



Episode 437: Health Optimization Medicine,  
Nootropics and Anti-Aging  
With Polymath Dr. Ted Achacoso

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Katie: Hello, and welcome to the "Wellness Mama" podcast. I'm Katie from [wellnessmama.com](https://wellnessmama.com) and [wellnesse.com](https://wellnesse.com). That's Wellnesse with an E on the end. It's my new personal care line. And this episode was so fun for me to record and I know that you will learn a lot from. I'm here with Dr. Ted Achacoso, who is a polymath doctor with one of the most impressive resumes I've ever seen. He's also one of the most impressive people I've ever had the pleasure of speaking with. And he's an expert, multiple board-certified, and an expert in many things, including what he calls health optimization medicine. It's an entirely different approach to medicine, beyond even functional medicine and naturopathic medicine, also in things like nootropics, anti-aging, hormones, and so much more.

And we go through a whole lot of different topics in this episode, including his seven pillars of health, things like vitamin D and some myths surrounding that, some nootropic substances including methylene blue, which I have not talked about on here before, and a nootropic he created that uses methylene blue along with other substances. It's one of the more effective ones that I have found. But he walks us through simple things that can help optimize brain function quickly, improve sleep, his own 80/20 practices for better health, and much more.

The amazing thing about this is he's probably one of the most intelligent people I've ever talked to. We barely scratched the surface on the first couple of questions that I wanted to talk to him about. So he will definitely be back for at least one more round. We didn't even get into consciousness, which he's an expert on as well. But I think you will learn a whole lot from him, from Dr. Ted, who is an expert in areas of pharmacology, toxicology, neurology, interventional neuroradiology, medical informatics, artificial intelligence, and much more. He is truly a wealth of knowledge, and I can't wait to share them with you. So let's jump in. Dr. Ted, welcome, and thanks for being here.

Dr. Ted: Thank you for having me.

Katie: I'm so excited to chat with you. You come highly recommended by some of the people I trust most and look up to the most in this world. And I know there's about a dozen topics, at least, that you are legitimately one of the best experts in the world in and many directions we can go. But to start broad, I would love to kind of just touch on the topic of health optimization medicine, which I know that is something basically that you kind of created. And I think it's something that's not super well-known, even with my audience. So can you start off broad and just walk us through what that is and how it's different than maybe other types of medicine?

Dr. Ted: Yes. Look, Katie, you know, my training is really in illness medicine. I was a pharmacology toxicologist for a while, and then I trained in neurology, in interventional neuroradiology, which is just like poking brains, right? I used to kid people that I used to poke brains for a living. And as you grow up in the practice, you realize that all we're doing really is that if we were a car mechanic, you know, all we're doing is actually, you know, replacing your tires or cooling your engine each time that you're sick and you come to us. And that's what we do. But there's no one actually coming in to say, "Well, let's maintain your health. Instead of diagnosing and treating disease, you know, why don't we maintain your health," right? And so, that's equivalent to our cars now having, you know, sensors, like your windshield wiper fluid is low, right, and your tire pressures are low. Those are recent inventions.

And looking back, you know, the reason why we didn't get this in medical school is that we actually didn't have the technology to do it, to look at what's going on inside the cell, right? An example of this is, like, you know, people ask me, "Dr. Ted, you know, is vitamin C good for me? Is Vitamin E good for me?" Before, we couldn't actually measure these things but now we do have a way of measuring these things so you don't guess anymore. You don't just bombard yourself with a whole host of vitamin Bs and then declare it done, right? And so, that's the genesis of why, over a decade ago, I said, "Well, it's time to move away from disease, which is the diagnosis and treatment of illnesses, right, into the detection of correction of imbalances." And so, Katie, what I was looking for is now where do we detect these imbalances? As I said, you know, like, the sensors in your car, when you go every 30,000 miles, your car has to go for maintenance, right? And we don't do that for our bodies.

And I said, "Well, now we do have the technology to do that." So, you can sense whether or not your alpha lipoic acid level is low and your CoQ10 level is low, instead of just taking all of those. And the answer actually

came from a field of science called clinical metabolomics, which is now about probably 45 years old, right? But it's only reaching the clinics now. So, what is that? And that is actually, very simply, detecting what's called the small molecule metabolites. When your body processes things, right, it produces metabolites. When it produces energy, it produces metabolites. And those metabolites before were very expensive to measure or could not be measured. But in the course of time, you know, we were able to measure them. In fact, I have a joke in biochemistry, in medical biochemistry, you know, we used to just memorize all of these pathways with mnemonics and we were given exams on them, etc. And now, when I go to lecture on physicians, it's like, yeah, you're back to biochemistry but this time, you really have to know your biochemistry, right? Because you can now measure what you just used to memorize, right?

So, that was sort of, like, the realization that I have. And no one was teaching this at the time. And already we were seeing laboratories that are coming out that would measure your nutrients, right, the different levels of vitamins, your A, B, C, D, E, you know, all of those vitamins, they could detect, for example, how the different amino acids that comprise your proteins, whether or not you're deficient in arginine or, you know, deficient in lysine. And all of this, before, it was just all a guessing game. They also are able to see how your fats are metabolized. Like, for example, here in the United States and actually elsewhere in the world where Western medicine is practiced, you know, they just give so much Omega 3s, right. They give Omega 3 capsules, etc. You can measure those now, right? You can see your various different types of Omega 3s, your EPA, your DHA.

And then what I find now with my patients and with my clients, clients because they're not sick, right, with my clients is that, you know, they now have too much Omega 3 that their Omega 6 levels become deficient, right? And so, since we were just giving this willy-nilly to people, and in fact, we were treating this like drugs, therefore, the key in health optimization is really the balance, right? It is basically the detection of borderline deficiencies and subtle toxicities. Now, if you ask me, you know, why did I settle on clinical metabolomics as a way of diagnosing, right? Why not use the, say, genome testing? And that's really a very fair question but it's actually easy to answer. When you're looking at the gene, right, you're only looking at the potential. But when you're looking at the metabolome, you're looking at what's actually happening now to you, right? You're currently deficient in vitamin B2 or B6 and so on.

