Beating the Odds: Dr. Larry Carr's Recovery from Near-Suicide and Brain Decline Transcript

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Introduction to Dr. Carr and Brain Health Research

Every football player, every athlete, and every person in collision type activities needs to have this in their locker. Welcome back to the Think Well, Age Well podcast.

I'm your host, Dr. Heather Sandison, and I am delighted to have the honor today of speaking with Dr Larry Carr. He's a respected physiologist, educator and researcher whose work is helping to transform how we approach brain health, aging and recovery from brain injury in particular.

Dr. Carr currently serves as an adjunct professor at the Department of Neurology at The University of Utah, where he brings decades of experience in biomedical research to some of today's most pressing challenges in brain health.

He's focused particularly on traumatic brain injury and its long-term consequences, especially among athletes, inspired by his personal experience as a football player.

One of his most impactful collaborations to date has been with Brigham Young University's football team and athletic department, where he's been partnering on research to better understand the effects and benefits of interventions when it comes to repeated head trauma and how we can relate this to later in life decline and neurodegeneration.

Through his work, Dr. Carr is helping to bridge the gap between science and real world solutions, advocating for prevention, early detection and compassionate care, plus real outcomes.

Today, we have an exciting conversation to share with you about what he's learned from working with athletes, what's he learned form his own personal experience, and what gives him hope for the future of Alzheimer's, CTE and dementia care.

His unique perspective is one that can't be missed. Please join us. Welcome Dr. Carr. Thank you. Pleased to be here. You've had a long and impactful career in this area, but you also have personal experience.

Would you start with just kind of sharing with us your personal experiences of being an athlete and experiencing head trauma of your own? I started playing tackle football when I was 10 years old.

I played for the next 15 years through middle school, through high school college, and a couple of years professionally in the CFL. The only one that did not play in the NFL, I played in a CFL.

So I was very productive, thousands and thousands of head hits that took a toll. I mean, love the game, and love football. It gave me a lot of identity, a lotta success, but I paid a big price.

About 10 years ago, was diagnosed with severe brain damage by a neurologist. most probable cause was football and the head injuries from that probable CTE.

But that was preceded by years and years of a decline in health, both emotional and cognitive.

Personal History With Football and Head Trauma

My wife, bless her soul, paid a heavy price. Obviously, I never was violent with her, but I had a lot of rage in me. I was jealous, inconsistent, paranoid.

There were a really, really dark, dark times back then. And that followed me until about 2018 where my wife and how we got through those next few years is difficult to say, but we did.

But we found ourselves in Boston for a short period of time, actually about a year and a half we were there. Finding ourselves in Boston, I had done previously, some research on CTE because of my diagnosis and realized that Anne McKee was at Boston University and was one of the major voices in CTA and in the diagnosis of and defining its characteristics and such.

We talk here a lot about dementia generally, but also about Alzheimer's. So can you describe the characteristics of CTE, what it stands for, how it fits under the dementia umbrella?

CTe is chronic traumatic encephalopathy. It is a relatively newly identified disease. Most people have seen the movie Concussion with Dr. Amalu who discovered it.

It's related to earlier the disease that boxers experienced for many, many years. So they knew that it existed, but it's a relatively new, identified, separate form of dementia.

It is a neurodegenerative disease. There's not Alzheimer's. others, but Alzheimer's and a lot of the neurodegenerative diseases follow very similar patterns.

They have similar mechanisms and such. So CTE is an ongoing disease. There is no cure for it. there's no absolute diagnosis for until after death. But a lot of people have heard of it because of the suicides and major football players especially.

And that's what I probably have and will always have. So, cephalopathy refers to swelling in the brain. So there's some swelling of the brains that leads to changes in cognition, but there is also this particular characteristic of CTE that is behavioral change that you alluded to, that were experiencing where there was more aggression, more rage, and sometimes violence, sometimes suicidality.

These are things that maybe people have heard some of these stories. And also, we know that multiple brain injuries can also put us, even one brain injury, can put up at higher risk for developing many forms of dementia, including Alzheimer's.

