Bioenergy Testing: Assessing Your Mitochondrial Health to Determine Your Overall Health
A Special Interview With Dr. Frank Shallenberger
By Dr. Joseph Mercola

Dr. Joseph Mercola:

Welcome everyone. This is Dr. Mercola, helping you take control of your health. As usual, we're trying to provide you with resources to optimize your health, especially in light of all the things and challenges we've been exposed to recently. So we have a real treat today. We're going to be talking with Dr. Frank Shallenberger, who has been a physician, not just a physician, but a natural medicine physician for nearly five decades, a true pioneer in the field, who's from my perspective, and it's admittedly biased and prejudiced, I think one of his biggest contributions is he is the person that's single-handedly responsible for implementing my favorite intervention for upper respiratory infections, including SARS-CoV-2, which is nebulized peroxide.

Dr. Joseph Mercola:

He figured that out last century, last century. Yes, Dr. Thomas Levy and I have been promoting it, but he was certainly the earliest adopter, and Dr. Brownstein too. And sadly, it's been so widely disparaged and discredited that not as many people could use it as they could, but those that do find it their way around to it are really impressed with it.

Dr. Joseph Mercola:

So we're going to talk a lot about different things, Dr. Shallenberger's history, and hopefully you'll be learning a lot of great strategies that you can use to optimize your health. So welcome with that intro, and thank you for joining us today.

Dr. Frank Shallenberger:

Well, thanks. Very nice intro, Joe. It's great to be with you.

Dr. Joseph Mercola:

Yeah. So why don't you just give us a little bit of your journey, because you are really truly one of the pioneers out there. You've been around so long and just really innovating. That's the really good thing about you. We discussed this prior to hitting the record button, but you are the sort of take the ideal characteristics of a physician, which is you are a perpetual student. You don't want to get bored. And I believe truly the vast majority of physicians stop that learning process soon after they finish their last certification examination.

Dr. Joseph Mercola:

It's sad, and it is understandable though, because they're really confined to almost the protocols that are dictated by medical boards or the government or both. There's not really much room for innovation. But you and I both take a different perspective and the last thing we're going to be using is the conventional medical approaches. So there, it's kind of fun, exciting to see what you

can find out and utilize the foundational principles of biology to optimize health. So why don't you tell us a little about your journey because we're excited to hear how that occurred.

Dr. Frank Shallenberger:

Well, okay. That could be a pretty long story,

Dr. Joseph Mercola:

Well, yeah. Briefly sum it up, because I want you to share your pearls with us and that's really where the highlights are going to come.

Dr. Frank Shallenberger:

Okay. So, well for me, it all started with trauma medicine. In retrospect, I reflected on this, but after I graduated from medical school, I went into trauma medicine. So for those that are listening, that means I'm in a trauma unit, people being flown in and they have gunshot wounds and God knows what else going on. And that's what I did for about six, seven years. And after a while I thought maybe I'd like to get a decent night's sleep. So I thought I'm going to go ahead and I'm going to hang my shingle up and I'm going to be like your basic general practitioner/ internist.

Dr. Frank Shallenberger:

That's what I did. I was doing that for about six months and I very quickly realized, number one, nobody's getting well. And too much, a significant amount of time, they're getting sick from the drugs I'm giving them. And then I reflected back on it, Joe, that in trauma medicine, we look for the actual cause of the problem. But with internal medicine these days, you don't actually do that. I like to use the analogy like if you practiced trauma medicine like you do internal medicine, the guy would come into the emergency room with a knife in his back and you'd give him some Prozac and send him home. But in trauma medicine, we actually pull the knife out, sew up the wound, and correct the damage. But anyhow-

Dr. Joseph Mercola:

That's one of the few indications for conventional medicines, is trauma medicine.

Dr. Frank Shallenberger:

Yeah. Yeah. It's legitimate medicine. And I thought all medicine was like that. So now I hang my shingle out. Yeah. What do I know? I hang my shingle out and I have to go to the medical director of my hospital. I say, "Look, I'm new to this. I've only been doing this for about six months, but seriously, none of my patients are getting better and too many of them are getting kind of sick with the medicines I'm giving them." So he reviewed everything that I'm doing. And he said, "No, you're pretty much doing it right." And I said, "But nobody's getting better."

Dr. Frank Shallenberger:

And boy, that was an eye-opener. He looked at me in the eye and he said, "You know what? Really nobody ever really gets better. That's not the idea. The idea is to make them feel better, give them some symptomatic control, help them out, ease their misery," et cetera, et cetera.

Dr. Frank Shallenberger:

Well, that's when I thought something's wrong with this picture, because aren't we supposed to look for why the person's sick? I understand we want to alleviate symptoms, but aren't we supposed to try and figure out why they're sick in the first place? And that's what kind of started me off, Joe. I got lucky because I was in the Bay Area at the time, San Francisco Bay Area, and Linus Pauling was having a study groups meeting once a month in San Francisco. And just good fortune put me in that study group.

Dr. Frank Shallenberger:

And so here I'm sitting with these basic geniuses, like Dr. Abram Hoffer and the rest, back in those days. Just a kid listening to this stuff going on. And boy, my eyes were opened real quickly. No, there are fundamental causes. And there are many causes why people get sick, and the reason this job never gets boring, and the reason you have to be innovative is because human beings are different. If we were all genetically identical, it'd be a hell of a lot easier to do what we do. If we all lived in the exact same households, ate the same food, so forth and so on.

Dr. Frank Shallenberger:

But no, that's not the case. We're dealing with the different animal every time we see somebody. So you have to like dig deep, you've got to get innovative. You got to figure out in that person's life what's going on. And that's kind of what got me here, over and over again. I'm always striving to learn new things, trying get a better handle on what's going on. But that's what I've been doing the last 50 years.

Dr. Joseph Mercola:

You've compiled a variety of not widely adopted or available to treatments that you use in your practice. Some of them are really uncommon. Bioidentical hormone treatment, I think we both learned from Jonathan.

Dr. Frank Shallenberger:

Jonathan.

Dr. Joseph Mercola:

Yes, Jonathan. Yeah. So he brought it into the country and he really is a pioneer in that. I've interviewed him a few times. But you're using ozone, and something I want you to talk about with this bio-energy testing and of course chelation, which is pretty much standard for those of us who were practicing in the ‘80s and ‘90s. And then you got colon hydrotherapy with ozone. But it's interesting, this bio-energy test I was particularly intrigued with because there's not many places that do it in the country.

Dr. Joseph Mercola:

You're one of the few, and you actually innovated and developed this approach. It's like a metabolic therapy machine – not metabolic therapy, metabolic testing unit, like a chamber. And there's only a few of those in the country. But you developed a derivative of that that's a lot easier to do and you can get some really valuable data. And whenever I get my butt over to your

clinic, or probably Dr. Minkoff in Florida who also offers that testing that he learned from you. I've got to get that testing done because it's so intriguing.

Dr. Joseph Mercola:

So why don't you just give us a brief overview of that? And I want to have a dialogue then and get some of the best interventions you learned in over 50 years, because you've got a lot of pearls hidden in that brain of yours.

Dr. Frank Shallenberger:

You know, I like to ride bicycles. One of the nice things about riding bicycles is you've got to pay attention to what's going on, and a lot of free-floating ideas go in and out of your head. Most of them are ridiculous. But at the time I was riding the bike this day, I had been thinking about the fact that as people get older, and this was recognized at the time, this was maybe 25 years ago. What we knew at the time is as people get older and their mitochondria function decreases. Their mitochondria don't work so well. And this is a hallmark of disease and a hallmark of the entire aging process. Now I'm sitting there riding my bike, I'm thinking, “Yeah, people get older and the mitochondria get worse as they get older.”

Dr. Frank Shallenberger:

And for listeners, mitochondria, those parts of the cell where oxygen basically releases its energy. That's what powers up the cell. That's what keeps us alive, that interaction between oxygen and the mitochondria. And that decreases as we get older and it decreases with diseases. So I'm riding my bike and I'm thinking to myself, "Yeah, you know, you get older, your mitochondria get worse." And some crazy thought came into my head and said, "Well, what if your mitochondria get worse before you get older? What if the reason the mitochondria get worse is there's other factors that destroy them early on?" And I thought, "Well, why not? Maybe that's the case." So I thought, "You know what? Mitochondria are important. And they're so darn important, why is it that nobody tests for it? Why is there no test for it?" I mean, blood is important. We test that.

Dr. Joseph Mercola:

[crosstalk 00:10:13].

Dr. Frank Shallenberger:

Yeah. Blood sugar's important. We got to test for that. Mitochondria are maybe even more important than blood sugar or blood pressure, but nobody tests for it. So, I mean, literally nobody was testing for it at that time. Maybe in research centers, but not actual practice. And so I went through a whole bunch of gyrations later on trying to figure out how in the world can you in fact measure mitochondria in a clinical setting?

Dr. Frank Shallenberger:

And I came up with this system that evaluates how much oxygen you consume, and in real time, how much CO2 you produce. And using that, and some data that's been around only since the 1930s, I [was] able to develop a way to assess mitochondrial function. And very quickly, very quickly, you learn some absolutely fascinating things about mitochondrial function that they

never taught me in medical school. They're probably still teaching the same nonsense. I don't know. But some things that just contradicted what I had heard in medical school.

Dr. Frank Shallenberger:

And I'm doing the measurements, so I call the guys that make this equipment, which is all FDA (Food and Drug Administration)-approved equipment. And I say, "Hey, there's something wrong with your equipment. These numbers can't possibly be right." And so they come out, check it out, they say, "Nope, my equipment's pretty good." So I said, "Well, how come I'm getting these crazy numbers?" They say, "I don't know."

Dr. Frank Shallenberger:

So I thought I have to dig into this a little bit more. Joe, it was then I discovered that all the data, at that time, at least, on oxygen consumption was really done in two classes of people. On the one hand were Olympic-athlete types, those people. And on the other hand, it was people getting ready to have heart transplants or lung transplants. Those were the extremes that all the data was being published on.

Dr. Frank Shallenberger:

Joe Lunchbox in the middle, there wasn't anything on that guy, and those are my patients. It turns out that a lot of them, even, and we published a study on this, but even in their thirties, asymptomatic people even in their 30s were having significantly decreased mitochondrial function. So I developed this term called “early onset mitochondrial dysfunction.” In other words, mitochondria aren't working before the aging process has happened. And then I started to think, “Maybe that's why the aging process is happening because of the mitochondria are going down even in your 30s and 40s.” And as they go down, that's why people get sick.

Dr. Frank Shallenberger:

So the rationale at that point was, I don't want any of my patients getting older unless they have youthful mitochondria function. So that was my goal. And that's a lot of the stuff that I've learned over the years, is how you maximize that, how you deal with that. And everybody, as you know, is so unique that different people require different things to get that in balance. But that's sort of how I got here to a large extent.