So, when you do that, you see that very, very quickly, you see the effect of the environment is more reflected on your metabolites than it is on your genes. And a quick way to remember this is that I cannot detect if you're having mercury poisoning or the levels of your mercury or your arsenic as is common in Asian populations, right, where they are rice eaters. Rice usually has some arsenic in it due to the milling process. And, you know, you see the arsenic levels rise. And this is undetected by your illness medicine doctor. So, that's the value of staying with what is happening now, rather than what could possibly happen because there's no gene that says, "You know, you're susceptible to mercury poisoning." It just won't do that, right?

So, now that we have a sensor, so to speak, in clinical metabolomics, we can take a look now at, okay, what nutrients are you deficient in, right? And I like to say, you know, there are groups like nootropics or people who like to boost their brains, etc., and they classify, for example, vitamin B6 as a nootropic. And you go, you know, when you take vitamin B6, it just doesn't go to your brain. It goes everywhere in your body. So the first level is actually looking at all the cells in your body as basically a fundamental unit of healthcare, right? And

these cells are communicating with one another. So, in other words, you forget about the organs, you forget about the tissues, and you go right into the cell. What does the cell actually need?

Now, when you see that, you could see that the cells require vitamins, minerals, hormones. And all of those can be measured, and then you can move those values to an optimized level. And what do I mean by an optimized level? An optimized level is a value between when you were 21 years old and 30 years old, right? And, you know, the childbearing age for women, they say, the optimal childbearing age is 23 plus/minus 2, right? And then for men, testosterone starts going down at age 30. So, if you take a look at that, then you could see that, you know, a 21 to 30 range would really be optimal, except for those vitamins are actually hormones that are evolutionarily derived, for example, vitamin D, right? The requirement in illness medicine of vitamin D is really very low.

And what I noticed over a decade of practicing, just balancing this, is that if you have a value 50 and above, you know, if you have any other disease, really a lot of your other diseases seem minor, meaning their signs and symptoms really manifest so much less, right? But that's just a personal experience with this, right? And so there are evolutionarily derived values like vitamin D. And as you know, vitamin D is a highly conserved gene, right? It's been around for about 750 million years. So, ever since, before even man, the gene was already there because humans are yoked to sunlight.

So, when you look at that and you look inside the cell then, so what does the cell have, right? It has cell membranes. So, as I said, you could measure fatty acids and, you know, the cell membrane is made up of lipids or, you know, fats. And then, you know, your enzymes, the ones that are doing all the work inside are actually proteins, right? They're made up of amino acids. So you could measure all of those levels along with, you know, the next pillar after...There's seven pillars of health optimization. We just discussed the first actually, which is clinical metabolomics. The second pillar is now bioenergetics or the mitochondria. The mitochondria are the powerhouse of your cell, right? They are batteries, and you have about 100 quadrillion of these. So you can do nothing without them.

And as I like to tell people, Katie, especially in this time of our pandemic, right, is that the Department of Defense requires a lot of money. And so, your mitochondria actually needs a lot of energy in order to provide energy for your immune system to function. So, what did the...? You know, you could now measure, you know, what the mitochondria is doing to your glucose, for example. You know, you could see the metabolism when it has no oxygen and producing the ATP, the energy currency of the cell. And you could see when it actually is in the Krebs cycle and it's producing lots more ATP. And for example, if you have mercury poisoning or arsenic poisoning, you could see which particular parts of the cycle are being disturbed or blocked, right? And in particular, for example, lack of vitamin B2, for example, will shut it down or vitamin B1, thiamin, will decrease the transport to the mitochondria.

And, for example, if you're burning fats, right, your acetyl L-carnitine is a chaperone for your long fats to go into your mitochondria for burning, right? So you could see whether or not you are deficient in acetylcarnitine. But there are these levels cannot be measured. And most people don't know that, right? Those levels can be

measured, you know, and many people don't know that we can now measure this. And we've been measuring this for over a decade already. And it's already at a consumer level.

So, what can you do, you know, to rev up your mitochondria in a simple lifestyle? You know, it's shown in literature that an overnight fast of about 12 hours, right, is enough to rev up your mitochondria. So mitochondria are like bacteria. They are actually bacteria. They have their own DNA. You know, they divide. When the cell divides, they also divide. And the way I look at it is, you know, it's like cooking in a kitchen. So, they cook for you. They provide you the energy. But if you don't stop cooking, it will continue dirtying up your kitchen, right? So, consider them like a self-cleaning kitchen, not a self-cleaning oven, self-cleaning kitchen, right? So the next day, for example, if you fast for around 12 hours or so, then you will have new kitchens available, in other words, new mitochondria that's available for you to be able to metabolize your glucose and your fats, right?

So, this is, like...you know, I was talking about intermittent fasting way before it was called intermittent fasting. I just asked my clients and my patients, you know, try a 12-hour fast, which is, like, you know, from the time that you finish eating at night to the time that you have your first meal in the morning is 12 hours. Me, personally, I do 16 hours, right? And, you know, in any time zone that I am, I usually try to follow a 12:00 noon to 8:00 p.m. schedule. And that's because your intestines are usually begging for some regularity from where you are in order to adjust to a timezone. So, that's bioenergetics, sorry, mitochondria.

And the exciting finding in the last 15 years is really the gut microbiota. So, when I was in medical school, the gut microbiota, you know, was not studied at all. And the immune system was considered, you know, your bone marrow. But in the last 15 years, you know, we know that the largest immune system of the body is the gut. So if you want to boost your immune system, you better take care of your gut microbiota. Why? Because the gut microbiota are the ones that are actually teaching, right? They are teaching your immune system on what's foreign and what's not foreign, what they will respond to, and what not to respond to. In fact, your gut microbes are so important, right, that certain chemotherapeutic agents, or agents for cancer, won't work, you know, if they don't have particular species of bacteria in the intestine.

So, you know, we now know, for example, that depression, anxiety, etc. can be due to, you know, dysfunctional communication between the brain and your gut microbiota. When I was in medical school, we only had what's called the gut-brain axis, meaning your brain and your gut were communicating. But now, it's a three-party system. All right? So it's the empiric microbiota-gut-brain system. And that's a big jump, right? That's a big jump from what we knew. So now you have, you know, plethora of, you know, probiotics, prebiotics, postbiotics, you know, synbiotics. You'll hear all those terms, but you could actually measure your gut microbiota. You can get a stool test and you could see, you know, what these bacteria are, whether or not they're in overgrowth. You know, some people would have some overgrowth of some bacteria because they actually eat too much fermented food, for example. Some will see that they have fungal infestation, you know, much like Candida and so on. And you could see that.