So it doesn't just mean that playing football leads to CTE, but there are multiple types of neurodegenerative courses that the brain can take when it's had these types injuries.

Would you agree with that? I agree with that. As I said, I'm not a neuroscientist. I can't give you a specifically full definition and the specific differences between the diseases, but they are neurodegenerative.

That means they're degenerative, they continue on. And as of right now, there's no cure, although I've found some things that have really changed the course of my life.

Amazing. Okay, I want to hear about that right away. What changed the course of the disease for you? And you know, even just my experience of chatting with you here today, you're very cognitively with it, of course, and you are still very engaged in research and in your work.

So I'm sure a lot of people want know what is your secret, Dr. Carr? I found it about seven years ago, like I say, when we were in Boston. My wife and I were there, Pacific assignment, we were living in a thousand square foot apartment, one car 24 seven.

My life actually was her her idea to go here to maybe. helping my progression or my healing, so to speak. But it wasn't working. It was going downhill really fast.

And one evening, my wife came to me in tears saying, it's not supposed to be like this. We've been married for 53 years right now. At that time it was like 47 or 48 years.

and it just broke my heart. I mean, I just, It's a disease that you know what you're doing. There's a separation between your mind and your gut, the best way I can describe it.

You know that you're making someone unhappy. I could even see fear in her eyes at times. terrifying for me also. So at that point in time, we had visited with Dr.

McKee earlier, several weeks earlier. And after spending time with this, she said, you probably have this disease, but unfortunately, there's nothing that we can offer you.

We visit with family members, We study the brains, But there is really nothing we could do for you now. just go and live your life. And we left there pretty depressed, you know?

If I could live my life, I wouldn't have been visiting with her, right? After that time, after that interaction with my wife, i sat down and I emailed Dr.

McKee again and i begged her in an email, is there anything, anything at all you could give me? Because I just can't go on like this. She responded and referred me to a 12th floor, small crowded office on the VA in Boston.

What CTE Is and How It Differs From Other Dementias

Dr. Nazer was doing some research with using near infrared light, and she was using it with Gulf War vets who came back with suffering from Gulf war illness and some brain injuries.

And she said that there was some pretty good success they were having. So I visited with her, I understood the physiology as she went through the mechanisms that potentially were involved.

I had no other choices, so I said, sure, let's do this. And so I started a six-week program of going to the hospital three days a week, having these big giant infrared lights put on my head.

They were hot, they were powerful. But within about three weeks, my wife said she noticed some changes happening. I wasn't quite as Angry I wasn't so easily upset things like that.

I didn't believe it I thought I was just imagining it it was a placebo or whatever But after six weeks I went back in for and we did the full testing ten hours of neurocognitive testing scan data and such and I went back to and visited, went over our results and they were so excited.

They were jumping up and down basically. I improved on every single test. It was my PTSD was off the charts to start with. That was down close to nil.

Depression was close nill. My cognitive testing, my memory, and my executive function, all these tests, were really, really great. My scan data was good.

It showed changes in functional connectivity that correlated with the changes and my cognitive neurocognitive testing. Well, the next phase of the test was to go off it for six weeks and we were kind of scared because we got me coming back to where I used to be and now I have to off of it.

So I went off it, and after six weeks, my wife noticed that I was going right back where I started from. She was scared to death, but we went back in, got tested, And sure enough, My tests were right to point zero.

Sometimes not quite back to that point. A couple of tests where worse than they were before, But it showed a very significant pattern. Where they increased, they improved, They went right right down.

And so at this time, I started using an at-home device, which was the V-Lite early headset. The changes weren't quite as quick, but they did start to come back.

And we went back in and got tested right before we left Boston. Sure enough, the results were right back up. I wish I had the graphs to show you, they were significant.

And it made a difference in my life at that point. At that time, I loved the sport. But I was really conflicted because not only did I love the sports, but it was a sport that almost brought me, caused me to not be here.

I mean, there's a lot of people that didn't make it. Why I, why I able to make, it why was able survive that? I don't know, certainly could have lost my marriage and lost So I was, Maya was committed to saving football.

You know, I mean, my wife looked at me and laughed at. But, you know. For a hundred years, football has known about head injury. I. It was boxing, it was concussions, whatever.

