begin to age in reverse. Biological aging can literally reverse even as you're aging chronologically. The other factor that's important is hormone balance.

I find there's a huge divergence of people's aging when they pay attention to their hormone balance and keep their hormones balanced throughout their lifetime versus not, and let them decline with time.

And then other factors are really lifestyle-based, like maintaining healthy muscle mass, improving how oxygen is delivered in the body, how it's utilized in the body, optimizing the utilization, and then improving your metabolic health over your lifespan.

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Core Factors That Reverse Biological Aging

Detox, detoxing chemicals out of your body by exposed to and minimizing chemical exposure in your food supply, in your personal care products, in your home cleaning products, et cetera, so that you don't have as many challenges to deal with that accumulate over time.

Right, absolutely, lowering that toxic burden. Absolutely. What are your favorite biohacking practices? Well, let's start lifestyle and then we'll talk about different supplements and intravenous therapies and technologies.

So lifestyle, I think that something very basic like maximizing and optimizing your sleep. So you really want to try to have good sleep hygiene. You go to bed at roughly the same time every night, you set yourself up for a good sleep experience where you create like a sleep sanctuary in your room with cooler temperatures, dark, where you dark out the windows and And then track your sleep.

I think that's vital. Be able to track their sleep and whatever you track and follow improves. So tracking your sleep, my favorite tracker is an aura ring because you're not exposed to EMFs during the night.

It's just collecting your data. Then in the morning when you turn your phone on, it will download onto your phone. But ideally you're wanting to improve the amount of deep sleep you're getting, the amount of REM sleep you're getting, minimize waking during the night and track other metrics such as your heart rate, how quickly your heart rate diminishes during the night, your heart rate variability.

And how much time you spend sleeping versus awake while in bed. And so sleep, we now know, deep sleep is where our body really heals and repairs itself.

This is where the body will clear toxins out of the brain. And then REM sleep is so vital for memory consolidation. So it's absolutely important to improve your sleep.

And what I find is that there's so many factors that can go into the quality of one's sleep. So if the person has exercised yesterday or now that day, what they had for dinner, what they ate dinner relative to going to bed, some people don't eat enough for dinner or they don't eat enough, like a complex enough meal in order to keep their blood sugar stable through the night.

Other people overeat and their body's burdened trying to digest all of that, or it's too close to dinner, to bedtime. And then how stressful was your day?

Did you meditate in the day? And then other factors such as how much exposure to screen time did you have? And did you do that right up until the time you turned the light off?

Or did you give yourself a nice period of time to not have that blue light exposure? The other factor that I find that's

a good lifestyle practice that helps sleep, but it helps many other things aside from just sleep, is going outside in the morning.

Really you want to spend time outdoors when the sun is cresting the horizon. or in that hour kind of post the rising of the sun. Because the ratios of different wavelengths in sunlight vary according to the time of day.

And in the morning, that first hour, the red light and near-infrared light wavelengths predominate. And those wavelengths of light are very important for your mitochondrial health.

Sleep, Morning Light, Grounding, and Exercise

It also kind of like sinks you up with the diurnal rhythm of the earth. It tells your body it's morning, it's time to be awake. It actually promotes the production of pregnenolone in the mitochondria.

from cholesterol, which is a precursor to cortisol. So going outside can promote a better cortisol bump right in the morning that kind of wakes you up.

And then it also helps you wind down for sleep later in the day, particularly if you're not overexposing yourself to blue light from devices at night.

Going outside in the morning, It helps your sleep quality, it allows you to wind down at night, and then it also improves your hormone balance. and sinks you up with the diurnal pattern of the earth.

The other thing that's important is to put your bare feet on the ground. You know, do that at the same time. And that, we tend to absorb electrons through our skin from the earth.

You know, we used to sleep on the ground, we used to walk barefoot on the ground, spend a lot of time outdoors sitting on the ground. We don't do those things as much anymore.

And our cell membranes, you can almost think of our cell membranes like batteries. They actually need to be charged up, and they're charged with electrons primarily.

