Introduction to the Fasting and Longevity Summit

Welcome to the Fasting and Longevity Summit. I'm your host, Doctor David Jokers, and today I'm excited to interview doctor Heather Sanderson on using fasting to optimize brain health.

Doctor Heather Sanderson is a naturopathy doctor who has dedicated her career to supporting those suffering with dementia. She's created unique, successful solutions for patients and caregivers using clinical, residential, research and educational platforms.

And she hosts the annual Reverse Alzheimer's Summit, which has reached over 80,000 people. And she's excited to shatter common misconceptions about Alzheimer's and share what she has learned about keeping your brain sharp at any age.

You guys are in for a great treat here. We know that dementia and Alzheimer's are staggering, and the impact it's having on our society is really astonishing, and there are natural strategies you can do to help prevent it and really to age successfully and have your brain age successfully.

And we're going to go through that in detail. So without further ado, let's go into this interview. Well, doctor Heather Sanderson, always great to, speak with you.

You're doing great work in this space. And, excited to talk to you about brain health. Right. We've got an epidemic of neurodegenerative conditions. Dementia. Alzheimer's disease.

Most of the listeners have been affected by it. Whether it was a family member, close friend. They've seen the impact of this and the, you know, the the frightening thing is that the numbers are not getting better.

Why Dementia Rates Are Rising

They're getting worse. And I know you know a lot about that. So why do we see such an epidemic of neurodegenerative conditions? Yeah, it's actually really interesting.

What's happening in the, in the in first world countries. Is it the incidence. So per 100 people it's actually declining. There aren't as many people getting dementia now in the third world that number is going up.

And there's lots of reasons why this can be the Lancet published in 2020, kind of in the right, in the middle of the pandemic, when nobody was paying attention, there was a new commission report, an updated commission report that listed 13 modifiable risk factors that we can things that we can actually do something about to change our risk of dementia and reduce it.

They were things like toxic air pollution that was in there. And so you might imagine that in a third world country, there's probably more pollution than in first world countries these days.

Things like hearing loss. It's easy to get to come by hearing aids in a first world country, harder to do in a third world country, right? So we can kind of see how some of these risk factors we have more control over in a first world country.

And so the incidence is going down. Now to your point, though, you're absolutely right that more people than ever are getting dementia and more people than ever know someone with dementia have been affected by it.

And partly that's because in most part, I think it's because so much of our population is aging, right. This baby boomer generation is approaching 65, and by 2051, in four Americans, it's going to be over 65.

Now, this is frightening for several reasons. I mean, it's it's wonderful that there's this great, wonderful generation that's getting older. But what's terrifying is that there's not enough young people to take care of them, particularly if they have a very labor intensive condition like dementia or Alzheimer's.

And so finding ways that this generation can prevent it and even reverse it is really, really crucial. And the federal government agrees with me completely on that account.

They are throwing money at this like mad. They are looking for ingenious ways and and, you know, how can we use technology? How can we use AI? How can we put, it's almost like a moonshot.

Like how can we put resources behind this and find real solutions? And unfortunately, the the federal dollars and the pharma dollars that have gone into this beta amyloid plaque hypothesis and finding a single molecule cure or, or some way to make this better, that they've failed there, even these new recent drugs ad you home or aducanumab can be, that have been FDA approved and they don't create any improvement.

They just slow the rate of progression. And so this is not a very helpful position to be in for us as a society, to be approaching this day and age where so many people are going to be elderly and we don't have a pharmaceutical treatment for this that's meaningful in any way.

Yeah. Yeah, absolutely. And so obviously you do a lot with nutrition, functional medicine. And so what are some of the top just preventative lifestyle tips, nutrition strategies that people can apply to prevent or prevent dementia.

And perhaps if they've got a family member who has dementia, maybe some things that they can do to help, help, slow the progression. Yeah. So I use Doctor Peterson's approach.

