

Welcome to the Cutting Edge Health Podcast with Jane Rogers, where we discuss science to help prevent cognitive decline.

[00:00:00] Jane Rogers: Welcome to the *Cutting Edge Health Podcast*. I'm Jane Rogers, journalist, health coach, consultant to doctors, and recovering chocoholic. My passion is helping my friends and others squeeze every drop out of life using the latest scientific breakthroughs to make 90 the new 40, extend our health spans by 10 to 20 years, and prevent the diseases of aging. I travel the world interviewing leading experts in health and longevity to learn how to live longer, better. Buckle up, it's never too late to ride the cutting edge to grow younger, sexier, healthier, and sharper together.

Research is showing that hyperbaric oxygen therapy has some real potential if you want to slow aging and the age-related diseases that come with it. With recent research from Israel, it's been demonstrated to increase telomere length and get rid of senescent cells, zombie cells, which spew inflammatory molecules, which contribute to aging. It also can help fight bad bacteria. Today's guest is Dr. JoJo Yonce. In his clinics, he is using hyperbaric oxygen therapy, known as HBOT for short. Dr. JoJo Yonce, I'm so glad that you're with us today. Thanks for making the time.

[00:01:15] Dr. JoJo Yonce: Thanks, Jane. So happy to be here with you.

[00:01:17] Jane: We have a lot to unpack with hyperbaric oxygen therapy. I know you have several clinics, one of those in Greenville, South Carolina. Tell me about it and tell me about the experience your patients are having with this therapy.

[00:01:31] Dr. JoJo: It's pretty phenomenal. We have an office in Asheville. We have one in Greenville. We have Greenville Brain Training, Asheville Brain Training. Sensorium Neuro Wellness is really our overarching new name that we've adopted. We do a lot of functional neurology and testing of all aspects of the nervous system, so we're in a really good position to test and see what's working.

We have over a dozen distinct therapies that we do. Based on the testing, it leads to actionable information about how the brain and the nervous system could be working better. One of our really cool most recent tools that we brought in about a year ago is hyperbaric oxygen therapy. Like this article you sent me, *Holy Grail* is the name of the thing. I've always been leery of-

[00:02:20] Jane: [laughs]

[00:02:21] Dr. JoJo: -things that purport to be good for everybody, but that's really what we're finding. As long as you don't have indications that mean that it wouldn't be good for you to do, it's good for humans. That's how I look at it, like water and oxygen. [chuckles]



One of the special things about hyperbaric oxygen is it's upping the delivery of a nutrient to the body that it already knows how to use, and that being oxygen.

[00:02:50] Jane: That's oxygen?

[00:02:51] Dr. JoJo: Yes. That's how we view oxygen, as a nutrient.

[00:02:55] Jane: Your patients when they go into a hyperbaric oxygen chamber, they're under 200% to 300% more air pressure than you would be outside. Is that right?

[00:03:07] Dr. JoJo: You can go as high as two to three atmospheres in hard chambers of pressure.

[00:03:12] Jane: Oh, that's a hard chamber. Okay.

[00:03:14] Dr. JoJo: Yes. We use 1.3 atmospheres, which is enough, it turns out, for helping brain health.

[00:03:21] Jane: You do that in a soft chamber, not a hard chamber. It expands more.

[00:03:25] Dr. JoJo: That's right. If you go beyond, say around two atmospheres pressure, you really need the hard chamber to maintain that pressure. If we look at the pressure being delivered in there as equivalent to number of feet underwater, 1.3 atmospheres, which is what we use up to that, is about 10 feet underwater. The same pressure on your body and system as you would experience at about 10 feet underwater, so it's not huge. What you were referring to is hard chambers can go 2 to 3 atmospheres, which is the equivalent of 66 to 99 feet underwater.

[00:04:03] Jane: That's a big difference.

[00:04:05] Dr. JoJo: Huge difference, and huge safety considerations around that, not only at that level of pressure but at the amount of percentage of oxygen that you're delivering. We use what's called oxygen concentrators where you're delivering about 90% oxygen in the air that you're breathing versus 100%, which is medical grade that comes in the green tanks that's used in hospital settings. In hard chambers, that's infused into the entire tank and people are breathing it as part of the environment. That has its own considerations around oxygen toxicity and needing to take air breaks.