So going outside with bare feet on the ground very quickly, you're improving your cell membrane potential and charging up those cell membranes. Another important biohack is to exercise.

and to find the right training schedule and the right dose really of exercise because some people don't exercise enough and some people over exercise and they're not varying the types of exercise they are doing and they're not really tracking biometric metabolic data to kind of like inform the proper training schedule that they should have.

So I personally think that it is good to begin with some tracking with like resting metabolic rate, VO2 max testing, some strength testing, spirometry, et cetera.

We do all of those at my center. Body composition with DEXA scan and, you know, in-body, which you can follow monthly, very helpful. And then, you know, to devise a training schedule that really prioritizes strength training because I would say, you know, it's been said that muscle mass is the currency of longevity.

And I would completely agree with that. The data is actually so compelling. And so ideally, you want to do things that maintain muscle mass and improve the health of your muscle cells over time.

And if you don't work at it, you lose muscle mass and you lose muscle cell health with time. If you think about our aging being so directly tied into the health of our mitochondria, for example, you think about how many mitochondria you have in the different cell types in the body.

It varies from hundreds of mitochondria per cell to tens of thousands of mitochondria per cell. and the muscle cells have tens of thousands of mitochondria.

So the more that you work out and the more muscle mass you have, the more mitochondria you have, and the healthier they are, and the more efficient they become for generating energy from oxygen and glucose.

So we want to prioritize muscle strength training. And then you want to do some cardio exercise that is kind of based on your heart rate training zones.

So most people do need to train with like sprint interval training or high intensity interval training in order to maintain, you know, kind of like good VO2 max at the higher heart rate zones.

And then the rest of the time, you want to make it a little bit more relaxed where you're doing zone two cardio or you're hiking with a friend or you're on a treadmill and you're walking at a pace where you could still carry on a good conversation.

Right. and bury it up. And then diet, you know, I think that's huge. You want to try to ideally eat a diet that's very tailored to you and, you know, what makes your biochemistry hum.

And that's going to be different from person to person and it's going to be different for you at different stages of your life. And as you age, it's going to be dependent on how active you are, how much training you're doing, and also just kind of genetic factors as well.

So you want to try to vary the ratios of macronutrients in your diet so that you're probably prioritizing protein. Back to maintaining the health of your muscle cells, you ideally want to have a protein-forward diet in order to do that, you know, consuming about a gram of protein for every pound of ideal body weight you want to be.

And then carbohydrates really varies, you know, and you can use things like blood work, testing your glucose, your insulin, your hemoglobin A1c, your inflammatory markers, your lipids, and looking at your body composition in order to figure out, you know, how many grams of carbohydrates you really need to include in your diet.

And then of course, you know, fats are important because our cell membranes are comprised of fats, but you want to make sure you're eating healthy fats that are going to be good for your cell membrane composition and limiting the seed oils that are easily oxidized and become rancid when exposed to heat.

These are very deleterious to our metabolism, our membrane, receptor health and sensitivity, and even to the mitochondrial energy production because these fats accumulate in the membranes of the mitochondria as well.

And then when you look at what you're eating, once you've kind of established the appropriate macronutrient ratios, you want to make sure that you're ingesting a lot of living foods, you know, a whole wide variety of foods that contain a high life force quotient and lots of vitamins and minerals and and trace minerals and phytonutrients that, you know, across the rainbow, for example.

And so that you're just introducing that life force in your body. Again, this is another way that you're introducing electrons into the system to charge your cell membranes and you're introducing structured water into the body that way as well.

And then finally, making sure that you're drinking enough water. I think that's huge. I could almost always see people who are dehydrated versus those that are well-hydrated and look at the rate of their aging, and it really diverges.

So when you drink half your body weight in ounces, at least, of pure, ideally structured water, you're going to age slower. Your brain's going to work better.

Your bones are going to be stronger. Your intervertebral discs are going to have greater height. Your joints are going to be more lubricated. Your teeth are going to be less inclined to crack and decay.