Lifestyle Strategies to Prevent Cognitive Decline

So Doctor Bateson wrote the book The End of Alzheimer's in 2017. And both his group and myself, we've both published clinical trials, in smaller cohorts in 25 to 23 participants that show that when we put these things together and we stack them.

So the idea with functional medicine and with the doctor Peterson's approach is that we're not doing one thing. So, yes, nutrition is a component, but we're doing detox application.

We're we're using nutrition. We're managing stressors. We're optimizing sleep quality, not just quantity. We're optimizing exercise. And so there these are the foundational basics right.

These are the lifestyle basics that are so so crucial. And then I did an addition to that. You can do the medicine pieces right. You can get all the functional medicine testing.

And that starts to cost more money. But what people can do at home, there's three big things that I recommend that you can start today. One is an organic ketogenic diet with with some intermittent fasting.

Now, I only recommend that, you know, as people get older, sometimes we worry about weight loss. So weight loss is not the goal anymore. That actually can become an issue and a risk.

So we want to be cautious about that. And I don't recommend intermittent fasting with an organic ketogenic diet. If you are at risk of too much weight loss or frailty.

But if not, if you're looking to optimize cognitive function, if you're if you're younger and maybe you have a family history of dementia and you're looking to prevent it, what I personally do is I get into ketosis for about six weeks, 3 to 4 times a year, and the rest of the year I'm eating a whole, you know, very much a whole foods based diet.

I'm not gorging on a bunch of like, Skittles, but I'm eating mostly plants and lots of them in lots of fiber, lots of whole foods. So nothing processed.

I don't know if you've, read into the book Ultra Processed People. I've been listening to it lately, and it is just like a great read that has to be very inspired to avoid processed food at all costs.

So an organic ketogenic diet is pretty foundational. And what we see is that people not only get there's detox, that happens with this. It's anti-inflammatory.

But what we're really looking for is that shift in metabolism. We're looking for that switch that flips from burning glucose, carbohydrates, sugar, glucose.

We'll use those interchangeably, burning carbohydrates for fuel to burning fat for fuel as ketones. And that is it is a much more efficient way to metabolize fuel.

You have less oxygen reactive oxygen left. You have. I'm getting so excited here. I'm tripping over my words. You get less reactive oxygen species or the oxidative stress on the brain so it burns cleaner.

And then as we age, all of us, regardless of our diabetes status, we become less insulin sensitive in the brain, and we don't as efficiently burn carbohydrates and turn it into ATP as we did when we were younger.

And so the body, the brain, it's like this really incredible machine. It can it's like a hybrid, right? It can go back and forth between, different fuel sources, carbohydrates and fats.

And most of us, because we have access to sugar and carbohydrates 24 hours a day, seven days a week. We've never been in ketosis. Many, many people. But our hunter gatherer ancestors did it routinely.

And when one definition of health can be resilience to stress in the environment. And so that's what our our ancestors did, was they were resilient to those stressors in the environment.

When there wasn't sugar available, they burned fat. They had an alternative. And when we remind our bodies how to do this, we give it back that metabolic flexibility.

We notice that our bodies are basically this hermetic effect. Our bodies are more resilient and stronger. So and that's kind of the theme of the things that I'm going to discuss of these things that we can do.

So one is the organic ketogenic diet. Two is exercise. Now exercise, if we could put this on a pill, there is probably be just no chronic disease. If not, most of it would be gone eradicated, right?

If we could get everybody to exercise regularly. So with cognitive function, the key here is to combine exercise, physical exercise, the way we think of it with cognitive exercise we call this dual task exercise or dual.

There's a lot of literature that supports this. And we see this in Parkinson's clinics in traumatic brain injury clinics where you're combining cognitive and physical exercise to get new new neurons firing, new synapses created.

We're basically trying to create, new connections in the brain. And this happens much more efficiently when we do these two things together. Classic example is ballroom dancing, right?

You're moving. But you also have to be paying attention to the music, to your your partner, to your steps. And you have to remember things, in addition to getting that physical exercise.

