A One on One Interview with Dr. Stephen Sinatra

By Dr. Joseph Mercola

DM: Dr. Joseph Mercola

SS: Dr. Stephen Sinatra

Introduction:

DM: Welcome, everyone. This is Dr. Mercola. Today we are joined by Dr. Stephen Sinatra, who is a very prominent cardiologist and an innovative pioneer in this area. He's really implementing natural strategies to the field of cardiology. We're really delighted to have you here. Welcome.

SS: Thanks, Joe. It's good to be here.

DM: All right. For our viewers who don't know about you, maybe you could explain your background as a cardiologist and how you came to discover Earthing or grounding, as some people call it.

SS: Sure. I actually did what most of us do: four years of graduate school, a D.O. school, a med school, a chiropractic. I did four of med. Then I did a year of internship, two of residency, and two of specialized training in cardiology. When I received my cardiovascular boards in 1977, I met this Dr. Jacob Rinse, who was a Dutch chemist. He was 91 years old. He told me he had the cure for atherosclerosis. He didn't want to get bypass surgery. To cut the long story short, he was my messenger.

So back in 1977, after I did five years of post-graduate training in conventional medicine, I met this 91-year-old guy who's sharp, erudite, and humorous. He got me on the track to alternative medicine.

DM: Oh, interesting.

SS: So I was opened back only when I was 31 years old. He started talking about phosphatidyl choline, cerium, and magnesium. He was talking about vitamin E, which I knew really nothing about.

DM: No physician knew that. There are very few – hardly.

SS: We've had no training in medical school. So he was the one that opened me up. After that I studied some nutrition, but I became a psychotherapist. I spent 10 years training in psychotherapy. I studied bioenergetic psychotherapy, which looks at energy blocks in the body. That really helped launch me even more into alternative medicine.

Then I decided that nutrition needed more work, so I studied for the American College of Nutrition exam, a test to certify a nutrition specialist. Are you familiar with that?

DM: Yeah.

SS:I studied for two years for that. I really pounded the books on overall exams. I realized how much I didn't know. You know what it's like when you read a book and realize how much you don't know! *[Laughs]*

DM: Sure.

SS: You know more about that than most people, right? So I passed the exam. There were about 300 shortanswers, about a three and a half hour exam. I passed it and I was really happy. But in the process of going on that journey – it's not the destination– I learned a lot.

Then I took my boards in anti-aging medicine [02:50], which was good and then I started to get the exam. I had a great background in alternative medicine. I had vitamin and nutritional supplementation, diet and being a cardiologist it worked on lifestyle. Then I met Clint Ober 10 years ago.

DM: Ten years ago.

SS: Ten years ago. You've got to realize that I'm an open cardiologist.

DM: What does that mean – open cardiologist?

SS: Ten years ago, I have been using CoQ10 for 20 years then. I have been using CoQ10 for 30 years now.

DM: Okay.

SS: I have been using magnesium ever since I became a doctor. I have been using carnitines for 15 years and ribose for eight years. So 10 years ago, I'm well-enmeshed in psychotherapy, emotional aspects of heart disease, vitamin, and mineral supplementation. I'm really there. Now I need a guy like Clint, who blows me away.

DM: *[Laughs]*

SS: At first I was thinking about Frankenstein medicine.

DM: *[Laughs]*

SS: He approaches me with this grounding, and I said to myself, "Wait a minute." I was a little skeptical at first.

DM:I'm wondering if you could address that, because I think that's the logical, rational, and scientific reaction to this concept.

SS: Yes.

DM: I'm wondering if you could guide us through your journey in that process.

SS: That process was quick though, Joe.

DM: Okay.

SS: At first I was skeptical. I said, "My gosh, putting my feet on the ground is going to improve the heart, improve the body, or at least the things that Clint are talking about?" But then I thought about it less. I thought about Rinse. Then I said, "Wait a minute, he was my messenger." The next minute I thought about was, "Wait a minute. Let me give this guy a little bit of time." I spoke to him for about an hour and then I went from skeptical to being all in! The way that it happened was, look the heart is the most electrical organ of the body. We're electrical.

DM: Yeah. That's not hard to understand.

SS: For me, it's not hard to understand. The whole body is electrical. We're electrical beings. We think that we're flesh and blood as we see it, but we're really electricity. After I thought about it I said to Clint, "Clint look, what you have is a great hypothesis, but you needto prove it." I told him 10 years ago, "What you need to do is show that grounding improves inflammation. If you can show that, then you can show that it improves heart disease. Because the real cause of heart disease – even back then– was inflammation. It's not cholesterol like what everybody believes. It's really inflammation.

I said, "What you need to do is you got to pour a lot of dollars into research. You got to bring some animal data to the table and some human data to the table. If you convince me, I'll help you launch this mission of yours, which is getting grounded to the earth. That's how I started with it 20 years ago.

He actually mailed me a grounding mattress six months later, and I have been sleeping grounded for years. I'm a big believer ingrounding. But then his experimental work was just really awesome, and I got involved with research myself. I'm still smacked in the middle of it right now, but it took me 10 years.

DM: Okay. I'm glad you described your journey in that process. Can you summarize what you've learned in this, and perhaps explain some of the science behind grounding?

SS: Sure. First of all, I have one messenger on this. I have to tell you this. I vacationed for a month one point on the beach. People feel good when they're on beach vacations. I just saw that there was the sun and the electrons on the ocean, the fresh air, and everything else. Just likegrounding there's an element to it.

I met this contractor years ago. He was a G.C. of my age, about 23 years ago. I actually put him in one of my books. I put him in my *Lose to Win* book, because he was developing a heart disease. Then when I wrote the *Grounding* book, basically, I approached him again because I saw him on the beach. He asked me what I was doing and if I have written anymore books. I said, "Yeah, I have been working on this

Grounding book." He goes, "You mean, putting your feet on the ground?" He's a contractor now who builds houses. I go, "Yeah" and he said to me that when he was a carpenter, he worked with a bunch of Scandinavian carpenters. They all took off their shoes in the morning and walked barefoot on the wet grass.

DM: Interesting.

SS: He came to work as a young carpenter, and the foreman said to him, "Hey buddy, you better take your shoes off, because if you come to work right now with those shoes on, you're going to be busted up in 10 years. Your joints are going to be aching. Your muscles are going to be aching. Everything's going to be aching.

DM: Interesting.

SS: So this contractor was told by a foreman who worked in the construction. He told him to take his shoes off for an hour in the morning.

DM: Wow.

SS: So when I talked to him about the *Grounding* book, he goes, "I know about that." *[Laughs]*

DM: Interesting.

SS: It's a small world.

DM: So the empirical wisdom ofthat community has validated it through their own experience.

SS: Exactly. Guys slugging sledgehammers, digging, and hammering. It's stress to the tissues. But if they foot their feet on the ground for an hour and had their coffee breaks with their shoes off, it made a difference.

You asked me about the science. I was blown away when I started to read the work that should validate what I did on cortisol and basically inflammation. In a nutshell, the human body is inflamed. The reason why we're inflamed is sure we have [08:30] a little blood. We got thick blood. We got a lot of free radical stress. We got a lot of positive charges in the body. What does grounding have to do with that?

When you ground and you take your shoes off and you put them on a wet earth – not a desert; you're not going to ground too much in the desert – but the beach, grass, concrete, brick and nothing manmade like asphalt, it's not going to ground you.

DM: Wood is not manmade either, but it's an insulator.

SS: Yeah. Wood is not going to ground you, but ceramic tile will, though.

DM: Interesting – but trees will.

SS: Trees will, absolutely. You should be a tree-hugger. You'll be grounded good.

DM: *[Laughs]*

SS: What grounding does is basically, the Earth is struck by lightning for thousands of time a minute, around the equator. The Earth has an unbelievably enormous negative charge. The Earth is struck by lightning all the time, anyway. There are solar flares and solar storms. Then there's the sunlight coming through. Basically, the Earth is always electron-rich.

So when you put your feet on the ground, what you're doing is you're absorbing all those electrons through the skin. Basically, your body, which is depleted with electron to begin with because of all the free radical stress, whether we're inhaling mercury, we're smoking cigarettes, exposed to insecticides or pesticides, trans fats, radiation, which is sort of a paradox, because too much radiation, too much sunlight, can cause active damage.

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Basically, whatever the factor is we get a lot of free radical stress in the body, which is really the biggest cause of hypertension right now. We never knew that in medical school. We thought it was something else. But we know that oxidative stress causes disease. It causes inflammation.

Now we have this Earth – Mother Earth that's going to give us all these free electrons.

Remember that before I got interested in grounding, I wrote the book *Metabolic Cardiology.* I am a big ATP guy. One of the reasons why is that my cardiovascular training helped me connect these dots. For your listeners, ATP is ourchi. It is our energy. It's basically what's allowing me to talk right now and move my hands. When you bring ATP to the table with metabolic support, you are generating energy. CoQ10, which is one of the biggest electron donors that we have, helps turn over ATP.