Moreover, you could also see the metabolism of your fats. Now, for example, you know, my requirement for fiber, the average requirement that I throw around is about 34 grams of fiber a day, right? And this fiber serves as the scaffolding for your poop, right? And, of course, this is also used by your bacteria in fermentation, right? And they actually produce what's called butyrate, which is the fuel of your colon cells. And, for example, in illness medicine, they found out, like, low butyrate levels actually correlate and we call them cancer. And you could see many studies on that, right? So, these are the kinds of things that you could see the butyrate level, you could see the ketone levels, actually, you could see the propionate level and so on, just by looking at the stool and the gut microbiota. You could also see things, like, for example, if you have, for example, intestinal bowel disease or IBD versus IBS, you know, you could distinguish that with markers like calprotectin. So, these are things that are normally produced, right, by the intestine, that you could see in what amounts they're being produced.

So, the big picture here is now, before, we used to think as the gut microbiota as separate from us, right? Oh, these are organisms that are outside of you. No, they actually are inoculated as the baby is actually going out of the vagina, right? So, the first inoculum actually comes from the mother, right? It's coming from the vagina. And you can see, you know, about two, three years ago, there were now some obstetricians who were doing a Cesarean section, they will put a gauze in the vagina while they were cutting up the patient for a Cesarean delivery. And then, as the face of the baby is coming out, they would wipe the gauze and the face to provide a good inoculum because it is actually sad that they have measured in kids, right, the gut bacteria of those who are born by Cesarean section is that it's actually the skin bacteria that are predominant.

And it means the skin bacteria of whoever held the baby first, right? And that's not good because you could see these children having a lot more immune problems. For example, they're more prone to asthma and other asthmatic skin diseases. Right? So, that's important is that it's like we consider the gut microbiota, which is about 2 kilos, right, as one organ in the body that actually develops after you're born. If you consider it that way, then you'll never get lost and say, "Oh, no, that's outside of me." No, that's inside of you. And it regulates a lot of your immune system. So, there's clinical metabolomics. There's bioenergetics mitochondria. There's gut microbiota, right, and a gut immune system.

And then we go to something called exposomics. And this is very important, especially now that we actually are not seeing, you know, all of these heavy metals that we're eating. For example, I had a client who was a pescatarian, right? He just ate lots of fish for over a decade, right? And so essentially, when I was doing health optimization practice on him, I could see his mercury rising, but I couldn't stop him from eating fish, right? And so, what happened was he actually collapsed. But if you take a look at his record in the hospital, each specialist had a diagnosis on him without considering mercury. You know, if it was a cardiologist, he would say it was an arrhythmia. The hematologist would say it's just anemia of unknown origin. The neurologist would say, "Oh, this is just cognitive decline due to age, you know, and sarcopenia from loss of muscle, muscle weakness from aging." But it's not. If you take a look at his mercury levels, you know, it was rising until, you know, at the time that he collapsed and was admitted to the hospital, it was already more than 50.

So, you could see things like this, you know, over time and you could already start balancing them. As I said, you know, balancing of the subtle deficiency and borderline toxicities would help a long way. And I'd like to

emphasize it's not preventive medicine, right? It is health maintenance and health promotion because preventive medicine is still the purview of illness medicine, right? Like, for example, vaccinations are preventive medicine and it's preventing a disease. And that's why I said, let's move away from disease orientation. And it's very funny, Katie, because when you have, for example, a client or a patient that has Parkinson's, and that has heart disease, and that has diabetes, right, they will get three sets of this is how you prevent Parkinson's, you know. And you could see, like, this set of, like, 50 recommendations, and then you go, "Why? You know, why do you have to do that?" It's not about disease prevention, right? So health optimization is before that. And we take care of basically the fundamental needs of the cell, which comprises, of course, all of your organs and all of your body.

So, your exposome is basically important. Now, I just read, you know, in the last few days, have been an article that men's penises are shrinking, right, because of these environmental pollutants, they call the endocrine disruptor compounds, like phalates in your plastics, right, and so on. If you just do, you know, a search in men's penises are shrinking, you'll see, you know, those articles repeat this. And this field is called exposomics. And most people are familiar with what's called the human genome database because the genes were first. But we were talking about the metabolome. There's actually a human metabolome database.

And the large...one of the fastest-growing segments in there, Katie, are poisons arising from female cosmetics, right? So, be careful of what you put on your skin. I like to think of the skin, basically, just as an inverted intestine, right? It will absorb what you put in there. So, be careful what you put in skin, and especially in the skin of your kids, right? They're more delicate and so on. So, be careful with what you put it in there. There's also a human exposome database so you can see actually the number of growing poisons. You know, your simple weed killer that you use for your garden, etc., like Roundup, for example, all of those, those actually will eventually find themselves in our food chain. And pretty soon, not only will they be there in the ground, but you'll be eating them too. Right? So, that's exposomics.

And then there's chronobiology. And most of your listeners would be familiar with chronobiology, you know, the study of your rhythms, your circadian rhythms. Now, circadian means within a day, right, within 24 hours. And circadian rhythm is just one of the rhythms, right. Women, for example, will be familiar with what's called an infradian rhythm. And that's for menstruation, you know, circa 28 days, and so forth. And one of the interesting findings in the past few years is that men actually have testosterone cycles that are actually two peaks within 28 days. So, I like to kid around that, you know, men have basically two appetites because they have two peaks in the month. So, anyway, you could see here and then there's the ultradian rhythm, right, which is below the 24 hours. Like, for example, a heartbeat has its own rhythm in seconds, right?

So, circadian rhythm is just our, basically, response to a 24 hour day, right? And so, this is a very common problem, it's like...And people equate this to sleep and sleep problems, right? And we know that when you are unable to sleep, of course, you see what's called the inflammatory markers, those that are derived from activation of a gene called NF-kappa B. You know, they rise, right? And we know that inflammation actually is the root of many chronic diseases. See, in western medicine, we're very good at acute diseases, right? Acute trauma, for example, that requires surgery, and, you know, acute infections, but we're reading very bad at management of chronic diseases, right, because it starts very slowly as an inflammation. And by here, what I

mean is molecular inflammation, not the, you know, redness, swelling, etc. that you see that's already very much later, but the production of what's called inflammatory cytokines, right?