Dr. Joseph Mercola:

I couldn't agree more with you that that mitochondrial function is that the core of most diseases, especially the ones that are enigmas to most clinicians. And that would be things like chronic fatigue syndrome, which seems to me what might be at the core, is mitochondrial dysfunction. I'm wondering if you've done any correlations with the data you've compiled for looking to see the extent of mitochondrial dysfunction in chronic fatigue, irritable bowel syndrome, fibromyalgia, those types of diseases that the typical clinician will shrug their shoulders and say, "I don't know what's causing it."

Dr. Frank Shallenberger:

Yeah. So again, I got lucky because right around the corner of the Incline Village. It's not far from where I live.

Dr. Joseph Mercola:

Yeah. Chronic fatigue.

Dr. Frank Shallenberger:

Yeah. Dr. Cheney was right in the middle of that. And Cheney actually published some studies in the early ‘90s using pulmonary gas analysis, which is what I used for mitochondria function. He didn't name mitochondria, okay? But he's using the same darn data. And he's able to show from his data that you could literally diagnose chronic fatigue syndrome based upon oxygen uptake and CO2 production. And that was in the early ‘90s. He published all that stuff.

Dr. Frank Shallenberger:

But here's the thing, Joe. We looked at 30 patients in their 30s, men and women, all of whom were asymptomatic, felt good, no problems. In fact, most of them were athletes to some extent and just wanted to see how good their CO2 max was. And out of those 30, 12% of them would've fit Cheney's diagnosis of chronic fatigue syndrome.

Dr. Joseph Mercola:

Wow.

Dr. Frank Shallenberger:

Is that crazy? When I saw that, that's when I had to call the people up and say, "It's something wrong with my machine." But when I saw that, I thought, are you kidding me? If 12% of people in their thirties already have mitochondrial dysfunction, out of those 30 people, guess who's going to get diabetes in about 20 years? Guess who's going to get cancer in about 20 years? I'm betting on those 12%. I'm not betting on the people that actually have good mitochondrial function. And it occurred to me, this is happening before people get sick, not necessarily after.

Dr. Joseph Mercola:

Absolutely. And I would imagine a good percentage of those people with it who are also predisposed to things like SARS-CoV-2.

Dr. Frank Shallenberger:

Well, yeah.

Dr. Joseph Mercola:

So people could be dying premature because they don't have the metabolic resources to compensate for it.

Dr. Frank Shallenberger:

Exactly. And we all know, as clinicians we know that you get a group of people and they're all exposed to the same issue and only a percentage of them go down from it. We see this over and over again.

Dr. Joseph Mercola:

So did you see a correlation with mitochondrial dysfunction in those chronic diseases?

Dr. Frank Shallenberger:

Oh, yeah. All the time. It's not if they have mitochondria that are dysfunctional, it's, "How bad is it?" We can actually quantitate it. And so if they come in with, say, 50% of what would be considered optimal and we do some treatment. They come back in like five, six months and they're at 70%. That's good. That's really good. They're not where we want to get them, but at least we can see some progression.

Dr. Joseph Mercola:

To the best of my knowledge, there is no really consistent tool that clinicians have to assess this. I mean, we know about intellectually and academically, but we don't have the tools to measure it.

Dr. Frank Shallenberger:

Think about the fact that mitochondria are so critically important. I don't think anybody argues against that.

Dr. Joseph Mercola:

No, no.

Dr. Frank Shallenberger:

Yeah. And yet we're like a bunch of doctors treating blood pressure without a blood pressure cuff. We don't know how to diagnose the problem. We don't know if our treatments are making the problem better because we've got no way to monitor it. As an internist, and especially as one that's interested in prevention, to be without something that measures mitochondrial function, you're at a loss. It's like a cardiologist without a stethoscope or something. It just not going to work very well.

Dr. Joseph Mercola:

So I'm wondering how long you've been using this tool? For over 20 years?

Dr. Frank Shallenberger:

I basically came up with the original computer program for it, maybe I think around 2004.

Dr. Joseph Mercola:

Oh, so this century. Okay.

Dr. Frank Shallenberger:

Yeah. So we had to work a little bit more at it to get it down. I would say it's been pretty much rock-solid for a good last six, seven, eight years. There were some issues, not only with the equipment, but with some of the equations.

Dr. Joseph Mercola:

Calibration and consistency. Yeah. So from your use of that tool for the last six or seven years, I'm wondering what, in your experience, have been the most effective interventions to move the marker? Or you really can't give a generalization because it depends on the individual?

Dr. Frank Shallenberger:

The first time I got this, Joe, I'm looking at this and I'm thinking like probably a lot of us would think, "Well, what supplements are going to make this better?" So I'm thinking, “Okay, Coenzyme Q10.” I'm thinking B vitamins. I'm thinking, anything that has to do with mitochondria, carnitine, whatever. I'm thinking about all these things.

Dr. Frank Shallenberger:

So I keep trying things. I'm doing a lot of before and after studies. Taking somebody and then putting them on something, then bringing them back with no other interventions and seeing if their mitochondria function gets better. And of all the things that I tested, the only substance that really worked great was ozone and B vitamins.

Dr. Joseph Mercola:

Oh.

Dr. Frank Shallenberger:

B vitamins. Well, you know that mitochondria, they need niacin, right?

Dr. Joseph Mercola:

Oh, absolutely. You’re not going to make any [crosstalk 00:19:39]

Dr. Frank Shallenberger:

They need riboflavin. [crosstalk 00:19:41] And then I, then I reflecting back to guys like Abram Hoffer who in the ‘50s or pointing out that some people actually require massive doses niacin. And so I'm adding all that up and I'm saying, yeah, that kind of makes sense. But of all the things I tested B vitamins and ozone in terms of substantive treatment.

Dr. Joseph Mercola:

Yeah. So let's stick with that before we go to the other interventions. What type of dosages with the B vitamins? Was it a B complex or a specific B that you were using?

Dr. Frank Shallenberger:

At the time I was using Myers’ cocktail. I didn't want to deal with the absorption issue. So we were using [inaudible 00:20:29] vitamins. So we were using typically what you see in a Myers, which is relatively lower doses. Now, orally speaking, I think with niacin, you can go up to 2,000 milligrams, easy on some patients, which is like-

Dr. Joseph Mercola:

Not to start with that dose, not to start with.

Dr. Frank Shallenberger:

I start like for the average for somebody that actually doesn't have a problem, I typically give them about a hundred, 200 milligrams a day. For people that do have problems. We escalate from that.

Dr. Joseph Mercola:

So you focus on the niacin or do you use the B complex?

Dr. Frank Shallenberger:

I use a B complex because I like to balance it out, but I'm focusing primarily on niacin, folate and riboflavin.

Dr. Joseph Mercola:

Okay, good. And many people may not appreciate that you said folate, not folic acid, which is the good one.

Dr. Frank Shallenberger:

Folate. Yeah.

Dr. Joseph Mercola:

So, okay. And how long did it take before implementing these doses before you notice a change in mitochondrial function?

Dr. Frank Shallenberger:

Boy, it could be two, three weeks. Mitochondria are so vulnerable. I mean, I have literally seen patients have great mitochondrial function, be under stress for like two months, and their mitochondria wiped out just from emotional stress. I'm actually pretty sure, and I haven't done the studies, but I'm pretty sure that if you get under a lot of emotional stress, I bet your mitochondria suffer a hit within 48 hours, a measurable hit.

Dr. Joseph Mercola:

Yeah. I've listened to previous podcasts of yours. One of the podcasters asked you a question of how do you know, or what's the best test to assess someone's cortisol level, which is of course related to stress. And he says, "Well, you're in my office."

Dr. Frank Shallenberger:

Yeah.

Dr. Joseph Mercola:

That's a good one. But all right. So what type of quantitative improvement did you see in the mitochondrial function? Was it 10%, 20%, 30%, 50%? Or what's the range you noticed?

Dr. Frank Shallenberger:

You know, it varies just enormously. As you would expect, some of us have just bombproof mitochondria, that's the way we came into the world. And we could go on to some details about that. I remember in my early days, I used to race bicycles, and here we are at the end of an 80-mile race, we're going up some crummy mountain pass and I'm about half-dead. And I do remember this one guy, he won most of the races. But he would like ride up alongside me, want to chit chat, and I can like barely breathe and finally get tired of talking, he zips on up past me, you know?

Dr. Frank Shallenberger:

We run into people like this, these just incredible people. But then on the other end of the spectrum, you have the other group. They have just bad mitochondria and you probably never get them optimal, at least I haven't figured out how to do it with everybody. So we just try to make them better. So there's a lot of genetic issues that come to play here. And then of course, innumerable environmental issues.

Dr. Joseph Mercola:

Have you ever explored working with the peptides, like specifically SS-31, which is elamipretide, which goes in there and specifically changes the curve of the cristae in the inner mitochondrial membrane?

Dr. Frank Shallenberger:

I wouldn’t to talk to you some more about that. I'm getting new to peptides.

Dr. Joseph Mercola:

It's the only peptide I recommend. The only one. And it's really, really hard to get because there's patents on it.

Dr. Frank Shallenberger:

Do you have anything on MOTS-c?

Dr. Joseph Mercola:

No. No. The only peptide I've looked at is SS-31.

Dr. Frank Shallenberger:

Okay. So MOTS-c's supposed to be pretty good at this and they're coming out with some very interesting peptides about this. But I'm a novice at peptides. I really haven't-

Dr. Joseph Mercola:

All right. We've got to get you hooked up with that, because I think you've got the tools to measure this. I mean there's a lot of literature showing it. I mean, it's so impressive. They use it for genetic SNPs where they have disorders where many of these people die an early age because of mitochondrial genetic dysfunctions. But they're giving them this SS-31, it's compensating for that. It really gets in there. I've never seen anything work like this thing. Heart failure, it's just crazy good. We'll talk after.

Dr. Frank Shallenberger:
Okay. All right.

Dr. Joseph Mercola:
Get you up to speed on that.

Dr. Frank Shallenberger:
Yeah. The great thing about this testing process is, as a research tool-

Dr. Joseph Mercola:
Yeah, absolutely.

Dr. Frank Shallenberger:
Like you just talked about.

Dr. Joseph Mercola:
So the other physical resource you suggested that had a benefit was the ozone. So there's a wide variety of different ozone interventions. And actually, I'm going to start focusing on ozone quite a bit later this year, because there's a new method of delivering it. It's called EBOO, which is short for extracorporeal blood, ozone, and oxygenation. And I think that may be, the emerging is the best way. You've been doing this a long time. I never did ozone in my clinic when I was seeing patients, but I've come to appreciate it since stopping seeing patients, how beneficial is, and I've had it regularly done myself. So why don't you give us a summary of that, and what you use to see, in your testing, to see what worked well?

Dr. Frank Shallenberger:
First of all, people should understand that ozone is – when we talk about ozone in medicine, we're not talking about ozone in the atmosphere. We're talking about a very pure molecule, it's pure oxygen, period. There's nothing else in there. Regular oxygen that we breathe in a room air is what we call O2, that's two oxygen atoms combined together.