Here I am thinking as a cardiologist, "Does that mean that if we're taking free electrons through our skin, through all our acupuncture points, through our feet, and through our meridians, can those electrons be available to make ATP?" I asked Dr. James Oschman this, who is a physicist. He's one of the contemporary physicists of the 21st century. I said, "Jim, can I connect that dot?" He goes, "I think you can."

When I realized that grounding could actually enhance ATP via another mechanism other than metabolic cardiology, I said, "Wow!"

DM: The switch went on.

SS: I had this "Aha!" I have had a long process with this. There are lots of experiments to review and I did a few, myself. There's lots of science. I can go over some of the experiments, if you like.

DM:I'd like you to, but before we do, if we can just start from the philosophical basic perspective. You mentioned that the Earth is a massive source of free electrons – an electron donor, so to speak, which is somewhat similar to the function and purpose that

the antioxidants serve in our body, because they donate electrons like CoQ10, vitamin E, and vitamin C.

You connected the dots and had this “Aha!” moment. I’m wondering if you could translate that for us and perhaps, compare the source of free electrons from the one that we receive from the Earth and the one that we receive from an internal oral antioxidant or the antioxidants from the food that we are eating.

SS: Sure. Grounding contributes to healthy living. What I know about grounding right now and what I know about the physiological effects –and I know that they are many – grounding should be part of the healthy lifestyle program. You said it. Taking antioxidants targets nutritional support. Whether you take antioxidants in your body, electron donors, or whether you get electron donors through the skin – what you’re taking in, what you’re taking into the skin, and taking in orally, it’s going to be synergistic. It’s going to help the body.

There are antioxidants that you’re taking in from healthy food. I mean, you eat organic as much as you can. I eat organic. Some of us are gluten-free. Some of us aren’t. But basically, you must bring grounding to the table as part of a healthy lifestyle.

Healthy air is very important, so as healthy food and healthy water. I’m looking at these waters right now.

One thing I learned about grounding is that it improves the zeta potential of your blood, which means (I can talk about it) it improves the energy between the red blood cells. You can take water additives that improve the zeta potential of water. It makes water wetter, so it gets inside your cellular membrane.

What’s a healthy lifestyle? It’s eating healthy. It’s avoiding sugars. It’s avoiding trans fats. It’s eating organic much of the time. It’s avoiding pesticides, insecticides, and chemicals. It’s drinking healthy water, breathing in healthy air, and getting healthy sunlight. Sunlight is good for you, even gazing into the sun. I’m a big believer of that. You can do that for a few minutes every day. Sungazing is good for you.

In other words, taking in these natural energies is a healing energy. Grounding is another natural energy that everybody should do in their lives, because it just makes sense. It incorporates a healthier lifestyle.

DM: Yeah. It’s hard to argue against it. It essentially has no side effects, and it’s something that our ancestors have done for ages. I guess the basic hypothesis would be that if our ancestors were doing it, there’s likely that we acquire something important in our own function. If we don’t replicate those patterns, we’re going to become injured or diseased in some way.

SS: Exactly. What did people die of a hundred years ago? It’s infections. What do people die of today? Degenerative disease. So what has happened in the last 50 years is that we have become disconnected from the Earth.

DM: Sure. That's an important point, because it's not intuitively obvious to many people. But why don't you go review that, because Clint actually has some phenomenal data collection that supports this. He has some theories as to when this…

SS: Yes – the rats, and the glucose. I was actually talking to Clint about that a few years ago. What has happened in our society in the last 50 years? First of all, we have a new generation of kids that are obese. What? It's like there's like 37 percent of obesity in the country right now. His kids that are obese get insulin resistance.

DM: And double that – they're overweight.

SS: Exactly. That's true. These kids are insulin-resistant. A lot of them have Type 2 diabetes. A lot of them are even Type 1 diabetics. We have a generation of diabetics right now. We have a generation of kids that aren't going to outlive their parents. It's the first time in history where instead of the lifespan getting greater, it's going to go back maybe 10 to 15 years because that's what diabetes does. It robs you of your longevity. Why did that happen?

Clint and I had several conversations about this. What happened in the 50s? Basically, the fast food diet started to come up. I used to be a manager of a 15-cent hamburger stand when I was high school. Fast food was okay, but then the trans fats and the sugars came on. Now we have the supersized sodas. A kid can get 80 teaspoons of sugar just for drinking soda in a day, especially of he's in a supersized mode.

DM: Sure.

SS: We've had the sugar revolution hit us in the last four or five decades. What else has happened? We used to exercise as a generation, but now we bus our kids to school. Kids don't walk to school anymore. Now gym programs have been cut. So exercise is sort of falling back. It's sort of not a thing to do any more like it was. People all used to walk three to four miles a day. I mean, I walked to school even when I was only eight years old.I walked.

DM: So did I – all through grade school. In high school I had to take a bus, because it was too far away.

SS: Yeah. We have taken exercise out of the equation in children. The other thing that we have done is that instead of kids walking on shoes with leather…

DM: Which they did for ages. That was a sole – shoes with leather sole.

SS: Yes, leather sole. All my shoes were leather when I was a kid. Now we replaced them with neoprene. Clint calls it the "Nike generation" or the "Adidas generation."

DM: Or synthetics.

SS: Synthetics – rubber disconnects you from the Earth.

DM: It's an insulator.

SS: It makes you two inches taller. It gives kids a nice balance in their step. It probably prevents a lot of shin splints. It probably does a lot of good things, but it also does a bad thing, because it disconnects you from the Earth. I said to Clint, “You know, if we could show in the animal model that sugar metabolism is disturbed by being disconnected from the Earth that could explain why we have a lot of diabetic children. So he did it. He did an experiment in rats, which showed that ungrounded rats compared to their grounded counterparts had disturbances in blood sugar. They had higher blood sugars.

DM: And both go through the same diet and exercise?

SS: The exact same diet. He showed an anomaly with sugar metabolism. Now when I look at something like that and see a disconnected rat with greater blood sugar than a grounded rat, to me that’s big stuff.

In the human model, similar things were found in the biochemistry. These Polish researchers showed changes in phosphorous and calcium metabolism and fibroid metabolism. There were studies done on delayed onset muscle soreness that showed changes in white blood cells.

What grounding was doing was that it’s making the human physiology better – so to speak– through all these different experiments in Poland, United States, and Canada with an animal and human model. When I saw all these experiments and I read the materials and methods, I said, “Man, there’s something going on here.” I think the reason why we have a generation of diabetic kids is because we took away the ground, gave them a lot of sugar, and we don’t exercise. That’s the perfect storm.

DM: Yeah.

SS: That’s the trifecta.

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Then we have got negative EMF going all over the place. You saw that research which shows that glucose metabolism gets disturbed in the brain. The more glucose metabolism you have, the faster you age. Because of age- related glycosylated products where the sugar combines with the protein. Now you have a cellphone or a cordless phone, and you’re disturbing glucose metabolism. What’s the biggest cause of Alzheimer’s? It’s really more sugar metabolism in the brain. That’s one of my prophecies that I really believe in. I think there’s a perfect storm going on in our society.

As parents, we got to get our kids off sugar. We got get them back in exercise. And we got to ground them. We got to get them back on leather shoes or, at least, neoprene that’s grounded to the earth.

DM: Usually, the most profoundly effective interventions are really quite simple and basic. They’re foundational. Thank you for describing those. It’s kind of tragic that kids don’t walk to school anymore. When they do walk, they’re certainly not walking on leather shoes. They’re not getting grounded. They’re not getting those benefits.

You have highlighted some really good science. Are there any other scientific support that would validate, or I guess address someone who may be skeptical to the concept of grounding and hasn't gone through the epiphany phase as you have?

SS: Yeah. It's only natural to be skeptical to grounding. It really is. If you'll really look at the clinical research that I have done – I have done two small studies myself. I'm working on a hypertensive study now, so that would be three. If you'll look at the studies, the small numbers, they are all control groups. The person can be used as a control. They can sham ground somebody. In other words, they think they're grounded, but they're not.

DM: So it eliminates the placebo?

SS: Yes. It eliminates the placebo effect, exactly. The criticism out there is correct. There's small number of patients, but the largest studies need to be done. The largest studies need to be done. What's really cool about grounding is that all the studies point in the same direction that improves benefit. Sure, we need 300 to 400 patients. I'm sure we needthe largest studies. The placebo control trials – absolutely. But in order to that, you need millions of dollars.

DM: You need millions of dollars, but it's important to understand Clint, who has some success in his business ventures prior to this. I think he's in his 70s now, so he has acquired some wealth He's actually donating millions of dollars to fund the very research he's saying.

SS: He did.

DM: I think that many people don't realize that research… They know that research costs plenty, but they don't understand its funding philosophy, which is almost always generated through funding from the government or drug companies.

SS: Exactly.

DM: They typically have an agenda and a goal. Typically, drug companies', of course, is to sell their product. But here, there's no ultimate benefit. I mean Clint does have some motives himself, but it's relatively minor compared to the principles, which is educating people about this. He's doing this for a noble effect. It doesn't cost anything to take your shoes off and walk out on the ground. Then you get the benefits.