You're going to have fewer toxins in your body, even have better elimination of toxins. You're going to be so much

healthier. And your energy can transfer in your body in a much more efficient manner.

And can you explain what structured water is?

Nutrition, Hydration, and Structured Water

Sure. So water molecules can be randomly arranged, or they can exist in various types of structures. So for example, in the body, water primarily exists in a structured form.

There is a type of structured water called EZ water, people refer to it, and it's where water will line up in honeycomb sheets, sheets of water molecules kind of arranged in a honeycomb configuration and it's where the it actually changes its chemical configuration from H2O to H3O2 so that the oxygens are sharing hydrogen and then arranging in honeycomb sheets and these sheets will line up along surfaces such as the inside of your cell membranes, the outside of intracellular organelle membranes, inside the blood vessel membranes, and the sheets will line up on top of one another.

And because of the change in the chemical configuration of water from H2O to H3O2, it sets up a charge separation. So the The protons, the extra protons, are pumped outside of the structured zone and bind up in a line of positive charge outside of the structured zone.

And then the structured zone is negatively charged. And that charge separation actually acts like a battery that can do work. Water will also line up in helical arrays along your spiraling DNA.

it'll, it'll in sheath proteins that, and then the water will help proteins change configuration when they need to change in order to do functions. And the water will supply the energy for the unfurling of proteins in your body.

So a lot of the, you know, protein malfolding diseases such as, you know, Parkinson's and Alzheimer's and Louie and things like that, these things can be in part related to not having sufficient water in a structured state to govern how proteins are folding or misfolding.

The water is incredibly important. And then, of course, the other thing that's important for longevity from a lifestyle standpoint is doing some energetic maintenance as you age.

What I mean by that is some people, you know, we all experience traumas in our lifetime as just part of being here on the planet. sometimes we're not equipped to deal with those traumas at the time that they occur.

We maybe are too young to really experience and metabolize all of the emotions around those traumas. So we may store the energetic imprints of traumas, the innate of unmetabolized emotions, in our own energetic field, then eventually can translate into dysfunction on more of a physiological level, if left there for a lifetime.

And so you can kind of see people who have done some personal work, you know, of kind of excavating these traumas, you know, really, really looking at the energetic holding patterns in their bodies, and working to understand and release those versus those that haven't.

You know, people that are carrying around a lot of baggage versus those that have kind of like a clear, pristine, you know, kind of crystalline type of an energy feel.

That energy field is incredibly important to how we age because we live in a field of energy. We exist within this unified field that is infinitely full of energy.

And so the amount of energy that communicates with our physiology is very much going to determine how well our physiology functions. If we are not having optimal energetic transfer into our system, that's when we begin to experience entropy and breakdown.

Ideally, you want to clear out the dissonant signatures of the restored trauma and the unmetabolized emotions in

order to have a more seamless you know, transfer of energy actually through the structured water in the body, you know, from the kind of quantum field through the structured water to communicate and to empower the physiological biochemical reactions in the body and keep everything in good working order.

So those are kind of like the lifestyle components to the puzzle, I think, of improving how we age and go through life. But also, you know, there's so much we can take advantage of now that's coming kind of longevity science when we look at, you know, therapies to improve mitochondrial health and supplements to improve energy generation in the body, supplements in bioidentical hormones to improve hormone balance as we age, peptides to reduce the rate of aging by maintaining, you know, better mitochondrial function and better hormone function as we age, and then also technologies, you know, kind of coming out of the biohacking space that intelligently used to reduce the rate of aging.

Right. Yeah. And so what are some of your, what are some of the new technologies and medical interventions that you use to enhance energy vitality and wellbeing?

Yeah. Well, for one, we do a lot of NAD IVs here. and love NAD, love to do whatever we can to maintain more youthful levels of NAD. And the best way to do that is IV.

So we do a brain refuel protocol where we're doing pretty high dose, 750 milligram IV of NAD. And we do about five of those over 10 days. And that tends to bring people up to sufficiency.