And when you are stressed, for example, because your body's stressed, you know, when it can't sleep, and so on, so these inflammatory cytokines would rise, and therefore, will contribute to all of these effects that you experience when you don't have a good night's rest, right? And, you know, the average sleep cycle is around 90 minutes, right? You either have four or five of those every night, but you can gauge this for yourself because the younger you are, the longer the cycles are. The older you are, the shorter, right? And, you know, it's basically in between the cycles that you are most likely easily aroused.

So, one of the things that if you know, you know, that you...when you wake up and you feel like waking up already, despite the fact that your alarm clock is saying, "You know, you could still sleep for another 30 minutes," probably means that you should already get up before you enter into another cycle. Say you have an appointment at 7:00 a.m., right, and your alarm is at 6:00, but say you woke up at 5:30, so what you're gonna be doing is you're gonna be entering, you know, another cycle again. And waking up in the middle of a cycle feels like you've been hit by a Mack truck. You know, and for me, when that happens, I could not recover from within the day. Like, everyone just, you know, get out of my face sort of feeling, right, and your body feels very heavy. So, that's chronobiology as a pillar of health optimization.

And, of course, we have to take up epigenetics, right? And this is very interesting because my slide when I lecture on epigenetics is usually three generations of women, right? And if your grandmother, who was a smoker, then she could pass on, you know, the epigenetic changes to you as a mother, and you as a mother can pass it on to your kids. So, it's three generations of women. So, what is epigenetics really? Epigenetics are the mechanisms in the body, whereby the genes are actually activated on or off, above the gene itself. So it's gene regulation that is not occurring within the genes itself. So in other words, your DNA remains intact, right? But there are mechanisms. So that's why it's called epigenetic, mechanisms above that, that control the reading or the regulation of your genes.

And this is highly correlated, you know, with the foods that you eat, for example, methyl-rich foods, vitamin B, B vitamins, you know, like methyl folate and so on, the part of the methylation cycle. And we can measure this. Again, as I said, you know, we'll show your methylation state. In fact, there are now what's called epigenetic clocks, right? And the most exciting thing about these epigenetic clocks is that you can actually reverse them. And, for example, the work of David Sinclair out of Harvard, right, in the retina, right, that have already gotten "old." You know, he put in the, you know, what's called the Yamanaka factors, these are the factors that won Yamanaka his Nobel, right, and injected it there. And it showed that it's like a...Katie, it's like this. It's like a tooth that, you know, over time, it develops all of this crud and plaque, right? And what his technique does is it removes the crud and plaque and restores them into a younger state.

And so, this is actually a game-changer in health optimization, right? We could use, for example, your epigenetic clock to say, "Okay, illness medicine doctor, you gave, you know, Metformin, etc. for diabetes, and this for heart disease, for five years, and here's the epigenetic age of the patient. You know, the patient is

actually 40 years old, but epigenetically, the patient is 70," right? And then comes to me and says, "Okay, you know, let me do just balance, you know...I'll set aside your disease, let your illness medicine doctor take care of that, and we'll balance out your nutrients, and hormones, and we'll see what happens." And you check after 6 months or 9 months, and you'll see, right, that you actually now, you know, in 6 months, you know, from the 70 that you got with our treatment of illness medicine, you'll probably get to like a 65. You know, so you could see that you're actually doing something that's beneficial for the patient or the client.

So now, it's very...What I like about this is now you can hold the candle at the feet of illness medicine doctors and say, "Hey, you're actually aging the patient or the client a lot faster with your therapy than, you know, just doing health optimization," right? Well, of course, acute diseases for trauma, they have to be fixed. Like, for chronic diseases, we have to think a little bit more that the body, you know, is comprised of cells all over. And if you don't look at it that way, no one is going to take care of the fundamental level of...no one's gonna take care of the nucleus, the cytoplasm, you know, the mitochondria, the cell membranes, you know, the enzymes in there, etc. Those are basic functions, right?

So, that brings us to the seventh pillar, actually, which is evolutionary medicine. And evolutionary medicine essentially asks, you know, why do we get sick? And there are things in us that the way we're actually designed by evolution that predisposes us to some disease or the other, or that this is a natural way of doing things. If, in illness medicine, we can take a look at this as like, "Oh, these are bad signs and symptoms," but by epigenomic medicine, you know, you say, "Oh, this is the way the body protects itself." So, for example, the example here that's easy to remember is an ankle sprain, right. When you sprain your ankle, essentially, you're gonna have some swelling. And you know what, Katie, that swelling is actually equivalent to the cast that they were putting it in, right? The ankle swells, that's like putting a cast in there. And then when you stand up, right, it hurts, right? Because the body says, "Go and rest. You need to remove pressure from this foot." And what do we do in illness medicine, right? We give them medication for pain, right? Here, take this double Advil and, you know, you'll be fine. But you're actually ending up abusing.

So, the point here is, how much do we actually aid and abet nature, and how much do we hurt nature by giving our interventions, right? So, you can see here that the body has its own way of healing itself. And if you just are sensitive enough, you see, "Oh, this is actually not a bad thing." Illness medicine consider some bad things. Oh, the patient is having fever. Yeah, you know, if it's a child and fever is very high, of course, you would like to prevent seizures, right? But for adults, mostly, you know, fever serves as an effective, you know, antibacterial. You know, the body raises its temperature, kills bacteria, or inactivates certain viruses at certain higher temperatures because protein denatures with heat, right? And these are organisms with protein. So, there's a perspective here, which is the overarching perspective in the health optimization really, that we evolved, right? So instead of asking, why do we get sick, health optimization medicine asks, how do we get healthy, right?

And so you could see it's a very different point of view because when you're looking at the laboratory values, for example, there is, like, for example...When they're looking at your fasting blood sugar, it says, okay, you know, you're 95. You know, this is high blood sugar, etc. The cutoff is 94. And interestingly, Katie, when I started this, I was telling people that the cutoff must be 94, when the cutoff used to be, like, I think 104. And

over the years, in less than a decade, they cut it down to 94, right? And this is just your fasting blood sugar. So, there is no one value that will say, okay, you're sick and you're not sick. But that's what illness medicine does, right, because they're looking at what's called survival value. So survival value, so you need this. This is your survival value for your B vitamins, etc.