SS: Exactly.

DM: If that's not available to you, or it's not easy and convenient, then there are some other strategies that you can use. But the basic concept is trying to improve. There is no commercial benefit from it, so its funding is really limited, which prevents these kinds of studies from being performed properly.

SS: Yeah. I know Clint puts all the money he gets from the net proceeds from sale, right back into research, because the research costs money.

DM: Yeah.

SS: Even in the study I'm doing on hypertension. For your listeners, we need to go through the IRB, which is the Institutional Review Board that requires money. You have to get a university to show that what you're doing is safe. You have to have a group of MDs and PhDs, and if you do an experiment on humans, it has to be safe. You have to write up all these procedures. You need to have statisticians involved in the materials and methods. A lot goes on. There are a lot of moving parts.

DM: Sure.

SS: Even in the two studies that I have done, I spent an enormous amount of time on these studies. I learned a lot. I'll tell you two of them.

As a cardiologist, I realized that the times we live in are basically rough times. People have panic disorders, anxieties, emotional stress. People have worried about earning a living. People have worried about terrorism. They have worried about uncertainty. The hormone of uncertainty is cortisol that goes up. Adrenaline goes up. Your adrenaline goes up. We are overdosing on our own stress hormones.

Take something as simple as air pollution, which is really rampant in our society right now because of the burning of coals, especially with gold prices soaring. In order to melt gold, you have to smelt this thing. Coal-burning is huge right now in South America and China.

DM: Lead and mercury are actually used to extract gold from the ore in Third-world countries.

SS: Exactly. They have to extract it. Basically, the environment is getting toxic and more toxic with mercury. But air pollution is very, very crucial.

The reason why I'm bringing this up is because whenever we breathe in particles, these stimulate the autonomic nervous system. The autonomic nervous system goes up – the sympathetic drive – meaning more stress and anxiety. People don't understand that. The parasympathetic nervous system goes down. We have an imbalance with higher sympathetic drive and lower parasympathetic drive. What does that do? That disturbs heart rate variability.

Knowing that we live in these times – whether it's air pollution, insecticides, or pesticides – we live in toxic times both physically and emotionally, as well as spiritually. Basically, our nervous system is unbalanced. We have more sympathetic drive. What I wanted to show was that if we ground the Mother Earth and we take in this little amount of gauss energy – the electromagnetic energy from the Earth – this will have an effect on our autonomic nervous system. That's now my hypothesis going into the study. I approached Dr. Gaetan Chevalier about this. I said, "What do you think Gaetan?" and he goes, "Oh, let's do it!"

We did this study on heart rate variability. When people ground to the earth, we put patches on their hands and feet. We put patches on and they had to stay on the ground. What we showed was that it was a calming of the sympathetic nervous system. In other words, heart rate variability was supported. When you support heart rate variability, this

reflects the autonomic nervous system. It showed an improvement on heart rate variability. Whenever you improve heart rate variability, you're improving the whole life of the organism.

For example, disturbed heart rate variability. Do you remember drugs that we would use like short-acting calcium blockers?

DM: Sure.

SS: The alpha-blocker menus for prostate and some of the [27:29] that kids use for asthma inhalants, they all disturb heart rate variability. That's why there's an increase in cardiovascular events. Because when heart rate variability gets disturbed, the heart is more likely to go out of rhythm.

DM: It suffers failure.

SS: The cough syrups. Remember that cough syrups were taken off the market because of phenylpropylamine. They caused arrhythmias. Calcium blockers with erythromycin – that was a big combination for arrhythmias.

DM: Xbox 20.

SS: And Xbox 1, that's right.

DM: Black box.

SS: Black box. Basically, there isa lot of things out there that will disturb heart rate variability, as well as panic, anxiety, and fear. That's why people will have more cardiac arrhythmia or die quickly when they're under emotional stress. They have spontaneous episodes of malignant ventricular arrhythmias or age-related arrhythmias.

So when I found out that grounding – simply putting your feet on the ground or having patches – improves heart rate variability, that was the most incredible discovery I have ever made in my life. Because living in these times where our autonomic nervous system is on overdrive, we need something to bring us back into balance. That's what grounding will do.

Let me say it this way. You know when people do a lie detector test on you?

DM: Sure.

SS: You can't beat a lie detector test. You got to be really good. That's why they're 99 percent efficient. Because when you tell a lie, you are betraying your autonomic nervous system. A lie detector test is a measure of what we call a skin conductance. What grounding does is as soon as you turn that switch on, within a second there's a blurp within the skin conductance, because it lowers the activity of the autonomic nervous system.

DM: When you said to turn the switch on, you mean when you're grounded?

SS: Yeah, you're grounded. Because lots of times when we do the experiment, we'll turn the switch on, but the subject is "sham" grounded. In other words, there's a disconnection. The switch doesn't work. We have to do that because in the studies, we want to have a tight control, and basically, we want to show that it's not just a simple relaxation. I mean look, if I put myself in a chair, put my feet on the ground, and sit there for 40 minutes and two hours, that's relaxation. I'm going to get a good response. But when we ground someone, we get a grounding response to improve heart rate variability that goes beyond simple relaxation. When I saw that I said, "Man, we got to publish this."

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I sent it to *Integrative Medicine* and I tell you, the review board made it to go through the hoops. I had to rewrite that paper. I had to revise it and refine it. I got to give that review board a lot of credit. This concept is hard to understand for physicians, especially heart rate variability.

If I was practicing cardiology on a day-to-day basis right now, and a patient called me and had angina, heart cramp, arrhythmia, a soaring blood pressure, who had fear, panic, or who thinks that he's having a heart attack, I'll tell him, "Okay. If you think you're having a heart attack – chew an aspirin, put your feet on the ground, and call an ambulance."

One of the things I do know is that grounding creates tranquility in people. Why do people go on vacations at the beach? We have talked about this before. They'd say, "Oh, this is the best vacation I have had in my life. I'm relaxed. I'm comforted." They're walking on the beach. They're walking on that saltwater. That's a perfect ground. They're getting all these electrons. Remember, not only is it reducing oxidative stress, but now it is also putting the autonomic nervous system in a balance mode. We're raising the parasympathetic. We're balancing out the overstimulated sympathetic. When we balance our autonomic nervous system; we have more hemostasis. In other words, we're there. We're in a health mode, as opposed to disease mode. Grounding does that. That's one of the cardiovascular experiments we did.

DM: That's terrific. Thank you very much for sharing that. That's just fascinating information. You mentioned previously about zeta potential. I'm sure that many of our listeners still have no idea what it's about. So I'm wondering if you can expound on that.

SS: Yeah. Actually, the heart rate variability (HRV) was the second greatest discovery I have made with grounding. But the greatest discovery and the stuff that just blew me away was zeta potential.

Joe, when you went to medical school and you studied heart disease, do you remember the Framingham data?

DM: Sure.

SS: If you smoked more, if you ate more sugar, if you didn't exercise, if you had high uric acid, if you had hypertension, and if you had high cholesterol, you got more heart

disease. What does high cholesterol, high sugar, uric acid, or smoking do to the blood? It makes it hypercoagulable. It makes our blood into red ketchup, as opposed to red wine. Now another big thing that turns our blood into red ketchup is radiofrequency fluorosis (RF) found in cellular phones, cordless phones, and baby thermometers. In other words, toxic electromagnetic forces (EMFs) also thicken the blood.

DM: By thickening the blood, they're more likely to have a blood clot.

SS: Exactly.

DM: In other words, stroke and blood clot.

SS:I remember when I wrote my book *Heartbreaking Heart Disease* in the mid-80s, I had a 37-year-old male with a massive heart attack in New York. His cholesterol was 150. I wrote about that almost 15 years ago. Basically, it was emotional stress that caused his major heart attack. They were pulling clots out of his coronary vessels. He had no coronary disease. He had no obstructions. He had just clotted because of an adrenaline surge, cortisol surge…

DM: That's relatively common.

SS: That's so common. People don't realize that. I can't tell you how many angiograms I have done in my life. We did an angiogram where we inject dye into the coronary arteries and they light up like a Christmas tree, and we can see the vessels. We would do somebody after a heart attack. We do the angiogram six or eight weeks later, and they had normal coronary vessels. I used to think that it was spasm, but what I have learned over the years is that a lot of people who had heart attacks would have normal coronary vessels. In other words, the blood clots inside the heart, then the body in its wisdom has a way of healing itself overtime and it re-canalizes the blood vessels, but the damage is done.

When I looked at all these risk factors for the heart…An emotional stress thickens the blood as well. Anxiety does the same thing. Hypercoagulable blood is really the essence of inflammation, that's why people get diabetes, Alzheimer's disease, heart disease, and cancer. It's because oxygen can't get to the tissues if the blood is too thick and it doesn't flow easily.

DM: So would you say that it's a better indicator than something like CRP or sed rate in respect?

SS: Yes, absolutely.

DM: Okay.

SS: In other words, sed rate, CRP, and 8-hydroxyguanine in the urine: these are all markers of inflammation and[35:31] cytokine. But when you have thick blood that is a hypercoagulable blood – to me that's the pinnacle marker of inflammation.