For a hundred years they've known about this and in the course of those hundred, what have they come up with? Nothing. They have no changes in their game, they try to change the rules, which are ineffective.

a $5 pad on the outside of a thousand dollar helmet, think that that's going to do anything at all, which I don't believe it does.

Near-Infrared Light Therapy Changes the Course

Studies have shown that it doesn't, but you see all the teams wearing these caps on top of their helmets. And it has not changed the fact that the brain gets rattled in the head when you change acceleration or momentum.

So anyways, football needed something, and it still needs something. They're slow to respond. So I visited with the athletic director at BYU. His response was, sounds too good to be true.

I said, you're right, it does sound that way, but here's my data, here is the thing. And I've got 4,000 plus studies documented the biological changes that this causes.

You know, this is not just me by myself. So he listened to me, but I knew at that point because I talked to other people and they'd pat me on the back and say, well, I'm glad you found this.

I am glad it worked for you. But you know everybody has something. Everybody has a chiropractor or this supplement or that supplement that they quote, swear by.

so I know that I needed to validate this And so I got introduced to Dr. Elizabeth Wilde, who's a department chair at the TBI and Concussion Center at University of Utah.

She's been doing this for 25 years. she's one of the top neuroscientists in the world, hundreds of publications. So she just transferred jobs from Baylor to the University Utah and she agreed to meet with me.

And, so, I talked to her and I've since found out that she was very interested in my results. I showed it to But she had never heard of it. And she actually thought it was kind of crazy.

But, she's a great person and she was willing to research it and look into it, and that started our journey. That was about five years ago. Since then, we've completed three research projects.

One with first responders, one with ex-football players, or actually ex athletes who were involved in many different collegiate sports. and one on the 2021 BYU football team that actually had a control group in it.

And there's been some, many publications have come out of it, but we feel like we've found a truly a sea change in the way football needs to address brain injury.

A real paradigm shift in this, and it's kind of hard to get people to listen to us. I'd love for you to talk us through the research and let's take them one at a time.

Would you start with the control trial with The University of Utah football players that you did in the 2021 season? Take us though how you designed the study and then what the outcomes were.

Well, it's really a simple design. We had a control group of 15 and an active group with 15. They were volunteers, the head coach. To get a headcoach to agree to let you study their players is really significant.

They don't want to do that. they don' like to allow outsiders into it. Luckily, I wasn't an outsider. I had played there. And so I think that opened the door.

We had assured him that there would be no negative effects to this because of the research that had done up to that point. with the benefits of this. There'd been no negative side effects using this device, so he let us go at it.

And we tested them before the season and right after the seasons. We looked at several emotional, cognitive, and performance measures, as well as did some very detailed scan data on them.

And the results were shock. What was the intervention? How often did they use the… Oh, I'm sorry. The intervention was to wear a V-Lite headset three days a week for 20 minutes.

They just did it in the training room, the trainer kind of oversaw it. Compliance was very good. The control group wore a headset that started but then turned off without their knowledge.

The treated group wear a head set that treated them the entire 20 minutes. That was it. They just had to wear that headset three days a week. Probably, I would guess it would probably end up being closer to two and a half days week, but that was the protocol.

And through the entire season? The entire football season. During the whole season, yeah. We did it after their last game, we tested them again. The results are unbelievable.

And I say that because nobody would believe it if we didn't actually show them the scan data and the clinical data. What we found was the clinical data, 10 different performance measures, cognitive measures emotional measures strength measures.

The treated group improved over the control group in 10 out of the 10 measures In many of them, they actually improve going from pre to post, which if you know much about the sport of football, the goal of a strength and conditioning program is to minimize the loss.

You're going to lose strength, you're gonna lose focus, whatever it is. But you try to minimise that so that they're still performing at a high level at the end of the season.

We found on several of these measures, they were actually better improved over the course of the season from the pre-testing. And that's, that the treated group, the untreated group.

They did worse in every measure from start to the finish. Wow. Well, I mean that, laws there are significant in that that just doesn't happen to that level.