But what's the optimal value? What value will actually help you thrive, right? What value will actually be optimal for you or bring you back to the energy levels where you were? And that's the values between 21 and 30. And I said, but the truth of the practice is, as soon as the patient or client feels better, then you basically try to maintain that. But it's a dynamic maintenance. Like, balance is not a static thing. So it's a dynamic maintenance. So, those are the seven pillars. You start with clinical metabolomics, you know, bioenergetics, mitochondria, gut immune system, gut bacteria, exposomics, chronobiology, epigenetics, and the evolutionary medicine. So, those are not taught in medical schools. But the overarching practice is detection and correction of imbalances and not diagnosis and treatment of disease. So, there's my big opening lecture for health optimization.

Katie: Love it. I just took a bunch of notes for the show notes. For you guys listening, I'm putting links to some stuff there that you guys can find to learn more. I know a lot of people are wondering, I'm certainly wondering, you make a really compelling case for this, how do you start to test for those things? How rapidly and how often do you need to test? I would assume in a lot of these things, you can see changes pretty rapidly within the body. But I'm curious. And I'm a very big believer in people being their own primary healthcare provider in that we take individual responsibility for each of our own health and...

Dr. Ted: I'm with you there.

Katie: So how do we start to practice this? I think you've made a perfect case for why this is better than preventative medicine or even different and better than functional medicine or just naturopathic medicine. But how do people start to shift their mindset and actually do this testing?

Dr. Ted: Yes, there are actually metabolomics labs, and, you know, there's labs by Genova that has been there for a while. There are other labs that do these kinds of test. So essentially, what you do is you submit, like, free specimen, you know, there's a urine, there's a stool. And if you are taking a look, for example, your food sensitivities, which is one of the things that are best for the gut, right? Because, you know, just as an aside here, you know, I had a woman who essentially attended my lecture after she was in my clinic for just a month, and I told her to cut down on certain things that she was sensitive to, you know, just for a period of six months. And within a month, you know, she lost a couple of inches off her waist. And that's how large your intestines can actually swell, right, when it's sensitive to some particular foods, and they also trap air and all of that stuff.

So, it is blood, urine, and stool. They will test you for the metabolites. They will test the stool for metabolites and organisms, and they will test your blood for some are hormones and some would be your sensitivities to

food. So, essentially, they put them all together. And from there, you actually do a reading, right? You ask how often. So, the body changes its blood, you know, every 90 to 120 days. So, ideally, you get a baseline. And then after 90 to 120 days, 3 to 4 months, right, then you get another test, but it's expensive for many people. So I just say, "Well, okay, let's just retest this after six months, right?" Or after six months and then after a year.

And, Katie, this actually very interesting that you asked this because I have clients who come and says, "Dr. Ted, I've been under your care for a year already. I don't feel anything," right? And I ask them, you know, "Okay, how many times do you get sick when you were not under my care?" "Oh, about six times a year." "And how many times did you get sick last year?" "Oh my God, I never got sick." So there's a certain rearview mirror quality to this practice, where that people basically realize it only after you point it out or, for example, you know, "I haven't been really reaping any benefits from this." And you go, "Well, how many projects were you attending to the year before you came to me?" It's like, "One." "How many projects were you juggling this year?" "Four." I said, "Are you...?" And he probably said, "Oh, oh, oh." You see how this thing is actually quite an experiential practice, right?

So until you experience it yourself, it's very hard to explain it to people because, you know, there's a certain feeling of wellness that you know when you've...For example, for me, if I eat, for example, a super sweet piece of cake, you know, I really, really know that, you know, I'm gonna be paying for it, right? For example, a scoop of ice cream is known to depress testosterone for about 24 hours, right? So, you get all of these things but the nice thing about it is that when they start feeling well, right, so when they start feeling well, then you could actually start, sort of, like suggesting new habits, right? "Oh, I feel so good already. What else can I do," right? And because the lifestyle is the most difficult things to change and yet, it's the most important thing that, you know, we should change. But it's not. You know, we're still instant gratification kinds of people. We like immediate results.

If you're doing hormone balancing, it's a different ballgame altogether. The results can come in as short as two days to a couple of weeks, right? So that's a different practice altogether. And that's done by physicians, but I'm training not only health optimization medicine experts but also health optimization practice experts, meaning people who actually are interested in, you know, doing this for their clients if they're not physicians. The only thing that's different in the training is really, you know, the capacity to prescribe drugs, right, and hormones or drugs. So that's the only difference. And, you know, you can also do balancing in a different way. You could do it with glandular. You could do it with peptides and so on. So there are actually options for doing those.

So, yes, ideally, you know, you note the change after 90 to 120 days. If that's too expensive, then after six months. And usually the longest, where I got a first feeling or first of wellness is nine months because the person was very, very deficient, right, extremely deficient in a lot of vitamins and minerals, and continued the eating habits that he had. So, you have to catch up with all the balancing. In fact, Katie, they complain to me, "How come I'm not feeling well yet?" You know, it took you, like, you know, 40 years to get to this imbalance, why do you expect to balance overnight? So, it's just a matter of being patient and knowing how the body works.

Katie: That's a good point. It takes a long time to get to this point and it can take a little while to reverse it as well. You also, in your initial seven pillars, you mentioned the importance of vitamin D being a really big factor connected to a lot of other things. And I would assume that there's also a sunlight component here as well. I've been doing a lot of research on light and how it affects, for instance, chronobiology. And also, of course, vitamin D is very well-documented for its effect. And I think also, sunlight is a relatively controversial topic within the medical world. So, I'm curious what advice you usually give to people concerning sunlight exposure, vitamin D, and how to get into that optimal range, which is from what I've read as well higher than the normal levels they tell you on a test.

Dr. Ted: Yes. Yes, Katie, you know, I was one of the first to really give a very long lecture of vitamin D in Asia. And, you know, part of my practice is in Manila, Philippines. And it's really very shameful because we are in the tropics, right? And the sun is actually just overhead. So it's really at the best angle to generate vitamin D for the UVB, right, to generate vitamin D. But we have, like, severe vitamin D deficiency over there because the people are actually using umbrellas, you know, to shield the sun or they would use like SPF 100 stuff. So, my advice really for vitamin D is this, so the body is yoked to the sun. You know, if you keep that to yourself that you evolve, you know, with the sunlight in there, in fact, when you wake up in the morning, you know, the sun is supposed to hit your skin, right? And when it hits your skin, it actually raises your thyroid hormone levels and your cortisol levels, that's why you wake up, right? Because that's actually good stress for the body. It increases your metabolic rate and so on.

