Introduction to Doctor Z and His Work

I'm so excited to welcome our next guest, doctor Z Ratan Z, known as doctor Z, to his patients and colleagues. He's a licensed naturopath, physician, and global authority on hyperbaric, bio oxidative and environmental medicine, as well as low level light and killer therapies.

He's a trainer for hyperbaric oxygen therapy and has an I a I h a approved education and training course for safety and operation. And he's established and manages a research based website for hyperbaric therapy and hyperbaric experts.com.

Doctors. He also worked with boxing legend Muhammad Ali to help him fight Parkinson's disease. He serves as an advisor to athletic trainers, team doctors and practitioners and elite athletes to help them implement personalized protocols for performance, training and recovery.

He also has extensive training in environmental medicine and has helped implement safe detoxification and cleansing programs, along with hyperbaric oxygen therapy within the Spa industry, helping to advance medical spas throughout the world.

Doctor Z, welcome. Thank you very much. Thanks for the introduction. Well, we as we were chatting a little bit beforehand, you told me that you'd been into hyperbaric oxygen for over 20 years.

So I'm curious how you kind of made your way into this industry because, you know, 23 years ago or so wasn't a big thing. No, no, actually, it was quite interesting.

I went to a medical conference in my last year, medical school and naturopathy medicine and, you know, trying to figure out what I was going to do and went to a conference that all the best doctors in my field go to was that I wanted to go and see what are they doing on their continuing education.

For, therapeutic interventions at conferences. And there's one conference or one lecture on hyperbaric and wound care. And I saw all the science.

How Hyperbaric Oxygen Became His Focus

I saw the research and I saw the application, and I saw what it can do. And then I asked the question, where I haven't learned about these, chambers, for wound care and where are they?

And in Canada, where I started my practice, where I was going, I did my university in Washington state and then went up to Canada to practice. And there's only nine hyperbaric chambers and there are in hospitals.

And so there wasn't any hyperbaric. And so I said, well, this is a good thing to do. And so I started, with a group of individuals, the first private multi place hyperbaric chamber in Canada for private use.

And within three days of opening with a nine month waiting list, and we had about five hotels contract out one month stays for people coming in for hyperbaric.

And who were these people? There were kids, with their parents coming in for cervical palsy. They were stroke victims or head injuries, brain injuries.

And it sort of made sense to me when I started because wound care, we think wound care and it works. It can help wound care that much. And then what about the brain and the brain wound?

So it it became really, really my first, I would say six months into practice, I saw things that really changed the, trajectory, of where I was moving towards into my practice.

And I went full on into, really helping with hyperbaric oxygen gain access, worldwide. But in that time, people were flying in and they were saying, why can't I get something around me?

It was all about access. And I remember doing a talk and there was about 3000 people and, how many people have heard about hyperbaric oxygen? They wanted me to talk about hyperbaric, and I had a handful of hands go up.

It just wasn't really known at that time. And I'm seeing, the potential benefits. So that's really what got me started. And that first six months of seeing what I saw, a patients in comas that were getting recovery, kids with cerebral palsy that were, regaining, strengths and muscle coordination.

And there was something going on. So then slowly and slowly, more and more science and research and applications started getting into hyperbaric. And then there became a hyperbaric movement not long ago, in the past ten years, you're seeing more and more now.

I do a talk and almost all hands go up on who's heard of hyperbaric. Yeah. It's interesting. I, as a former athlete in college, fairly high level athlete.

I remember seeing, hyperbaric oxygen used in the athletic world. Right. Particularly I think, in the NFL is when I first heard about it as these high level elite NFL guys using having these chambers at home that they would go, you know, essentially sleep in, right.

And take naps in and these type of things. And so that's kind of how I got introduced to it. And and then as I got into studying, you know, naturopathy medicine and, and integrative medicine, functional medicine, Ayurvedic there is this interesting, kind of, balance where, you know, we want to use nature's principles and use nature's substances and work with the natural principles, natural cycles.

Right. And then then we come up with these things like hyperbaric oxygen, which is almost, on the complete end of the spectrum, so to speak, in the sense that it's artificial and yet we're still coupling it with natural principles in the body.