But even classes like a Zumba class, a yoga class, a Pilates class where you're cued by the instructor, this can also be a dual task exercise. I had a patient said who with her granddaughter, they would go for walks and at first, because this is dynamic, it changes over time.

You should get better at these things. So they would go for walks and at first they were kind of slow walks and she would test her grandma on birthdays, important birthdays in their family.

Well as they kept walking they would do more hills and she would ask her harder questions. And they started talking about nutrition and she would test her about things that were more, more challenging as she got better and better.

And so that's a fun, creative way to do it. There's lots of ways to do these dual task exercises, and even just looking it up on YouTube, there's a bunch of, of, suggestions.

Exercise, Dual-Task Training, and Walking for Brain Health

So that's the second way. We have organic ketogenic diet, dual task exercises, cognitive and physical engagement together. And then third, I could go into so many directions because there's so many great things with sleep and stress management and detox, but meditation or prayer.

So a mindfulness based practice is another really, really exceptional way to help with cognitive function. And in particular the cure time. Kriya meditation has a huge amount.

There's meta analyzes showing how this is, positive for anyone struggling with cognitive decline, but also for people with mild cognitive impairment. And it's as good for people with mild cognitive impairment as it is for people with full blown dementia and for their care partners who don't have any cognitive impairment.

And what you see is improvements in mood in activities of daily living. This is like what helps us maintain our dignity, right? Like, can we cook for ourselves? Can we go to the bathroom on our own?

Can we get dressed? But it also helps with immune function and with inflammation and with glucose regulation. So it's helping with a lot of the causal level pieces that can contribute to the production of beta amyloid plaques.

And those structural changes in the brain. Yeah, really good stuff right there. And I know you had mentioned, frailty and people losing weight as their as are getting older.

Exercise is one of the best ways to maintain it particularly doing some resistance training. Walking is the easiest one in fact you know is research out on walking reducing just regular walkers.

People who take take regular walks, reducing overall morbidity and mortality. And so big factor there. And walking is low hanging fruit from the perspective.

That's very simple to do. But if there was one I would take resistance training because it's going to prevent that sarcopenia. It's going to increase that muscle mass.

More of an impact on that insulin, sensitivity factor. So if you can do both of those that's fantastic. And I love what you talked about there. The dual I think you call it dual action.

Right. Your task. Yeah. Dual task. Yeah. So you're you're having to think through things right. So really forcing memory while you're getting that physical activity in.

Yeah. And that blood flow to the brain. Yeah. With walking, you know, there was a there's a article out of the UK last December and it was showing that about 10,000 steps a day, I think it was like 9558, you know, some exact number, but about 10,000 steps a day reduces your risk of developing dementia by half by 50%.

So massive reduction. If we're looking for a miracle, right, which is, the reversal of dementia, we have to do more than walk right on our experience.

But walking is enough to reduce your risk significantly. So if you're in your 30s and 40s and maybe you have a family history of dementia and your, and you're concerned about, you know, that being your fate later on, get walking.

Yeah. That's so powerful. And, you know, I had heard that, like Einstein, they looked at his brain at Stanford, and they thought he had more neurons than the average person at the same brain volume.

And he didn't, but he had, like, twice as many synapses, little gaps between the neurons. And one of the things that Einstein used to do was when he was thinking he would walk, he would pace, and he would just walk back and forth and he'd be thinking right and just contemplating right.

And sometimes he would close his eyes. That's what they said. Sometimes he would close his eyes. He would just be walking back and forth in a sense, like he was really challenging that cerebellum, which, you know, like if somebody gets pulled over for a DUI, they've got to do like a heel to toe walk, right?

And so he was doing something similar and it was really impacting the synaptic agenesis right there. Just the the overall gaps between the neurons and the flexibility of the brain.

And this is just a practice he was doing. And there's a lot of other people that have done this right that where they just, you know, it's almost like, an innate thing.

Sleep Quality, Sleep Apnea, and Cognitive Recovery

Sometimes when we're really thinking through things, just pacing back and forth, just moving while we're thinking really helps us come up with more creative answers.