We usually maintain that with just touch points of like, you know, quarterly or monthly single IVs. And then sometimes we'll do NAD injections. Sometimes people, I would say different, people differ in how much they respond to NAD IVs.

Like for some it's absolutely life-changing and for others it's moderately helpful. For those that somehow have maintained healthier NAD levels, it's not as impactful.

So then after doing the brain refill protocol, we can kind of determine what is a good cadence for you going forward of intermittent IVs to kind of maintain sufficiency.

Energetic Health and Trauma Release

Would it be helpful for you to also do NAD in an injection form? And then oftentimes we have people on NAD precursors such as NMN, NMR, niacinamide, things like that.

Of course, you know, we talked about hormone balancing, but like I just said, again, like you really can't have good longevity without. healthy hormone balance, and so we do a lot of work there.

And then technology's really come into play here. So I was an early adopter of red light, and you're for red light devices, and we have three Novathor beds here, which kind of look like an old-fashioned tanning bed, and you get in and close it up, and then you're in there for 20 minutes, four times a week or so.

That can be extraordinary for upregulating mitochondrial function and even unblocking mitochondria that whose energy production has been impaired by toxins or intracellular buildup of nitric oxide and things like that.

The red light will kind of optimize the mitochondrial function again, also will stimulate the release of tissue specific growth factors that are really important for the skin and for the brain and for the muscles and all of that, and speed recovery after a workout, get you back in the gym sooner, also helps with pain and inflammation.

So we use the red light near infrared lightbeds a lot. We also have a hawket. Oh yeah. Are you familiar? I'm unfamiliar with the hawket. I do ozone therapy in my office.

Yeah, I do a lot of ozone therapy too. And the Hockett is incredible because it's an infrared ozone sonic capsule. While you're in there, there's a pulsed electromagnetic field device that will charge your cell membranes like I was

talking about.

And there's frequency delivery while you're in there as well. And you can actually dial in some frequencies to support pathways of elimination of toxins.

in the body through the liver, kidneys, lymphatics, and you can also, you know, use frequency to support various other types of health goals that you have.

And then we do cryotherapy here. We also do VASPR. VASPR is an incredible training device where you're putting compression cuffs on your upper arms and upper thighs.

And you are, the, the cuffs are filled with cold liquid and then you're doing a high intensity workout, you know, kind of an interval training workout and that, that the compression builds up lactic acid in the muscles that can trigger an anabolic hormone response, as well as trigger the release of brain-derived neurotrophic growth factors, which is very good for brain healing.

We do a lot with the brain here, so we do a quantitative EEG brain mapping. And based on what we find, we have different neurotechnologies for kind of like toning down hypercoherency in the limbic system, which can lead to autonomic nervous system imbalances or being stuck in fight or flight.

We can quickly tone that down and kind of calm someone's autonomic nervous system and really kind of help the brain imprint of trauma.

Longevity Therapies and Biohacking Technologies

And then we also can spot brain injury from, you know, from car accidents or playing sports or, you know, we see a lot of athletes that have chronic, multiple brain injuries over time that superimpose on one another.

And I also find it very valuable from a medical standpoint to just see like is the brain showing signs of inflammation or is there kind of like a global metabolic slowdown in the brain where the mitochondria don't seem to be generating energy properly and then I can kind of change my therapies based on what we find.

That's great. So we have a lot of technology. We do a lot here with oxygen. So we do intermittent hypoxic training, which is like altitude training. We have like a passive version and an active version.

The passive version is like you're sitting in a zero-gravity chair breathing oxygen through a mask. And then the coach will cycle you from normal levels of oxygen to mild hypoxia and back four times in a 40-minute session.

And that process will trigger the release of HIF-1-alpha. which three scientists won the Nobel Prize for in 2019, discovering how that works. And it's a master gene regulator that triggers a transcription of thousands of genes that produce products that really help us more efficiently deliver oxygen, help us more efficiently utilize oxygen for the production of energy.