Dr. Frank Shallenberger:
Ozone is basically three oxygen atoms combined together. And what makes that molecule so unique is that it is very electron-deficient. It needs electrons big-time. So as soon as you put that into the human body, or into any tissue, it's going to start grabbing electrons. And as it grabs the electrons, it's going to form molecules called peroxides. And so after this ozone treatment, you're loaded up with peroxides, to whatever degree you got the treatment, and these peroxides can stay in the body for a good seven, maybe as much as 10, maybe even 14 days. And so these peroxides are what mediates the various physiological and biochemical effects of ozone. And they're also, by the way, molecules that are electron deficient. And so we can talk a little bit about implications for that on mitochondria. But that is kind of what makes the mitochondria go around looking for electrons.

Dr. Joseph Mercola:

They're both ROSs, reactive oxygen species.

Dr. Frank Shallenberger:

Yeah. Yeah. Yeah. Actually. Yeah.

Dr. Joseph Mercola:

The peroxides are generated from the use of pure, medical-grade oxygen cylinders, running through a machine that converts that pure oxygen, with no impurities in it, to a pure ozone.

Dr. Frank Shallenberger:

Yeah.

Dr. Joseph Mercola:

Because you can use an oxygen generator, which is going to not be ideal, especially if you're going to be injected intravenously.

Dr. Frank Shallenberger:

Yeah. You can't do that, except maybe for topical uses. You're applying the gas to the skin. But you don't want to apply that particular gas internally. You want it to be pure outtake, like you said.

Dr. Joseph Mercola:

Yeah. So that's the key. And then I learned from you that, ostensibly you would think, "Well, it's an oxidative stress? Well, let's bump up the antioxidants before the treatment." Things like vitamin C, which you're a big fan of. And I'm sure you use intravenously regularly. But that's not a good idea with those. And you don't use the vitamin C before. Can you tell us why?

Dr. Frank Shallenberger:

Well, the reason is, because I want these peroxides. So when the ozone goes into the tissue, I want it to be interacting with lipids and maybe amino acids. I don't want it to interact with ascorbate. Then I'll get dehydroascorbate. That's not what I'm looking for. I'm looking for peroxides. Basic thinking with ozone therapy is, you really never want to give any kind of substance that's going to donate electrons, like vitamin C or glutathione. I don't want to get any of those kind of molecules prior to the treatment, if you want to maximize peroxide production. Now after the treatment, yeah. You want to do it after, but you got to have that sequence correct.

Dr. Joseph Mercola:

Yeah. I'm wondering if you've explored the use of selective antioxidants, like molecular hydrogen. Which go in and cause the body to make its own internal antioxidants, that catalase, superoxide dismutase, glutathione, peroxidase and reductase. But it doesn't do it if there's no oxidative stress. So you could give it before and it wouldn't make these antioxidant molecules until after the ozone was administered. It seems like the delay would be close to optimal, because you're going to be able to create those peroxides that you mentioned, and then they kick in.

Dr. Frank Shallenberger:

So you're suggesting we put the hydrogen first?

Dr. Joseph Mercola:

Well, molecular hydrogen prior. Not like a day before, maybe an hour before. So it's on board and ready to go.

Dr. Frank Shallenberger:

Interesting. Actually, I did an experiment, maybe four or five years ago, where I took molecular hydrogen and injected it subcu in one leg, and injected ozone subcu in the other leg, figuring I would generate an electrical current through the human body.

Dr. Joseph Mercola:

What happened? What'd you notice?

Dr. Frank Shallenberger:

Nothing much, clinically. I did it on a number of patients. I thought it would help neuropathy or something, and I didn't see that. But I mean, it's a very interesting concept, combining hydrogen and ozone. Super interesting.

Dr. Joseph Mercola:

Yeah, because I think there is a potential downside for the ozone. You can overdo it and you get too much oxidative stress. But the hydrogen would be really effective. It's one of my favorite supplements, and I love ozone. What ozone intervention did you do with the mitochondrial testing? Was it just a regular ozone IV? Is it 10-pass, or-

Dr. Frank Shallenberger:

Yes. So as it turns out, ozone's a hormetic molecule, it has a hormetic clinical effect. Which, for listeners, that means at low doses it does one thing, as you increase the dose high enough, it starts doing the exact opposite. So deciding on the dose for ozone is pretty critical. For mitochondrial function, for stimulation, and for most of the reasons that I use ozone, I'm going to use relatively small doses, in the order, say 10, maybe 12 milligram-type doses. Those are the ones that work great for mitochondrial stimulation, as you can see the higher dose-

Dr. Joseph Mercola:

And you looked at the higher doses too?

Dr. Frank Shallenberger:

No. Higher doses, actually, you're going to have a suppressive action on things.

Dr. Joseph Mercola:

And you saw, you tested that with the test that you have?

Dr. Frank Shallenberger:

I actually have not done that.

Dr. Joseph Mercola:

But you're just-

Dr. Frank Shallenberger:

I'm looking at that clinically. And also, there's a lot of data to support that, especially when it comes around to immune system function.

Dr. Joseph Mercola:

Yeah. And I'm not disputing you, because you're the expert. In fact, you have a regular ozone conference that you put on, that you invited me to speak at this year in Colorado. So I'm excited about that.

Dr. Frank Shallenberger:

Yeah.

Dr. Joseph Mercola:

Yeah. That's the first event I'm speaking at this year. It's like halfway into the year, or even more. When is it, in October or June?

Dr. Frank Shallenberger:

It's in June. June.

Dr. Joseph Mercola:

June. Okay. Yeah, June. That's going to be, it'll be fun. So yeah. Have you started looking into using EBOO at all?

Dr. Frank Shallenberger:

Interestingly enough, back in the early ‘90s, Carpendale published some studies where he took serum, he bubbled ozone through the serum. So now he's got a test tube of peroxides. And then, he would take a culture of HIV, pour that serum on the culture, and kill all the HIV. So I thought at the time, "Wow, I'm going to be super famous because I'm going to cure AIDS (acquired immunodeficiency syndrome)." And so I'm not going to be using my tiny little doses, which I've been using like eight milligram, maybe 10-milligram doses on my AIDS patients, and they got better and everything's great. Okay? But I wasn't curing anybody. And I thought, "Well, this is a no brainer." So I invented an EBOO-like device, where we had two pumps, I had a 14-gauge needle on one side-

Dr. Joseph Mercola:

14 gauge?

Dr. Frank Shallenberger:

14 gauge.

Dr. Joseph Mercola:

How many people can you fit a 14 gauge in?

Dr. Frank Shallenberger:

Well, I found them.

Dr. Joseph Mercola:

Wow.

Dr. Frank Shallenberger:

Then I had pumps on each arm. And what we would do is, pump the blood out into this cascading device, where it got mixed with ozone. There's no filter. Like with EBOO now, I think they have filters, but there's no filter.

Dr. Joseph Mercola:

Yeah.

Dr. Frank Shallenberger:

We just ozonated the blood and pumped it back through the other side. Basically I treated their entire blood volume five times per session. So it was gigantic.

Dr. Joseph Mercola:

Yeah. You could do that with a 14. Regularly, what we'd use is an 18.

Dr. Frank Shallenberger:

Enormous doses of ozone.

Dr. Joseph Mercola:

Yeah.

Dr. Frank Shallenberger:

I would do that every day. And we published a study on this where I did it for two weeks. And I was convinced these men with AIDS would get so much better and everything would be wonderful. Guess what?

Dr. Joseph Mercola:

What?

Dr. Frank Shallenberger:

I didn't do any better than I did with the lower doses.

Dr. Joseph Mercola:

Ah.

Dr. Frank Shallenberger:

With a 20-gauge needle, in about 45 minutes, with no pumps, and all that stuff. So, I had to ask, "Why?"

Dr. Joseph Mercola:

Yeah.

Dr. Frank Shallenberger:

What's the deal on this? And it turns out that – that took me down another rabbit hole where I started to realize, you know what? Viruses are not about the virus. I should have known that anyway. But ultimately, because logic tells you this, 80% of the kids in the school come down with pertussis, what happens to the other 20%? How come they didn't get sick? You know?

Dr. Frank Shallenberger:

I met with Peter Duesberg, back in the late '90s, and he was able to set me straight on this. "Frank, it's not like bacteria. It's not like bacteria. Bacterial infections are about the bacteria. This is different. Viral infections are not about the virus. They're about the body's response to the virus." And what was happening here, with that high dose, I was suppressing the body's response to the virus. With the small dose, I'm stimulating it. And that's kind of what I've learned, about how to use these doses a little bit better. And in general, we like to use the high doses for very acute, very thick conditions. Because I want to suppress the cytokine storm. And early on, where it's not like that, I want to stimulate cytokines.

Dr. Joseph Mercola:

Hmm.

Dr. Frank Shallenberger:

So we can vary the dose based upon that.

Dr. Joseph Mercola:

Yeah. And for those who don't know, Peter Duesberg, in the '80s, was widely recognized as the premier virologist in the entire world, until he came up against Fauci in the late '80s and said, "No, HIV does not cause AIDS." And boy, that was, Fauci didn't like that, and he just blew him out of the water, discredited him and just smashed him to pieces.

Dr. Frank Shallenberger:

Yeah. It's a shame. Good man.

Dr. Joseph Mercola:

Yeah. He was. Is he still alive?

Dr. Frank Shallenberger:

Nope. He passed on about what, two years ago, I think.

Dr. Joseph Mercola:

Okay. So yeah, he was definitely a pioneer, no question. I'm not surprised you connected with him. But just before we leave the EBOO, I think, and I commend you for pioneering, that innovation was pretty brilliant, actually. But I would agree with this, you don't need these super high doses to treat the virus. But I think that there may be an improvement, at least what we're seeing clinically, from many of the physicians who are using EBOO in their practice, that they seem to be getting better responses with conventional ozone therapy. And it's not necessarily related to the dose. Maybe the filter has something to do with it, or the length of time of exposure.

Dr. Frank Shallenberger:

Yeah.

Dr. Joseph Mercola:

But it's something that, hopefully, I think will be adopted, because I think there's a benefit for it.

Dr. Frank Shallenberger:

There's definitely going to be a place for it.

Dr. Joseph Mercola:

Yeah. Yeah.

Dr. Frank Shallenberger:

We just need to sort out those details.

Dr. Joseph Mercola:

Yeah. Yeah. We're in the middle. But hopefully this year, because the equipment is going to be available commercially, very shortly, to do it. What were the other interventions you used? You said ozone and B vitamins. Are there other strategies to improve mitochondrial action?

Dr. Frank Shallenberger:

Oh, here's the funny part. All the other things that work super well are the things everybody already knows about. Number one, aerobic exercise. Hello. We all know this, but this is how it works. It works by regenerating mitochondria. Two certain hormones, particularly thyroid. And we could really have an interesting discussion about how medicine has gone down the tubes ever since thyroid blood tests were invented, and we were not doing this clinically anymore. But thyroid is right in the middle of all that. And number three is diet. And that might be a really interesting conversation to have here about this, about how diet... And I'm mainly talking about carbohydrate content of diet can affect mitochondrial function so dramatically in certain subtypes of people, who we can identify using mitochondrial testing. So diet, exercise-

Dr. Joseph Mercola:

Exercise.