Right. And, and so it's, it's a really fascinating, kind of time that we're in. And I think there's a ton of opportunity with the sort of regenerative medicine kind of movement that we're seeing with all kinds of new therapies that are coming online, coupling that with fundamental principles, you know, from, from naturopathic medicine to, and these type of things.

To me, it's like a super exciting time to, to couple these things together. And I'm curious how you how you kind of go about doing that when you're working with, you know, any kind of head injuries or, or neurological symptoms, anybody that comes in, you know, how are you using these sort of in conjunction with one another?

Well, excellent. Excellent question. And I'm glad you said that because, we have to think of other disciplines. Oxygen is, helping to combust carbon in food for cellular energy, but you still need you need to think about it as a car.

Hyperbaric Physiology and Brain Recovery

You could gas up a car. That's great. But you still need a motor and you still need mechanics. You still there's there's a system. But why? I'm so passionate about hyperbaric oxygen is because every cell is metabolically active that utilize oxygen.

So take your discipline, take our Vedic, take any discipline, take on ecology. Take, cardiology, take physical medicine, physical therapy, sports trainers.

Any profession relies on metabolic activity. Right. And oxygen dependent. Ophthalmology, oxygen dependent. So if we understand oxygen oxygen physiology and then dose a surplus of oxygen alongside complementary therapies.

So if we can really train practitioners well on, on, on the hyperbaric physiology and then they use that application. Now take neurology, for instance, seeing that you ask the question of neurology and I started, in that field, the brain itself, let's say the brain takes up 25% of your oxygen right now.

Now, that is normal. Can then think about the brain. It only weighs about 3% of your body weight. So an organ that weighs 3% of your body weight consumes a quarter of the oxygen that gets into your blood from your lungs, 25%.

And because the brain is so metabolically active, we need oxygen. Right. And and so when we're in hyperbaric, physiology, the application of hyperbaric is you're, you're inside a chamber and you're just getting more oxygen.

But, you know, best way I could, call it is a glorified oxygen supplement. What you're doing is you're dosing more oxygen into the blood. But what's interesting with this dose, the oxygen doesn't go that surplus of oxygen when you're in the chamber doesn't go onto red blood cells like normal delivery.

You'll get some extra. But the extra dose, it's a gas pressure law of physics. It's. It's a Henry's law of physics. It's an absolute law. More pressure, more oxygen in liquid.

That's the liquid that the red blood cells are going in. So if you take blood and you centrifuge spin it in a laboratory, you'll see all the red blood cells go down.

And then there's about two thirds a liquid. It's called plasma. So all that oxygen is going in a free form in liquid. Well the brain is bathed by liquid cerebrospinal fluid.

So all of a sudden you're in the chamber and your heart beats, and then it beats again and beats again, let's say 60 times in a minute. That's six, three dosages of extra oxygen and liquid that now get into the liquid surrounding the brain and into the fatty tissue of the brain.

Now the brain gets extra oxygen and extra energy. Okay. Oxygen energy. Don't breathe for five minutes. Not much energy. So you're energizing the brain.

And just like when we're treating wounds and we're doing wound care, you're creating more oxygen and cellular energy to where the wound is. And if you cut your skin, skin heals.

The body knows, has an innate ability to heal. But we're oxygen dependent, energy dependent. So all we're doing is saying, hey, we're going to give more oxygen and we're going to have the brain treat itself.

And that's what we really saw when we're looking at, brain injuries starting off. But then you start seeing what is the mechanism of action and what we and what we found.

Some of the key mechanism of action for the brain is when you get that surplus of oxygen within 24 hours, we get a response, a protection of the brain.

So there's an upregulation because now there's more metabolism. So, the within the brain cells itself, you start getting more, not only metabolic activity.

That's great. That's function, but you get more protection. It's called indulge in this antioxidants. So you're protecting the brain. Some of these, enzymes or glutathione peroxidase, catalase superoxide dismutase.

And what's happening is because you're getting more combustion and you're getting more protection, think of it like back when I give you that analogy of the car and you put gas in a car, you get, you know, you get combustion, but you get exhaust, right?

So you need to have more exhaust, an exhaust system. If you don't use a car for a while, it might not have that all going. So now what you're doing is you're, peaking the cells back into metabolism, and then all of a sudden, the exhaust system comes, but it's inside every cell because you have to protect the fragile DNA.