Meaning that what you would breathe through the ported air in would be normal air, not oxygen. We reverse that in the mild hyperbaric oxygen therapy where you're in a soft chamber going up to 1.3 atmospheres of pressure and staying there about an hour. What's being ported in is the 90% oxygen, 85% to 93% depending on certain factors. You're breathing that concentrated oxygen that's not being stored in tanks, so it doesn't have the same level of fire hazard considerations, and it's still over four times what we're



breathing right now. Right now, you and I are breathing about 21% oxygen in the air, so we're delivering that to you at 90%. That's one of the main mechanisms of benefit.

[00:05:33] Jane: What you're finding then is some real benefit without having to go equivalent of 60 feet under the water.

[00:05:39] Dr. JoJo: Totally.

[00:05:40] Jane: Tell me about what you're seeing in your clients and what you're seeing in some research. There's a whole lot we can unpack with us.

[00:05:46] Dr. JoJo: There's a lot of research. Unfortunately, I'm seeing it starting to split and you're seeing the people who have the hard chambers not recognizing the benefit of the soft chambers. There is just some research out of University of Minnesota, I think, that is showing that as far as the brain is concerned, the soft chamber is providing the same benefits as the hard chamber.

[00:06:08] Jane: Good. Without the risk.

[00:06:10] Dr. JoJo: Yes. There are 14 FDA-approved conditions that warrant using hyperbaric oxygen therapy in a medical or in a hospital setting, and that always means a hard chamber. If you're not doing a hard chamber and you're not delivering 100% oxygen, then according to the FDA and the insurance companies, you're not providing hyperbaric oxygen therapy, they equate those. They're charged thousands of dollars a session from what I've seen, so it's very different.

If you go with a head injury or some of these off-label conditions, which is only what we deal with, even if you want to pay \$1,000 a session, they wouldn't see you in a hospital because they're only allowed to see this FDA-approved condition. Like for wound care, that's a big one. We can talk about how that works and why that works and how the same factors are at play for people who might want to age well and to have those considerations addressed. Another one is radiation burns, gas embolisms, things like that. When a lot of people hear about hyperbaric oxygen, they think, "Oh, is that where you get the bends?"

[00:07:15] Jane: It used to be.

[00:07:16] Dr. JoJo: Yes. That's what's happening. You're depressurizing too quickly, you've come up too quickly. This is a good point, I think, to talk about how one of the ways this really works is there's two main factors at play when you're doing hyperbaric oxygen therapy. You're in an environment that's being pressurized, so almost like a champagne bottle or a carbonated drink. That's bottled under pressure so that when you take the top off, the bubbles come out of solution, which meant they were under pressure for the gas



to go into solution. That's what's happening when you're going under pressure, either in a hyperbaric oxygen setting or as you're going underwater.

There is more gas, in this case, oxygen is what we're concerned with, being dissolved into the liquid. That's useful therapeutically and even medically because it's the red blood cells that carry the oxygen, like when you do a pulse ox and you're seeing that your red blood cells are saturated 98%, 94% saturated with oxygen. What we're able to do is in effect go beyond 100% because we're bypassing the red blood cells' ability to carry oxygen. Let's just say it's at 100%. We're still dissolving oxygen into the blood, into the plasma of the liquid portion of the blood to be delivered to the end tissues and organs, including the brain. That is why it works for wound healing. That's why it's totally indicated for that.

[00:08:53] Jane: You're pumping so much oxygen.

[00:08:55] Dr. JoJo: Because the red blood cells-

[00:08:56] Jane: Yes.

[00:08:57] Dr. JoJo: -at these end capillaries where they've been damaged, you can't even fit a red blood cell through that opening, but the liquid will go through and carry the oxygen for healing. That's why it works for wound care.

[00:09:09] Jane: Then for brain care, it crosses the blood-brain barrier, so you're getting more oxygen into the brain.

[00:09:14] Dr. JoJo: It does. Anywhere the blood is going, it allows more oxygen to go, so by pressurizing, that's number one, and delivering more oxygen. Now if I'm breathing 90% oxygen instead of 21%, that's more oxygen for my body. That's good. You put those two together, that's typically what's at play with hyperbaric oxygen therapy. We use them separately, by the way.