So, that's, you know...And then there's noontime and then there's evening. The vitamin D production is really dependent on where you are, right? The more you are in the Northern or Southern...the higher you are and the lower you are in the Southern and Northern Hemisphere, then, you know, the different levels of vitamin D could be generated from the UVB rays because it depends on the angle or the penetration of the environment, right? But in the tropics, you shouldn't have any problem. So, what I do there is I actually asked them, you know...of course, you have huge fights with a dermatologist, etc., but what I ask them to do, especially for women is just wear a sleeveless shirt, you know, put a ball cap on so that your face is shielded. No sunblock and expose yourself to the sun for about 5 to 10 minutes at noon, right? The most unforgiving time, which is, you know, 10:00 am to 2:00 p.m. is actually the best time for you to do it. And you can actually google the charts on the internet and you could see what your skin color is and how much exposure to the sun you need in order to generate the vitamin D, right? Of course, the fairer you are, the less exposure to sun you need than if you're darker, right?

So you could see, for example, in black communities, there is actually a lot of vitamin D deficiency, right, because they need a lot more sun exposure. I'm brown skin and I really need a lot more sun exposure than most people. Now, the thing that I actually am emphasizing here is that, you know, it's free. However, when it comes to the winter, you know, and spring, right, then, you know, for example, from late November to about early March here, where I am currently in Washington D.C., I am not getting any UVB rays, right, because of the angle of the sun. It would just start rising over in spring and all through summer. So, what I do is I actually have a vitamin D lamp, which is UVB, and there's, essentially, the table for your exposure to the UVB lamp,

right, and how many minutes I think you should expose yourself into. I used to suffer really severe seasonal affective disorder, right, the winter blues. And the UVB lamp is one of the things that will prevent that.

And you were asking about light, Katie. Light is actually part of the exposomics, right, because there is such a thing as toxic light, right? For example, if you have blue light, you know, that's overhead when actually the sun has already set, right? So, as the sun rises, the hues are more red and then they get more blue. But you also know that the sun is actually getting overhead and setting. So even the...You know, it's not only the light itself that is important, but where it is coming from, right? Is it overhead, is it from the side, and so forth? So, there's a reason why you both have overhead and lamps in your home, right? And now there are bulbs that can do that. You could actually pick the spectrum of light that could shine on you because light can be toxic, phototoxicity, right? And you can see that it's also a drug. If you ever have seen a baby, you know, that was born with jaundice, right, phototherapy is the thing that's being used there to actually help heal the baby.

So, you could see the importance of light and vitamin D. And don't rely too much on D supplementation, right? For example, before when I was trying to fix "my seasonal affective disorder," I would take 50,000 IU of vitamin D three times a week, right? I would get diarrhea, right, because it's really, really way too high. And even better, one of the solutions that I came up with for myself is, aside from vitamin D oral, I would also have the vitamin D lotion, which is available, right, or you could put vitamin D lotion on. So there are many, many solutions. But really, the one thing if you can get out there, get out. But take a look, there's also so many free apps where you could put in your location, right, and you could match your skin color, and you could see how much exposure to sunlight you would need at the end at what time. So, if there is no UV to be made, it's at zero and, you know, it would recommend the D supplementation that you actually need.

So these are...You know, as I said, it's older than us and we're yoked to it. And you'll see a lot of things...In fact, Katie, as just as an example, I had a powerful female client, chief financial officer of a huge company. And she came to me and she was a smoker. And that's the only thing that, you know, was not good with her lifestyle. But, you know, when I took a look at her values, etc., yeah, you know, she had all of these imbalances that could be easily corrected but I was marveling at the fact that it wasn't worse, right, and that she was in great shape, you know, no heart disease, nothing.

And I found out what had happened was, you know, at noontime, since it's forbidden to smoke in her building, right, so what she would do is she would actually...She's sleeveless, you know, she doesn't even wear a hat to cover her face, she would walk around the block and puff a cigarette. So, she was getting her sunlight while smoking and walking around the block. And, you know, her vitamin D level was 60. And, you know, and all of her other complaints, you know, became secondary. And that was really a very...You know, it's one eye-opener after the other, you know, when we go through, you know, this is how we evolved, and if we just follow, you know, the way healthy people would evolve, right, then we would not be stuck with too much supplementation.

Katie: I love that. Certainly, I don't think there's any health expert that would recommend smoking, but I have thought about that before that they do have a couple of habits tied in that involve getting up every hour or so

and at least moving and going outside. And those are actually great habits. So if we could all adopt for those without taking on the smoking part, we'd be better off.

Dr. Ted: Yeah, you know, but hey, she already had the habit so it's like tie it on there, you know, and then start decreasing her smoking habit, right?

Katie: Exactly.

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And another topic I want to make sure we touch on that you are also an expert in is the idea of nootropics and how to use them effectively. A lot of people listening are moms. And I think of all people, moms are some of the busiest on the planet right now, but also some of the most effective, especially when given the right tools. So, for anyone who's not familiar with the term, can you walk us through what a nootropic is and then some general guidelines? I know you've also helped formulate nootropics.

Dr. Ted: Yes, yes. Katie, I've always said that moms of whatever age and condition, you know, should always be paid a salary for running a household, for, you know, doing all of these things in the house, in addition to their current jobs, right? So, they need to have...You know, it's another job altogether. And I've said that, like, you know, 15 years ago, it's like, you know, they should have a separate salary for that and just for them, right? So, anyway, the way I look at nootropics, Katie, is that it's a form of brain balancing, right? You're

balancing the functioning of your brain. And when I formulate nootropics, I classify them into...this is my personal classification because the classification of brain-boosting agents there is very confusing, right? As I said, we start with health optimization, right? And I said, "Hey, you know, vitamin B6 can improve your memory or, you know, methyl tetrahydrofolate can boost your memory and so on."