But still, people will say maybe it's biased, maybe they were incentivized or what have you. The bottom line is the players that wore the headset were better players at the end of the season.

They were people, they better students, and just about everything. Now the scan data, that's another thing altogether. So we looked at the scanned data.

I'm not a radiologist, I am not an expert in this, but I can tell you that at end of the season, the untreated group, their brains were inundated with inflammation.

The inflammation, and this is DTI scanning, it's a relatively new technique. But you could see it's color coded and

you can see that the inflammation was identified throughout the entire brain.

The cerebellum, the cerebrum all throughout their brain, there was nothing but an inflammation in that. There was also significant damage to the axons in the white matter.

The gray matter, the functional connectivity was kind of messed up in terms of, it was, It was like going down the road and running into a detour and having to turn and go to another detours and going there.

Whereas now the treated group, that was a whole different story. The treated had no new inflammation over the course of the whole season. In fact, they had a net loss of inflammation from prior seasons.

Nothing has ever shown decreased inflammation over the course of a football season. They had no damage to the axons, no repair mechanisms that had kicked in.

It showed nothing there. So as far as connectivity, it was more like a normal brain and normal connectivity where there wasn't. the delays in processing and such like that.

So I mean, we've got the data, We've the proof, the scan data. I presented this to one strength scientist at a professional team, and he flat out said, I don't believe it.

You know, that's the case.

BYU Football Study and Season-Long Results

And I tried to tell him, do you really believe that these researchers would put out data risk their 25 years of credibility, risked their jobs, risks everything that is sacred to them, that doing good research in order to impress you.

I mean, it just doesn't happen that way. The data is the data. And they went over it two, three, four times over the course of a full year, a year and a half, just looking at the date, making sure that it was accurate, And the bottom line is we've got just from wearing this headset three days a week, a football player that's got a healthier brain looking at the measures that we measure at end of the season than they did at beginning of season.

Now what the NFL, what NCA is doing is they're hoping to minimize the damage that occurs. Because all the CTE research shows that the more years you play, it's cumulative.

The higher the risk is of getting the disease and the worse of it. So it's an accumulated problem. And we saw that in the untreated group where their inflammation, there was still residual inflammation before the season and it was inundated after the seasons.

The treated group, their information was non-existent. One question on everybody's mind is how did they play? How is their season? Well, That's a really good question.

If you look at the head coach at BYU, he's been there 10 years. And if you looked at all of the years, his win-loss record, taking out the two years that they used the light, because they also used a light last year.

Yeah, I was going to say I hope that the Head Coach decided to use that going forward. His win loss record was, as I think, about 58%, which is okay. It's not great.

It's not going to get you a long-term contract, I don't think. So, but if you just take those two years that they use the light, their win-loss record is about 89%. I mean, the year we researched them, they were I believe 10 and three.

Last year they 11 and two, and they we're just one play away from being in the national championship playoffs. Now this is a team that had no draft choices.

They didn't have any first-team All-Americans. They had great players, but not one of them was worthy of a draft pick. And so you've got a team that is one the top teams in the country with no draft picks, 11-2, one play away from the national championship playoffs.

I can't say that that's due to wearing the light. But I could say it certainly didn' hurt their performance. And did you notice, or did the researchers pick out any athletes that had concussions?

I mean, we assume everybody's getting their head rattled if they're playing football for a season, but was there anybody that has a particular event, loss of consciousness, a particularly bad head injury, who was in the treatment group where the results were maybe different from what would be expected?

I don't know exactly that, except that they did do a measure, a sideline measurement, in terms of concussion symptoms, and the symptom levels of the treated group were much lower, significantly lower than the untreated group.

So, I mean, that's a good point. Now, personally, i don' love looking at concussions, because I think it's misnomer, so to speak. For the NFL use of concussions because they say well last year we had this many concussion this year, we have so many connections.

Concussion is just a point along that. Spectrum of brain injury where we see. Symptoms. Okay. What football player in the right mind, unless they were knocked out on the field is going to come off the and say, I think I have a concussion.

There's not anybody I played for a lot of years and there was a of times where I was knocked briefly. I would be stunned. Would have temporary amnesia or I wouldn't be able to call the signals.