[00:09:35] Jane: Tell me more.

[00:09:36] Dr. JoJo: There's some people that can't get in the chamber for whatever reason, anxiety or whatever. We do the concentrated oxygen when they might be doing other therapies in our office like a Chi Machine to get the lymphatic system moving, or while they're doing one of the functional neuro exercises to provide-- While you're doing certain things, certain areas of the brain and body are utilizing more blood and oxygen, so we can use that in tandem with that idea. There's something called EWOT, exercise with oxygen therapy, where you're actually exercising while you're breathing concentrated oxygen.



[00:10:16] Jane: What does that do? Does that make your exercise easier?

[00:10:19] Dr. JoJo: Yes, it makes it easier, and I think it builds the endurance around what you're trying to achieve by delivering more oxygen.

[00:10:25] Jane: This audience is especially concerned about the brain and about how to stay cognitively sharp. In your patients, do they need to do this every day? Do they need to do this every week? Do they do a certain number of sessions and then they're back to, "Okay, what do you see?"? How early do you have to catch in the cognitive decline process to be able to see the most benefit?

[00:10:50] Dr. JoJo: Yes. There's a few stages of Alzheimer's, and in stages one and even two, it's very helpable.

[00:10:59] Jane: That's subjective cognitive decline and mild cognitive decline. MCI--

[00:11:03] Dr. JoJo: Even moderate. Yes.

[00:11:05] Jane: Those two stages, this can help.

[00:11:06] Dr. JoJo: Yes. We're exploring some other technologies. We should probably do another podcast. We have a new medical director in our Sensorium Neuro Wellness center. We're looking at technology out of Germany that has been approved over there for five years but is not FDA-approved here. We're creating an investigational company to bring that in, and along with transcranial magnetic stem and this sound wave technology that is basically dissolving the neurofibril tangles. We're looking at bringing that in about two to four months. That's a whole other podcast. I'll get him in here and we can look at that.

[00:11:42] Jane: Oh, that's exciting. That's very exciting. Getting back to the hyperbaric oxygen, so what you are seeing is that even if someone is noticeably getting forgetful, that putting them under pressure with oxygen really helps to-- Can we even say the reverse?

[00:12:01] Dr. JoJo: Yes, I see that as possible. I wouldn't like to say that and make a false claim because it's not going to do that for everybody.

[00:12:08] Jane: Up to a point or just are they thinking better for that day?

[00:12:12] Dr. JoJo: What else are we doing? Are we giving them a medication? It makes sense to me. You eat right, you work on your sleep, you work on all these factors. If we can dial up the oxygen and the delivery of oxygen, I've seen it do amazing things because the body already knows how to work with that nutrient. See, that's how we view it. We view oxygen as a nutrient. The medical community legally consider it a drug. You have to



be able to write a prescription for 100% oxygen, but I'm happy with 90%. [chuckles] To me, it's safer.

[00:12:45] Jane: It's better than what we're getting now at 20%. Yes.

[00:12:48] Dr. JoJo: You asked about cognitive decline. Some of the factors at play when you do hyperbaric oxygen therapy that's been documented and researched is it creates more stem cells in the brain. It creates more BDNF, brain-derived neurotrophic factor. It specifically creates up to eight times more stem cell production through this process. It produces sirtuins that actually increase the telomere length.

[00:13:18] Jane: Oh, wonderful.

[00:13:19] Dr. JoJo: Those are some plays and the way some of the mechanisms at play there is one of the biggest things. You have you're delivering the pressure, you're delivering the oxygen. Over time, and we can come back to frequency and recommendations depending on what somebody's dealing with or trying to achieve-You've got the oxygen, you've got the pressure. Those are really good to deliver more oxygen to the brain, but that's not even the biggest thing. Another thing is that as you're coming back up to normal pressure, the oxygen that's in solution is coming out of solution and perfusing the area around wherever the blood is. That's a second factor.

The most powerful factor, a third one, is something that happens by what's called relative hypoxia. The brain and the nervous system, they're not actually going hypoxic or lack of oxygen, which is a trigger for the brain and the nervous system because it thinks it's going to die so it mounts everything it has to bring healing to play. Just even being relative hypoxia triggers that same sirtuin reaction to bring that to play. That is one of the main things that's happening in terms of this idea of anti-aging or aging well, as I like to say.

