Introduction to the Summit and Guest

Welcome to the Fasting and Longevity Summit. I'm your host, Doctor David Jokers, and today I am interviewing Doctor Terry Walls. We are talking all about telomeres and telomere shortening and how that relates to longevity.

So Doctor Terry Walls is an Institute for Functional Medicine certified practitioner. She conducts clinical trials in the setting of multiple sclerosis.

In 2018, she was awarded the Institute for Functional Medicine's Linus Pauling Award for her contributions and research, clinical care, and patient advocacy.

She is the author of The Walls Protocol A Radical New Way to treat All chronic Autoimmune Conditions using Paleo Principles and the cookbook The Walsh Protocol Cooking for life.

You can find her at Terry walls.com. She's a wealth of knowledge. You guys are going to enjoy this interview. So without further ado, let's go right to it.

Well, Doctor Terry was always great to connect with you. You're a wealth of knowledge, and I love all the great work you're doing in the clinical setting.

Doing studies and really, you know, getting this information out and how lifestyle can impact our overall health are inflammatory. You know, just our overall response to inflammation in our body.

You're helping a lot of people with autoimmune conditions, with all, all forms of chronic inflammatory conditions. And today we're talking about telomeres and longevity.

And so let's start by just talking about what are telomeres and why are they important to look at.

What Telomeres Are and Why They Matter

So hopefully everyone in your audience knows that we have DNA that is, wrapped up in our chromosomes at the end of the chromosomes, there's a little cap, that protects the ends.

And every time that cell divides, the cap is a little bit smaller, a little less effective. And finally, we get to the point where the cap is not doing its job and the cell can't divide anymore.

The process of aging. Is that shortening, of the cap? Yep, yep. And so how do they measure that? Like, what are people looking at when they're looking at that?

And how is it relate to our, you know, process? There are some, commercial labs out there. So the public can now get your telomeres measured. And, then, many of these companies will give you a report.

This is your telomeres. This is your, it's another way of measuring biologically how old the person is. And the big question is, so I have my chronological age, and then there is my biological age based on, the measurement of the telomeres.

And what you want to know is that your biological age is younger than your chronological age. But, you know, many, many, many, people in the American space are discovering that their biological age is quite a bit older than their chronological age.

And what they're experiencing is a, accelerated aging. There is some part of the reason I care about that so much

is people with multiple sclerosis. People with autoimmune disease.

We're beginning to realize that, part of our disease process is accelerated aging. And we can measure that with the telomeres. Yeah, absolutely. And, you know, I know, I know your story of overcoming debilitating Ms..

But I don't know if all of our listeners do. And so can you can you dive into that? Yeah. So, I'm an internal medicine doc, and, you know, I'm in I'm in, clinical practice.

Everything's going well. I have a couple of, young kids. And, back in 2000, while I'm out walking, with my wife, my left leg grows weak, dragging it. You know, I hobble home.

I see the neurologist the next day. And he looks at my medical records, says, you know, 13 years ago, you had an episode of dim vision in your left eye.

And now, there's weakness in your left leg. If you walk a long way. And so. So this could be bad or really, really bad. So we begin the work up, and, you know, at that point, it takes about three weeks to get through all of the testing.

And I, I'm thinking about the fact I've had, 20 years of worsening electrical face pain due to trigeminal neuralgia.

Terry Wahls' MS Diagnosis and Recovery Journey

So I'm thinking, okay, I've got a progressive disease. I don't want to become disabled. So I'm secretly hoping for a fatal diagnosis. Three weeks later, I hear multiple sclerosis.

I do my research. I find the best Ms. center in the country. I see the best physician. I take the newest drugs. Three years later, I hear tilt, recline, wheelchair because I've been going relentlessly downhill.

And, you know, that's what I decide. I going to go back to reading the basic Science. And I, decide that mitochondrial dysfunction drive the disability.

I take a supplement cocktail, for my mitochondria. And my fatigue is a little bit better. But I, you know, I'm super grateful that I'm a little bit better.