DM:I suspect zeta potential is one way you can measure that.

SS: Exactly.

DM: Are there other clinical tests that you can use for this, like a PT?

SS:PT won't do anything; darkfield will. Conventional medicine is an anti-darkfield, but I think darkfield is great. I love darkfield. If any patient sees his own blood under a microscope and he sees parasites going through, or the crystals, uric acids, and microbes, that's unbelievable. I have always been a big fan of darkfield. Conventional medicine doesn't accept it, but they will accept zeta potential.

DM: Interesting. When I mentioned PT – for those who don't understand – it's prothrombin time. That's a test for physicians to monitor blood clot for Coumadin and other anticoagulants.

SS: Grounding will raise INR.

DM: That's definitely one of the dangers.

SS: That's the contradiction of grounding. We should talk about that later.

When it comes to zeta potential, Dr. Linus Pauling was a genius, an absolute genius. He knew that our red blood cells repel one another and that they function at the speed of light. Think about that. Think about our red blood cells in our body going 186,000 miles in a second.

When I was in a cath lab and I do an angiogram, we would have bands on the brachial artery. If one of those bands loosened, blood would hit the wall 30 feet away. As a young doctor, I was amazed at how the heart would contract blood. If you look at a heartbeat, when a heart contracts blood, it talks and it twists. The twisting of the heart – coupled with the velocity of the red blood cells – pushes the blood through our system. It goes through the speed of light.

What Dr. Pauling knew is that when the red blood cells lost vitamin C – when the vitamin C content went down on the red blood cell – the velocity of the red blood cells became less. The spleen, in its intuitive wisdom, would take the red blood cell out. They will sequester the red blood cell. Then the bone marrow would make a new red blood cell. Remember that our blood cells are made every 120 days to live in our body.

DM: That would be for normal red blood cells.

SS: Yeah, the normal ones for about 120 days. Dr. Pauling realized that when vitamin C went down, the red blood cells didn't function as well. That's why this genius would say, "Take vitamin C." To a cardiologist, a vitamin C isn't given credit. It really needs to be given, because in cardiology, vitamin C is absolutely vitally important. One of the other things that it does is it basically prevents the pro-oxidation of vitamin E and HDL. That's another thing that vitamin C does. It is awesome.

What Dr. Pauling understood is the zeta potential. Here's what happened. You got these red blood cells that can have diminished vitamin C that aren't functioning well or can have red blood cells that are exposed to EMFs, which are now that chaotic forces

are coming in that don't allow the spin. You can now have the red blood cells that are old that don't have the spin. The red blood cells that are affected by cigarette's smoke, which raises fibrinogen that clots the blood vessels and not the spin – or whatever.

When those red blood cells lose the ability to repel one another, they become tired. It's like being on a traffic jam. The cars that are on a traffic jam can't pass through one another as opposed to being on a [39:33] where cars go like this. That's zeta potential. That's the force between RBCs.

When I learned that grounding increases zeta potential – not by 30, 50, or 100 percent, but by an average of 280 percent – I said, "Wow!" This is the most incredible discovery, because if you can increase the thinning of your blood naturally by grounding, you can fight off disease. Not only heart disease and stroke, but I'm thinking cancer, Alzheimer's, multiple sclerosis, or any illness that requires good oxygenation to the tissues.

[----- 40:00 -----]

Now here's the heartbreak: I was weeping for joy. I told Gaetan, "Gaetan, this is the biggest discovery – I think– of the 21st century. This is so incredible. It's unbelievable."

DM: When did you learn about that?

SS: It was two years ago.

DM: So it's relatively recent?

SS: Yeah. It was two years ago. I sent this paper to the American Journal of Cardiology, thinking that they would accept this paper as a great…

DM: And get a Nobel Prize?*[Laughs]*

SS: Well, I wasn't really thinking of getting a Noble Prize!*[Laughs]* I was thinking that cardiologists kind of know this information, because the cardiologists' domain is sluggish blood. That's why statins work. Do you know why statins work in a male with low HDL?

DM: Because it's anti-inflammatory?

SS: It's an anti-inflammatory, but it also thins the blood. See, low HDL thickens the blood. That is why a higher HDL is so important for the cardiac patient, because it thins the blood. Statins – and this has been reported in the Edinburgh study and in the West of Scotland study, which are two major studies on statins where the research has said that there were something other than cholesterol that was contributing to the benefit of statins. They were leaning against cholesterol. They said that statins literally thin the blood, and they change the rheology or the shape of RBCs.

Statins, in a way, is beneficial, especially for men with coronary disease and with low HDL. Would I give them to women? No. Would I give them to women with heart disease? No. Would I give it to treat high cholesterol? No. That's not smart medicine.

However, anything to improve the zeta potential of the blood – anti-inflammatories would do this, fish oil would do this,krill oil would do this – anything that will improve the net negative charge of the blood. Pauling knew vitamin C would do this. Grounding will do this.

DM: How does one measure the zeta potential? Is this something that can be done in a research lab? Is this something your doctor can order for you? Is there some instrument you can purchase yourself so that you can measure?

SS: Actually Jim Oschman who is another PhD physicist, and Gaetan Chevalier developed a way of doing it by putting blood on a microscope slide and putting in an electro-charge into the slide. That is something that, I don't know, could be developed maybe like these diabetic tests where you can stick your blood and you get a blood sugar.

DM: Sure.

SS: Wouldn't it be nice if you can stick your blood and find out what the zeta potential is?

DM: But right now?

SS: There's nothing commercial on the market.

DM: It's only done in research labs?

SS: It's only done in research labs.

DM: Okay.

SS: But, blood viscosity is a forgotten risk factor in cardiovascular disease. Everybody has talked about it for decades, but nobody has figured out a way. If I can measure your blood viscosity, I can tell you whether you're at risk for cardiovascular disease.

DM: Does it also impact the zeta potential?

SS: Yeah. In other words, blood viscosity…

DM: It's an indirect measurement.

SS: It's an indirect measurement of zeta potential. Who was that big blood viscosity guy? He recently died. He spent 30 million dollars developing technology. It was at YouTube. I used it in my office where patients would come in, and I can measure their blood thickness. But then they went out of business. It had to do with real logics.

DM: Okay.

SS: Anyway, I think the smart money in the future is going to visit blood viscosity. Do you remember birth control pills that were causing early heart attacks in women?

DM: Oh sure, those synthetic estrogens and progesterones.

SS: Do you know what it does? It increases blood viscosity.

DM: Yeah.

SS: It decreases zeta potential. Anything that is going to make the blood thinner is going to improve your health. Now, let's get back to Coumadin. We had patients on Coumadin who were grounding unknowingly. They didn't tell me.

DM: Coumadin is a blood thinner commonly used for people who have artificial devices inserted in their bodies or have a history of blood clots.

SS: Correct.

DM: It can save your lives.

SS: Correct.

DM: So you have to be really careful to go off of it.

SS: If you have a metallic heart valve, plastic heart valve, atrial fibrillation with a large left atrium and then you're leaking across that natural valve, you've got to take Coumadin. I'll wear my conventional hat.

But I don't like people to ground when they're taking Coumadin. It's a relative contraindication. Because we have had people ground, taking Coumadin at the same time, and their blood became like water. It was like red wine and then it got really thin. That could be dangerous.

DM: Because you'll get a stroke.

SS: Yeah. Sure, if you had a high blood pressure, sure. If you had a stroke and you have thin blood, it's a disaster.

DM: Yeah. It's a disaster.

SS: We basically tell people that if you're on Coumadin, you must work with your doctor, because your doctor's going to have to reduce the Coumadin. Even my patients who were taking Coumadin – when I was still practicing on a day-to-day basis – when I was grounding them, I was cutting their Coumadin levels in half, which is a good thing. If you remember Coumadin…

DM: It works with vitamin K2.

SS: It's a vitamin K2 antagonist. People on Coumadin at an early age can calcify their blood vessels. So wouldn't it be nice to bring grounding on the table and use less Coumadin? Somebody has got to do that study.

DM: Yeah.

SS:I mean right now you have to take Coumadin. Geez! Somebody has got to do that study on grounding and Coumadin.

DM: This is a very powerful empirical observation that there's a massive benefit or effect on blood viscosity. If it will seriously impair your blood viscosity levels based on Coumadin, you have to change your dose; otherwise you're going to have a serious consequence.

SS: Exactly.

DM: Then there's something going on here.

SS: There is. That's the other thing about grounding. Anecdotal stuff is really important.

When I used CoQ10 30 years ago, I used it in one patient who had postpartum cardiomyopathy. She was 29 years old. She delivered a baby. She went into heart failure. I used CoQ10 – she was my first patient – after she refused heart transplant. I realized how important CoQ10 was. I would look at these anecdotal cases as messengers that empowered me. It's almost like an angel would send me a messenger, right? It was like Rinse – 91 years old – empowering me.