[00:14:39] Jane: Aging well, yes. You can get that benefit. It seems like coming out of it. It's such a short time. It's your ears pop and pop and pop and then you're completely back to the room air pressure, but that short time is just enough to induce that relative hypoxia.

[00:14:55] Dr. JoJo: It is. Yes, it is. We like to take people down. You should never descend more than one PSI per minute, or that's a good thumbnail. When I say PSI 1.3 atmospheres, under pressure is 4.25 PSI. It's about you don't want to go quicker than say four minutes to pressure and coming up as well. On that note, with mild hyperbaric oxygen at that level, even if you all of a sudden unzipped it, if that were possible, you're not in danger, you just might have a headache or something. Whereas if you decompressed in a hard chamber at-- Just imagine if you came up from 66.

[00:15:34] Jane: You'd be in trouble.



[00:15:35] Dr. JoJo: You'd be dead. You'd have nitrogen narcosis, which is what the bends is. The formula does not add up for that to happen the way we do it, nor does it add up to achieve oxygen toxicity where that's even a real concern because the formulas are such that if you're in there for an hour at this pressure breathing this concentration of oxygen, you're good. We don't even really have to consider that.

[00:15:59] Jane: When you're talking to your patients about hyperbaric oxygen, what's the response? Is this a hard sell or do they just after you've talked about some of these things, they just jump right to it?

[00:16:10] Dr. JoJo: We're really lucky that people find us, and they already know what we do. I don't have a big marketing arm of my business, or people hear about us from word of mouth or they're just looking for a safe, effective alternative to whatever they're dealing with in Google. That's probably where we get half of our-- People find us through Google and the other half is either referral from happy clients or doctors are referring a lot now. We have plastic surgeons-

[00:16:40] Jane: For the wound.

[00:16:40] Dr. JoJo: -that are referring to us, dentists, because to do a series of five before and five after surgery exponentially minimizes the recovery time and minimizes the potential adverse reactions around surgery. That's really good for the surgeon.

[00:16:59] Jane: Tell me how that would work. You go in five times, your blood, and then it's very oxygenated by the time you hit the surgical suite. Then coming out of that, it helps the wound healing, it helps everything that has undergone the trauma of surgery. Is that it?

[00:17:17] Dr. JoJo: Yes. You would think right after might be even more important because things are healing, but it turns out the front end is even more important to oxygenate the tissue, bring healing capacity to the area that then is going to undergo that trauma even though it's trauma on purpose, that's what any surgery is. Before is just as important as after. In fact, if I was going to have an appendectomy or something and I had to split it up, I'd probably do seven before and three or four or five after, or I'd do a lot more than that. We're just recommending a package of 10 because that's really doable for people around this idea of leading up to and recovering from surgery in a good way.

Whereas regarding frequency for things like cognitive decline, we have our eye on a 20 or more. Some of these are going to be like 80 plus. If I have my eye on 80 or more, that's what I'm recommending. Somebody might just purchase one to use in their home or rent one. We're working with a company now that actually can rent them to you, set them up in your house, and rent them monthly. In fact, I just recommended that twice in the last week. Once was this morning where a lady, she has cancer, and she just underwent



chemotherapy and everything they recommended. This is really good for recovering from chemotherapy, by the way.

She said, "I have this much money, how much can I do?" I said, "First of all, I would be doing this every day, and so I would recommend you either buy one or rent one to use in your home once or even twice a day. That's what I would be recommending for you. If you don't want to do that, then come in here every day." That's what I recommend for people who are really doing this for a specific reason like long-haul COVID vaccine reactions. That's really why we got this a year ago because nothing seemed to be touching those. It's been very helpful for that, people recovering and wanting to get back to come out of that brain fog and just that immune shutdown.

[00:19:24] Jane: You've seen efficacy with that?

[00:19:25] Dr. JoJo: Definitely. We just sell packages of 20 at a time. Even if people want more, it's like, "Let's just take it one step at a time and get in those first 10 as quickly as you can." That's what I say all the time. If that's over two weeks, then great. If it's over three weeks, great. If you're really going after something like that and you're saying, "I just want to do it once a week," I don't think that's enough to really build up the momentum of what's possible. I think three times a week is a minimum if you're really going after something.