And I call these health optimization nootropics, meaning they just don't go to your brain. So if you see some vitamins there, minerals there that are basically being touted as nootropics, they're actually what are called health optimization nootropics. You know, it's actually correcting those because your body needs it can already improve your brain function, right? So, that's the big story there. For example, when you're testing within a couple of weeks...So before, you had to insert a huge needle in the brain and then get a sample on brain biopsy, right, to check out the levels of your neurotransmitters or these are the messaging system in the brain, right? But now, you could actually correlate them now with their levels in urine and levels in platelets, and you could have an approximate in your brain. And you take a look at basically four types of neurotransmitters. You're looking at, you know, metabolites of dopamine, metabolize of serotonin, and metabolize of epinephrine, right? And you take a look at, for example, you know, the levels of kynurenic acid, which is the inflammation in the brain, and so on.

So you could see all of those now. And you could see where all of these things are actually needing some vitamins and minerals in the pathway. So, that's the health optimization nootropic. So, for me, it's like, you know, when something is actually needed by all cells in your body, you just put it there, classify it as a health optimization nootropic. And then there is what's called a performance-optimizing nootropic. And when you're trying to optimize performance, you're trying to overclock the performance of the brain, right? So, most people will actually respond already to health optimization. They have better cognition, better memory and so on. But when you try to overclock the brain, you better be sure that you're actually health optimized first, that all of the vitamins, minerals, hormones are optimal levels, and then you add this stuff in order for your brain to function a little bit better.

For example, here's where you can add, you know, particular plants like huperzine A, for example, which prevents the degradation of acetylcholine, right? And you know that acetylcholine is responsible for essentially a lot of your working memory, right? The other thing that you could do, of course, is you could give nicotine, right? Small amounts of nicotine is known to improve your working memory and nicotine is nicotinic acid. And, you know, you have your nicotine receptors, right, in the brain. And that's because we also have...you know, vitamin D3 is close in structure to nicotine, right? You have nicotinamide and so on. So, you could see that...I don't know, you may have heard even of, you know, NAD infusions and stuff like that, but that's another subject. But it's these kinds of things. We are trying to push the performance and try to push performance, for me, the way I do it is only after you've been health optimized because it's easier to do it that way. For example, if you push it to imbalance because you overclocked something in the brain, it can come back immediately to balance because it's self-optimized.

Now, the other classification is what I call blutropics. And the reason I called it blutropics is really not because of my product that has methylene blue. But methylene blue is both health optimizing nootropic and a performance-optimizing nootropic. So as a health-optimizing nootropic, it donates electrons to your

mitochondria and gives more energy to your brain, right? And as a performance-enhancing nootropic, it contributes to the signaling system of your brain. And as a blutropic, you know, you basically have a blutropic stack. So you put...So, for example, my product that I formulated, actually, Katie, just for myself, right, because I travel a lot and then when you land, you have to be on because they're either very important people who are running countries or, you know, who will appear on screen and you can't afford to be late and you can't afford for your mind to be foggy.

So, you know, for me, I formulated Blue Cannatine. People liked it. It is methylene blue, which is both a health-optimizing and a performance-optimizing nootropic. It has nicotine. As I said, it improves memory. It has CBD. And the reason I put CBD there is it's an anti-inflammatory but what it also does, it rounds out the pointy feeling that you get when getting nicotine. Now, I'm very nicotine shy. You know, it's like, there's only 1 milligram per troche, and 0.25, one-fourth of that would actually already do it for me. And then, of course, there's methylene blue, which provides energy to the brain. And it's a buccal troche, meaning, you know, it's like a lozenge, but you stick it up your gum and your cheek, right? And because it's closer to the base of the brain, and it doesn't have to pass through the liver, right?

The other nootropic that was actually asked for from us is Just Blue, which is all just methylene blue, right? And people wanted it, you know, for...they say that it revved up their brain, and so on. And now, you know, there are studies where actually they're checking out methylene blue. In fact, the dosing was based on the study being done and methylene blue being used for Alzheimer's. And methylene blue is also being investigated for Parkinson's. But those are...you know, I'm not claiming those. You know, those are illness medicine types of applications. We were just responding to people actually requesting for pure methylene blue for their purposes.

So, this is how I would classify nootropics so it doesn't confuse people, right? If it's actually naturally needed by the body, etc., then it's a health-optimizing nootropic. And usually with plants, right, if you want to rev up the functioning of your brain with some, you know, phytochemicals or some plants out there, then go ahead and do it. For example, you know, some people say that ginkgo biloba can increase the blood flow to the brain, right? So, you could see that these are now plants that actually improve the infrastructure of how the brain will work, right, the brain needs more oxygen, etc. In fact, you know, your listeners can actually do this, facing a wall, a blank wall, you know, they can just actually push themselves to a wall, you know, basically scratch the nose into the wall and put their hands up and do a deep breath. You know, this will actually straighten the carotid artery, you know, to the brain. And if your hands are up and so on, then take deep breaths, and you'll see that a foggy mind would clear rather quickly, right, because there's more blood flow to the brain.

That's something you could see, you know, these crazes about, you know, taking in oxygen, you know, really, really small canisters, and so on. I have an oxygen concentrator myself, you know, which I use, like, 20 minutes in the morning and 20 minutes in the evening. So, these are the kinds of things that you can do to enhance to brain performance. And, of course, you know, you could do blutropics, which are...we actually have both health optimization and performance, optimization characteristics. But the key here, really, Katie, the best

nootropic, without spending for anything, is just go ahead and exercise. It's one of the most wonderful things that you could do, not only for your brain, really, but for your entire body.

Katie: I love that. I think that's a really important perspective is exercise is free and it's probably the most underused nootropic out there, but so effective. I'll make sure we put links for people to learn more about everything you just talked about, especially methylene blue, I'm guessing might be a new one to a lot of people listening. And certainly, nicotine comes as a controversial topic, in general, just because of its association with tobacco and smoking. But like, as you explained, nicotine can have a purpose within the body separate of that that can make it very beneficial. Are there any dangers to using nicotine when it's not included in a smoking capacity?

Dr. Ted: Let's see. Here's the thing, Katie, people have been mistaking nicotine from cigarette smoke. For example, if you put in water and then basically run it with cigarette smoke, right, and you just put nicotine in water and you put rats, right, and you will see that the rats actually would shun the one with nicotine and they would take the one that's been run in cigarette smoke. So there's something in cigarette smoke that actually makes nicotine addictive, right? The second point that I'd like to make here is that we do have these receptors in our system. It's much like cannabis, right? So, for example, phytocannabinoids are coming from the cannabis plant are molecules. And those molecules are actually found in the body, right? They are found in plants. They are also found produced by the body.