I continue to decline. By 2007, I cannot sit up anymore. I'm going to talk. Recliner, wheelchair. I have a zero gravity chair from which, I work. I can take a couple steps with two walking sticks.

My trigeminal neuralgia is relentlessly worse. And behind that brain fog, my boss signs me to a new clinic. They have to start in January. Describes a job, not to see patients without results.

So I probably can't do that job. I'm really quite depressed. The next week in my packet for the research, I was supposed to review for, the committee that reviews research.

It's a study that uses electrical stimulation of muscles. I review that, for people who are paralyzed, who are never going to walk. So I, make it a point with my physical therapist, I ask, could I try this?

He gives me a test session. It hurts really bad, but when it's over, I feel great. And so we add electrical stimulation of muscles to my little tiny workout that I'm doing every day.

Then I had this big And David I laugh at myself for how long it took to have this. What if I take my paleo diet that I've been following for five years, and I redesign it based on this long list of supplements?

And that's a few more weeks of research, but I get that sorted out. And so now I have a very, very structured paleo diet. And January comes, and I have to go to this new clinic.

In the first two weeks of just watching my partners. The third week, I start examining patients. And, you know, at the end of the week, Friday comes and I tell my wife, Jackie, you know what?

That definitely wasn't too bad. I think I can do this. And my, when I go to see my physical therapist who says, yeah, you're definitely stronger. We're going to advance your exercises.

So I start doing them twice a day. And it is remarkable. Within three months, my fatigue is gone. My pain is greatly reduced. My mental clarity is improved.

I'm clearly stronger. I began walking in the hospital, first with two walking sticks than with one, then with none. And then in May. For the first time in six years, I'm able to ride my bike again.

And you know, my, when I do that, my kids are crying. Jackie's crying. I. I, you know, I get curve tearfully even now reliving that moment. And after that, you know, I bike a little bit more.

It will change the way I practice medicine. It will change the focus of my research. And I've since made it my mission to teach clinicians how to use the concepts, that I've created, and to do the research that shows diet and lifestyle have such a powerful impact.

And by the way, you know, so I could not in 2007, I could not set up, in 2024. You know, I'm strength training. I'm carrying 60 pounds around, walking around.

I'm carrying 30 pounds walking up and down stairs. I can do vertical jumps again. Not very high, but I can jump. And I can now jog. Yeah. Amazing. It it it for all the listeners, if you can, if I can come back from such profound disability.

It is, is when you have secondary progressive Ms.. There is no recovery. It's just are you going downhill slowly or very, very rapidly? And so and we've done clinical trials since testing my protocols and others, and we've been able to, achieve remarkable success in other people with progressive M. S.

and with relapsing remitting multiple sclerosis. Yeah. Amazing. And and so, you know, pretty safe to say that chronologically, you are 17 years older than you were in 2007, but biologically you're quite a bit younger.

Your body's obviously much more stronger, more, more resilient. And, you know, you're you're really in a place where you're, you're thriving in general in your health.

And so let's bring bring that back to telomeres. Did you ever had your had you had your telomeres tested. Yeah. You know so I'm going to tell a couple more sort of fun things.

There's some online, forms you can complete to estimate your biological age. And so when I was 52, I went back and put in my age and all those parameters of what I could do when I was 52 and my biological age in that online calculator was 69.

That was in 2007. I was, I was around. Thousand and seven at age 52. So remarkably older. Then when I redid that when I was 65, my biological age with what I could do, what I 65 was now 45.

Yeah. Now I've not redone that since. But it's probably still pretty young because I can do more push ups. I can lift more weight. I can now jog. And I couldn't do those things when I was, 65.

And you're 60 now. How old are you now? I would be 69 by the time this airs. Okay. Yeah. Very, very soon. Well, that's really. And that's really awesome.

The fact that you can do more push ups now. You're stronger and stronger. Yeah. I can do vertical jumps now. I can jump forward. I can jump side to side.

I can jump backward. Not high, not far. Sure, but it was not that long ago. I still couldn't jump. Yeah. And I can jog now. And I had to contain myself.

I was jogging two miles, but I, stumbled, and, like, I have to not not jog so far because I don't want to risk stumbling and breaking boards. Of course. Yeah.