With these patients that I was treating, one patient after the other, the same thing occurred to grounding. I would say that with the patients who had Lyme disease, because Lyme disease was rough to treat– I would treat them with an alternative point of view. Sometimes I have to give them antibiotics, especially for an acute infection. But you'll notice the Lyme parasite hides from the immune system. They get encapsulated. They get inside the muscle. The immune system can't recognize this, so it can't kill it. Lyme disease is dreadful. I lived by the way in Connecticut. I lived in [47:22]. I lived in Florida, too. Both of the states are just epidemic in Lyme disease.

I would tell patients that because grounding puts out the fires. It improves zeta potential. It puts out inflammation. It puts out the fires of inflammation. I started using them in Lyme patients. Some patients got worse. They developed adverse reaction.

Remember that grounding is not for everyone. I got to make that perfectly clear. Some people get worse on grounding before they get better, because they're having a detox reaction. Some patients with polyneuropathy would get worsening of their limb pain on grounding, and some would get better. I want to make that clear that grounding is not a panacea. It's not a panacea.

DM: Although, ideally it's something that everyone should strive to incorporate in their lives.

SS: Exactly.

DM: It's just like if you eat too much good food, you can have side effect to. You can irritate the good bacteria. There might be a detox or [48:16], but you still need it. You just have to implement it and integrate it wisely.

SS: Yes, slowly and gradually. Here's what happened. When I first realized that grounding would improve sleep, cortisol, physiology, and the autonomic nervous system, I started to use it in people with illnesses. I tried it on somebody with multiple sclerosis. They got better. I tried it on somebody with migraine and with CoQ10. It was a knockout punch. Grounding and CoQ10 was a knockout punch for migraine.

DM: Interesting. That's really good. Is there any specific dose on the CoQ10, or ubiquinol would even be better?

SS:A 100 milligram twice a day.

DM: Okay. Acutely, for a migraine because you want to get rid of it right away.

SS: Migraine is related to mitochondrial dysfunction.

DM: Oh, I didn't know that! I had no idea.

SS: We should do a show on the new diseases of the 21st century.

DM:*[Laughs]*

SS: It all has to do with mitochondrial dysfunction.

DM: Wow.

SS: Diastolic dysfunction of the heart is number one. Migraine, Parkinson's disease, autism spectrum disorder, and fibromyalgia– these are the diseases that are all caused by mitochondrial dysfunction. The Gulf War syndrome is a classic. The veterans with Gulf War syndrome that got better on CoQ10 is mind-blowing, because they all got better. Basically, it's because their mitochondria are under assault, especially from EMF.

I know we got off-tangent here. But I have to tell you that when I was bringing grounding on the table with these people with different illnesses, they were improving. Not everybody would improve, but that's why I want to do a study on hypertension. Look, why do people get hypertension? Well, it's an autonomic dysfunction, right?

[----- 50:00 -----]

It's emotional stress. It's oxidative stress. What's does grounding do? It reduces oxidative stress. It brings the autonomic nervous system down. Could it improve blood pressure? Sure, it can. What else does grounding do? Grounding decreases blood viscosity. Whenever you decrease blood viscosity, it makes the blood thinner and the blood pressure goes down. Thick blood causes high blood pressure. That's why one of the greatest health things you can do in your life is to give blood. Give a pint of blood every three or four months. It reduces blood viscosity.

DM: It also reduces iron.

SS: And it also reduces iron.

DM: Which for almost all men and post-menopausal women is a massive thing. How does that impact on blood viscosity with excess iron, cardiovascular disease, and mortality? As a pioneer in this area of nutritional cardiology, what is your take on that? I'm just curious.

SS:I use to check for ferritin all the time. In other words, I call it "toxic blood syndrome." Everybody's focused on cholesterol. That's a joke. You and I both know that cholesterol is found at the scene of the crime, but it's not the perpetrator.

DM: Right.

SS: Lp(a) is a small BB shot of LDL particle is highly inflammatory. Lp(a) fibrinogen, which thickens the blood, is an inflammatory messenger, so to speak. Homocysteine can cause endothelial cell dysfunction and ages the blood quicker. C-reactive protein is a manifestation of inflammation in the body and ferritin.I wrote about this in *Reverse Heart Disease Now* like eight or so many years ago, about toxic blood syndrome. I wrote about this in *Heart Sense for Women* back in the year 2000, about you can have toxic blood. But what they all do is they thicken the blood.

DM: Okay, so that's the mechanism of action.

SS: That's the mechanism of action. Basically, they thicken the blood. So too much iron… If you carry the gene hemochromatosis and 36 million people have that gene, which means that you have too much ferritin in your body that can act as a pro-inflammatory messenger. Ferritin can be dangerous. You don't want to be taking iron.

Did you see this study that women taking multivitamins with iron had more events?

DM: Sure.

SS: How ridiculous. Why would you ever want to give a post-menopausal woman iron?

DM: No.

SS: That's the thing that protects them from heart disease the most. One of the reasons why a pre-menopausal woman's incidence of heart disease is 400 percent lower than post-menopausal woman is, because when the she has her period every month, she's getting rid of iron.

DM: Yeah. That's a very powerful yet simple intervention. It's one that we can easily do, having post-menopausal women or all men by just simply donating their blood. Plus it has a therapeutic effect on your body. Because in my experience when I would check patients, there were about one in five people in a group that have elevated ferritins. That's a lot.

SS: That's a lot, because a lot of those people carry the gene. Then I want to get back to vitamin C now.

DM: Yeah.

SS: We don't want to get people high doses of vitamin C, if they carry the gene for hemochromatosis, because that's going to enhance the absorption of iron. Pauling was a great pioneer, but he wasn't a doctor. When he was advocating his high dose of vitamin C, that's fine, but make sure you don't have a genetic defect or you're going to absorb more iron.

DM: Yeah. That's easy to do. Check your [53:24].

SS: For us physicians, that's important to know that.

DM: You have described a large number of benefits for grounding. Can you get back to that now? It seems that the zeta potential was one of the most amazing discoveries you have had. Can you sort of prioritize the health benefits of grounding? You mentioned diabetes, heart disease, potentially cancer, autoimmune diseases like MS, and inflammatories such as arthritis. What would you describe from your perception as the best or as the most important benefit?

SS: The most important benefit, clearly, is it gives the body another raw material to heal itself.

DM: That's a very powerful and succinct statement. I like that.

SS: You and I both know – as we got a little gray hair and we have been in the business for a while – that the body has a remarkable innate intelligence in healing itself. We know that. What grounding brings tothe table is that it brings in that Earth energy. It gives our body another raw material to stimulate the innate intelligence to heal itself.

Lots of times, we doctors mess it up. Pharmaceutical drugs improperly prescribed. It's the fourth leading death cause in America today. That's why metabolic cardiology just blew me away also, because all I did is I give people CoQ10, L-carnitine, D-ribose, and magnesium, which provides ATP support. Grounding provides ATP support.

Again, remember that I connected that dot previously. Whenever you provide electrons to produce ATP, I believe that ATP will give you the raw materials to repair cells. Joanne Ingwall talked about this, where ATP– whether you get it from grounding or whether you get it from targeted nutritional supplements – you not only rejuvenate and revive cells, but you also repair them. I talked about this in my newsletters.

There was an article in *Science* in 2009, which showed that intrinsic stem cell activity gets propagated in a body over a lifetime. So if you live to be 100 years old, your stem cells would actually be reproducing your organs. What I learned after reading that was, "Oh my God… that's what ATP does." ATP allows or gives the cells support to buy time, so the body's intrinsic innate intelligence… I'm going to stem cells now, because the produces those stem cells frequently. Now our body's innate intelligence through stem cell revival can replenish the tissue in the organ.

DM: Well, it gets back to your initial excitement about mitochondrial dysfunction, because the factory forATP is the mitochondria.

SS: It's the mitochondria. So when we take out the mitochondria, we're basically creating the perfect storm for disease.

I have been seeing patients with "dead hearts" that have ejection fractions of 10 to 15 percent. I have seen so many people, Joe, that were told to get their affairs in order, for they couldn't find a heart transplant. I tell you, a lot of them are still alive today. I thought it was metabolic cardiology. But you know what it was?

It was metabolic cardiology that gave the body the time to get the innate intelligence to heal them. I put grounding into that category. Everybody needs grounding even just for an hour a day. When I get off the airplane and I came in last night, the first thing I did was ground. I got rid of my jet lag. That's another aspect.

DM:I have done that, too. I carry a half bed sheet with me now. I sleep on that. It goes wherever I'm going to be sleeping. That's in my suitcase.

SS: Good.

DM:I love it. I'm wondering if you could clear up some of the confusion about electrical pollution. There are two types. One is purely electrical. Then the other is more broadly based, which is electromagnetic radiation pollution (EMR) that has a magnetic component. Grounding doesn't have an influence – from my understanding– on the magnetic component, just the electrical. I'm wondering if you could expound on that.

SS: It's a poorly understood concept. I have seen scientists and PhDs go at it with one another. That's a poorly understood concept. There is a lot of confusion. This is what I feel is correct. Again, somebody could disagree with me.

DM: Sure.