Dr. Frank Shallenberger:

-thyroid, some of the anabolic hormones, obvious things. Things people have been telling me about. Mercury. Lead. How do you sleep? What's your stress level like? All that stuff that you already know is important. The reason it is important is because it affects mitochondrial function.

Dr. Joseph Mercola:

So let's dive a little deeper in some of those, with the exercise you mentioned, aerobic or cardiovascular exercises. Did you look at the difference between that type of exercise, versus resistance training? Which done in a high-intensity fashion can mimic that, but it's certainly different than, going out and ride on a bike.

Dr. Frank Shallenberger:

Well, so resistance training is really important, especially for the over 60 crowd. For lean body mass-types of reasons, for resting metabolic reasons, it's very important. But it doesn't do, unless what you're talking about, like some kind of circuit training-sort of phenomenon, it doesn't do what classic aerobic training does with intervals. And the wild thing is, about two years ago, something like that, in the old days, we used to say six five-minute intervals. That would've been in the ‘80s. Six five-minute intervals. If you ever tried that, it would make you crazy.

Dr. Joseph Mercola:

I've done that before. Actually, even not five minutes, but like 90 seconds.

Dr. Frank Shallenberger:

Yeah, it's tough. But when I was racing bikes, that's what we did. But yeah, it would. You would hate the day when you had to do that.

Dr. Joseph Mercola:

Oh geez.

Dr. Frank Shallenberger:

Now recently, they published a study, where they did head to heads. They took a group of people, put them on one protocol, and then switched the same group into another protocol, and the other. Switched the protocols around, and measured them using oxygen uptake analysis, similar to what I use. And they really, Joe, they found out that for normal people, not athletes, but for normal people to maintain good mitochondrial function, what you need is two 30-second intervals, followed by about four or five minutes of rest, in between the two, and done three times a week. Hardly anything.

Dr. Joseph Mercola:

Wow. It's impressive. Impressive. Really impressive.

Dr. Frank Shallenberger:

It's really something. It's really something.

Dr. Joseph Mercola:

So two 30 seconds. What's the intensity? All out for 30 seconds?

Dr. Frank Shallenberger:

Yeah, exactly. So basically, when we do the mitochondrial test, I'm able to determine where their anaerobic threshold is. And I know what their heart rate is. So I have them start off, for about two or three minutes, at a pace that keeps them at their anaerobic threshold. Which is pretty easy, it's not a big deal. And you know what's really cool is, that I don't have to worry about anybody if I'm pushing them, or exercising them too hard, because I know their exact numbers.

Dr. Frank Shallenberger:

So anyhow, I do the anaerobic threshold for about two or three minutes. Then they do a sprint to exhaustion. And then they literally get off the machine, sit in a chair, look out the window, whatever, for about three or four minutes, until they come down to, what I call, a fat-burning heart rate. I can tell you more about that. But anyhow, it's the recovery zone. Once they're down into that fat-burning heart rate, bang – back on the bike, or whatever they're doing, for one more time, and that's it. For 12, 14 minutes, period.

Dr. Joseph Mercola:

So you have to warm up, 30 seconds all out, and then you wait until their heart rate gets back in that sweet spot, and then you put them again. So the whole process takes about 10 minutes.

Dr. Frank Shallenberger:

Yeah.

Dr. Joseph Mercola:

Wow. That's impressive. And how many times a week, twice a week, three times?

Dr. Frank Shallenberger:

Three times a week we do it.

Dr. Joseph Mercola:

Three times a week. Yeah. Seems pretty doable for most people.

Dr. Frank Shallenberger:

Yeah.

Dr. Joseph Mercola:

Yeah. That's a pretty interesting observation. And you've seen big improvements on the mitochondrial function test you did?

Dr. Frank Shallenberger:

Every bit as good as anything of the harder exercise routines. Every bit as good as that.

Dr. Joseph Mercola:

How does it compare the ozone and B vitamins?

Dr. Frank Shallenberger:

Well, I haven't done a head to head, but I would say, when I talk to my patients, unless they can't do the exercise, and a lot of them can't.

Dr. Joseph Mercola:

Yeah. They're crippled.

Dr. Frank Shallenberger:

Yeah. They're too sick. I have them do both. So we're exercising them, and doing ozone at the same time. I basically talk to them. I say, "You know what? Exercise does this, ozone does this. Exercise is free, ozone's not free. Which one do you want to do?"

Dr. Joseph Mercola:

There you go.

Dr. Frank Shallenberger:

Yeah. And some people, we need to not exercise them, but that's, generally everybody needs to do that. I get ozone treatments myself every week, just because I can. And it's easy for me to do.

Dr. Joseph Mercola:

It's easy. Yeah.

Dr. Frank Shallenberger:

And it would be super good if everybody could do that.

Dr. Joseph Mercola:

Yeah. I've got EBOO equipment in my house, and unfortunately, I've had challenges getting a nurse in here, but my intention is to do it weekly for a while, and then probably once every few weeks. So I think it's a great strategy. It is a powerful intervention.

Dr. Frank Shallenberger:

Yeah.

Dr. Joseph Mercola:

No question. So thyroid is another interesting area. It's actually one of the quotes I've had, or given to people before, or at least patients said, one of the ways that you can differentiate

between a natural medical physician and a conventional physician is what type of thyroid hormonal they're prescribing.

Dr. Frank Shallenberger:

Very true.

Dr. Joseph Mercola:

I suspect you would agree with that. But even now, because before, it was Armour Thyroid, but that went to hell, as did most of the other natural thyroid prescriptions. Within the last few years, it's become very, very difficult to get natural thyroid.

Dr. Frank Shallenberger:

What's up with that?

Dr. Joseph Mercola:

I'm sorry?

Dr. Frank Shallenberger:

I said, what's up with that?

Dr. Joseph Mercola:

I don't know. I was asking you. I'm not in the field like you are. A good compounding pharmacy can get it for you, but it's not. You used to be able to write it, a prescription, at any pharmacy to get it. You can't get it. There's no way you're going to get it at a regular pharmacy. If you have thyroid, this is what you want to switch over. Because desiccated thyroid, there's actually four different types of thyroid hormone, T1, T2, T3, and T4. They all have iodine in them. But that's not what conventional doctors use. They typically use Synthroid or Levo-Thyroid, which is T4. And we do need all four of them ideally, but at least T3 and T4, if you're going to do it. So why don't you tell, walk us through the reason why it's such an important issue, and that you cannot, you cannot, rely on a TSH to know if you're hypothyroid.

Dr. Frank Shallenberger:

Yeah. Yeah. Thyroid is so critical for a number of reasons. First of all, and I can explain this a little bit more, but first of all, therein, probably 80% of people over the age of 50 have suboptimal thyroid function. I mean, a lot of them. That's one reason it's important, it's because it's so common. Such a common problem.

Dr. Joseph Mercola:

You say it's 80% over 50?

Dr. Frank Shallenberger:

Yeah. About 80% over 50 have suboptimal thyroid function.

Dr. Joseph Mercola:

That's a lot.

Dr. Frank Shallenberger:

I know. Yeah. It's crazy.

Dr. Joseph Mercola:

Does it continue to increase, the older you get?

Dr. Frank Shallenberger:

Maybe. I have run into people in their 80s that have really great thyroid function, but it's the law of diminishing returns on that. The older you get, the worse everything gets. Right?

Dr. Joseph Mercola:

Yeah.

Dr. Frank Shallenberger:

So anyhow, what that's all about? I don't know. I bet Brownstein's got some ideas. But you know, there's lots of reasons maybe, why thyroids go down the tubes, but they do. So when I first got my equipment, what I started doing was, measuring resting metabolic rates. Resting metabolic rate is how much energy your cells are producing when you're actually not doing anything. You're sitting very quietly in a chair. In other words, no exertion. And so how much energy do you need for no exertion? It turns out the resting metabolic rate is almost entirely determined by thyroid hormone. Thyroid hormone also activates something called UCP3, which is an uncoupling receptor on the mitochondria, which stop mitochondria from self-destructing.

Dr. Frank Shallenberger:

The thyroid prevents self-destruction of mitochondria. Thyroid also stimulates mitochondrial biogenesis, and stimulates mitochondrial division, so that you get, when the cells divide, you get representative DARs cells with the same number of mitochondria. So thyroid is absolutely critical. Also, through uncoupling protein number three, that's where a lot of fatty acids come in. So thyroid is very, very, very important for fatty acid metabolism of mitochondria.

Dr. Frank Shallenberger:

So it hits mitochondria in about four or five different ways. It's absolutely critical for mitochondrial function. And I can't tell you, but a lot of the times that's the big problem. Somebody comes in, their resting metabolic rate's low, the mitochondrial function's low. I give them enough thyroid to bring the resting metabolic rate up to what would be considered pretty close to optimal, and bang, the mitochondrial function goes right up with it.

Dr. Joseph Mercola:

And so you're using your mitochondrial function test as a tool to determine the thyroid function?

Dr. Frank Shallenberger:

Yeah. And the dose, too. We titer to the test.

Dr. Joseph Mercola:
Okay. Which test is that?

Dr. Frank Shallenberger:
It's resting metabolic rate.

Dr. Joseph Mercola:
And that's different from the mitochondrial test?

Dr. Frank Shallenberger:
No. The mitochondrial test basically involves two parts. One is where the patient is very quietly sitting in a chair.

Dr. Joseph Mercola:
Okay. The first part.

Dr. Frank Shallenberger:
We get their testing data. And then we put them on a bicycle and we do a protocol.

Dr. Joseph Mercola:
Okay. So it's easier to do the first part.

Dr. Frank Shallenberger:
Well yeah, anybody can do the first part.

Dr. Joseph Mercola:
It's a screen. Can you just outline? Can people do this at home, or do you have to have more clinical-grade equipment to do the test?

Dr. Frank Shallenberger:
There are devices that do this, but I haven't tried them.

Dr. Joseph Mercola:
Yeah.

Dr. Frank Shallenberger:
I mean cheap, little devices.

Dr. Joseph Mercola:
Yeah.

Dr. Frank Shallenberger:

I haven't tried them. My experience with equipment, over the last couple of decades, has been that, I don't know how you're going to get an accurate number-

Dr. Joseph Mercola:

So you can forget it.

Dr. Frank Shallenberger:

-outside of some seriously good equipment.

Dr. Joseph Mercola:

Okay. You need good equipment. So are there any other tools, or even the thyroid function test, that you can use. You can't use it to say you have normal thyroid function, but if it's above a certain level, like if it's five, even in conventional circles you know you're going to be hypothyroid. But I think the typical – what's your range? It should be below 1.5, the TSH (thyroid-stimulating hormone)?

Dr. Frank Shallenberger:

We're talking about TSH? [crosstalk 00:50:23] talk about TSH because it may the most absolute, worthless test we have available today.