And it actually has been shown to really help our mitochondria and trigger something called mitophagy, where the body will kind of edit, repair or replace damaged mitochondria and birth more pristine mitochondria.

So that's great for people with metabolic slowdown and insulin resistance. It's great for people with cognitive decline. It's really good for peripheral neuropathy.

It's good for even respiratory conditions like chronic asthma and COPD. It's good for fertility. It's good for athletic performance, cognitive performance.

It's incredible. And then we do that also in a more of an active format so that it's great for people that are, you know, wishing to train at altitude so they can then train and compete and perform better at sea level.

And that's been incredible. And there's so many more technologies that we introduce here and there's so many that you can take advantage of. And, you know, sauna therapy and cold plunging and all of that.

And so it's just, you know, there's so much to do that it's helpful to have like a trusted guide that can say in your situation and your kind of biometric data, your blood work and your goals, like, you know, you want to see happening for yourself.

This would be an intelligent protocol. This would be, you know, things to include in your lifestyle. This would be, you know, some recommendations on how to train, how to eat.

These would be an intelligent stack of protocol, of, you know, technologies that you could include at this cadence. And, you know, probably it'd be good to bang out, like, you know, some NAD IVs so that you kind of kind of bring your energy production up and, you know, hormone balancing and peptides and all of that.

Right, right. And so how do hormones affect aging? Wow. In every way you can think of. Yeah. Now, so I think, like, for example, let's maybe start with women.

Estrogen is just absolutely essential for aging well. And now, I know I've always known that, you know, I kind of the gate, you know, for my internal medicine residency into a practice in San Francisco that was a bioidentical hormone balancing practice.

I was immersed in that milieu right from the get-go and got really into it even before the Women's Health Initiative study that came out in 2001. I just saw such beautiful things happening when I would balance women's hormones.

So then in 2001 when that study came out, I was very clear that that data was not being interpreted properly. And, you know, they were making a big deal out of not much and really blowing it out of proportion and not reporting important findings such as, like, you know, the arm of the study where women were given estrogen or premarin without progestin.

They actually had a lower incidence of breast cancer than in the treatment placebo group. And so much of that was misinterpreted, I thought. So, you know, I kept treating women that wanted to be treated and a lot of women still were scared off hormones.

And then they came kind of crawling back in being like, I don't feel well and I got to do this thing. And so the silver lining really that came out of that whole experience was just like, okay, maybe we could get by with slightly lower doses of hormones.

And, you know, so I kind of found a way to pay attention to the entire hormonal milieu, such as like the adrenal hormones, the thyroid, and estradiol, progesterone, testosterone, so that I could use smaller doses when balancing everything.

And you could get by with smaller doses and you didn't have to lean so heavily on one particular hormone because you weren't contending with deficiencies of other ones.

So I said, yeah. So I just kind of got a more holistic way that was a little more subtle for helping women and found the women that had stuck with me over these 25, 30 years have done really well from the standpoint of aging and have not had about a lower incidence of breast cancer than the average population.

And now it turns out that that's what the data actually shows. at that great study that came out in April of 2024, where they prospectively followed 10 million women.

Did you see that? I did not, no.

How Hormones Affect Aging in Women and Men

At 10 million women, they followed the Medicare data of 10 million women, half on hormones, half not, and found that hormone use, basically all commoners, like they grouped it all together, like Prevara, transdermal estrogen, or estradiol, vaginal estradiol, synthetic progestin, natural progesterone, but all where all hormone users had a reduction in all-cause mortality that's, you know, significant, like, a 2% reduction in all-cause mortality and, like, a 19% reduction in breast cancer mortality, which was surprising, had a reduction in cardiovascular mortality, congestive heart failure, cognitive decline, bone loss, you know, even colon cancer and things you wouldn't necessarily expect.

And then they broke it all down and kind of parsed out the data so that you could look at, you know, the different types of hormone replacement therapy.

And sure enough, as I would have expected, transdermal, natural estradiol, and natural progesterone fared the best of all options, which is what I'd always used anyway.