SS: What I feel is correct is that our bodies are electrical. It's no accident that I became a cardiologist and now I'm involved in electrical forces. There are evil forces, and there are good forces. An evil electrical force would be, let's say, a 6 DAC of a high-tension wire like these high-tension Godzilla wires that causes kids to have leukemia. That's been shown in Japan, England, and in our country.

DM: It's non-controversial.

SS: It's not a controversy anymore. There's something about these chaotic electrical forces coming from electricity that can cause leukemia. As a cardiologist, I researched this. If you look at a study of 36,000 participants, electrical workers, who worked with electrical machinery, there's certainly a much higher index of stroke and cardiovascular disease in working around electrical motors and stuff like that.

People will sleep in their homes. They won't know it, but they may have their bed next to a wall where there's 6 DAC going into the wires and their head is next to the wire.

DM: And those wires are not inserted into a conduit, which would actually neutralize it.

SS: No. They're in the wall.

DM: Right. Because there are a few communities in the country where it's code to put them in. Or commercial buildings like hotels would have to have it, but a residence typically in most communities in the United States do not require those codes to build it.

SS: Correct. Whenever you're plugging a lamp, you're getting electromagnetic forces just from it being plugged in. If you're sleeping on a waterbed, that's electricity. I used to sleep in a waterbed, but not anymore. *[Laughs]*

There is a lot of electrical hazards. Small motors, like a hair drier for example, and a clock radio that has a little motor in it. These puts on electrical field and it can travel 12 t 15 inches…

DM: And a magnetic field, too.

[----- 1:00:00 -----]

SS: And a magnetic field. How would you determine that? If you had a Gaussmeter, you can determine that.

DM: They're pretty cheap. For just 100 dollars, you can get a nice one.

SS: Evenless. You can get them on RadioShack.

DM: Yeah.

SS: Those are electrical forces. Now what grounding will do is that if you're in a home that has a lot of electrical pollution – Clint Ober has shown me this using a computer and a grounding pad – is that the electrical charge can be dissipated in the body. That electric charge really goes into the body. I believe it can have a downside. I'm talking 6 DAC now.

Let's go to the other spectrum: radio frequency (RF) – cordless phones, cellular phones, baby tooth monitors, and microwave ovens these are putting out radio frequency forces. These are evil vibrations. I call it "evil chaotic vibrations" that also disrupt the internal electrical environment of the body. That's why my son got so sick on Wall Street. He had a cordless phone on each ear. He's always on a cellular phone. He was working on a sea of computers. He developed and electropollution syndrome. That's how I get very involved with electropollution.

It's not really talked about in this country, although, we got people with diastolic dysfunction, chronic fatigue syndrome, and autism spectrum disorder. One thing I do know is that electromagnetic forces – whether coming from electricity, radio frequency, cordless phones, cellular phones – they disrupt the mitochondria. The mitochondria get toxic.

DM: That's one of the mechanisms of actions.

SS: Exactly.

DM: Your suspicion may be the mechanism of action. It may be the primary one.

SS: Yeah, I believe so. You have been going to the Anti-Aging Convention as long as I have. I was one of the original guys in 1994. I have always been impressed with the mitochondrial theory of aging. Look, some of my colleagues they take growth hormones or testosterone. I'm sure it has benefits. Women take bioidentical hormones. They can't live in their body without it. I'm pro-hormone, but you got to convince me that there has to be a need for it. To take it as an anti-aging substance, I don't agree with it.

If you have severe congestive cardiomyopathy and you need growth hormone, that's great. If you're a male with metabolic syndrome and your testosterone is in the bucket, that's great. If you're a woman who needs hormones and you can't get it in your body, that's fine. But to take these hormones to get a suspected anti-aging effect, I don't agree with it.

However, I have always been a proponent of the mitochondrial theory of aging and the free radical theory of aging. Because remember that mitochondrial DNA– unlike nucleo DNA– have no defense mechanisms at all, so there's nothing to protect them.

DM: Is it likely that shortened telomeres in the mitochondrial DNA would be an accurate predictor of aging?

SS: That could be as well. I do believe in the telomeretheory of aging as well. I think there's solid evidence on that. That could affect the mitochondrial function as well. But remember that mitochondrial DNA, when produced in ATP, there's nothing to protect them. In other words, a nucleo-DNA – we have catalase, superoxide dismutase, and all our natural glutathione peroxidase. You're a big glutathione guy. You know about that.

DM: Sure.

SS: But the mitochondrial DNA don't have that luxury. We have to fortify that. That's why metabolic cardiology works, because we give the mitochondrial DNA ribose, CoQ10, carnitine, and magnesium to help breathe in. It's almost like a fertilizer to mitochondria. It sorts of breathes in a defensive mechanism. Without mitochondrial support, then we're very vulnerable, extremely vulnerable.

DM: From your perspective and all your heath journey, the most powerful tools for intervention to mitochondrial support would be three: no sugar, CoQ10, and grounding.

SS: Yes. I would add ribose, magnesium, and carnitine.

DM: Okay.

SS: But you said it. You absolutely said it. You're familiar with Bruce Shames, right?

DM: Sure.

SS: He's a big mitochondrial guy.

DM: Is he still alive?

SS:I think he is. I heard him lecture last two years ago.

DM: Okay.

SS: Hesaid in a half-hour lecture that the bottom-line is that the processed American diet is a mitochondrial killer. And you said sugar. Remember that mitochondria needs a little bit of zinc, copper, chromium, definitely CoQ10, alphalipoic acid that gets into the mitochondrial membrane, and vitamin C and E. If we have a diet that's pure sugar and you're not getting these valuable nutrients…

DM: Fructose specifically goes in there, and the way that you metabolize fructose is the second step. It just annihilates the ATP. It's one of the ways that you figure out that it's a problem. You get these massive levels of AMP. Because it requires that it should detoxify itself.

SS: Exactly. That's why I guess the high-fructose corn syrup sodas are killing us, you know. They're killing our kids, you know. But anyway, I would put grounding in there because grounding's a mitochondrial support. That's the next piece of research that we have to do, to show… you see, I could take a cellular phone and a mouse model with an 1800 Hertz, okay, and those neurons will have mitochondrial destruction. They've done that in China in the mouse model. Just with using the cell phone, you know. What I would like to see is, take that same experiment, ground some of the mouse counterparts, and see that they have the same mitochondrial destruction.

DM: What's your suspicion? Obviously this study is with them, what do you think will happen?

SS: Well, let me finish with that experiment. What they did in those mice who had DNA destruction is they pre-treated some of the mice with melatonin. The melatonin pre-treated mice had more survival of the DNA. They had less DNA knockout. Now this is kind of cool, isn't it? Because what does EMF do? What do cellphone towers do? What does a cordless phone do? Cellular phone? It disturbs the pineal gland and ourmelatonin stores go in the basement. Melatonin is probably the most potent antioxidant in the body.

DM: Even more than CoQ10?

SS: Yeah, I wouldput it in that category. It's as good as CoQ10. As good a CoQ10, I mean. To me, I think that CoQ10 is the number one nutrient in my lifetime, anyway.

DM: I would have to agree with that**.**

SS: But think about this: RF from cellphones, cordless phones, and cellphone towers shuts off melatonin. So it makes sense that there's something about melatonin that if you pre-treat these mice or rats with melatonin, they're not getting the DNA breakdown. So grounding works on melatonin, doesn't it, because people sleep better.

So can we connect that dot and say grounding/melatonin DNA? I think we can, but I would like to do a little research on that and put some of the rats on melatonin and some just grounded, and see if the grounded rats do just as good as the melatonin rats.

DM: That'll be an interesting experiment.

SS: But that's going to be a million-dollar study. *[Laughs]*

DM: Right. So you've provided some very compelling reasons that one should consider to incorporate grounding into your life. You briefly mentioned some ways we can ground, but I wonder if you can review again so we can consolidate it into one portion of the video: how people would ground, and what you would recommend as an ideal way. And then, if there are particular lifestyle and environment that doesn't allow them to participate in that type of experience, how they might add certain developments in this technology that allows them to ground.

SS: Sure, sure.First of all, I'll tell you what I do. But before I do, what I've learned with grounding is that the sicker you are, the more you need to ground. For example, in this hypertensive study I'm doing, I'm going to be recommending 12 hours of grounding. So I'm going to tell people to ground either by walking outside barefoot (if weather condition's permitting), sleep grounding, or maybe use a grounding pad (if they're working at their computer or watching television or if they're driving, suppose you're a travelling salesman and you spend four to five hours a day in the car). But what I've learned…

DM: Or a plane.

SS: Or a plane. When I'm on a plane, I take my shoes off and put them on the steel struts.

DM: Really?

SS: Yeah.

DM: I never thought of that. Because I use a pad on the plane, but I never thought about doing that.

SS: I used to bring a pad on the plane.

DM: Now you just do that?

SS: Now I just do that.

DM: Dang… That's a really good pearl. I like that.