Dr. Joseph Mercola:

Okay, good. This is what we need to hear. Forget the TSH.

Dr. Frank Shallenberger:

It's a totally worthless test. I don't even care about it.

Dr. Joseph Mercola:

Don't test for it.

Dr. Frank Shallenberger:

I could tell you all kinds of... I mean lots of patients, they come in, they're miserable. I do their resting metabolic rate. It's what? 65%, 70% of what it ought to be. Like way low. I do the TSH, T4, T3, everything's totally normal. I go ahead and I titer them up to where they're 90% of what they ought to be-

Dr. Joseph Mercola:

By titer you mean just gradually increase their thyroid.

Dr. Frank Shallenberger:

I'm giving escalating doses of thyroid and monitoring it with the resting metabolic rate. So until I get the resting metabolic rate up from say 70% up to 90%, 95%. At that point, they'll tell me – I had lots of these cases. They'll tell me, "You know what? I feel really good. Everything's wonderful. Thank you so much, see you later." So then they come back like maybe a year later

and they say, "I'm miserable." I say, "Well, how come you're miserable?" "Well, I saw my doctor and he did-

Dr. Joseph Mercola:

He took me off.

Dr. Frank Shallenberger:

-did the thyroid test, and he says, "Oh, you're being way overdosed." And so what he did is he, he took my thyroid or reduced the dose or whatever he did. And then I went back to him and the doc says, "Oh yeah, your tests are looking good now.""

Dr. Frank Shallenberger:

And the patient says, "Yeah, but I feel like crap again." Doc says, "But that's okay, because your tests are looking good." So that's how good these tests are. They're totally useless. Patient comes back to me, put him back on the thyroid, that's the end of that story. But there's so many cases like that. I'll use T4 and T3 to monitor what I'm doing. But the [crosstalk 00:52:12] age is absolutely useless. And they're all useless for diagnostic purposes.

Dr. Joseph Mercola:

That's really good to know. So what's your usual progression? You start with half a grain, quarter grain?

Dr. Frank Shallenberger:

I'll probably start with one.

Dr. Joseph Mercola:

One grain?

Dr. Frank Shallenberger:

Yeah.

Dr. Joseph Mercola:

Wow. And then how long do you wait before you bump it up before-

Dr. Frank Shallenberger:

I'll typically start them on one grain and maybe a week or say two, three weeks later, I'll bump them up to one and a half. And then I might want to, two or three weeks later, bump them up to two.

Dr. Joseph Mercola:

What's your typical [crosstalk 00:52:47]-

Dr. Frank Shallenberger:

-final dose up – I'm looking at how bad they are, and I'm deciding here's their final dose I want to get to. Let's say it's a 90 milligram dose. I'll start them on a 60 and maybe bump them up to 90. Wait for about four or five weeks afterwards, and then repeat the resting metabolic rates [crosstalk 00:53:03]. And [crosstalk 00:53:04] T3 to make sure I'm not pushing them over that number.

Dr. Joseph Mercola:

So 60 milligrams is one grain, 90 is a grain and a half. So what do you find most people wind up needing, typically? What's your typical dose, grain and a half? Or 90 milligrams, 120?

Dr. Frank Shallenberger:

Grain and a half probably is [crosstalk 00:53:21] most people.

Dr. Joseph Mercola:

Most common. Okay.

Dr. Frank Shallenberger:

Yeah.

Dr. Joseph Mercola:

It's good to know that folks, that took 20 to 30 years to figure out. It may seem like a simple answer, but that is valuable information. Really valuable. I just want to point that out. Might have flipped by most of you, but that's – because 80% of the people watching this or probably the vast majority of people who watch me are over 50. So 80% of you have thyroid that needs to be taken care of. So this was worth your time to get here, to learn this.

Dr. Joseph Mercola:

Okay. So we got the thyroid taken care of, and deep gratitude for helping us understand that. And then the diet, which is something I've studied for quite a while, and I couldn't agree with you more, it's a big issue. So your concern is that people – and I have to agree with you – most people are metabolically inflexible. They're eating far too many carbs and they've lost with time the ability to seamlessly convert and transition between bringing carbs as their primary fuel instead of fat. So your approach is typically reducing the carbs. And why don't you tell us what the strategy you're using and what type of assessment or intervention you're doing?

Dr. Frank Shallenberger:

Okay. So a little background on this. When mitochondria burn, if they are purely burning glucose, now, mitochondria have the ability to generate their energy by either burning glucose or fatty acids. If they're purely burning glucose, they produce twice as much CO_2 than if they're burning fat. Purely burning fat.

Dr. Joseph Mercola:

And you can measure that on your test?

Dr. Frank Shallenberger:

Yes. So if I look at the ratio between oxygen consumed and carbon dioxide produced, since it's a linear equation — this is important — since it's a linear equation, based upon that ratio, I can tell them exactly how much energy they're generating from glucose and how much energy they're generating from fatty acids. So I could tell somebody, "Listen, right now, you're generating all of your energy from glucose." Or "You're generating all of your energy from fatty acids." So we have that capability just from looking at these numbers, to determine that. So now this is all published stuff. So I knew this already.

Dr. Frank Shallenberger:

Early in the game I had this guy come up from Los Angeles and he's an actor who's out of work at the time. And he's LA-type guy, eats sprouts all day. He's got that lifestyle. He's in the gym. He looks like Adonis. Everything is perfect. And so he came up, we did the test on him, and he failed it. Completely failed it. And I said, "What's the story on that?" And so we dug a little bit deeper. Turns out that his lifestyle is pristine with the exception that he does two – what was he doing? Dairy Queen Blizzards a day. Which is like a milkshake with a whole bunch of crap in it. And I asked him, well, "How come you eat Dairy Queen Blizzards?" He says, "Because I really like them." I thought, "Well, that's probably the best answer to that question I've ever heard."

Dr. Joseph Mercola:

Yeah, honest.

Dr. Frank Shallenberger:

Yeah. So I said, "I tell you what. Carbohydrates in certain people suppress fatty acid metabolism. So how about you stop your Dairy Queen Blizzards? Because I have no way of explaining to you why you test out so bad." He stops his Dairy Queen Blizzards, comes back in two weeks. His mitochondrial function doubled in two weeks' time. I've had more cases like that. And what I've learned is there's a subset of the population out there that when they eat carbs, it's mitochondrial-suppressive. Now, the rationale is that since we're all different, there are going to be a subset of people whose mitochondria prefer to get their protons from glucose. Where there's going to be another subset of people whose mitochondria prefer to get their protons from fatty acid. They're just more efficient that way. So you have these two extremes. And then the rest of us fit on some continuum between those two extremes. But if you're that guy whose mitochondria prefer to get their protons from carbohydrates, you better be eating carbohydrates. Because if you don't, you're going to have decreased mitochondrial function. And if I switch your diet around and say, "Okay, I want you to eat carbohydrates now and come back and test you." You'll test out better.

Dr. Joseph Mercola:

And there's really, outside the test that you developed not that long ago and refined, there's no easy way to differentiate between those groups.

Dr. Frank Shallenberger:

No, there isn't. But with this test, it's pretty easy.

Dr. Joseph Mercola:

Yeah. Yeah. I know. But most people don't have access to this test.

Dr. Frank Shallenberger:

[crosstalk 00:58:10] almost where you are on that continuum, by what the numbers look like.

Dr. Joseph Mercola:

Yeah. So I was going to ask you what you have determined to be the ideal, because the ratio you get is 0.7% or .70? Or is it 70? .7, I think, yeah.

Dr. Frank Shallenberger:

Yeah, .7 is-

Dr. Joseph Mercola:

Seven is the glucose, or is that fatty acids?

Dr. Frank Shallenberger:

That's the fat.

Dr. Joseph Mercola:

That's the fat. And 1.0 is the glucose.

Dr. Frank Shallenberger:

Exactly. Exactly.

Dr. Joseph Mercola:

And somewhere in between there. So, but I was going to ask you, what did you determine is optimum, but from what you said, it depends who the person is.

Dr. Frank Shallenberger:

Yeah. So you're going to get some people who have a 0.74. In other words, they're burning fatty acids like crazy, and their mitochondria look great. “Hey, eat fat, dude. You're a fat loving guy.” Conversely, you'll have somebody that whose ratio is say 0.74, and their mitochondria stink. Eat carbohydrates. So let's give you some carbohydrates and bring you back and test you. I've done that long enough to know that pretty much that's what's going to happen. Then you have people in the middle, by the way, it doesn't matter what they eat. They can eat carbs, they can eat fat. They just swing either way. Everything's beautiful. And if you're that person, you're a lucky guy. But outside of that, you have to maybe pay attention to the carbohydrate content of your diet.

Dr. Joseph Mercola:

Well, that is a profound observation, and you should get some type of award or prize because no one has figured this out before. No one has figured out. This is not known.

Dr. Frank Shallenberger:
No, no.

Dr. Joseph Mercola:

Widely. I mean, you've done a good job in figuring things out. I'm really impressed with your innovation capacity. So because I think this information just might go over some people's head, but this is profound. I mean, this tool, this ability to make that determination, which could customize, ideally, a diet recommendation for someone is not known. Because there is no perfect diet for everyone. Depends upon their metabolic machinery and what their genetics are.

Dr. Frank Shallenberger:

Yeah.

Dr. Joseph Mercola:

Well, congratulations. That's really, really great.

Dr. Frank Shallenberger:

Well, I'm glad you got it, Joe, because I tell you what, most doc don't get this. I will talk to groups of docs and explain it, and it sort of goes right over their head somehow. I try to make it simple, but I'm not getting through a lot.

Dr. Joseph Mercola:

Well, I was impressed when I first heard it, and intrigued. So I do have the advantage of having read your book. Can you remind me what the name of your book is, because it's been a while since I read it?

Dr. Frank Shallenberger:

“Bursting With Energy.”

Dr. Joseph Mercola:

“Bursting With Energy.” I thought it was “Super Burst” or something, yeah. “Bursting With Energy.” That's a good book. I mean, it's still available. So if you want to go learn more about this, you go in great detail in the book and you provide some other insights. So that's another resource for you. Man, so that's good. I mean, you just knocked out of the park with the recommendation, much better than I thought you were going to. Well, I was hoping for. I knew you could. I just didn't know that we'd get there, but you did. I told you earlier, you've got so many pearls buried in their brain of yours to help people. And then why don't you talk a little bit about the peroxide therapy? I mean, you didn't even mention it, but it's such a powerful tool and it's just one of the little things you did, but it's incredible. And you figured it out yourself.

Dr. Frank Shallenberger:

Again, it's silly stuff, but one day I'm going into the clinic. I'm going into the clinic and, and I got a patient with asthma, and she is what, inhaling albuterol. Okay. So albuterol is making her shake

and she's got a tachycardia of 120 and blah, blah, blah. And so I'm treating this patient and as I'm leaving the room, I'm thinking, just thinking through that. I'm thinking, "Okay, she inhaled albuterol, and now she's got a tachycardia and her blood pressure's up and she's shaking and trembling." Everybody knows this, but it didn't occur to me until that moment that when you inhale something, it gets in your bloodstream. Now we all know that.