Now, the question of telomeres, because I know Ms. is a disease of accelerated aging. I, and so. Well, you know, I should check my telomeres, and see where I'm at.

And I was mentally preparing myself, David, like, okay. You might be 15 years older than chronological age. Don't don't get freaked out about it. And if you are, you'll just check it again in a couple years, see if you're getting younger.

So I got my report, and I was four years younger than my chronological age. And of course, then they gave me a bunch of, diet recommendations I disagree with.

So I never, repeated it because I thought, okay, you guys don't really know what you're doing. Yeah. Yeah. But you know, clearly the, diet and lifestyle.

And if we sort of think about the fact that biologically, you know, I was to, 17 years older, that my chronological age in 52. So the fact that I covered all of that at the acceleration of my, biological age, and I'm now younger than my chronological age is truly remarkable because you would expect my biological age to have been, you know, still 15 to 20 years older than my chronological age, because that's what you see with, progressive M. S.

once you hit the progressive phase, you are just so completely screwed. Because you were you were your body was just undergoing high levels of inflammation, tissue damage that was taking place, like.

Inflammation, oxidative stress. Yeah. All sorts of things that were really burning up my, telomeres. But but what I want, the audience to know is there's this wonderful enzyme, that can repair your telomeres.

And so there's probably millions and millions and millions of dollars, being spent on can we make a drug to repair telomeres. We all have the capability of repairing our telomeres, but it's really through modifiable lifestyle factors.

And you know, the fact that, for years I've done ketogenic, eating and I've also done, fasting. So when I was younger, I could do water fast. Now that I'm sort of older, I don't want to risk losing muscle.

So, I, I don't do, the five day water fasts that I did, when I was quite a bit younger. But I still will do fasting strategies. I still do ketogenic strategies.

And I do red light, cold showers, ice baths. And, I'm working on my jumps. We gotta keep working on my jumps. And, doing my hits. Yeah. So you've got a whole regimen that you're doing now.

And so what was your diet and lifestyle like? Let's say, let's say, you know, 2007 and before that, and let's compare that to your lifestyle once you, you know, started really healing.

So, I grew up on a farm. We had, you know, plenty of vegetables, meat, some processed food, but mostly we cooked using ingredients so great that went to medical school was taught that fat is evil plus a plus.

I also went through a period where, I didn't want to eat my friends anymore. Because, a tenderhearted farm kid. So I became a vegetarian. My parents told me I was ruining my health, which made me dig in my heels even more.

Went to medical school, learned that fat is evil. So then I went a very low fat, vegetarian diet.

Telomere Testing and Biological Age

Lot of beans and rice. Plenty of vegetables and cooking from, ingredients. So it would look like a very hard, healthy, great diet. But I also had, a lot of, whole wheat breads, then diagnosed with a mess.

I mean, in the 80s and 90s, you were told that was really healthy as told. That was really healthy. That's right. I'm diagnosed with multiple sclerosis in 2000.

The only book out there is, the Swank Diet, and that's a low fat diet. So I think, okay, I'm doing the right thing. 2002 my conventional neurologist introduces me to the paleo diet and the work, of the, group, director, miss Charity out of Canada.

And that was really new. The paleo diet was. Was there. New back then. Yeah. So 2002 after prayer and meditation and both my parents had died by then.

So I was in my head. Time that you're right. Maybe the vegetarian diet was bad for me. So go back to eating meat. I continue to decline, but I figure it might take me several years to recover because I clearly had, a lot of damage to my brain and spinal cord.

Then, you know, I discovered functional medicine, and, I do my own research. I have a long list of supplements. Then I had this big. Like, What if I get all these ingredients from my food?

So a fair amount of research to restructure my paleo diet very specifically. I still take my supplements. All this food. It is super interesting. It's what I do that this dramatic, dramatic speed of recovery happens.

And, you know, I still take a lot of supplements. I still do, research. I keep reading the the latest, basic science. And I read the clinical trials, and I'm reading the, longevity stuff.