And that's why every cell has its own antioxidant, species that we make. We don't take it in pills. We absolutely have it in is oxygen and oxygenation that causes that, reaction.

And now the brain is protected. The second protection that happens is, with something that you'll see in the brain called inflammation. In the brain, we call it neuroinflammation.

So just think if you hurt your wrist or something, you might have a little fluid or you might, you might have heard of people being just chronically inflamed, right, from injuries.

But the same thing is the brain can, have inflammation. It's actually quite common, especially in neurodevelopmental disorders, neurodegenerative conditions, Parkinson's, Alzheimer's and then neurological insults like, head injuries, inflammation.

So there is, those two happen, quite quickly. But then one of the most powerful, things that we see in hyperbaric delivery for the brain is, we will get, stem cells, bone marrow derived stem cells that now the body is an energy mode.

So we are creating brand new cells. Okay. Stem cell, mobilization is what, what it's called. One study where they applied hyperbaric oxygen to atmospheres cause an 800% increase in stem cell mobilization.

This was in 2006. That was a landmark study that that is what really made us look and say, hey, there's a whole other mechanism of hyperbaric oxygen therapy.

And but then we didn't think it went to the brain. Right. But then they started taking and they looked at where are these stem cells going? And they found to the brain it's called neurogenesis.

Neurogenesis, genesis, the new formation of brain cells. So the application of hyperbaric started, helping for this process of repairing new brain cells.

And then something called induced genesis, new circulatory pathways to damaged parts of the brain. And now we can understand a lot better of the influence of hyperbaric oxygen for neurological injuries and recovery programs.

When you're getting out to the core, I think of really a lot of disease processes, particularly chronic disease, right? When we get down to, yes, inside the cell and in in metabolically active organs like the brain, the heart, the liver, the kidneys, we got a ton of mitochondria, right.

And yes, what do we what we call the powerhouse of the cell. But they do so much more, right? They produce hormones, they clean things up. They they recycle.

They they produce, as you mentioned, antioxidant defense systems. Right. So there's so much going on at that mitochondria level. And and I'm curious if, you know, you hit on something really important, I think, which I think was the initial my initial introduction to the physiology, which was that there's this sort of functional hypoxia, right?

There's a lack of oxygen at the cellular level. And while we might not call it, you know, hypoxia in broad terms, it's functionally hypoxic. There's not enough sort of oxygen, and sort of that electron transport chain inside the mitochondria is not really churning optimally.

So when we we kind of get oxygen more perfusion into those tissues, then we're going to get these sort of this good thing happening. Right. More energy production in the form of ATP.

We're going to get less reactive oxygen species. Perhaps we're going to get antioxidant defense systems turning

on, you know, there's the cells are going to be cleaning up.

But but this is really fascinating what you're talking about here with the stem cells. Because this is kind of next level stuff that I think it seems like we're starting to run into is some of these sort of, you know, secondary or tertiary effects that we weren't fully aware of.

And now I think with stem cells kind of taking a big forefront in regenerative medicine, we're starting to kind of our lenses are going are starting to change with regard to stem cells. Right.

And so I'm curious what other kind of things are we are we figuring out that that hyperbaric oxygen is really able to do for us? Well, it's in in the hyperbaric doesn't do any the hyperbaric allows the body to do for itself at its peak performance.

You know, when you talked about, mitochondria, what we see is something called mitochondria biogenesis. And what that means is more of these powerhouses within each cell.

Well, yeah. Hey, if if I'm in, spending mode because I got lots of energy, physiological energy, real energy for the cell, I'm going to I'm going to create more mitochondria, and it's going to be this vicious cycle of energy.

Right. And I think one of the biggest is that cardiovascular, you know, I can tell you, aging is really a disease. As we look at it, the blood vessels start narrowing, narrowing, narrowing, narrowing, and we slow down.

Mitochondria, Angiogenesis, and Aging

This happens at birth. At five years of age, we start seeing fatty streaks, inflammation in the arteries. By adolescence, you'll you'll you'll, you'll see that normal.

You know, it's normal to have arteries that are calcified and have plaque in them. And some people are 30% blocked here, 80%, 90%, 100%. And they're walking around.