Dr. Joseph Mercola:

Quickly. Quickly.

Dr. Frank Shallenberger:

Yeah. Yeah. So if you smoke marijuana, if you smoke anything, it gets into your bloodstream.

Dr. Joseph Mercola:

Nicotine. Right?

Dr. Frank Shallenberger:

Hello. So in the meanwhile I had been for good 20 years at that point, giving intravenous hydrogen peroxide. And so it's intravenous. It never occurred to me, "Oh, by the way, if you could inhale it, you don't need to do the IVs. You can actually do this at home." And then I thought, "You know what, where do viruses hang out? They hang out [crosstalk 01:02:59]-

Dr. Joseph Mercola:

Don't hang out in the veins, typically.

Dr. Frank Shallenberger:

Hello. That's where they are. And in your lungs. That's how they get into your body, through your lungs and nasopharynx. So how much sense does it make to take something like a dilute[d] concentration of hydrogen peroxide that's known to kill virtually every virus, probably every virus that you dunk into it? Can we find a concentration of hydrogen peroxide that is known to kill virus that is safe to put in the lungs that will work systemically? So basically I fiddled around until I found that, and that's it. It's pretty simple type deal, but it's unbelievably effective at how it works.

Dr. Joseph Mercola:

So why don't you give us a summary of your years of work and research on this to figure out what the vital concentration of hydrogen peroxide is? Because knowing that the stuff you buy at the drug store is 3% and it has stabilizers, which you don't want inhale. You want to get food-grade. So if you get the food-grade, what concentration does it need to be diluted to?

Dr. Frank Shallenberger:

Yeah. So by the way, in a pinch, you can use the off the counter stuff.

Dr. Joseph Mercola:

Yeah. If you had to.

Dr. Frank Shallenberger:

[crosstalk 01:04:08] regular basis. But if you're stuck someplace and that's all you can get, you can still get away with it.

Dr. Joseph Mercola:

Do it. Yeah. Better than nothing.

Dr. Frank Shallenberger:

Yeah. So already I knew what I could put safely in the bloodstream. So that gives me a pretty good idea. And then after that point, all I need to do is figure out osmotic pressure. Because I didn't want to put a hypertonic type of solution into the lungs because we know that can be aggravated. I don't want to aggravate anybody's lungs. Because I want to give this to chronic lungers and all kinds of people like that. So I need to get that dose down. And then you can go to the books and you can figure out what the concentration needs to be to kill viruses. So I found that happy medium. And basically I tested it on myself. I just kept on raising the doses till I started coughing and having a problem and trying to figure out what that nice, sweet little, "What's the highest concentration that I can safely take into my lungs without bothering me?"

Dr. Joseph Mercola:

Was it 0.1%?

Dr. Frank Shallenberger:

Yeah. It came out to like a 0.1. Now we can go up to 0.3 with some people.

Dr. Joseph Mercola:

Which is 10 times lower than the stuff in the grocery store.

Dr. Frank Shallenberger:

Oh yeah. Yeah, yeah.

Dr. Joseph Mercola:

Okay. So normally 30 times lower, which is good. Now, I want to address the hypertonic component because there's been a lot of research just using hypertonic saline, like 3% or 9% saline to have really important benefits. Just nebulizing it without anything.

Dr. Frank Shallenberger:

Really? Okay.

Dr. Joseph Mercola:

Oh yeah. I can show you the literature on it. It's pretty amazing. They even sell it on Amazon.

Dr. Frank Shallenberger:

And what are they using it for?

Dr. Joseph Mercola:

It's a mucolytic. It breaks up the mucus in there. I think they even use it for cystic fibrosis. Yeah. Hypertonic saline. So I think by itself may have a very potent virucidal effect. And when you-

Dr. Frank Shallenberger:

[crosstalk 01:05:54]. Maybe we need to start throwing that in there.

Dr. Joseph Mercola:

Yeah. I'll dig up the paper for you. And then the other component is adding some iodine. I was a little skeptical of David Brownstein when he was doing that because he's got a bias. He loves iodine. But I think he's right. And then Peter McCullough, who is a conventional medicine warrior in COVID-19 battle has been heavily being censored and lawsuited to death. But he independently came up with this iodine approach too. He was recommending, not Lugol's, but betadine or povidone iodine. Which I think Lugol's is a lot better and safer. So small amount, you don't need a lot. You don't need to be squirting up a Lugol betadine up your nose. It'd have to dilute quite a bit. But that, I think, is a powerful intervention. The betaine or the iodine, Lugol's iodine a drop or two. And the 1.1% in some maybe hypertonic saline.

Dr. Frank Shallenberger:

I've been using the betadine and [crosstalk 01:06:56].

Dr. Joseph Mercola:

How much? Just a drop?

Dr. Frank Shallenberger:

Nasal. No, actually 10 drops. But using it [crosstalk 01:07:01].

Dr. Joseph Mercola:

[crosstalk 01:07:01].

Dr. Frank Shallenberger:

-washes. And so you're [crosstalk 01:07:04].

Dr. Joseph Mercola:

Oh, so you're not nebulizing that.

Dr. Frank Shallenberger:

No, no, no. It's a nasal wash where you use a neti pot or use the SinuPulse or you to use a syringe and shoot it up there. Works absolutely great.

Dr. Joseph Mercola:

How did it work compared to the nebulizer?

Dr. Frank Shallenberger:

Well, if the patient has significant sinus congestion, I'm adding that in. It's way, way [crosstalk 01:07:29] nebulized.

Dr. Joseph Mercola:

So it's addition to.

Dr. Frank Shallenberger:

But more for the congestion aspect.

Dr. Joseph Mercola:

Okay, great. And how – because it's such a treat to be able to talk to someone who's in the field using these interventions. Because I'm not doing that. I mean, I would've 20 years ago, but I'm not there now. So how does the nebulized peroxide compare to the ozone?

Dr. Frank Shallenberger:

Oh, okay. So ozone you got to be careful with. Of course you can't inhale it.

Dr. Joseph Mercola:

No, no, no. Just an IV ozone treatment compared to nebulized peroxide.

Dr. Frank Shallenberger:

Oh, oh yeah. I prefer the ozone. I think it's stronger. I can use it more. I'm more [crosstalk 01:08:09].

Dr. Joseph Mercola:

That's what I thought. I just wanted your confirmation.

Dr. Frank Shallenberger:

Yeah.

Dr. Joseph Mercola:

Yeah. So, but obviously more expensive. You got to come to the office. It takes a lot more time. Can't do it every day at home. But if you're in a really sad shape, that's – I mean, I put it on my protocol too, is that you got to seek someone out who can administer ozone. And I would assume, but I'd like you to confirm your clinical experience, that the sooner that you administer that, the better and the longer you're waiting, the more time the virus has had to replicate without some type of intervention, the worse the outcome's going to be.

Dr. Frank Shallenberger:

Yeah. And yeah, you're absolutely right. That's true for virtually any viral infection. You want to get it early on before it started create havoc. If you wait till it's late, it's going to be harder to dig that patient out. You can do it, but you might actually even have a fatality if you're not careful.

Dr. Joseph Mercola:

Yeah. Yeah. I mean, these interventions are powerful, but they really need to be started early. And that's one of the things that we're, I'm sure in complete agreement on, is prevention is the best, because you can start these therapies before you have symptoms. The way I approach my life is I assume I have a terminal cancer and I'm coming down with Alzheimer's next week. So I'm doing every intervention to stop that. Just doing it. Just assuming the worst. Because it's not much of a hassle to do it-

Dr. Frank Shallenberger:

Nothing wrong with that. That's a good way to approach things, huh?

Dr. Joseph Mercola:

Yeah. So because why not? Because I can do it and I'm open to it and I don't mind.

Dr. Frank Shallenberger:

Now, are you familiar with the Franzini COVID study?

Dr. Joseph Mercola:

No, I don't think so.

Dr. Frank Shallenberger:

He published this a year and a half ago, was August of 2020, which is such a sad thing, because when you look at it, you realize that 80% of the people that have died from that unnamed virus here in the U.S.-

Dr. Joseph Mercola:

Oh, you can name it because I'm censored anyway. So this is not going on YouTube.

Dr. Frank Shallenberger:

Eighty percent of people that have died from COVID-19, would die from medical malmanagement. That's the sad part.

Dr. Joseph Mercola:

Oh yeah. Most definitely.

Dr. Frank Shallenberger:

It also points out what we just talked about, how important it is to get people in early. Because Franzini, he published on 50 patients all over the age of 75, or average age of 75, all with acute respiratory distress syndrome, all requiring oxygen ventilation, all with CT evidence of pneumonia. So how good do we do with survival rate here in this country? We're at 25%. His survival rate was 96%. One of the points also that you can make is he still had 4% die. But so I've never had anybody die. Even though I've treated lots of people like that. Reason being, because I got them on the same time, they're, bang, they're on that hydrogen peroxide and

quercetin and all the rest of it. And when I get them in, then we're pounding them with ozone and vitamin C and such and some quercetin. And we haven't lost anybody, but-

Dr. Joseph Mercola:

No that's good. Kudos to you.

Dr. Frank Shallenberger:

-pretty close a couple times. It's pretty close sometimes if they wait too darn long.

Dr. Joseph Mercola:

Yeah, I know. So how many people have you treated successfully?

Dr. Frank Shallenberger:

Oh, I haven't even counted them, but I got to say 500,000, something like that.

Dr. Joseph Mercola:

Wow. That's a huge number. I know Dr. Zelenko had a big cohort too, and his numbers were in the high 90s I think. And the only people it didn't work for, be they came to him too late. He was getting people from all over. You got to get this thing rolling. So that's a useful strategy. So what are the other pearls? If you can look back and say, what moved the marker the most for the most amount of people that you could think of? I mean, what are some – if you could say one, maybe three things. I mean, you mentioned a bunch and if it's one of the ones that you mentioned, that's fine too. But I mean, I think you've got a few more good pearls that we can get out of you.

Dr. Frank Shallenberger:

Well, let's see. Well, we've talked about viruses. We talked a bit about immune systems, talked about prevention. Haven't really talked about heavy metals, but I think most people understand they have [crosstalk 01:12:32]-

Dr. Joseph Mercola:

So heavy metals/detox?

Dr. Frank Shallenberger:

Yeah. Yeah. I think most people understand that that's an issue.

Dr. Joseph Mercola:

That's a good discussion because let's talk about detox because I've come to my own conclusions. Never really implemented clinically other than myself. So what is your strategy for detox?

Dr. Frank Shallenberger:

Oh, first of all, I like to look, I like to screen people for – okay. So I'm going to do that mitochondrial function test on every person who walks in my clinic. Sick or not sick, unless they can't do the exercise part, which they would totally do the resting part.

Dr. Joseph Mercola:

The requirement for being evaluated by you.

Dr. Frank Shallenberger:

If they look good, if they have got great mitochondrial function, that's the end of my story. I don't really go ahead a lot further than that.