And I realize, that, you know, the food that you and I eat, we digest it with our digestive enzymes, and then our microbes further digest our food, and we get the metabolites back and so it's probably a combination of the food I eat, plus the microbiome that I have that determines the health outcomes from the food.

Because we, you know, in our clinical trials, we, we measure the microbiome and we measure clinical outcomes. And, some of the things that we saw, super, super interesting.

The microbiome could predict. Are you going to respond well on the swank or. Well, on the, modified paleo or waffles diet? And so it may well be someday that when our patients come to see us, David, that we will get saliva, maybe a rectal wipe or rectal swab that the patient will do on themselves.

A little bit of urine, a little bit of blood, and we'll send that all off. And then in about two months, you'll get a report and we'll be able to say, okay, here's your genetics, here's your microbiome, here's your current nutrient levels.

These are the supplements I think would be helpful. And these are the two diets that you would not do well with. Here are the 2 or 3 diets that you would do well with.

And this is the 1 or 2 diet that we think would be the very best. And then it's a conversation of, given your culinary preferences and your family's point of view, which of these diets can you successfully implement.

So highly personalized. Highly personalized. And we'd ideally get them with a health coach to help them, you know, set goals, check in and set a new goal, check it and set a new goal.

And make progress towards, the diet plan that they've decided on.

Diet, Lifestyle, and Personalized Healing

And the other thing I, I also notice in my practices, we may start with the Mediterranean diet because that's the easiest place to start if you're in the standard American.

Terrible that once they're doing a little bit better on the Mediterranean diet and let them know when you're ready for the next level healing, come on back.

And some folks, the Mediterranean gets enough that were that sick. And that's okay. I have some folks who are so, so sick. They're like, I want to go straight to the hard core, most effective.

And I know it's hard, but I'm willing to that that's what I. Want to do. Yeah. So it's really personalized to what the person wants, what they can achieve.

And we have a negotiation as to what they think. Realistically, they and their family can implement. Yeah. I think that personalization is really key.

I mean, there's a lot of, you know, different nutrition plans out there. There's some people that thrive on a vegan diet. And a lot of people like you and I included that.

It actually was part of our, you know, process of actually getting getting sick. And then there's people that thrive on a carnivore diet. And I always think about it like a bell curve, like on one side, you got the people that do really, really well on little to no fiber.

And then some people do really well on very, very high fiber. And then most of us are more in the middle, where, you know, we need more of a combination diet, good balanced diet.

But, you know, you got some of the outliers that do really well on kind of these more, more, you know, strict diet, plant based, you know, strict diet or carnivore diet.

But again, most of us are more towards that. The middle omnivores and need a balance of all of it. And I know with with your, with the diet that you use with autoimmune conditions.

Right. You're also removing the most the most common food sensitivities that, could be, could be irritating the gut lining and driving up inflammation in the body.

Yeah. If my clinical practice was. I was going through this transformation. I'm in the, Veteran Affairs health care system. And so no fancy functional medicine testing.

We had some basic primary care labs. My real instrument was behavior change. How do I inspire people to do the work? How we then help them, with, basically a, physician and dietitian supervised elimination diet.

And what I discovered was, man, I had fabulous, fabulous results there were probably about 20% of folks who we couldn't help that. I'm thinking if we'd had access to a, more extensive functional medicine panel to really dial in the nutrients, really dial in the food sensitivities, I probably could have gotten that 80% to a much higher level, 90 or 95%.

Yeah. And there's also, you know, a couple other conditions, like, I know I've had people where I put them on a great diet, things like that. But they they were living in a house with mold. Right.

Oh, they had, you know, gingivitis or root canal. That was kind of dropping endotoxins into the bloodstream. So there's a couple of these other factors on attrition should be the foundation of our plan.

There are some of these other, you know, contributing factors that we got to look at to correct it. And, you know, part of what, I message to my audience is it depends on your resources, and how much, testing you want to do.

I know some folks are happy to spend ten, $20,000 of testing. But they can't spend the emotional capital of changing their diet and lifestyle. Yeah. And so that's a big conversation I had with folks is the first question you have sort is can you spend the emotional capital to improve your diet and your lifestyle.