Why? Because the human body is so resilient. And that when you talked about that hypoxia, you know what's fascinating? The body's defense to hypoxia is angiogenesis.

Create new blood vessels. Okay. Think about that. As as we as these my analogy is very simple to lay traffic. All right. So, you know, when, roads were first put in five lanes, ten lanes.

No problem. These kids that are five years of age, there's ten lanes going to the brain, right? There's there's no problem at all with oxygen or energy.

Cellular. Right. There's no blockage. There's no restriction. As we start aging eight lanes, six lanes, two lanes, there's highway disease everywhere.

And naturally take anyone who has never been in a hyperbaric chamber and ask any cardiologist. And what you'll see is you'll start seeing angiogenesis.

It's a body's way of, hey, you know what? But we're budgeted. Just like every county says, well, we got to build a new road, but we only have certain amount of money, you know, so there's a little budget on that.

And, and so, what happens is so the stimulus is hypoxia, but when you get hypoxia, when you go into the hyperbaric chamber, what do you do? You get extra energy.

So now you got the budget. So you start. So you want to go to what we call relative hypoxia and then hypoxia. So you get this stimulus. I went to it's called vascular endothelial growth factor.

New, growth factors, being produced in and the, that surplus of oxygen and energy with the, with the hyperbaric.

So that's why typically hyperbaric is dosed in very short periods of time.

But repetition frequency, just like if I'm taking a course of antibiotics, I'm going to do it regularly for a short period of time. So we call it repetitive hyperbaric therapy.

And typically, a lot of times we'll see. Remember that program I told you when I first started, we did this one month, protocol where patients came in, and in one month we saw a lot of stuff going on.

That was daily sessions for a month, twice a day, and that's it. And just, really high influence of high and low and high and low and really getting a lot, physiological support and change, for the body.

Yeah. There's something called hermetic stress. Right. And this is, this is something that and anybody that exercises. Right, you know, exercise and then the body and the body is constantly, it's an open system.

Right? So it's constantly, picking up energetic signals, be they thoughts or emotions or physical, signals or whatever the case is in this case. Oxygen. Right.

A heavy, relatively heavy dose of oxygen to the body is going to receive this, this signal, and it's going to respond accordingly. Right. And that seems like what you're doing is you're just repeating this sort of hermetic stress, and the body's then adapting to this new signal, in, in a way that, of course, it knows how to do, and what you see is, is increased function over time.

Exactly. So what what what happened with the aging in the degeneration is adaptation towards disease. We're changing. You get short intermittent bouts of oxygen.

And what you're doing is you're stressing and add up to stress. But on a on a way to support physiological health and wellness within the human tissue and cells.

And you're doing so at the at the sort of micro level. Right. That's what's so cool. You know, again, if we were to take something like like sunlight, right, or exercise, these are, probably the most, some of the most prominent hermetic stressors where for and everybody's different.

Right. This is what's interesting, right? It's sunlight, you and me. Very different in the sunlight. Right. It's not going to take me much before I reach my limit.

And then I've got to let my skin, my body sort of recover. And if I go too hard, I can actually tip over into negative consequences as a result. Same thing with exercise, right?

I can push myself too hard and do things too often, and if I don't give myself enough recovery time, which may be different for each individual, right?

It may be different for for me, at 18 versus me at 60. Right? Then, then. So this is kind of this individuation that happens. And so I'm curious how you're using that with your patients.

If there's sort of a feel that you get as a, as an experienced practitioner or if there's protocols, depending on what you see, walk in your door. Good question.

I think it's we start off with protocols and then there's always personalization. And, you know, some people might feel, you know, after doing, some sessions, they get more fatigued.

And, hey, let's change that at nighttime. Hey, why don't we, double dose in a day? Why don't we just do one session a day? Time, 75 minutes, 90 minutes. 60.

But you know what? There's standard. Just like you're taking any standard medication. So they're standard protocols that we have in hyperbaric delivery.

I try to stick to standard because I follow the research. And, you know, we want to replicate the research. Hyperbaric, is not FDA cleared for, treating any of these conditions.

So the way that I look at it is, just health and support physiological dose of extra oxygen and, protocol based that allow, patients to respond to exactly what you said, health and wellness.