[00:19:53] Jane: It's about \$100 a pop.

[00:19:56] Dr. JoJo: Yes. We charge \$120 per session. I think that's a little on the low end. I know people that charge \$175, \$150. We do a discount for a package, so it ends up usually being about \$108 is what people pay on average. Where we are really supporting the communities we're in is we don't charge extra. We have larger chambers where two people can get in it and they each have their own concentrated oxygen port. That's that same price whether one or two people are in there. If you have a partner, you can share that. We don't buddy people up. Like, "Oh, meet so and so," we don't do that.

[00:20:35] Jane: [laughs] Yes.

[00:20:36] Dr. JoJo: We work with a lot of autistic kids, so I need a parent to go in with them. That's back to another idea that we can use this as a standalone without that because some of them, they won't wear this. If they can't get in the chamber, we can still do the oxygen. If they can't wear the oxygen, they can still get in the chamber.

[00:20:55] Jane: They can bring their toys in, and they can hang out in there. It's like a playhouse.

[00:21:01] Dr. JoJo: It is.



[00:21:01] Jane: It's a nest.

[00:21:02] Dr. JoJo: Yes.

[00:21:03] Jane: It's highly cool.

[00:21:04] Dr. JoJo: They're scared the first time, but after that, they just run and dive in

it. [chuckles]

[00:21:10] Jane: I bet. You have access to this unlimited amounts of time.

[00:21:14] Dr. JoJo: I do.

[00:21:15] Jane: I know you're busy.

[00:21:16] Dr. JoJo: I am.

[00:21:17] Jane: Do you do this every day? How often are you doing it?

[00:21:21] Dr. JoJo: There was a two-week period probably about a month ago where I did it every day for two weeks.

[00:21:25] Jane: Every day. Wow.

[00:21:26] Dr. JoJo: I felt phenomenal. I would get up at 5:30 and do it. You're reminding me I really want to do that again, but there's some weeks I don't do any because I'm--

[00:21:35] Jane: You get busy.

[00:21:36] Dr. JoJo: I am. I'm very busy. That's no excuse, it's prioritizing things. I would like to say that it's like meditating, I guess. I'd like to do it three times a week.

[00:21:47] Jane: Aspire to it. We've talked about a lot of things, we haven't talked about how hyperbaric oxygen helps to fight bacteria, specifically bad bacteria. It can do that too, can't it?

[00:21:57] Dr. JoJo: Yes, anaerobic bacteria doesn't like oxygen, so [laughs] it's really good for that. Regarding gut microbiome, there are anaerobic and aerobic. That's one of the side effects, it can create cell die-off like a healing crisis, so Herxheimer reaction where-

[00:22:18] Jane: A Herxheimer reaction.



[00:22:19] Dr. JoJo: -pretty much the bad guys in the gut don't like oxygen. When you're giving that to them, it can shift that in a good way, but the die-off can be symptomatic where you just get some gastric distress or diarrhea a little bit for a few days. It's not as common as I thought it would be when I learned about this over a year ago.

[00:22:38] Jane: The gut-brain connection is so important.

[00:22:40] Dr. JoJo: Huge.

[00:22:41] Jane: What would it do to parasites because so many of us harbor these critters?

[00:22:46] Dr. JoJo: I don't know how they would respond to oxygen, but I know parasites are living in us because there's some kind of imbalance in our immune system. This is one of the best things I know to boost the immune function in the immune system, but I don't know specifically how it would affect each parasite.

[00:23:05] Jane: How Giardia would do in there.

[00:23:06] Dr. JoJo: Yes.

[00:23:08] Jane: You've seen reductions in cognitive decline. It releases growth factor stem cells. Have we covered it all?

[00:23:16] Dr. JoJo: Stem cells, BDNF, sirtuins. It works by being under pressure by breathing higher concentrated oxygen. One of the biggest effects is the relative hypoxia that prompts that healing response. You're in there about an hour and 15 minutes because we take you down over about six minutes and then you're there for an hour, and then we bring you up over about four or five minutes. Relatively few contraindications. You have to keep breathing, you have to not have a pneumothorax, which you wouldn't be walking around if you did.