And not once was I diagnosed with a concussion, because I never wanted to lose my position, I wanted never to be taken out of the game. And that is the biasness in using concussions as a measure.

What coach really wants to say, hey, you look like you've got a concussion, come over here, let's take care of it. Oh, by the way, he might be out for three weeks if we find something there.

It's just not going to happen. If that was their main goal, there would be accelerometers in the helmets. There would force plates. concussion worthy hits.

And they don't have that. Players aren't going to admit that they have concussions. The diagnosis is very sketchy at best. So I don't, I, don' believe whenever they look at statistics with this many concussions or that many.

I just, just kind of put it to the side and you can ask any football player. They, they don''t admit to having concussion. they didn't admit wanting to come out of the game.

It's, it's across the board. As talking to one coach and telling him about this research and he said, well, yeah, but our concussions are down 25%. And I go, well, okay.

The trouble is, concussions have no relationship to CTE. So even though you think you're doing a good thing, which I give you credit for, it's not doing anything to lower the risk of CT.

Is there a clear way to detect when the cognitive issues are related to these repeated head traumas that maybe might not be classified as a concussion?

Just testing, just cognitive testing by experts and such. They have different tests that they can give the players that have been developed. I don't know how accurate they are.

And we're looking at kind of the long-term health benefits. When you really look at the benefits, Of having the players use this light technology. All of the other worries kind of go out the window.

Because if, if we prove through, we've got another FDA trial starting in another month or so. But if if validate what we're already shown to be the case.

In my mind, we solved the brain injury problem for football. That will bring a lot of other parents into the game, a lotta other kids into game. I just feel that we're on that course.

And that's big news. Yeah, that huge news! You talked about some other applications as well, though. You mentioned first responders and doing a study with them.

Can you speak to that, how the study was designed, what the intervention was, and then the outcomes? Intervention was the same. They wore the headset three days a week.

We didn't have any scan data with it. It was just a pilot study. And we looked at Las Vegas, a very active group of firefighters. They wore it three days a week, like I said.

We didn't have any control groups. Firefighters, they have a rough job. A lot of PTSD, a lot divorce, lot suicide. In fact, there's more suicides, deaths from suicide than there are from fires than firefighters.

So they don't sleep well. I mean, you have lot stress in this job After the eight weeks, we tested them again and the main researchers did the testing.

There were no assistants doing the test. But they had tremendous results, too. What were the primary outcome measures? Depression was decreased by about 20 percent.

PTSD was down about 30 percent, executive function improved, processing speed improved. Every single measure that would improve their performance as a firefighter improved!

They wouldn't give the headsets back after the study. They refused to return them. And so, I mean, they responded a lot like everybody. What do you mean this light is going to go through my head, my hair, or my scalp, and my skull?

Yeah, it does. And we've got a lot of research. VLite has done, they've done so much research in this area. No other company, I don't get paid for selling Vlite.

I just help them with the research and they do a lotta research, so it's a very validated device. It does do what we're saying it doesn't. Can you describe, you're a physiologist, so describe a little bit of the mechanism and start with like, okay, what does it look like?

How do I put it on? We've talked about wearing it for 20 minutes. Is that normal? how many days a week? So if somebody's wanting to potentially use one of these, like what would that look for them?

Oh, great. You're going to bust one out. I love it. There's a device. And so this looks just about there. This is the headset that goes on. These two lenses go to the back.

They match up kind of with the cerebellum. The front is on the front part of the head.

First Responder Pilot Study Outcomes

And these two lights on this side go on sides of head There's also a nose clip that go in the nasal cavity, which they've just released some data that shows that the The light from the nose clip penetrates down deep into the skull, into brain down here, and it's very effective.

So they just wore this headset for 20 minutes, three days a week, And they had tremendous results. Do they meditate while they're doing it? Can they talk while doing this?

They can do whatever they want. You can cook dinner while you're wearing it, you can watch TV while wearing that, You could be doing anything at the same time.

Okay, interesting. Now some of the research that we're looking at doing is to match this along with some more traditional therapies to see if it's synergistic with those, if that accelerates more tradition therapies.