Protocols, Personalization, and Safety

Right. So it's just going the other way. Think about what, what we talked about regeneration, what happens as we age. Degeneration, chronic degenerative diseases, osteoarthritis, degenerative disease, degenerative eyes, macular degeneration, aging, blood flow, oxygen.

So we get, low oxygen, low blood flow. And a lot of people say, oh, it's the air that we breathe. Well, no, I'm still at 97, 98, 99% on my pulse ox. This system of lungs is great.

It's just when the heart pumps it, there's resistance. Blood pressure goes up. There's all this, blood vessels from the micro circulation, diabetes, blood sugars, basically spill into the small blood vessels called small blood vessel disease.

And now you're damaging little, and cardiovascular, one of the number one killers. But the way I look at it is, I don't think about that. I think, what about the degree of debility that it causes?

You know, it might not have. Who knows what's one of the first signs is a heart attack. You're going to wait for a sign. So, you know, and so that's why it's this holistic application of hyperbaric where it's not selective to any part of the body, it's the whole body.

But as you improve blood flow, what happens is the brain gets the recipient, of a so after a month, of doing, some of these standard, protocols, now we can have, better oxygenation, and it's not going to take any plaque out.

Right. But, having more blood flow to organs and organ systems. And so, you know, that's why when we talked about the benefits of hyperbaric for the brain, the immediate effects.

Yes, but the long term effects, and then you think how many people are around dangerous, harmful chemicals, either in their workplace or home place environment?

These are called neurotoxins. And, you could smell it. It goes into the roof of the palate. You get, these, metals, mercury, lead. And what do they do? They damage the brain.

They cause oxidation. So if you preconditioned your brain, with hyperbaric, you're more protected. Not that you want to go and do hyperbaric. So you could go into toxic fumed environment, you know, but, in today's society, we could be more protected.

You know, you talk about more protection. I do a lot of concussion treatments with hyperbaric, and we do preconditioning. Right. People who are at high risk, football players who are maybe already had a previous concussion or any contact sport, where the head can be involved.

We like preconditioning, before the game. Right. To help that brain be stronger for protection. And so that inflammation and oxidation, that protection is very important in the long term scheme of things.

And sometimes the neurological issues that are going on are from environmental, what we call neurotoxins, that get into the brain. Well, anytime you can increase function of the brain and increase oxygenation, you're increasing neurogenesis, right.

You're going to start to increase hopefully going to clear ridge clearance. Right. So you're starting to clear toxins out of the brain. You know, you shutting down inflammation.

Yes. Good. Shutting down neuroinflammation is huge right? I mean especially with some of the glial cells that can essentially get stuck on, so to speak. Right.

Like I mean, this is this is a major issue with with a lot of people, that experience all kinds of neurological symptoms and conditions. You mentioned, concussions.

And I'm curious if there's, if there's any neurological condition or brain related issue that you've seen that hyperbaric oxygen does not work well with, or that you need to be particularly cautious, when you approach it.

That's a very good question. There is so if somebody has, seizure activity, you want to be careful of what we call oxygen toxicity seizure, hyperbaric can cause epilepsy.

But it, can induce a oxygen toxic seizure. But that's when we dose it really high. We try to stay below that threshold, and we have standard routine applications to help do that.

Sometimes someone has carbon monoxide poisoning and it's life threatening, and they need to be at a very high dose. Then we take precautions for that.

And sometimes there are risks, that are associated with that. I tend to recommend lower dose because the brain doesn't need much. It is. It's already so oxygen dependent and that physiology is in the liquid.

Hey, they've done head to head studies on very low pressure, compared to higher pressure and seen in, similar outcome in studies in cerebral palsy. They did a study the University of Wisconsin just recently.

I don't know if it's published yet. But they found just a low pressure, not even putting on a mask. Just, er, had a tripling effect. After just one session of stem cell mobilization.

So that. Interesting. So. So, yeah, I talked to me about that. And it's I guess it's sort of in the name, but but it may not be fully, recognized by others who who aren't familiar with hyperbaric oxygen in, in most cases, you have a, a chamber that you're increasing the pressure, right?