If you can't, come back and see me when you're ready. Yeah. I'm not, I'm not I don't feel good about spending thousands of dollars for, lab investigations.

If you're really pre contemplating, with making any kind of diet and lifestyle changes because supplements are not going to solve your problem. Yeah. For sure.

I mean, really 80 to 90% of your health results are going to come from lifestyle changes. And so supplements just kind of give you a bump in the right direction.

But, it's the lifestyle changes that are really going to make the biggest difference. And so you had mentioned a number of things that you were doing.

You talked about, you know, doing cold plunges and getting in front of red light. What are some of the, the, I guess you say the most well studied, practices that somebody could put into action to help improve their biological age and reduce telomere shortening and improve their overall, quality of life.

So, step number one, get rid of the ultra processed foods, the sugar, the white flour, even the paleo friendly versions. So and then step number three, be sure your nutrient density is maximized.

And there are several, health plans to do that. Then step number four, I'm going to tell you meditation and mindfulness. So many studies, tell us that, regular meditators, are really quite profound.

And if you can't deal with your diet, then start with meditation. So those two are really high, high results. Next thing, exercise and movement, be the time you spent sitting very, very inflammatory, accelerate the age.

So stand standing desks are good. Walking desks are better. So that low level, walking, jumping. If you only have ten minutes to exercise, work and see if you can jump for ten minutes, that that would be, super, super helpful.

And then, expand your temperature tolerance. More heat, more cold. Many of us live between 68 and 72 degrees. In that narrow temperature window again, is disease promoting.

So expand your temperature tolerance, at a pace that you can manage. We're supposed to have a little bit of, ultraviolet light so we can make vitamin D. If we had a little bit of ultraviolet light every day didn't burn, we wouldn't have so much skin cancer.

It's the burns that accelerate the skin cancer. And, some red light is, really, really good for our mitochondria. You know, another thing that I might throw in if you're gonna do supplements, you know, vitamin D vitamin, I would think about, Bruce Ames, the brilliant nutrition scientists, said that, he had 40 key nutrients he identified for mitochondria health because mitochondria drive aging.

And neurodegeneration, in the brain. And so, I'll sort of give you his top, level there, vitamin D plus vitamin K, all the B by. Vitamin K, which you are you referring to, K2?

K2? Yep. Because K1 is pretty easy to get from diet. And you can make K2 if you have the right microbiome. Right. So that's a big if, if you're eating grass, fish, meats, wild fish, you're getting K2 in the meat.

Most of us are severely depleted in K2. People with M. S., we are severely depleted in K2. So I put my patients on, vitamin D3, plus K2, either in a combination or extra, K2.

And most people don't know that our vitamins act with mineral cofactors. And easily 80% of us are have diets insufficient in magnesium, 90% insufficient in chromium.

Selenium. Not quite so high. That's about 15. Iodine is 15. And so if all these trace minerals are co-factors for a wide variety of vitamins and the vitamins interact with one another.

So, Bruce Ames said, take a multivitamin. Take a multi mineral, take, coenzyme Q, take a B complex. It also recommend NAC. And he had creatine. Creatine.

Stressors, Recovery, and Mitochondrial Health

And then he talks about crowd noise supplements, as well. So. You know, I think nutrients are super powerful. If you have a chronic disease, you have a deep nutritional hole in your tissues.

So fix your diet, get help with someone like Doctor Jacobs or myself to help you design a supplement program to help you get out of your ditch a little more quickly.

Yeah, that's really good. That's so key. And, some of those things that you mentioned as well, like, for example, the exercise you talked about changing, getting out of, you know, your normal temperature range.

These are actually stressors on the body. We call them hermetic stressors because they're stressors that our ancestors would have faced or ancestors would have been in a lot of heat in the summer, and they would have been, you know, at times in a lot of cold.

So they would have had these exposures if they wanted to bathe, you know, they didn't necessarily have warm water. Typically. It was usually jumping in like a cold lake.