But you know, I've done this a long time When I was first out of college, I did a lot of work with cardiac rehab. And these are people that are fighting for their life.

That had a heart attack, that almost took their lives. They have some significant lifestyle changes that they're trying to make. Diet, exercise, the whole bit.

You want to lose weight. There were great for the first few weeks, but after that, they just fell off the wagon. Making lifestyle change is really, really hard.

I agree with that. It's next to impossible. With this, you don't have to make any lifestyle change. You put it on your head in the morning and you go about your day.

As far as the effectiveness of this it's unmatched. It's easy to use. you can take it anywhere. There's a lot of beds out there. there's other things that delivers lights and there is nothing that it can compare because there are a lots of barriers to its use Not the headset you can take that with you anywhere So, you know, I don't want to sound like I'm doing a commercial but when you get the results that we found What's the percentage of people that have mental health issues out there?

You know it's huge what 50%? We're talking about millions and millions of I was interested in football because of my own path my Own experience going down the dark path black hole.

And it's a really good petri dish to experiment with. You've got these young, healthy people that exercise a lot. They try to take care of their bodies.

But the only thing wrong with them is they beat their heads. So we can kind of isolate the brain damage associated with what they do on the field. If this can mitigate that damage and have the success that it has had, that's huge.

It's Well, yeah, and imagine what it could do if you wore it five days a week, because we found that five day a day is better than three days. And imagine if they started wearing it when they first started tackle football when their 10 years old and wear it year after year.

I've worn it for seven years now. My wife tells me she's got her old husband back, he's better then ever. But I feel like I got my mind back. So a couple questions.

One, is there any risk? Is there a potential downside? Can you overdo it? What if you did it seven days a week or twice a day? Could you be getting too much stimulation through the red light?

And what is the physiology or at least the hypothesis? Like, what's going on? How does the light work? Well, it works several ways. To answer your question about too much, you can get too.

I don't know if you could get to much from a headset like this. The power is adjusted so that it minimizes that risk. It's effective and they're high quality lights, not all light is equaled.

In Amazon they have red lights and there's a lot of difference in the quality of the lights. There is a biphasic response though that you could get too much light if you use real powerful lights.

How the Headset Works and Why It May Help

And that just, it stops working. There's no real negatives in terms of health issues. We've not found anything that is

negative. there's been a few people that have claimed to have headaches.

It's really minimal. There's a center for PBM back east, and they've documented- PPM photobiomodulation, just very- Yeah, TPBM is transcranial photobio-modulation.

They've document over 100 million hours of use of this without any serious negative effects. I cannot say and I won't say that this is effective for everybody.

but we have had a really strong success rate. And when it is successful, it's usually successful. Statistically successful we've got several papers that are going to be that have either been published, submitted for publication, being under review, that will be coming out very shortly.

When that happens, I mean I expect when the football study is published that people are going to take notice because this is huge. Can you imagine what the NFL would do with this data if they understood it?

I mean, headlines, football, brain issues solved. Well, it sounds like you're going to make that happen. So the physiology. You're a physiologist. What is happening?

My understanding is Michael Hamblin, he was at Harvard for a while. He's published extensively on this. There's also Russian data. Of course, has to be translated a little bit easier these days with AI.

But my understanding, is that the cytochrome C oxygenase enzyme in the mitochondria does a lot of the heavy lifting in terms of using the light to optimize how we turn glucose into ATP.

Is that your understanding of it? Is there more to it than that? Well, Michael Hamlin was an author on my study. He was part of the group in Boston that published my results.

I was a part three additional NFL players that had very similar results, so that was the first study on football players. But what you're talking about is within the mitochondria.

And in the mitochondria, that's kind of like what they call the powerhouse of the cell. That's what creates the ATP, which is the energy that drives muscle contraction and enzymes and all the chemical reactions that take place.

It seems that there is some effects on the cytochrome C oxidase level within that system that transfers electrons, the electron transport system, through that that creates the ATP.

They look at blood flow, seems to be improved, they look the nitric oxide that seems be part of this, which affects bloodflow. The improvement in the mitochondria, there's a lot of mitochondrion in blood which gets affected, radiated by the The nose clip.