The atmospheric pressure in. And so talk to me about that pressure and how that works with oxygen. And I guess in that tank too, or is it a higher percentage of oxygen in the air, in the atmosphere, or is it standard air that I'm working with. Excellent. Excellent question.

In traditional hyperbaric, you know, when hyperbaric first got, discovered in 1662, you're but what you're doing is you're dosing, pressure and you're dosing oxygen.

Okay. So 2 to 2 drugs, extra oxygen by a mask or in hospitals, we put a hood, some wound care centers just have the whole chamber pressurized with just oxygen.

And so they don't have any breathing apparatus. And remember, the pressure is a big thing that causes more oxygen to dissolve in the body. But now you add, more oxygen to your breathing apparatus because this is the only place you need it.

You don't get oxygen in your skin, you can't drink it, you can't eat it, you can't bathe in it. You have to breathe it. So just making sure your this area has that surplus of oxygen that's traditional.

Well, what was found when they started doing studies and comparing, placebo to hyperbaric? They didn't see any. They saw both groups getting improvements.

But the problem was the the, placebo was a pretty decent amount of pressure. So you're getting a physiological response, you're getting more oxygen, you're getting more drug.

And, and so it then led us to say, well, why are we doing this dose if we could have just pressure and air. Right. So

there's two trains of thought and you're saying, okay, if you want to have, that pressure and air, is there any harm to adding the extra oxygen?

And if there's not, then we add it in. Right. And because we, we have an understanding that that will increase the dose, but we still don't have really good data on head to head to show one is more better than the other.

It's thought by a lot of people that, okay, I'm going to do a higher pressure, I'm going to get a bigger dose. So I'm going to get better results. You know, it's a difficult one because I could give a medication 25mg of prednisone.

I give you 50mg of prednisone. And they could both, give benefit to the patient. But one is just double dose. Do I need it?

Neurological Applications and Treatment Cases

You know, so it's understanding I think, understanding how much oxygen you're getting from being even at a low pressure, because the dosage is every time your heart beats, it's just extra.

You would not have any stores accumulating. So you get such a high of of an essential nutrient, it doesn't get wasted. That extra doesn't just go it, it gets utilized for combustion with carbon, for energy.

What is it energizing? I don't know, everybody's different. You know, I like to think of it like a, When you're in the chamber, it's a buffet, right? For every cell just says, hey, I got a buffet.

I'm going to take more. I don't need more. You might not take more. Right. But. So you're allowing this extra dose and giving that, body and every tissue, every organ, every organ system, the immune system is dependent on oxygen, stronger immune system.

So, so we tend to I tend to keep it more simple. Yeah. I like that approach. And it seems to me that the consistency is really, maybe, perhaps the biggest key, in this, in this whole game.

And so talk to me about some of these things that you're seeing in terms of neurological conditions, brain related conditions that, that you're treating.

How long of a protocol do you typically see with, with some of the most common conditions that that walk in your door? It varies sometimes just 3 to 5 sessions.

I typically call that a jump start. You know, might do that, preconditioning, like I told you, those preconditioning studies Monday, Wednesday, Friday, or in the case of some of the football players, Tuesday, Thursday, Saturday.

And then they play on Sunday. You can, you know, you could do, pre surgery. We're finding, like neurosurgery if, if we know someone's going in for brain surgery, just getting five sessions before the, surgery.

You know, sometimes it's not, applicable because there's no time. Because it's, an emergency procedure sometimes. Right. But if it's a planned procedure, then we like doing, just five sessions or so, and then after the surgery, there's another maybe five sessions.

3 to 5 sessions. We have, sometimes ten sessions. If there's an acute injury, 20 sessions, protocols. If we need a little more of that angiogenesis or regeneration, the gold standard, like I tend to say take a course of antibiotics, you know, is this, 40 session protocol.

It's what we've seen the most results in. Some people say, hey, I feel great. And, you know, 18. All right. I had one guy he got, you know, he had homogenous Hemi.

You obviously he had stroke and he just had central vision. He lost his peripheral and he, only. Yeah. So he was very depressed. Went into this chamber and after a second session, he had a significant increase in his visual,

perception.

And then third was even more and he had this small black spot on his upper left quadrant, just a small spot. And then he did four, five, six, seven, eight, nine.