And so this kind of short term for medic stressor, challenges of mitochondria. And actually it will stimulate, my autophagy where we break down the old damaged mitochondria and we regenerate new, healthier, more stress resilient mitochondria.

But the key caveat there is you need the stressor. So you need to get uncomfortable. But you also need to recover properly. And that's where good sleep nutrients.

You mentioned meditation. So good breathing to balance your nervous system. So that's key. We need stress but we need great recovery as well. Yes. You know, when I was in college, I was an athlete.

And, I love working, I love training, I did martial arts. I trained really hard, and I failed to recover. And so I'm sure that was part of, And I didn't realize that I was accelerating my disease process.

Yeah. And that's really common. You know, I used to be a personal trainer. I would see so many people that, you know, they were exercising for hours a day, but they weren't sleeping. Right.

They'd stay up late at night beyond the chronic, really poor sleep quality. A lot of us do that, especially when we're younger, bad diet, all of these things.

So their recovery was really, really poor. And, you know, over time, these individuals would overtrain they'd be burnt out and it would accelerate the aging process.

So, you know, everything needs to be balanced out. And you had mentioned starting with meditation, starting with mindfulness, right. Getting that circadian rhythm dialed in, that's, you know, kind of the foundation getting the diet.

And it's really the low hanging fruit. And then we start to implement some of those stressors. I think that's super key. It'll certainly help us out. Stress recovery.

That's right. You know, my population is is chronically ill. Yeah. And so I talk about, you do a little exercise, can you get recover back to your usual self within two hours?

And if you can't, the dose of what you did was too big for you. So you need a smaller dose. And now you'll figure out the frequency of the exercise. Is it every other day? At first, and so it's. Yes.

I want you to exercise. It will be very helpful. Can you recover within two hours to your usual level of energy for you? Then that was the right dose.

Yeah. I was going to say, I mean, with where you were at with the progressive Ms. to the point where you're wheelchair bound, and you said you had this very small little exercise routine that your PT puts you on.

I mean, you started from the meet even walking out mailbox, you couldn't do right. And there's a lot. Out there that I couldn't do. That. Yeah. There's a lot of people out there that are there at that.

There that will. Exactly. And even if you are, with, with wheelchair bound, scooter bound, use your walker. There's more recognition in the EMS world that we.

What were you exercising? And we want to send you to a physical therapist who understands, and works with other Ms. patients so they can help you design a exercise that is correct for somebody who's wheelchair dependent, scooter dependent, walker dependent.

And they exist. And, you know, that was the one thing that I, that I did correctly with my misdiagnosis. It was shocking my physical my neurologist did not send me to physical therapy.

Now, fortunately, I set myself I said, okay, I you know, I need to be exercising. And so I ran and as long as I could run, then I started swimming, as long as I could swim.

Then when I wasn't coordinated enough to do that, then I just did, water aerobics. Because low impact. Smaller. Yeah. Yep. And and I kept my pool unheated.

So it was cold. It was, you know, I was giving myself one hell of a warm extra. Absolutely. But you were able to recover. That was what I was. Able to recover.

And I and I could tell that I felt really, really great. Doing my exercise in that cold pool. Yeah. You know, that cold water really releases a lot of endorphins.

And endorphins make you feel good, right? So they they they they're like natural opioids. They, they crush pain, you know, so you don't experience the pain.

They actually boost serotonin, dopamine. So you get, kind of this feel good, mood raising, you know, people that are dealing with perhaps depression or lethargy, they notice a big improvement in their, in their mood symptoms and just their overall happiness, right?

When they get some level of cold exposure. So, you know, in your mind, it's you're, like, afraid to go in, right? If it's a cold shower or cold pool or whatever it is.

But, you know, you come out of there 30s 60 seconds later, whatever it is, and you will feel a difference. Right? It's quite an energizing. Yeah, absolutely.

Now let's talk about let's finish up with kind of what your lifestyle looks like now, let's take a take.

Daily Routine, Sleep, and Gratitude Practice

Take us through a day in your life. Obviously you're you're still a clinician, you're doing studies, you're working right, but you're also training your body eating.