So I read an article in the MIT research journal several years ago where they had identified light channels within the brain. Channels that actually transport the photons.

And so I haven't seen a lot of work thereafter. It was very advanced work and kind of woo-woo kind work, people thought. But, you know, we can't describe.

the reaction time and the movement of muscles and that performance in people just by the electrical impulses from the brain to the muscle. The time doesn't match really.

And so what happens in the bring with light and photons and such, We'll figure it out. Somebody will figure that out, but all I know now is that for whatever reason, whatever mechanism, light works.

The FDA just approved the use of light, PBM, for macular degeneration. They use it in cancer sores with cancer patients that end up with soreness in their mouth.

That's a go-to treatment. They've known that near-infrared light has biological benefits for many years, 40 years. And yet people still don't know anything about it.

I would guess that if you asked 100 people about PBM-99, would never have heard of it before. Yet it's one of the most studied, most researched, technology that's out there.

At no risk, there's no side effects, no drug overdoses, nothing out. I beat my head against the wall trying to get people to listen, but it'll happen.

People will see this and it will explode. And that's exactly why we're here, Dr. Carr, is to have this conversation so that more people can learn about this potentially beneficial intervention that has very low risk.

As a clinician, this really stands out to me when I can recommend something that is cost effective, that doesn't take a lot. As you mentioned, it's very easy.

It's easier to put this light on your head for 20 minutes a day than it is to cook differently or exercise differently, or change your social network.

And so it's low risk, cost effective, easy to use, and there is really good data coming from multiple sources. I was so excited when Dr. Lu Lim and the group up at V-Light was telling me about you, because I think when you take a cohort of study subjects who have repeated trauma, brain trauma and then you can show this really distinct, significant difference in those who were treated versus untreated, it speaks volumes about what the intervention is doing.

And even if we don't understand exactly the details, when we can see the differences in these two groups, it really shows us that there's some promise here, and it's probably worth adopting for a lot of people listening to help optimize cognitive function as they age, regardless of traumatic brain injury, history, or not.

Absolutely. My wife uses it. She has a history of Alzheimer's in her family. I played football quite a while ago, but I'm not that old, you know? I lost one defensive end from suicide.

I've lost another defensive and he was entered into a care facility, died of dementia. One, a little younger than I am, has been multiple divorces and is living in his car right now, very bright guy.

I can go through a group of 15 players that I played with and coaches involved and see that this affected 10 or 12 of them. And even the ones that tell you that I'm fine, if you really dig down deep into their situation, there's a lot of unhappiness.

There's lot stress. A lot anxiety. Lot of divorce out there. I mean, people that played this game, that really played any kind of collision sport, are not their best selves.

As good as they are, they're not their best selves. And I try to make people realize this, that that's a situation that we're dealing with. Did you work as a physiologist?

And what was your work there? I worked as an exercise physiologists and physiologists at a university for eight years. After that, I started my own business.

I was so compromised. I went downhill so far in my cognitive and emotional status, which I didn't have any idea what was causing this, that I ended up teaching middle school PE for 15 years before I found this in Boston.

It's not as exciting as an NIH researcher, but it's more realistic. When I said people are not their best selves, they're not the best self. What advice do you have for clinicians or families who are concerned about having had a history of head trauma and who might be at risk for developing long-term CTE or Alzheimer's, or even just as you described, like not living their best lives?

What would you tell them to do? Get a headset. Simple as that. Nothing more than that." I mean, before the effects that I found of this, every researcher, Every clinician would say the same thing.

Eat better. Exercise. Get more sleep. See a therapist. You know, go on and on about these things that don't have I don't want to say they don' have an effect, but I did exercise.

Broader Implications for Athletes and Families

I was a physiologist, I ate right. Meditated, was spiritual. Did everything that I supposed to do and I just kept going downhill, downhill and downhill.

Until the point where I held a knife to my chest for over an hour and wanted to end my life. You know, it just doesn't help. This is the only thing that I've found that has helped.

And I got it validated by many, many individuals, by highly respected researchers that have validated this and published papers based on this. So people will hear about this, It's just a matter of time.