So, in nicotine, we also have nicotinic receptors. So they perform a certain function in our system, especially in our neuromuscular system. It's what's called the neuromuscular junction where the nerve actually comes to join the muscle. And you could see there the nicotinic receptors and where it actually works. So, you know, for very low doses, I wouldn't be afraid of it. As I said, you know, I'm very sensitive to it. And my thing is this, Katie, you could buy like 200 pieces of gum at 4 milligrams each in CVS, for example. You know, and here we are, it's like there's 1 milligram that you could divide a troche into four. It's like, really, we're not promoting anything here but the performance-optimizing capabilities of nicotine.

Katie: A great explanation. Thank you. And in the interest of respecting your time, I'll wrap up with a couple of questions I love to ask at the end, although I hope you'll agree to a round 2 one day. The first being, of your own personal practices, if you had to do an 80/20 analysis of the things that are most effective for health in your daily life, what would make the cut?

Dr. Ted: Well, for me, Katie, the 80%, which you basically don't pay attention to is actually your lifestyle. I know that people will hate me saying that. But, you know, when you, for example...And this is the way I would put it, you know, when you wake up in the morning, what's the first thing that you do? Right? You basically wake up and say, "Oh, my God, I'm alive," and you have a meditation of gratefulness. Right? And then you drink a couple of glasses of water because your body is dehydrated overnight. And then if you're lucky enough, you know, to have a yard, you know, you go out and ground yourself, right, bare feet on the ground to fix your electrical magnetic activity in your body. And then, you know, you basically eat well. You take a look at what

you're putting inside your body aside from hydrating, you know, where women need about 2.7 liters of water a day, men about 2.9, right? And then, you know, you mind what you eat.

You know, you move, especially you do your exercises or...the JAMA article that came out just a few months ago, you know, the "Journal of American Medical Association" is 8,000 to 12,000 steps of what every density reduces all causes of mortality by about 63%. That's huge, right? So, you know, as I said, before our interview here, you know, I have an under-the-desk treadmill and I'm on a standing desk, right? So, all of these things that you do when you're actually busy, you could actually, you know, add these little things in your life. I used to lecture five years ago that, you know, sitting is the new smoking, right? And then it caught on. I called it sitting-itis because most people just sit, right? And then you breathe well. And by that, I mean, aside from meditation, you have air purifiers in your home. You know, you have good lighting and so on. Because we always consider ourselves as separate from an environment, and we're not. We're very open to our environment. Our environment programs us as much as we program our environment. And we often forget the environmental aspect of how open we are. Look, you know, our breath is actually coming in from the plants, right? So, the oxygen that we breathe. You know, it's just so stark that we forget that.

And then, of course, you maintain your relationships, right? Get rid of the toxic ones. And if you don't know how to deal with the toxic ones, then, you know, get someone to mediate. And then, I'm sorry, that's going to be your partner, but that's a different story. And then, you know, basically, fix your relationship because they're a source of stress. And our relationship is not only with people, right, your relationship is your relationship with money, your relationship with your work, you know, your relationship with stress, and how to deal with stress, right, your relationship with news and so on. So, everything is actually in a connected sense, you know, a relationship. So, you know, we're thinking about only people when you do that, but you have a relationship with your pet if you have pets at home, and so on. So take a look at those and evaluate them. You know, are they helping or hurting you? You know, are you helping or hurting them?

And then, of course, you know, love well. Essentially, make sure that you and your partner, you know, don't sleep at night bickering at each other. You know, basically talk it out and see what it is. So, these are very, very simple things that you can do, you know. But the key here, Katie, is just an awareness, you know, awareness of where you're taking your day, right? So that's the 80%. The 20%, you can just do your health optimization and, you know, it will work for you. So...

Katie: Love it. And lastly, for now, is there a book or a number of books that have had a profound impact on your life? And if so, what are they?

Dr. Ted: Yes, you know, my research was in artificial intelligence, in particular, in consciousness. And so, much of the books that have influenced me have something to do with that. But for your listeners, I would actually recommend a really very short and old book that is very poetically written, and it's called "Illusions" by Richard Bach. You know, it's the adventures of a reluctant messiah, and it has a lot of reminders there, you know, for them to be able to read and to post, you know, in different parts of, like, in the mirror or, you know, in their

whiteboards, etc. And the first guide to the reluctant messiah, for example, is perspective, use it or lose it, right? And all I'm asking, for example, is very simple, Katie.

We applied it to health optimization, the perspective of illness medicine is looking at the body as a series of organs. That's why you have a cardiologist, a hepatologist, you know, a gastroenterologist, you know, a neurologist, and so on. But my perspective is the body is palabion meaning a group of cooperating organisms, right? So all the cells, I don't look at them as organs. I look at them as cells that are cooperating with each other, right? So, they have to cooperate, otherwise, if some cell says, "I don't wanna cooperate anymore, I wanna live by myself," and then it develops into a cancer cell. So it's easy to see now the development of those things, just based on the perspective. So, it's a really cool book. I've read it now, you know, probably about 700 times. It's very short and easy to read. So, you know, I would recommend it to your listeners.

Katie: Awesome. That's a new one. I'll make sure that's linked in the show notes at [wellnessmama.fm](http://wellnessmama.fm). I'd also love to, if you're willing, do a round two on the consciousness side, since we didn't even get to get into that today.

Dr. Ted: Yeah, sure. I would be happy to do that.

Katie: That would be amazing.

Dr. Ted: It depends on what psychedelic you want to be on during that time, Katie.

Katie: I understand. I think that will be a fascinating episode and you are certainly one of the top experts I can think of to explain that topic. So, I think we'll definitely have to make that one happen. But for now, I wanna respect your time. I know just how busy you are. And I'm so grateful for your time and for all of your knowledge today.

Dr. Ted: Thank you, Katie.

Katie: And thank you guys, as always, for listening, for sharing your most valuable resources, your time, and your energy with us today. We're so grateful that you did, and I hope that you will join me again on the next episode of the "Wellness Mama" podcast.

If you're enjoying these interviews, would you please take two minutes to leave a rating or review on iTunes for me? Doing this helps more people to find the podcast, which means even more moms and families could benefit from the information. I really appreciate your time, and thanks as always for listening.