Yeah. No doubt. And if you can also do that in nature, if you can get outside for a walk, that option will make it even better. Love it. Yeah. Now let's talk about sleep.

Sleep is critical, and I think everybody's felt the experience on their brain when they don't sleep well. And most people are trying to get good sleep.

But a lot of people in our society really struggle with it. Let's talk about the impact on the brain and things people can do to help improve their sleep.

Yeah. So, you know, just to drive home the point of how important this is. So at night, the lymphatic system is rinsing our brain, and that when we're getting that good, high quality sleep.

And so it's really important not just to have the amount of time in bed about eight hours, you know, 7 to 9 hours, give or take, depending on your like, chronotype.

But it's that quality of sleep. So, you know, of course as a sleep hygiene things avoiding blue light before we go to bed, avoiding stress like don't watch the news right before bed and learn about war.

Like watch something happy and relaxing that's going to put you in a rest digestion, heal state. Not eating three hours before bed can be helpful so that you're not trying to digest at the same time as you're trying to rest, right?

You want you want the body to be able to finish digesting and then get into sleep mode and then, light. So yes, no blue light, but you can have some orange or warm lights in the room.

Make sure that screens are off the TV, the computer, the phones, all of those you're not being exposed to the very least, if you have to wear in the blue light blocking glasses and then sound, you know, some people just there's ambient sound.

If you live in a city, there may be sound. So can you use either earplugs or a white noise machine so that you have you're not being awoken by those sounds.

And then, I recommend an organic mattress, organic bedding, just so you're not being exposed to toxins, making sure your room is a nontoxic environment.

And then if you have any, even the slightest tinge of a hint that you might have sleep apnea, you snore. Somebody tells you, your partner tells you, you snore.

You breathe through your mouth. You wake up feeling exhausted in the morning. Then I highly recommend a sleep study. And since Covid, these have actually gotten a lot easier because you can do their at home options.

So we've been using the watch. Pat. They recently sold. So if the name is different I'm sorry, but and it's basically this technology where you can do a sleep study at home and this the nuance here is that it can rule in sleep apnea.

It's not the hospital grade, you know, really high level sleep study, but it's a way to a little more efficient and less expensive way to get a sleep study at home, where you can then get a CPAp prescribed by a sleep medicine doctor and I recommend, even if somebody tells you you have mild sleep apnea.

This is essentially like mild brain damage every night. If you're not getting enough oxygen to your brain at night, especially over time, this will make you're not going to get that lymphatic rinsing even one night of sleep deprivation.

For people in the 2030s and 40s, there's a measurable increase in the amyloid plaques in the morning. And so that protein, over time, those misfolded proteins, you can imagine if that happens, if you're getting if you're sleep deprived in your 20s, 30s, 40s, over decades, that's going to accumulate and turn into structural changes in the brain that are going to inhibit your cognition.

And so we have to prioritize sleep no matter where we are in our lives. It's so crucially important. And then we need to get good quality sleep. So treating sleep apnea and treating it aggress evali, if you have any hint of cognitive decline or so I used to wait and have people tell me, oh, I snore.

My partner says, I saw I wake up tired and I would ask about symptoms. Now, if somebody has cognitive decline, I'm getting a sleep study for anyone because I've had too many patients where you know, their sweet little babies who are thin and they nobody says they snore.

And sure enough, they have sleep apnea. Yeah. Because some of the major risk factors for sleep apnea are typically people are overweight or at least a stereotype.

They're overweight. Insulin resistance a lot of visceral fat. Right. And then they have a higher propensity. But like you said, there can be people that don't fit that demographic that are still struggling with it.

Yes, 100%. So I had two patients in the past year, who were thin women in their 70s, 80s, and both of them had Moca scores of eight. So a perfect score is 30.

This is what the Montreal Cognitive assessment. This is a way we put a number on how bad someone's cognitive decline is, how bad their dementia Alzheimer's is.