SS: That's what I do, you know. I take my shoes off. So the sicker the patient – these people with MS, Lyme disease, you know, real ALS… sick patients -- I'll tell them to ground as much as they can. Rheumatoid arthritis, for example. I'll tell them to ground as much. Congestive cardiomyopathy, severe angina… because I want the blood moving, you know. But there are various ways of doing this.

I'll tell you what I'll do: weather permitting, when I walk my dog every day, I take my shoes off and walk barefoot in my town. When I go to my yoga class once a week or to

my pilates class twice a week, I walk barefoot. So I try to get in an hour of barefoot walking.

Now look, would I walk in a field with [01:09:24] all over the place and grass up to my knees? Of course not! You want to be smart here. Would I walk on grass, at the ocean, or on concrete? Absolutely. I take my shoes off a lot. And I wear leather shoes. Leather shoes will also ground you.

DM: If you're walking on natural surfaces.

SS: Yes. It can't ground you if you're walking on manmade. Clint also developed nice flip-flops. They're really inexpensive, and I walk on those as well, you know. For example, you don't want to walk barefoot on a golf course that's sprayed with insecticides and pesticides. *[Laughs]*

[---1:10:00---]

DM: It's counterproductive.

SS: Right. You want to be smart here, you know. So that's what I do. When I work on my computer at home, I take my shoes off and put my bare feet, or with my socks on, on a grounding mat, because I don't want that extra EMF from the electricity, the computer, or the plug-in. When I drive, I drive with a little grounding pad on my seat that's hooked up to the steel struts underneath the seat. When I fly in an airplane, I take my shoes off and I ground.

I sleep grounded. I sleep on a sheet and I use the stake in the ground, you know. When I travel in hotels like you do, I'll do a plug-in. First, I'll test the ground in the hotel and make sure the two orange lights come up and the hotel is properly grounded.

By the way, I was in Dallas at one of the old hotels, and the hotel wasn't grounded. So I have to sleep with my grounding sheet that night. A very old hotel. So anyway, you'll test to make sure the grounding's okay. So that's everything!

DM: Cause you want to know what might be grounded and another that might not be.

SS: Exactly. But you want to get a healthy outlet that's grounded. So basically, try to walk barefoot if you can. Use the devices if you can. One of my good friends, Dr. Delaney, who's trying to heal his knee, he puts an electrode on his knee and he plugs it into the wall, you know.

People read the *Earthing* book. They look at the Tour de France. When I showed those pictures – I don't know if you've shown the motion picture for that – they're pretty impressive. Where, basically, these guys, they fall on their bikes and they've been scraped up in the heat and the concrete. They've got multiple patches on them and they plug them into the grounding apparatus on the wall, and the next day they were almost healed.

Now I did a little experiment on myself. I had a hip replacement, and I was on the fast track. I went home from the hospital after 48 hours, and I was walking two hours after

my hip replacement. But when I got home – I didn't take any of the morphine, I don't believe in that kind of stuff. To be honest with you, I didn't take the morphine because I didn't want it to constipate me (because that's what morphine does). I didn't take any of my pain relievers.

And I called up Clint Ober and I said "Clint, I just got my hip replacement, what should I do?" Here I am a doctor, an alternative/conventional guy, asking a cable TV guy "What should I do?" He goes, "Put a patch on your hip joint with a [01:12:32]but you know, a few inches away, and put a patch on your K1 point on your foot, and plug it into the wall."

You wouldn't believe, Joe, what happened. First of all, my leg was swollen, you know, from the surgery…

DM: Which was what you expected.

SS: Yeah, my leg was much bigger than my other leg. And I have an edema where I could stick my finger in there, and it would pit. I was taking subcu heparin. I was a little worried about taking subcu heparin and grounding at the same time. But I said "I'll only ground one night."

DM: It's only 5,000. Right.

SS: Joe, I woke up the next morning, I had no edema in my leg and I had no pain. And I was on my third post-op day. I healed so fast. Now would I tell somebody after a hip replacement or knee replacement to ground if you're take heparin? No, don't do it. I did it because I assumed my own responsibility. But I got to tell you: I healed *fast*. Because all I could think of, I was thinking in my mind all those pictures in that grounding book. I saw the motion picture, you know, the video on those Tour de France guys, and I said "Boy, if it's good enough for them, it's going to be good enough for me." So that's my own personal experience.

DM: Well, thank you for sharing that. I am also a strong advocate of grounding, and I think I probably grounded somewhere between 20 and 23 hours a day. And I think, in my experience, the most powerful is to really do it in the ocean, because of the saltwater and you're really connected. So if you're walking on regular ground, you'll get some grounding, but it's really dependent upon how moist the surface is because you need the moisture to transfer the electrons. So if you're walking on the desert, you're not going to get very many.

SS: Yes.

DM: So that's a key, too.

SS: I'm glad you mentioned salt. We both know that most human beings have mineral deficiency –terrible mineral deficient. And when I came to your office today, I saw that you have the Himalayan salt up there.

DM: Sure.

SS: What I recommend to my newsletter subscribers, friends, relatives, and anybody I recommend grounding to is to take a pinch of either Celtic salt or Himalayan salt (I like Celtic a little better, but Himalayan salt, I've used for years.. you know, they're both good) in a little bit of water twice a day. Just a pinch. And I believe that that's going to conduct your body even better with grounding, because a lot of us are so mineral-dependent.

DM: But you can still put it on food?

SS: Yeah, you could put it on food, too. You can pinch it on food. I just say, you know, I'd like to give people simple and easy remedies. Everybody brushes their teeth once a day. If you put a little salt and after you brush your teeth and swallow that at night, that could help.

DM: Excellent. Are there any simple measures we can use just to see and monitor if the grounding is working? Obviously, you can check to see if you're plugging in and sleeping under a device, if you are grounded in an outlet, but clinically… You also mentioned that your hip pain got better, so that's an obvious one.

SS: Pain is a really good one. Pain is a very subjective monitor and that's another thing that, when I read Gayton's studies and when I even did that rowing heart rate variability study, people improved in pain. That was cool. Pain is a good index to measure. When they did the delayed muscle onset soreness study, that was another aspect of pain when these guys were weightlifting with huge weights and going up on their calf muscles and putting their calf muscles on the spot.

DM: What was the experiment? Were they grounded during the exercises or grounded afterwards or both?

SS: Both. The grounded counterparts had less inflammation, and we measured that. But what you're asking is: how can a lay person know scientifically if they're getting a benefit? The only way I would answer that is just use what tools we have; pain is a barometer.

Suppose somebody's a diabetic and they want a certain amount of insulin, and now they're grounding all the time. They're checking their blood sugars. Now they have lower and lower blood sugars. Could that be it? It's possible because we showed that in a rat model. Blood sugar could be a good index, and maybe that's something that people would want to do.

Suppose you had somebody with a high hemoglobin A1c, let's say over 6, and the blood sugar around 110 and it's sort of thin, and you can't take away any carbs and you're working best with them. But you don't want to give them any pharmaceutical drug. Try grounding them and see if the blood sugar goes down. That would be a nice, interesting experiment to do as well.

DM: What about for heart patients or cardiology patients? You mentioned some of the benefits certainly with a decrease in the inflammation and the zeta potential. What did

you see clinically, and specifically what conditions and what type of improvements have you noted?

SS: Definitely, when I wrote the article on emotional stress, heart rate variability, and sympathetic tone, any cardiovascular patient with arrhythmia, anxiety, panic, and fear would benefit from grounding, because it would balance the autonomic nervous system. I'll tell you, Joe, there are a lot of patients ofcardiovascular disease, especially with arrhythmia, that live in fear. Grounding will really alleviate a lot of fear.

When I was in practice years ago and I was treating panic in my patients, I would use Bach flower remedies all the time. I would use white chestnut. I would use rescue remedy. I would use these remedies because the brought in another dimension. But grounding almost has that similar dimension.

DM: Does it work for people with chronic anxiety conditions?

SS: Yes! Yes! All grounding does.

DM: Panic disease?

SS: Oh yeah. Grounding will work with chronic anxiety. No doubt about it. People just need to just give it a chance. We're not talking about one hour grounding. We're talking about, the way you do it, several hours of grounding. I mean, you're pretty good if you get 23 hours. That's awesome.

DM: Well, I fully believe in it and I just try to integrate it to every aspect of my life, so it's pretty well controlled. It's pretty easy to do for me, but the most important part, I think, is when you're sleeping. That's when your body is recovering or repair mechanism, as you alluded to with your hip therapy experiment replacement.

SS: I say grounded all the time. All the beds in my homes are grounded. Whether I'm in Florida or Connecticut, we're always grounded.

DM: You conducted an experiment with physicians in your home to demonstrate the effects of grounding. I wonder if you can discuss that.

SS: That was totally by accident, but it was incredible. I had a group of 13 people. I had physicists – I had a well-known physicist – doctors, lawyers, artists, nurses, and we were doing live cellanalysis. I had a specialist in live cellanalysis with a microscope, and I was using my wife's [01:19:54]. Now I had gotten rid of the cordless phones in my house 4 to 5 years ago.