Let's go through that. So one of the things that I, that I did in 2016, I retired from the V. A.. I work half time for the university and half time running my business, teaching the public and clinicians how to do what I do.

Which was just a wonderful, wonderful thing for me. So I can, get up, I'll do a gratitude meditation. I will do my

workout, which might be a vibration plate workout, strength, training, aerobic training with a jog, around the neighborhood or, a bike.

Then I will do a, red light sauna, with near infrared light. And I'll do that for about 45 minutes. Then I will sit on my, deck in the sunlight, looking at the sun, with my eyes closed.

So I get that nice, light on my face. Then I'll come in. I'll take a cold shower, and start my day. Now that that whole routine that I just described as a two hour, safe care routine.

Now, occasionally I've got stuff happening, and I can't get all of that done. And so I may just do an abbreviated workout and skip the sauna. Then in the evening, I like doing.

I have a post electromagnetic field generator, so I'll do a meditation. In magnetize in the evening. I will read, to quiet my mind, and then I will do a gratitude meditation.

To fall asleep in that gratitude meditation. I, go through the various phases of my life, and, you know, I'll. I'll pick a phase. Maybe it's thanking my parents, for taking care of me as an infant or as a toddler.

Or my grandfather, who gave us, our first pony or my colleagues who supported me during residency, my early research career. So I go through some events of my life and thanking the people, or sometimes the animals, sometimes or places.

And that's how I fall asleep. That's a great routine. I think most people are deficient in gratitude. Right. That's a really powerful deficiency, unfortunately, in our society.

So having some sort of access, some sort of regular intentional practice around that, I think is so powerful and, you know, reading before bed as well, most people don't realize.

But reading it, obviously in a dim you know, with lights dim, you do, you do. You are blue light blocking glasses. So what I do is I redesign the light in my home so that, we just have red lights on. Oh, perfect.

So you don't need to actually wear the glasses. I don't need to do that. Yeah. And then, I read by a red light. Yeah, yeah. And the the red light's kind of like fire, so it's like, what our ancestors would have been exposed to, which doesn't block the melatonin like blue light, which is what most people in their houses when you turn on lights or anywhere you go, streetlights, it's all blue light, which suppresses your melatonin release.

And actually reading before bed has been actually, associated with better quality deep and REM sleep. So obviously reading something that's interesting.

Fascinating, right? Calming. Not like reading like a horror story or something. You know, it would have to do is I can read fiction during the day. And my son, at night, I have to resist reading fiction because then I don't want to, you know, I want to keep reading.

Oh, yeah. I have to read nonfiction or scientific stuff at night, so I. I because otherwise I have historically would start a book and I just read it nonstop to the end.

And. Reminds me of my wife. My wife has done that before too. So. You know, I remember, reading a lot of, talking that way, blasting through it. That was super fun. In college.

Yeah. Yeah, absolutely. Yeah. I feel like I always sleep so much better when I'm reading, and it's like I'm reading and I'm enjoying the content, but then it's, like, hard for me to keep my eyes open.

And I'm like, all right, I think I'm ready. Right? Yeah. Book down. So that's a wonderful, wonderful way of going about it. And the proofs in the pudding. I mean, here you are.

Closing Thoughts and Where to Follow Terry Wahls

You're 69. You're just about 69 years old. And, you know, you're working out, you're going out, you're running. You just ran two miles, you know, so there's not many people at that age that are actually doing that.

And you're walking the walk and, you know, a great example for so many people and really, you provide hope for so many who are dealing with chronic, debilitating conditions.

And so and then obviously, you're also on the frontlines doing research public, getting this research published and reshaping the way that we look at chronic inflammatory and autoimmune conditions.

And so Doctor Ball is you're you're a health hero. And, you know, I just want to acknowledge you for that. Any last words of hope and inspiration here for our audience?

Well, I'll give a couple pictures. Follow me on Instagram because you get to see what I'm eating and doing. People, I really enjoy that. And come to our website, Tara walls.com.

We'd love to have you join our newsletter. There. Wonderful. Well, thanks so much, Doctor Terry. Can't wait to talk to you next and keep up all the great work.

Be blessed. Thank you.