It's so exciting. This is a really exciting time. I have told people if you are APOE 4, 4 positive, I wouldn't recommend that you play football. Uh, wouldn recommend you become a big wave surfer or take on jobs like firefighting or ER nurses or doctors because of the impacts on your brain and how susceptible you It sounds to me like you've really made it part of your life's work to make football safe again, so that we can say, even if you have some risks, you can still enjoy the game.

Absolutely. And did you ever see the movie Concussion with Will Smith? I haven't seen it yet. Oh, you need to see that. But there's a part in there where one of the doctors, they're trying to squash this research.

And he works for the NFL and he made the statement, if 10% of football moms out there believe this, that's the end of Well, 10% of moms did believe it and more, and they did take their kids out, but it wasn't the end of football.

In fact, there's probably been less talk about it these last several years, probably because of the NIL and the money that's involved. and the wild west nature of college football, even high school athletes are getting pillied nowadays.

Brain injury, CTE, the whole thing has kind of taken a back seat and that's too bad, you know, before I found this. It was really hard to justify supporting football.

I mean, you're basically telling your son to go out there, play this game, and, oh yeah, it's like playing Russian roulette. Maybe it is one bullet, two bullets, whatever, but it certainly increases their risk of not living their best self and possibly dying early.

Well, I mean, when you described it, it's worse than roulette, right? This isn't a 50-50 chance. This is you are sacrificing your brain and body when go out and play this game.

You know, one thing we found in the scan data of the football players, and we scanned nine women soccer players. But that was during COVID, so we couldn't finish that study.

But what we found, their brains looked really bad. And in retired football players that have symptoms of CTE, 92% of them have what's called a CSP, a cavum septum pollucidum, in their brain.

It's right in the middle of their And it's not normal, it is not common. Different researchers look at it as maybe 2% to 20% in the normal population, but in football players it was 90%. In Boston, Dr.

McKee suggests that presence of a CSP is a major risk factor for developing CTE. We found a CSP present in 95% of the football players. These are 21-year-olds that have the same red flag blaring warning, warning warning that these retired football But what else we found?

We found that that CSP was present in nine out of the nine women's soccer players. So every one of them had the same artifact in their brain. And we don't know what the clinical significance of it is.

But I believe what we feel is it's the result of the brain twisting and turning and banging around in there and that's end result. So I don't know if the presence of that in and of itself is the reason why there's problems and it has been associated with severe mental diseases, mental disorders too.

But it's a red flag. I mean, extended period of time playing tackle football, starting at a young age and the presence of a CSP, there you've got three major risk factors for developing CTE.

So without some kind of intervention, pads on your helmet, changing the rules is not going to do anything. You have to treat it. And this is the only way I know that you can treat effectively.

Well, what an exciting time. You know, we talk about in our work, my colleagues and I, that hopefully for my generation, I'm in my 40s, Alzheimer's can be optional.

And it sounds like your work is really, can we make CTE optional for football players and for soccer players, and anybody who enjoys sports that include getting repeated head injuries?

That this is a way to… We've talked about millions and millions of people, And if it has an effect on mental illness, another group of millions people.

Look at firefighters, law enforcement, military. I mean, we've had several military vets in this, and significant results with them. So, I think this is a must-have.

Every football player, every athlete, everyone in collision-type activities needs to have this in their locker. And even motor vehicle accidents, right?

Following a… We've had several that we've treated with that. Michael Hamblin, you mentioned him, kind of the godfather of PDM. He wrote one time in his book, he said, this is a performance enhancement device that cannot be detected.

You know, it is, takes performance to the next level in my mind as an exercise physiologist. How exciting. Dr. Carr, it has been such a wonderful conversation with you.

So eye-opening, so brain-expansive and mind-blowing. Thank you for sharing both your vulnerability, your personal experience, as well as your professional experience and your enthusiasm, really your dedication, you devotion to the sport and the players.

It's been a pleasure to talk to you and to have you on the show. Well, thank you, It has my pleasure be here. Thank you so much for listening to the Think Well, Age Well podcast.

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