Dr. Joseph Mercola:

So no detox, nothing.

Dr. Frank Shallenberger:

Yeah. I'm thinking, "Okay, whatever amount of the toxicity you have [crosstalk 01:13:25]-

Dr. Joseph Mercola:

The person can handle it.

Dr. Frank Shallenberger:

-those two, you're dealing with it appropriately. You can detoxify it. Your methylation good. Your mitochondria are good. Everything's in balance. Mitochondria are so sensitive that that test is a very global parameter for health.

Dr. Joseph Mercola:

That's a pearl in itself. Yeah.

Dr. Frank Shallenberger:

So many things screw up mitochondrial function that if you've got good mitochondrial function, you could sort of say, "Ah, I guess I got my ducks in a row here. Everything's looking pretty good." So if they don't, though, what I like to do is to use a urinary porphyrins profile panel (UPPA). That urinary porphyrins, that the profile are very sensitive to toxins, particularly heavy metals. And based upon the various abnormalities that might occur in that panel, you can almost tell what toxin it is that's doing that. So it's a really good way to screen for toxicity, particularly heavy metals. If they do poorly on my mitochondrial test and they do poorly on the UPPA test, now I know, yeah. We need to have some very aggressive detoxification with them.

Dr. Frank Shallenberger:

Normally for me, that means colonics, saunas and chelation therapy for whatever metals they've got.

Dr. Joseph Mercola:

Do you like the saunas?

Dr. Frank Shallenberger:

Yeah. I like saunas. We've got one of the ozone saunas in the clinic.

Dr. Joseph Mercola:

Is that the HOCATT??

Dr. Frank Shallenberger:

I had the HOCATT, but I bought one early on and it broke down, and it wasn't any way to get it fixed and it was kind of a hassle.

PART 3 OF 4 ENDS [01:15:04]

Dr. Frank Shallenberger:

And there wasn't any way to get it fixed and it was a hassle. So, I'm just-

Dr. Joseph Mercola:

Something similar. Something similar.

Dr. Frank Shallenberger:

Yeah. It's a lower-technology device. It doesn't have the CO2 tanks or anything like that. But it works great.

Dr. Joseph Mercola:

Or the PMF.

Dr. Frank Shallenberger:

It doesn't have anything. It's just simply a steam sauna with ozone.

Dr. Joseph Mercola:

Great. For me, I'm liking – and I'd like to get your feedback on it too because I've recently learned that 95% of melatonin is not produced in the pineal gland.

Dr. Frank Shallenberger:

Yeah?

Dr. Joseph Mercola:

It's produced in the mitochondria. Typically, in response to near-infrared light.

Dr. Frank Shallenberger:

Huh? Okay.

Dr. Joseph Mercola:

And you know, for energy production in the mitochondria, through the electron transfer chain, it's going to generate ROS. Reactive oxygen species. And when that gets excessive, that causes serious damage. So mitochondria is a – and melatonin is as you well know, is a very powerful antioxidant. So that's why I'm really fond of near-infrared saunas. And most people are familiar with far-infrared saunas. They have these heaters and you know it's a far because there's no light. You can't see far-infrared, near-infrared is visible for the most part, at least a low end, 600, 700 nanometers. You can see that as red light.

Dr. Frank Shallenberger:

Hmm.

Dr. Joseph Mercola:

If you can't see the light in the sauna, there's no near-infrared and far-infrared does not produce mitochondrial melatonin. So I figured out that the best way to do that is to buy an old far-infrared sauna that almost invariably has high electromagnetic fields, either magnetic and or electrical fields that you do not want to be in there.

Dr. Joseph Mercola:

I would say less than 5%, maybe less than 1% of far-infrared saunas are good EMF-wise. It's almost universally they're bad. So I wouldn't be in there, but you can use them to preheat it. And then you preheat the sauna up to 150 to 170, depending, maybe even 140, if you're gently going into it. And then once it's up to that high, then you add, then you shut off those far-infrared devices. And then you hang, I like SaunaSpace. They got these four or bulbs you get total no EMF on these and their full spectrum from near to far-infrared. And you can totally act – you can start to sweat like a river, because you need to really, really sweat.

Dr. Joseph Mercola:

I mean, you need to measure – lose, at least a pound of water that you can measure on a scale, if not 2 or even 3 pounds of water, sometimes 4, if you're in there for about 20 minutes and you're just sweating out, it's not hot enough. You're not sweating and not working, but with a sweat comes out those toxins, but you're also feeding the mitochondria and you're really providing that melatonin, which is I never – you've heard of Russell Reiter, Ph.D., before. Right? He's the big man.

Dr. Frank Shallenberger:

Oh yeah, yeah. [crosstalk 01:18:13].

Dr. Joseph Mercola:

Melatonin guy. He's the guy that wrote about this. That's where I learned it.

Dr. Frank Shallenberger:

Oh yeah. Yeah. He's the guy.

Dr. Joseph Mercola:
He's the guy. I mean, he's the grandfather of melatonin.

Dr. Frank Shallenberger:
Yeah.

Dr. Joseph Mercola:
There's no finer researcher in this area than Russell.

Dr. Frank Shallenberger:
Yeah. We had him talk to our group. What? Eight, nine years ago.

Dr. Joseph Mercola:
I thought you did. I was going to ask you. I think I can get a good connection with him. But I want to interview him because I mean, he's such a fine [crosstalk 01:18:34].

Dr. Frank Shallenberger:
Oh, he's awesome. He's awesome.

Dr. Joseph Mercola:
Yeah.

Dr. Frank Shallenberger:
He was I think 82 years old at the time. He talked just extemporaneously with a huge amount of energy for 90 minutes.

Dr. Joseph Mercola:
Yeah. Yeah. He's a good guy.

Dr. Frank Shallenberger:
[crosstalk 00:18:49] we did questions. Funny, 82 years old he was.

Dr. Joseph Mercola:
Yeah. I think he needs your mitochondrial test. He looks like he's got a little bit extra.

Dr. Frank Shallenberger:
He probably needs some help, but [crosstalk 01:19:03].

Dr. Joseph Mercola:
But nevertheless, his mind is still good.

Dr. Frank Shallenberger:

Well, he takes a 180 milligrams of melatonin every night and been doing it for years and years and years and years.

Dr. Joseph Mercola:

Yeah. I want to discuss that with you because I'm not sure that's the case, but anyway, that was a bit of a tangent. I really think that the near-infrared, just on the base of increasing mitochondrial melatonin and then also accelerating the release of bound-up toxins is such a powerful intervention. It's an intervention I do typically four times a week. I used to do it every day. Then I found out that was a bit excessive.

Dr. Frank Shallenberger:

Where are you getting the near-infrared?

Dr. Joseph Mercola:

Oh, there's a company called SaunaSpace.

Dr. Frank Shallenberger:

Okay.

Dr. Joseph Mercola:

And they make a tent that has these bulbs in them, but the tent, it doesn't have to be EMF-free. And it's a pricey tent. It's $5,000, but you can just get the set of these bulbs for, I know it's one to $2,000 somewhere in there and retrofit it into a regular sauna that you take the seat out because there can't be any bench in the sauna because you just have to move around unlike a – the whole – because it's a directional sauna. So you have to rotate every five minutes, your front, your side, your back.

Dr. Frank Shallenberger:

Oh.

Dr. Joseph Mercola:

So you treat your whole body, but boy, you are sweating like a river. You really are. And-

Dr. Frank Shallenberger:

Huh.

Dr. Joseph Mercola:

It's pretty crazy. I mean, I will lose somewhere between 2 and 3 pounds when you go into the sauna and I've had a number of different tests done for toxins and they pretty much I'm at the record, low level. It really works. It helps if you take some binders too, but anyway, that's what I've been using. I'm just wondering if you've looked at that.

Dr. Frank Shallenberger:

No, I haven't but I will.

Dr. Joseph Mercola:

Yeah. Yeah. It's good stuff. So yeah. Toxic. Porphyrins is a good test. And then if you find that, then you just put them in the sauna detox protocol and then you retest him. I'm assuming.

Dr. Frank Shallenberger:

Yeah, exactly.

Dr. Joseph Mercola:

Any preventive that you like? I mean, other than – I guess life is prevention. What's your favorite? If you were restricted to a favorite activity and intervention, what would it be? Probably ozone. I would think.

Dr. Frank Shallenberger:

Well activity would be exercise for sure.

Dr. Joseph Mercola:

Exercise. Yeah.

Dr. Frank Shallenberger:

In terms of strategies that I use in the clinic. Yeah. I would have to be ozone.

Dr. Joseph Mercola:

Yeah. I thought so.

Dr. Frank Shallenberger:

Yeah. We just do that all day long. Came to my clinic. Just ozone all over the dang place.

Dr. Joseph Mercola:

Well, okay. Anything else you'd like to add before we sign off?

Dr. Frank Shallenberger:

Oh gosh. I can't think of anything, Joe. We've covered a lot of really good space. We didn't talk too much about the immune system and-

Dr. Joseph Mercola:

Oh, that's right. You've had some really innovations in that.

Dr. Frank Shallenberger:

[crosstalk 01:22:02] catch. If you want to catch it now or catch it at another time. But about this TH1, TH2 test sort of-

Dr. Joseph Mercola:

Oh yeah. Yeah. Why don't you talk to us about that? Because I've heard you discuss that in the past. It was pretty brilliant.

Dr. Frank Shallenberger:

Yeah. So, I think it was 1994, there was a study published, looking at homosexual men. It had to do with AIDS and HIV (human immunodeficiency virus)-positive and all these men were HIV positive, but only a portion of them had AIDS. And they were looking to find, "Well, what's the difference here?" And they found that of the ones that had AIDS, 100% of them were all in the TH2 dominance and the ones that didn't have AIDS only 30% of them were in the TH2 dominance. They were in the TH1 dominance and then they went on to make assumptions. But I looked at that study and I thought, "Wow, you telling me that 31% of men in the control group here, were already in a TH2 dominance? That's pretty pathetic." Which basically means their innate immune system is more or less shut down. And they're in a TH2 humoral system imbalance. I thought-

Dr. Joseph Mercola:

TH1 is the innate and TH2 is the humoral.

Dr. Frank Shallenberger:

The TH1 is the innate system.

Dr. Joseph Mercola:

Yeah. That's an important one that the vaccines don't touch. They don't touch.

Dr. Frank Shallenberger:

Oh, they ruin it.

Dr. Joseph Mercola:

Yeah.

Dr. Frank Shallenberger:

They ruin the TH1 because what happens is, and what I learned from this paper was that the TH2 system produces cytokines that suppress TH1.

Dr. Joseph Mercola:

Mm-hmm (affirmative).

Dr. Frank Shallenberger:

TH1 produces cytokines. It suppress TH2.

Dr. Joseph Mercola:

Mm-hmm (affirmative).

Dr. Frank Shallenberger:

So it's sort of like one aspect of the immune system is saying, "Okay, I got this, we don't need you anymore."