So I found that very vindicating. And yeah, and then Lisa Mosconi published some really cool research looking at women and their brains and showed that receptor density for estradiol in different areas of the brain increase with kind of movement from premenopause to perimenopause to menopause.

And that receptor density increase is almost like the brain's kind of adaptation mechanism to try to suck up every little bit of estrogen that's like left over because estrogen is so crucial for brain health.

And she really is kind of starting to provide some compelling data that perhaps the reason why Alzheimer's is so much more common in women is because of the loss of estrogen.

so drastic and dramatic in women. And I just saw that over the years that like, you know, women's memories and their ability to recall names and, you know, their ability to find the right word as opposed to word substituting as they went into menopause was just so dependent on their estradiol level.

And so, you know, I could kind of turn women's brains around in two days, you know, starting on bioidentical hormones. So yeah, it's just been an absolute pleasure to work with bioidenticals all these years.

And then in men, you know, I have found the same to be true. Like men really age better if their testosterone levels are maintained and get by using less testosterone or no testosterone at all.

if you pay attention to the precursors and the adrenal hormone, cortical hormone precursors and, you know, kind of look at how testosterone is being metabolized in terms of, you know, is it being metabolized into estradiol?

Is it being metabolized into dihydrotestosterone, both of which have very bad ramifications with the prostate health and, you know, even just their ability to feel their testosterone.

and not have side effects. So I've, you know, I've been able to help men age better, have lower risk for, you know, downstream consequences, you know, when the hormones are balanced properly and you're paying attention to how they're metabolized.

Right, right. That's great. What types of programs for longevity do you offer at Gizen and the bio-optimization center that you co-founded in Marin? Well, we have a longevity program for people that live locally and a longevity program for people that are remote but who can commit to coming here for five days initially and ideally for one to two days a quarter after that.

because the five days, the initial five days is a very important time where we do elaborate assessment. So we do blood work. We do metabolic testing with VO2 max, resting metabolic rate, HRV testing, spirometry, grip strength, DEXA scan, in-body.

We set people up with continuous glucose monitors. We make sure they have an aura ring. hook them up with Heads Up, which is a group we've partnered with that tracks data.

And then we have them come, then during that first five days, we do some NADIVs, we also do EB02 here, so we get a couple EB02s out of the way. And then we then follow up if they're local, the next month, we have a report of findings day, and then we create a protocol that's an annual protocol.

And that protocol involves dietary advice, training advice, supplements, hormone balancing, a year-long peptide schedule, and a certain cadence of technology stacks.

If they're local, they also do quantitative EEG brain mapping and then they have some brain training included. We do functional movement analysis and they have some body work included.

Then for remote people, they don't do the on-site technologies or the brain training or body work, but they do do everything else. And then they follow up with the doctor every other month.

Longevity and Metabolic Health Programs at the Center

We do retesting on blood labs every quarter and biometric testing every six months. That sounds super complete. Yeah, it is. A lot of people are just like, I'd love to wear a CGM, I'd love to wear an aura ring, but they're not really paying enough attention to the data in a way that's meaningful, to alter their lifestyles, to optimize the data over time.

That's what we do, is we really help people meet their goals. If their goal is to optimize body composition, we can accomplish that. We also have a metabolic health program.

So we have one for local people and remote program. And it's similar, a little less involved and more geared toward metabolic health as even body composition and improving insulin receptor sensitivity and the handling of glucose over time.

That's so critical because it's the underpinning, as you know as a doctor, you know, absolutely fundamental to reducing your risk for heart disease, cognitive decline, diabetes, cancer, autoimmunity, etc.

Right, right. Yeah, this sounds amazing. Absolutely fantastic. Well, thank you so much for your time and your expertise and all this. It was really enlightening to learn about all the things that you do at the Jison Center.

And I appreciate that so much. You're so welcome. Pleasure being here. Thank you. Hey, thanks, Julia. Thank you for tuning in to Doctor Talks. We hope today's episode has enlightened and inspired you on your path to optimal health.

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