And these women had an eight. This is pretty severe. This is like you cannot live independently. You are dependent on everyone else. I if you can formulate sentences, you're asking the same questions over and over again. This is Alzheimer's.

A Moca score of eight. Both of them got on their CPAp and one of them had her Moca score go to 16. It doubled in about six months and the other one went up to 15 in 10 months.

That that is that is independence, that is dignity, that is it. Not needing a caregiver 24 hours a day, seven days a week. This is a massive difference in quality of life.

And both of them, although they did other things, they got on supplements and we did some detox. We got them on a better diet. Neither of them went into ketosis, but both of them got on their CPAp.

And I think that the CPAp treating the sleep apnea was what made the biggest difference for them, and that that is a huge reversal in cognitive decline.

Yeah. That's amazing. And and like I said, like we were talking about I mean, they didn't fit the normal demographic because usually it's males but the sleep apnea males that are overweight.

So, they wouldn't have naturally thought that. So thank God you were able to, with what you've seen, you were able to say, hey, we need to really check this, found it and caught it.

And so, you know, just it makes a big difference.

Toxins, Detox, and Reducing Environmental Exposure

Got to get that really good quality sleep. So huge. Difference. Yeah, absolutely. What else? What what else are you seeing? You know, we talked to obviously about exercise.

You talked about nutrition, sleep. What else are you seeing that are really big factors when it comes to neurodegenerative conditions. Yeah. So the way Doctor Bateson describes it, it's like we often want in the conventional model we think okay, a diagnosis.

And now everybody needs the same thing. They need the same medication. Because we arrived at the diagnosis and we I'm ready to just throw that paradigm out. Right.

So the way that people arrive at memory loss is multifactorial. And these, these, these different ways that you can arrive there, they're also not mutually exclusive.

So I think it's like a house, right? We've all had a houseplant and had to die. And there could be different reasons. Like did it get the right amount of sun?

Was it too much sun, too little sun? Was it too much water, too little water where there didn't have the right nutrients? Or was it totally did not have enough soil, right.

There's all these different things that can happen that can make the plant die. The brain is very similar. So what can happen? We can have glycol toxicity.

We can have too much sugar and have it become it. Basically we can say type three Alzheimer's is this dementia where there's so much sugar arriving in the brain, it's not going in the cells.

It's not efficiently creating a fuel, and it's actually creating glycol toxicity where you're caramelizing the cells, you're actually creating damage and inflammation in the brain that can lead to Alzheimer's.

You can have traumatic brain injuries, lead to Alzheimer's and inflammation in the brain. And that's you know, we want to treat these. So there's a list right. You can have glycol toxicity.

You can have toxic toxins things like the air pollution. You can have sleep deprivation contribute. You can have the list is long. And so what I recommend is that people who are interested in this, they see a Bredesen train provider who can go through that list systematically and say, okay, are these things affecting you?

And if so, how do we address them? Vascular dementia. You know, whether you have clogged arteries or you're having a transient ischemic event that can lead to dementia over time as well.

So we talked about diet, exercise, sleep stress management a little bit. But detox does come up regularly. And I think it's one of these things that we can definitely do from a prevention standpoint, really simply and easily.

So in the for the most part, we can always go deep into detox and do all of the testing and get really specific with

the binders. But just for for anyone listening today, like what can you do today?

Open the doors and windows in your house for an hour a day. Now if there's a fire or something, right? If the outdoor air quality is worse than indoor air quality, don't do that.

But for the most part, indoor air quality is tougher than outdoor air quality. And this is because flooring and furniture and textiles and paints, they all are gas and they're contained in the house.

But if we can open the doors and windows, we can get that fresh air in and reduce the toxic burden in the home. Now, Walter Kenyon, a teacher of mine, he would say the solution to pollution is dilution, right?

So we want to get that polluted, relatively polluted indoor air quality, diluted by the outdoor air. So weather permitting, open your doors and windows for an hour a day.