The main contraindication, I need to check everybody's ears. Not every time, but just in the beginning I want to look at the tympanic membrane, make sure there's no indications of infection or redness, or bulging. If they've had trouble with their ears clearing on an airplane or going up and down a mountain, we just have to be on heightened alert that that might be a problem because the ears have to be able to equalize. If they don't, then the pressure builds and it's very uncomfortable, but we're descending very slowly and they just have to raise their hand, there's a window in it, and say, "Hey, this is not clearing." Then we slow it down.

[00:24:36] Jane: It's not a good day.



[00:24:37] Dr. JoJo: Yes, it might not be a good day. That happened to my wife a few times when she was having sinus pressure.

[00:24:44] Jane: Oh, really?

[00:24:45] Dr. JoJo: I like to do this before flying and I like to do my methylene blue before flying because as we've talked about, when you're flying up in an airplane, you're only breathing 16% oxygen. That's the main cause of jet lag.

[00:25:00] Jane: Oh, I didn't realize that. Really?

[00:25:02] Dr. JoJo: Yes.

[00:25:03] Jane: You're so tired when you get off.

[00:25:04] Dr. JoJo: They only pressurize it to about 3,000 feet and you're flying higher than that. They only pressurize it to a certain degree so that you're breathing about 16% oxygen instead of 21 for the time that you're in flight. That's why methylene blue is a game changer for that because it can pick up the slack on that and acts like oxygen.

[00:25:26] Jane: That's interesting. That's one of the contributors to jet lag. You tend to want to go to sleep on a plane. I find I get real sleepy, and that's because of the lower amount of oxygen.

[00:25:35] Dr. JoJo: Yes. I've heard before I learned about that that it could be the change over magnetic lines. It's not really the time change so much, it's the magnetic line because I've not had jet lag in the probably five times I've flown over the last six months since I started taking methylene blue.

[00:25:53] Jane: Interesting.

[00:25:54] Dr. JoJo: My sleep and my blurring is even better when I'm--

[00:25:58] Jane: Taking methylene blue.

[00:25:59] Dr. JoJo: It used to be terrible when I was away, like sleeping in a hotel.

[00:26:03] Jane: You're not familiar with the surroundings.

[00:26:06] Dr. JoJo: Yes.

[00:26:07] Jane: For those interested in-- JoJo and I have talked about methylene blue before. We did a podcast on *Cutting Edge Health* with a doctor, Dr. Francisco Gonzalez-Lima from the University of Texas, Austin. He's done research in methylene blue and how



it helps to provide more oxygen to the mitochondria of your brain. Very important because when he did autopsies in Sun City of people with and without dementia when they passed, the ones with dementia all had a deficiency of their mitochondria. He found that if you give the methylene blue, that deficiency sparks a certain enzyme that creates the right oxygen to the mitochondria of the brain. Fascinating stuff. Exciting.

[00:26:48] Dr. JoJo: That's amazing. I take it every day now because I really like to function up here.

[00:26:53] Jane: Yes, so you have a blue mouth every day?

[00:26:55] Dr. JoJo: I do.

[00:26:56] Jane: It goes away-

[00:26:56] Dr. JoJo: Not now.

[00:26:57] Jane: -by the end of the day. I did too.

[00:26:58] Dr. JoJo: [laughs] I did this morning.

[chuckling]

[00:27:00] Dr. JoJo: For sure, and I let it really stay in my mouth when I fly, so sure, I am quite a sight to see.

[00:27:06] Jane: Yes, your seatmates, "Oh my gosh. What's wrong with that guy?"

[00:27:10] Dr. JoJo: Yes.

[00:27:11] Jane: Dr. Yonce, thank you. Thank you for your time and for how you're helping people.

[00:27:15] Dr. JoJo: Oh, thank you, Jane.

[00:27:16] Jane: It's very important work.

[00:27:17] Dr. JoJo: So good to see you.

[00:27:19] Jane: Thank you so much.

[00:27:19] Dr. JoJo: Yes.

[00:27:20] Jane: Have a great weekend and I appreciate your time.



[00:27:21] Dr. JoJo: Thank you. Hope you do too.

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