And then at 17, and he was scheduled for a course of 40 and 17. He said to me, I don't want to do any more. So okay. And you said, why? He goes, well, I, I could live with a small spot.

I got back my driver's license. That's all I cared about. And, you know, at the end of the day, the time and the finance, at the time, you know, now it's a little more cost effective.

But, back before it was quite, it was quite a budget for, you know, he got caregivers and stuff. So, you know, you'll find that the will tend to apply.

The older, the sicker, the more, the more I want to really help support the body, the more I'll just write a script for 40 sessions, standard protocol, and then maybe do some internal adjustments.

Do a lot of, light therapy, transcranial, over the forehead or, brain, where we can get certain wavelengths to increase cellular energy in the brain. And, also, blood flow.

So there's a tagging effect. We call it targeted hyperbaric. That's done, a lot in the chamber. I can't tell the oxygen will just go here or go here. So, we'll, we can we can help.

And then if they have some type of, so after about two weeks, we might then start doing some exercises, cognitive exercise, a frontal lobe for executive functioning.

Then we'll have them do some memory exercises while they have the light on there in the chamber. So exercise while that's what we're trying to build these tracks or where if it's, motor control fine or gross motor, then we'll do those exercises.

Right. So it's and that's what we first started talking about hyperbaric. And you said about, the various practitioners and, and you mentioned, one I think a robotic but but, physicians, practitioners who are knowledgeable in their skills, whether it's a functional, therapy where you can then utilize that, for, for, for wellness within, within that.

Yeah. I'm curious with, with cognitive decline whether it be, you know, full blown sort of dementia and, and yes, timer's early stages. I'm curious if you've seen any, any pauses impacts.

I mean, I think that you're starting to see that early cognitive decline where the handwriting starting to go, the gate is starting to go, these types of things.

It seems like a really good opportunity as you start to notice that early, but you're seeing even late later stage stuff. And, both there. Yeah. So, so we see the early, you know, originally we wanted it, the research was pretty strong on reducing the progression.

I thought, hey, if we could just reduce the progression, that's a treatment, you mean? And by that you mean kind of slow it down. So it's correct. So fast. Oh, but then we started seeing improvements as well, which is cool, you know.

Oh, there's a person, right? Yeah. And and you know what? So now there's, really good studies on mild cognitive decline, and, cognitive impairment. Right.

And and Alzheimer's. Now, when I started, I had some really good cases on vascular Alzheimer's. And sometimes it's an it's not diagnosis but vascular.

And while some really good ones were vascular of course blood flow. But, there's the latest research really got me

excited on amyloid plaques where the application of hyperbaric, reduced the amyloid plaque buildup and, and so now we're looking at, hey, and a lot of it has to do with that reduction of neuroinflammation, reduction of hypoxia, low oxygen and just pulling the cells, fueling the brain and letting the brain treat itself.

Right. And you know, I, you know, you can throw a rock, at a window or a door like you can, the damage here for Alzheimer's and here for Parkinson's and here for Ms..

The brain is, is only so big. And what's the damage? You know, everyone is different, but what do we know is how do we repair? How do we functionally help the brain repair itself?

And I think if we take that approach of helping the brain repair itself, giving the fuel, the nutrients, and, and definitely nutritional therapy, fatty acids, the brain is made up of 60% fat.

And so some of these, fatty acids are very important. And also for what we call nerve growth factor, there's excellent studies on Bdnf brain derived neurotrophic factor with hyperbaric influence.

So we're actually getting so many of these mechanisms of actions. We were understanding of potentially how this application of hyperbaric can help the brain.

But that's just one area. Then we have other therapies and other interventions that can be added in because every, no matter who they are, if they're a neuropsychologist, anyone that is treating the brain or any organ metabolically active, if if there's no oxygen in what they're treating, the brain isn't working.

Right.

Finding the Right Hyperbaric Provider

So so, really understanding, the, the application of hyperbaric physiologically and then having application of that. So and that's one of the things that we do training in, in the for practitioners is how to integrate hyperbaric within the practice.

And, and so make it a tool for, for application for patients. Yeah. I can really see the benefits of stacking this with other therapies. And, and lifestyle interventions. Right?