It's just a habit to get into. And then the other habit to to do that's totally free is take your shoes off at the door. So there's all those petrochemicals in that on the sidewalks and in the parking lots that we walk through, and the glyphosate, the roundup that gets sprayed and on the sidewalk to keep the plants from growing in between the cracks.

Take your shoes off and don't track that stuff into the house. Because what happens, undoubtedly is that we're barefoot. Sometimes I'm wearing shoes other times, and then it gets on our feet and we're absorbing it, and it doesn't rain inside.

But hopefully we're cleaning and vacuuming and mopping and stuff. But it doesn't rain inside, so outside that stuff washes away and inside it accumulates.

And so we want to make sure that we're not absorbing it and we're not tracking it around, and we're not putting it in our beds and then absorbing even more of it.

And so if you're in Canada or somewhere really cold, have indoor shoes and outdoor shoes and keep them separate, wear the outdoor shoes outside and the indoor shoes inside.

And those two things alone will reduce your toxic exposure in the home significantly. There's so much more we could go into in terms of toxins, but I'm curious if anything's coming up on your end.

Well, I think that's some really great low hanging fruit that people can focus in on. Obviously, getting an air purifier I think can make a real difference.

Water filtration is big. A lot of people are drinking water with chlorine, fluoride, disinfectant byproducts, heavy metals, pharmaceuticals. Now, you know, they're finding that people are putting in the toilet bowl and flushing down the toilet.

So statin drugs, things like that, that people are antibiotics that people are consuming when they're drinking typical tap water. So get a good water filtration system, at least a good carbon filter.

You got, you got what do you have right there? I am drinking Mountain Valley. So mountain Valley is the one. So spring water. My preference is spring water.

And and we can have a long conversation about water. I'm in San Diego, which is it's like some of the worst water in the country. We are at the end of the river and there are agrochemicals, all the agricultural stuff, all the military bases around us.

There's a huge amount of contaminants. And then in warmer climates they use chloramine instead of chlorine and chloramine. The reason they use it is because it doesn't evaporate, so it's harder to get rid of, and you can't get rid of it through reverse osmosis.

You can't get rid of the the perchlorate that they use on the military bases. It doesn't come out with aro. And so it's quite a chore for us. We put a lot of effort into figuring out how to get good, clean water in San Diego.

And how about distilled water? Does it? So then you, Well, if you distill it, there's nothing but water in it, but then you don't have any in the minerals and a lot of distilled water. Salt.

You add back salt. Yeah. Yeah. That's a that's really important with both Ro and distilled water, you have to add back salt. That's like a classic medical. So you probably had it.

The medical school exam question is like this guy is drinking completely distilled water and his heart. Basically, it'll put your muscles at risk and put in your heart.

So, adding back minerals is super crucial, especially with osteoporosis. You've got to have those minerals. But our Ro water here in San Diego does not get rid of everything.

Interesting. Not even close. Yeah. And I saw also that you're drinking out of a glass cup, which I think is really important. Obviously, some people, you know, when we're traveling, flying on a plane, you know, we got to drink what we can.

But I try to always control, you know, obviously at home I have a water filtration system. Always your kind of glass or mugs if I'm having, like, a warm beverage.

Stainless steel, you know, is is okay. It's it's not quite as good as glass, but that that will work to try to minimize your exposure to plastic and the phthalates and the different forever chemicals that are in there more we can minimize our exposure there.

The better off we are.

Clinical Results and Where to Learn More

Agreed. Yeah. Glass, plastic or glass, stainless or ceramic is what we recommend as well. Yeah. Yeah. So so all of those things are things that we can really do that will impact our overall toxic load.

And the, the, the lower our toxic load, the less inflammation we're gonna have in our system, the better we're going to be able to adapt to the stressors in our environment and better our brain health is going to be.

Yeah. The way Doctor Peterson describes that. I love this analogy because it just drives it home so well. If you think of your brain as a country like my brain is stuck on, if you are stuck and and my brain is not right, if you are an attacker, defend mode, right.