Dr. Joseph Mercola:

Mm-hmm (affirmative).

Dr. Frank Shallenberger:

And so what happens is we've got a significant number of our population of so-called healthy people that are in a TH2 dominance. And one of the ways that led up to me until I saw this paper and I was so confused because back in the early days, the '80s and such, it was a really big thing to test for antibodies for every [crosstalk 01:24:37]. Whereas Candida or cytomegalic or whatever. Everybody's testing for a zillion antibodies.

Dr. Frank Shallenberger:

And the conclusion we were all coming to is if you have a lot of these antibodies, that means you're super-duper infected versus somebody who doesn't have a lot of these antibodies. Turns out that's just not the case because there's no way in the world that some poor son of a gun is going to be super-infected with five different viruses and Candida. That's not going to happen. The problem is not that these antibodies are being caused by super infection-type situations. The problem is they're in a TH2 dominance and that's what they do. They live off antibodies.

Dr. Frank Shallenberger:

So this paper in 1940 led me to believe, yeah, by the way, and maybe as much as a third of the population out there's already in the TH2 dominance, number one, why is that? And number two, who's going to probably get sick? If they don't have an innate immune system, because that TH2 dominance is going to shut down there innate immunity. They're NK cells, cytotoxic cells, and then I'm reasoning. Yeah. So what do we do that's making all these antibodies? Hello, vaccines. But what's the definition of a good vaccine? It's one that makes an antibody. Every time you get a vaccine, you're automatically suppressing out your innate immunity. So I don't know if you saw this data. It wasn't peer-reviewed to publish, but it was just statistical data that came out a couple years ago, comparing the death rate from COVID in countries where the population was highly vaccinated for the flu. The annual flu vaccine compared to countries where they had very low number of populations that had the flu vaccine in 2019.

Dr. Frank Shallenberger:

And something like the death rate was 400% greater in the countries that where they most of the people had the 2019 influenza vaccines. That stands for reason. Yeah. You just suppressed out their innate immunity. So at this point, so, that was one thing that got to me. Yeah. You know, vaccines aren't really helping this game here. But the other thing that got to me is that we know from Bachi's work that ozone stimulates gamma interferon, which is a TH1 stimulant and suppresses out TH2. So my conclusion finally was when you add it all up, why does ozone work for every flipping viral infection you can get? I don't even care what it is. I don't care what the name of it is.

Dr. Frank Shallenberger:

Sometimes my patients come in, they've already been tested and we know they have caught the virus in West Nile or whatever. Otherwise, I don't test. I don't really don't care whether they got meningitis or what the heck the name of the virus is. We just do the same thing over and over again to get well, how can that be? It has to do with the fact that I'm taking them out of a TH2 dominance putting them in a TH1 dominance.

Dr. Joseph Mercola:

That's brilliant. I didn't realize that ozone increased gamma interferon.

Dr. Frank Shallenberger:

Yeah.

Dr. Joseph Mercola:

You know-

Dr. Frank Shallenberger:

[inaudible 01:27:58], too.

Dr. Joseph Mercola:

Yeah, Judy Mikovits has been a long proponent of interference. She was enamored with it in the ‘80s when she first learned about it and mentions it in her protocol. But I've never seen any protocol from the frontline critical care doctors or any others, Zelenko, that has integrated interferon. And I'm wondering why you think that is? I mean, you're doing it, but you're doing it in a way that's biologically appropriate because the body's going to make it itself and it's not going to make it excessive. And I think one of the complications of using interferon is that if you get the dose wrong, it could make it really problematic.

Dr. Frank Shallenberger:

These cytokines. And I learned all this from Bilio Bachi, he was just a brilliant cytokine researcher. He told me, he said, you can't mess around with individual cytokines. He says this is like an orchestra. This is a balance. And they change what? Every 30 minutes. And so to go in with one cytokine and start injecting that, you are just doing nothing but asking for trouble.

Dr. Joseph Mercola:

You're qualifying interferon as a cytokine?

Dr. Frank Shallenberger:

Yeah. Yeah. So interferon's a cytokine. Interferon's or gamma. He says you can't go in and just do one because-

Dr. Joseph Mercola:

Okay. Because it's an orchestra.

Dr. Frank Shallenberger:
An orchestra.

Dr. Joseph Mercola:
You're going to screw it up.

Dr. Frank Shallenberger:
[crosstalk 01:29:21].

Dr. Joseph Mercola:
You're going screw it up. Yeah.

Dr. Frank Shallenberger:
Yeah. And you screw it up.

Dr. Joseph Mercola:
That makes perfect sense. Perfect sense.

Dr. Frank Shallenberger:
And that's why ozone's so nice because-

Dr. Joseph Mercola:
It's beautiful.

Dr. Frank Shallenberger:
It just stimulates the cells to do what they want to do anyway.

Dr. Joseph Mercola:
It's like molecular hydrogen.

Dr. Frank Shallenberger:
[crosstalk 01:29:35] It's just that we screw it up, but they know what to do.

Dr. Joseph Mercola:
Yeah. I was not aware of that. That is brilliant. I'm going to have to premit that to permanent memory because that is a valuable piece of information that is stellar. That's why ozone is one of your favorite... It is your favorite medical intervention.

Dr. Frank Shallenberger:
Suppose you're in a country like Israel and they start lobbing. Then your next-door neighbor starts lobbing missiles over to you. And the defense minister comes and says, “Oh listen, we got a problem here. These missiles are coming over on a regular basis.” And the president says, “Yeah, don't worry about it. We've got this anti-missile thing. We've got this whole thing. Every

time they shoot a missile up, we're going to shoot their missile down. It's going to be okay." So the guy says, "Okay," so then he comes back about three, four days later, says, "No, we've got a problem Pres, you don't understand. They keep making more and more of these missiles. They got about 30 factories over there cranking out these missiles now. We can't possibly keep up with all these missiles coming in. I don't care how many anti-missile defense systems we have."

Dr. Frank Shallenberger:

We can't keep up with the continuous barrage. And all they do is keep making more and more factories. And the guy says seriously, we have to go in there with some special forces. And the only way we're going to win this war is to knock out the factories, just knocking out these individual missiles is not going to cut it here. This is a viral infection analogy.

Dr. Joseph Mercola:

Mm-hmm (affirmative).

Dr. Frank Shallenberger:

That's what viruses do. They come into our cells and at first no big deal. But then they start replicating themselves and releasing the missiles out into the bloodstream. And then the missiles are going and doing their damage and affecting more cells. And it starts to get out of hand after a while. You cannot control that by knocking off the missiles, you cannot control that by killing the free virus. The only way you can control that is by knocking out the factories. You have to kill the cells that are making the virus. You have to kill them and antibodies can't kill cells. All they can do is kill the missiles. They will never get that job done, but they will suppress out your innate immunity, which, in fact, can kill the cells. The cytotoxic T cells, the NK cells can kill cells. They have that capability. So all we're doing is knocking out the factories when we do things that stimulate NK activity and cytotoxic and TH1 cytokines.

Dr. Joseph Mercola:

Yeah, that's a brilliant metaphor. And it perfectly explains the ludicrous approach that conventional medicine has taken this pandemic because they are turning our cells into factories of making a toxic spike protein that makes all these antibodies. So you've got to wind up killing your cells are infected with the instructions to produce these. I mean, that's the only way to solve it. And it's interesting. I just have to share a story that last weekend I talked with the father of a 20-year-old in Tampa who was scheduled for above-the-knee amputation from complications of COVID. And I thought it would be easy to prevent that because I thought it was a blood clot, but it turns out she had rhabdomyolysis. And it really had just devastated the tissue in her legs. And there's not much left of them actually. So probably going to have to do that.

Dr. Frank Shallenberger:

Just antibody-mediated problem.

Dr. Joseph Mercola:

Yeah. Because she was injected twice with the jab and then wound up getting COVID. So she was primed to produce all these antibodies, which destroyed her body.

Dr. Frank Shallenberger:

Yeah.

Dr. Joseph Mercola:

And it was just so sad to have a 20-year-old athlete just have to have a bilateral above-the-knee amputation.

Dr. Frank Shallenberger:

Jeez.

Dr. Joseph Mercola:

And there's not much you could do at that point because the damage was done, the horse was out of the barn.

Dr. Frank Shallenberger:

Yeah.

Dr. Joseph Mercola:

But just as a story, I share that because it illustrates the danger of this massive antibody production that is believed, by conventional physicians, to be so beneficial. And they're not ever considering the downstream consequences of that.

Dr. Frank Shallenberger:

Yeah. Yeah. They just want to give it to children and the rest of the-

Dr. Joseph Mercola:

Oh yeah. Yeah.

Dr. Frank Shallenberger:

Pretty bad.

Dr. Joseph Mercola:

Now they're down to 6 months old, 6 months old. This is just such ridiculous, insane, criminal behavior that they're doing. But anyway, that's a different story. Thankfully, we have clinicians like you, who are out there innovating continuously and providing us with these relatively simple strategies that can make a big difference for us. And I really thank you for all your hard work. It's not easy being a natural medical physician and you're one of the leaders out there. So I really appreciate all you've done over the years and will continue to do. Oh, before we sign off, how does someone find out about you and what's your clinic in? And does your site have a link to other clinics that you've licensed to do this test for the mitochondrial function?

Dr. Frank Shallenberger:

Yeah, actually it does. The name I gave to the test is I call it bioenergy testing.

Dr. Joseph Mercola:

Okay.

Dr. Frank Shallenberger:

Bioenergy testing. And so the website is BioenergyTesting.com.

Dr. Joseph Mercola:

Okay.

Dr. Frank Shallenberger:

And only some of the clinics around the country that are doing the test and also they can get to that link. And some other information about the test by going to my website, which is AntiAgingMedicine.com.

Dr. Joseph Mercola:

No hyphen? Just antiaging medicine?

Dr. Frank Shallenberger:

Just AntiAgingMedicine.com.

Dr. Joseph Mercola:

Good. Good one. Excellent. All right. Well, I'm so glad we got to connect finally, we've known each other for a while now, but we never really did a formal interview like this and we can tease out all your brilliance and explain it to people and they can benefit from it. So thanks for allowing us to do that.

Dr. Frank Shallenberger:

Okay. My pleasure, Joe, thank you for all the good work you do too, buddy. Guys like me can be doing what we're doing, but you're out there getting the word out.

Dr. Joseph Mercola:

Yeah. Yeah.

Dr. Frank Shallenberger:

There's nobody getting the word out. Come on. We're just working in isolation. And so I feel privileged to be on your show. So thanks.

Dr. Joseph Mercola:

Well, thanks. It is a privilege. True, indeed. To be the number one spreader of misinformation in the world. Doesn't even come close to Joe Rogan though, but that's okay.

Dr. Frank Shallenberger:

[inaudible 01:36:25]. Good grief.

Dr. Joseph Mercola:
Well, thanks. And I look forward to seeing you in person in June.

Dr. Frank Shallenberger:
Yeah. That'll be great fun. Great talking with you.