[---1:20:00---]

SS: We don't have a cordless phone in my house. I thought the cordless phone in my wife's office was disconnected, but it was behind a desk that wasn't used and it was off in the corner. I had 13 people in that room, and we drew everybody's blood for dark field. I thought something was wrong with the reagents, because everybody's blood looked like poker chips stacked on one another, caught in a low formation. Only one person didn't, and that was Clint Ober.

DM: *[Laughs]*

SS: Clint had…

DM: Was he grounded?

SS: Well, he had his shoes off, but he was going outside every half hour, walking on the ground, and coming back in again.

DM: *[Laughs]*

SS: He was going out back and forth. How can 13 people out of 14 people have thick blood? Something's going wrong here. Even myself, because I ground. I take nattokinase. I take vitamin C. I take metabolic cardiology. I take omega-3s. How can I have thick blood?

All of a sudden, the cordless phone went off. Where was that coming from? Somebody had called Jan's number. I said, "There's a cordless phone in here!" I took outmy sensors – they were going off the wall. They were just going off the scale. I said, "That's it! It's the cordless phone! It's causing everybody's blood to be like red ketchup."

We threw that out, then we grounded everybody, and then after we grounded everybody, the blood went from red ketchup to red wine. So that's what gave me the idea to say that if we ground people, can we make their blood thick? Because I'm going on the premise now, as a cardiologist, that 99 percent of us have thick blood.

We have thick blood – that's a fact of life. There are so many environmental forces out there that make our blood thick, and cordless phones or cellular phones are some of them. So that's why I did that experiment with zeta potential. It was totally by accident. I thought there was something wrong with our reagents. I thought there was something wrong with our technician. And then we showed that, and I just feel that it's amazing. Great discoveries are by accidents.

DM: Serendipitous confirmations.

SS: The angels were good to us that day.

DM: Absolutely. You provided some very compelling arguments to seriously consider integrating grounding into your life. Yet, there are a large number of health professionals who are skeptical of this. Why do you think they haven't embraced it as you have?

SS: It's the same thing like CoQ10. CoQ10's in textbooks of cardiology. It's in the *American Journal of Cardiology*. It's in the bible of cardiology, but there are still cardiologists who don't use it. A lot of it is biased. A lot of it is misinformation. A lot of it is being poorly understood. And then there are health professionals out there that say that grounding is unhealthy – if you ground on dirty electricity or if it's live wires on the ground and stuff like that.

One thing I learned about the Earth – the earth trumps everything, because it has a huge magnetic charge. But there are areas in the Earth that, all over the world, have good energy.

Let's say Sedona, and maybe the Bermuda Triangle, have bad energy. Maybe these little towns in Germany or Switzerland have cancer clusters, and you take even a town like Denver that has seeping through the earth lots of chemicals, where people are getting enormously polluted. You know, I used to show slides on that in my lectures and they would develop illness. There's certainly the Tight House syndrome or the Tight Office syndrome that people chemically get embedded with. Are there other areas in the Earth that are unhealthy? Sure, there are! And you need to avoid those areas.

DM: But those areas of relative unhealthiness are not necessarily related to free electrons that should provide universal benefit.

SS: Correct.

DM: So they're different.

SS: Even the animal – farm animals – that were exposed to high tension wires and cows that weren't producing milk and had failure to thrive, see, they were grounded. They were grounded, but they were in an environment that was extraordinarily toxic.

If I lived in New York City, with all those towers on all the apartment buildings and everything, I personally couldn't live in it because of the chaotic RF forces. I'd be grounding all the time, trying to balance, because remember all of those chaotic forces disrupt the autonomic nervous system, and they throw the autonomic nervous system into overdrive. So there are skeptics out there, and a lot of it is probably understood. Again, I see people charged on this. But look, there's this concept of cholesterol.

DM: Sure.

SS: Do you believe that cholesterol causes heart disease?

DM: No.

SS: Neither do I, but you've got five thousands of doctors that try to ram it down your throat.

DM: Majority of healthcare professionals certainly would believe otherwise, but from my perspective it seems it's a very natural process.

SS: Yeah.

DM: Aside from the interaction with using a drug or antibiotic like Coumadin, there are really no perceived side effects except maybe [1:25:29-30]. If you're unhealthy to begin with, you're detoxifying. But from that, there are no side effects, and the cost is essentially free or close to it. If you need to integrate more of it, then you could use one of these devices, but it's very low-cost and no side effects. It's sort of a win-win combination.

SS: It's a win-win. Remember, the body gets worse before it gets better. Sick people who are grounding get muscle cramps or pain or they get a weakness or [1:26:00] reaction. I tell them to take baby steps. Ground an hour in the earth. Go to two hours on the earth. Use a pad for three hours. Maybe sleep four hours. In other words, don't jump into it. Take it in baby steps. And the reactions or the detox reactions or [1:26:17] reactions are lessened and lessened. It's like taking niacin.

DM: Sure.

SS: Do you take niacin?

DM: No.

SS: I take niacin. I like niacin. I tell you something. If I take a 500-milligramdose, I turn into a lobster.

DM: Sure.

SS: But if I take a 50 milligram – if I break a 250 milligram tablet into four – I'm fine. It's the same thing. It's just using common sense.

DM: Sure. I really thank you for expanding on this concept because there is a lot of confusion on it and I really have never heard a more powerful, compelling, scientific perspective than the one that you have just shared. So I really thank you for providing that information for us so we can really begin to appreciate the benefits that this useful technology might have.

SS: Thanks, Joe. It's good to be here and I had a lot of fun.

DM: All right.

DM: Yeah, I've got some questions for you, too, a sort of follow-up. I was particularly intrigued with your perspective on the hormones and the implication that you don't necessarily recommend them. The biggest proponent is…Have you seen side effects on those?

Let me just premise it by saying, Jonathan Wright's arguments, obviously one of the leaders in this, seem to be very compelling. The challenge from it seems to be, assuming that you're using bioidentical, but it's the method of application. Most people are swallowing – you can't swallow this stuff. And if you put a cream, you're still going to run into problems because you build up levels in the tissues so this trans-mucosal, trans-rectal, trans-vaginal seems to be the only way to go with bioidentical.

You know, I look at guys like Lalanne, who was… I mean you couldn't have done more exercise than this guy, right? And eating a pretty healthy diet. Yet, he's still 95 or 96, but you wonder that maybe it was mitochondrial dysfunction and lack of grounding in CoQ10, or was it optimizing his hormones?

SS: You know, optimizing hormones – you're right on. I agree with you. And believe me, when you can demonstrate to me that hormone is needed and if it's a quality-of-life issue, I'm all for it. But look at growth hormone and testosterone.

DM: Here is my proposition. I think that you should never take growth hormone unless you have some type of genetic defect, and you should optimize it through exercise which you can easily do.

SS: Exactly. That's the point I was going to make.

DM: Growth hormone – you cannot take that. But something like DHEA is the only hormone I take and actually converts, of course, to testosterone. There may seem some benefit to that and there's a lot of…

SS: More testosterone conversion in the female, less in the male. In the male, it can go to estrogen.

DM: I just got my testosterone back today, it's almost 800. I'm just taking DHEA. It's crazy.

SS: Do you exercise?

DM: Yeah, like crazy.

SS: I think the combination of exercise and DHEA really rockets growth hormone. The highest testosterones I've seen in my practice are in men who exercised.

DM: What levels were you looking at?

SS: Like you, 800. Totals of 1200. Freak testosterones of 500. I mean, really high!

DM: Do you think that's unhealthy?

[---1:30:00---]

SS: No. No, I don't. I think men who exercise especially in forms of interval training but not craziness – I'm not talking about coretraining – but for example, supposing you're walking and you're exercising. All of a sudden, you start skipping, and you improve heart rate variability. You get your heart rate up, or like in yoga, when you're doing yoga and you're breathing into the posture, that improves heart rate variability.

But I think men who exercise really give themselves a chance to produce more testosterone. Now if you add DHEA to that, you can even get more results.

DM: When I add DHEA, it actually increases my testosterone more than DHEA.

SS: Do you use DHEA sulphate or do you use a cream?

DM: Sulphate, cream, micronized, trans-rectally.

SS: Okay.

DM: Probably about 57 milligrams. I would never swallow that stuff.

SS: It goes to the liver. That's the problem.

DM: Oh god. It's crazy.

SS: We're in the same page as that. You see, I just don't want… It's kind of interesting, when I gave the exam – the oral exam – at [1:31:05] back in 1998, 13 years ago. I was examining men and women who were taking growth hormone and they felt terrific on it, and I was the examiner. And I was saying, "Are they a messenger for me?"

DM: Yeah. I like that approach. I'm open to that.

SS: And I tried it myself, got nothing out of it. Would I recommend it for my patients? Yeah, if they really needed it. If they needed it, you know?

DM: High-intensity exercise.

SS: But some men can exercise and they need testosterone. And I would recommend testosterone. Depressed men with a big belly, metabolic syndrome, who have testosterones in the basement…

DM: Stop the grains and the sugar, man.

SS: Stop those but I also see a lot of use L-carnitine in these men. Three grams of acetyl-L-carnitine, it's like taking testosterone.