If you are fighting off infections, if you are defending against toxins, you don't have the capacity to build new neurons and synapses. The way I am saying that, right?

If you're at war, if you're a country, at war, if you're fighting off an attacker you do not have, you should not be building roads and schools because they might get bombed.

You don't have the resources to maintain them. So if we're attacking and defending against toxins, this requires extra fuel, extra energy, right? We're having to put resources into that.

We don't have the resource to create new neurons and new synapses. And so we want to that's that's why I almost like finding toxins in my patients because I'm like, okay, great.

We have a project, we can get it done, and then we're done. We can check that box and move on. And so, yes, you know, if you're younger, if you're in prevention mode, just prevent the exposure.

And that's 75% of environmental medicine is stopping the exposures. Drink the good water. Stop. You know, eating conventional food that's sprayed with roundup and glyphosate eat and drink out of the the right things because the vast majority of it comes to our mouths.

There can be other exposures, like a moldy building. Whether it works at school or at home. But if we can reduce the exposure, that's a huge component of it.

And then we have resource allocation. Now we can now we have extra that we can spend building the new not just having to to defend an attack, but we can actually heal and rebuild.

Yeah, that's a great analogy. And, you know, it's really encouraging is that you're actually you're seeing results. You're seeing people that are coming in with cognitive decline that are getting better in the medical world.

Their whole goal is slow, the progression. Hey, if we can just kind of keep it where it's at, slow it from getting worse, you know, just minimize it getting worse, then that's a success in the medical world.

But you're actually seeing people progressing and getting get better. You know, like you were mentioning the Moca scores, how consistently are you seeing people getting better as they go through your program?

Great question. And I had so many patients asking me this question a handful of years ago, and I didn't know the answer. So, I was in a super fortunate position where we were, we had a grant to do a clinical trial.

And so we started that in 2020, and we finished collecting data in 2022. And we just published the results in, August of 2023, in the Journal of Alzheimer's Disease.

What we did was we took a cohort of participants with Moca scores between 12 and 23. So this is measurable cognitive impairment. So again, a perfect score on a Moca is a 30 and normal is 26 and above.

So these participants had Moca scores of 12 to 23 mild to moderate cognitive impairment. That's measurable. And we also we also used the Cambridge Brain sciences as another, research validated tool to to measure the cognitive impairment.

And we so we had 23 participants do an intensive six month intervention and 17 of them improved. So this is about 74% of our participants had an improvement after six months of intervention.

So not everyone but the majority three quarters. Yeah. So that's that's amazing. Yeah really great stuff. And I'll compare that if you if we have another minute to Doctor Bettis and his group, with Cat tubes leading that, she was the lead author on the paper that was published also in the Journal of Alzheimer's Disease in July of 2022, if you want to look it up.

They had 25 participants complete and sick. Excuse me, they had 25% to complete a nine month intervention. So three months longer in terms of intervention than us and their participants had Moca scores down to 19.

So everybody had some degree of cognitive impairment, but it wasn't as severe as what we were measuring. And they had 84% of their participants get better.

So less severe disease, longer intervention. But 84% of participants, like the majority of participants with Moca scores 12 and above, get better. Yeah, wonderful and so encouraging.

And so you're doing great work. Where can people find out more about you and the work that you're doing? Yeah, doctor Heather sanderson.com is the best way to find me.

We've got a newsletter there that you're welcome to sign up for. We've got, great tips about diet, about community. We've got communication guides. We've got all kinds of guides that can help you put this into practice.

And I'll have a book out with Harpercollins in June of 2024. So be on the lookout for that if you need additional support. Great. I'm excited to see your book and, and see all the all the great work that you're putting into that.

So thanks again, Doctor Sanderson. David, it's such a pleasure to be here with you. I cannot thank you enough for having me. Awesome. All right. Well, we'll see you soon.

And listeners out there, go check her out. Doctor Heather Sanderson, dot com. She's doing wonderful work. So go, supporter. All right. Be blessed.