I mean, we know that going out in nature, increases Bdnf and increases, all the feel good hormones, neuro hormones in the brain. Right. All the neurotransmitters as well as exercise. Right.

Same thing. So when we're starting to step back and change our lifestyle, increase more exercise, increase the sunlight. Right. And setting that circadian rhythm in the brain, getting all the, the neuro hormones and and, circadian rhythm, rhythm physiology in line with nature.

Hanging out with friends. Right. And and being around loved ones, having that support, all these sort of little things that we may not be keenly aware of.

And starting to change those and of course, with diet, as you mentioned, fatty acids and getting the right amino acids, and all of a sudden we're stacking things in our favor to such a large degree.

And again, this is where I see as much as, you know, we like to talk about individual therapies and really dig into those a little bit and, and find the nuances and the benefits.

It's it's all of a sudden when we start to stack all these things. Right. And it's like, Holy smokes, this is how we go from cognitive decline, to back turning back clock 15, 20 years, neurocognitive.

And it's like, wow, that's the opportunity, right? There's one there's one thing I want to ask you. You know, there's a lot of therapies that we can do remotely now, right?

I mean, we're having this call remotely know technology. Fantastic. Hyperbaric oxygen is not really one of those that we can do two well, remotely. I can't see you on zoom and get some hyperbaric oxygen.

So so for those watching this, you know, assuming they're in a lot of them are probably in the United States or Western countries, how can they find, a good, hyperbaric, therapist and, and what should they look for?

You know, if they're trying to interview or figure out who to go see for for some of these more brain related conditions, I would, look at their local, you know, now there's more and more hyperbaric centers and, you know, look and see, their training, how long they've been, applying hyperbaric, oxygen.

And, and so you want to be able to answer simple questions and also, you know, making sure that, there's no false claims being made, of the treatment conditions, the, the, hyperbaric delivery only has 14 medically approved treatments that we can say. Yes.

This is a medical treatment for. If you do the lower pressure, then there's a 15. It's called, altitude sickness. So really it's it's getting the right education.

Application in, in here is one where, if you find that the clinic is. Oh, I'll just schedule you in whenever. That's where I see a problem. I see that when I go to England a lot as well, with some of the centers that, they're only open on certain times.

And, and so I'll talk to patients and they just fit in within the schedule, but it's like me giving you, let's say, a bottle of 40 pills, let's say metformin.

And I say, take this twice a day, 500mg twice a day and take it for 20 days. Right. And if I see that bottle and six months later have 12 pills left, I know you haven't followed that, in. And it doesn't mean that that's not the right application.

But most times when people are going in for hyperbaric and they're making that investment, it's that repetitive hyperbaric that has a lot of the benefits that you might see.

Those physiological benefits are from, from that. And so just to you, that schedule is kind of a part of the therapy. Yeah. I don't prescribe of convenience.

And I think it's easy to do that. And, I see a lot of clinics that will do that because they're just like, hey, it's hyperbaric. Just come in. Right. So really understanding we have a wealth of resources.

Well, they can go to my website, doctors A.com. And also, there's the application of, of home hyperbaric where chambers can be, done at a home under, medical guidance and prescription for, I think, a month.

And then they're sent back. There's a few manufacturers that will do that. And so there's, you know, there's different ways to access and apply hyperbaric.

And it just depends on, you know, what, what's around in your area. And again, we have lots of resources and there are free resources with our website, hyperbaric experts, latest research.

You can search by the latest or you can search by autism or cancer. And I, I rewrite it for the layperson to understand. And then it has a link for the hospital and the doctor and physician.

So now everybody's, sort of coming together and it's just, it's, a resource, just for the community. Beautiful. That's thank you so much for for coming on today and sharing your wisdom.

Please tell everybody one more time where they can, where they can find your stuff. So I guess the best is, the website. Dr.. And my first name, Z a y d.com and z.com.

And that is a whole hyperbaric section. And for practitioners there's training and support for home. There's, there's lots of support. Put it that way.

Beautiful. Awesome. Thank you so much doctor Z. Really appreciate you coming on. You're welcome. Well thank you for having me. And I hope the summit goes really well.

And congratulations on what you're doing with the exposure. Education and functional medicine. Thank you so much. For.