



Pain2Brain

CHIROPRACTIC NEUROSCIENCE
SUMMIT



Dr. Kelly Miller

The Neuroscience of Brain Balance Restoration

Marcus Chacos00:14

Welcome to the Neuroscience of Chiropractic Summit. I am with Dr. Kelly Miller and not only in terms of highlighting his amazing career, he's the author of this incredible book, *Saving Your Brain*. Let me give you some background as well. He's been in clinical practice for over 38 years treating over 15,000 patients with multiple degrees or certifications. You have an incredibly experienced chiropractor, practitioner health care provider with incredible expertise about to deliver some great content and valuable information. Dr. Kelly, 1980 graduate of Logan University receiving his doctorate of chiropractic degree, but also receiving a certification in industrial occupational health from Northwestern Chiropractic College in 91. Dr. Miller worked as an ergonomic safety consultant after care doctor for a flute band, which is you know, and multiple other businesses as well giving him incredible exposure in a wide variety of areas, but he received his acupuncture certification in 96 and is a fellow of the Acupuncture Society of America. In 2011, Dr. Miller received his certification as a naturopathic medical doctor from the national accreditation certification of naturopathic medical doctors in Washington, DC and he finished his fellowship in aging in regenerative medicine, from the Brazil American Academy of aging and regenerative medicine, which is in south Paulo, Brazil. 2014, Dr. Miller received certification in Functional Diagnostic medicine from Functional Medicine University in 2014. As you can see, he is an epic learner and an incredible learned chiropractor. To bring it together though Dr. Miller is an international lecturer on genetic, nutritional and hormonal considerations related to heart health. And Dr. Miller is the author of seven health-related books. The seven book series is called *Health Restoration*. Today, we're going to look at saving your brain, causes, prevention and reversal of dementia and Alzheimer's. Dr. Miller, you're an incredible chiropractor, a broad learner, and I'm excited to hear your presentation. Thank you for all you've done for chiropractic in the health lives of your patients in the community. It has been an epic journey that you have done. I'm excited to have you on neuroscience on welcome.



Kelly Miller 02:31

Dr. Marcus, thank you so much for having me, took us a few days to get connected. But I'm glad we finally did. And I look forward to the presentation. And I look forward to helping your cause as much as I can.

Marcus Chacos 02:45

We love it. We appreciate it. Let's jump straight in.

Kelly Miller 02:49

Good afternoon. So happy to be with you. I'm talking from my clinic in Tampa. And we're going to talk a little bit about a book I wrote in 2018 Saving Your Brain and this really came about because I was having a lot of brain problems myself, and having problems with short term memory, and also just factual information and trouble remembering, looking at pictures of places I went in Europe, and I couldn't really recall the information. So I really, this was self-preservation. And this book is about a global approach to brain health, and different things that we can do day to day activity and to help protect our brain and keep us from Alzheimer's. And then we're also going to talk about you know, the hemispheric aspect of Alzheimer's as well. You know, today is a world, we are in an epidemic of brain dysfunction. And I not only treat Alzheimer's and Parkinson's patients, the aging brain but we also treat ADHD and autism spectrum, we can retreat a tremendous amount of anxiousness. And this is really a very common symptom for a lot of brain dysfunction, anxiousness and insomnia. So we're going to talk a little bit about these as well. You know, thing about Alzheimer's is most people have probably had it for 15 years before their diagnosis. And there are seven stages of Alzheimer's, most of the time individuals aren't diagnosed till the third or fourth stage. We'll kind of go through, there's really in stage one, there's no memory problems. Only stage two, you may forget some familiar words, you start misplacing your eyeglasses or your phone or a lot of things like that, and I was definitely doing that a lot of that in the past and stage three, there's mild cognitive impairment. And this is where, you know, some friends and family may start noticing some differences there, you're having problems with words and names. And the, you know, there's a decreased ability to remember names after introductions. Now, some people are better at that than others, but there's definitely a decrease in function of that. And they may have start to have some performance issues in social settings in the workplace, to friends and family and co workers, maybe having some filtering problems, saying or doing maybe some inappropriate things. There's a marked decrease in retaining information after reading. So a lot of short term memory problems, the hippocampus isn't working taking short term in the long term. So they especially like computers, or something like that, they may be having to repeatedly look at instructions and find things. And again, we have more of this losing or misplacing valuable objects. And there's, there's a decrease in the ability to plan and organize. So sometimes people are diagnosed here, but lots of times, it's not till stage four. And they have



difficulty with simple arithmetic, they're having more and more short term memory, can't recall, breakfast or lunch. And they're having problems managing their finances or paying bills, and they may even start forgetting details about their life history. stage five is definitely where, as a physician, we should recognize when someone comes in, they're going to have problems with recollection of very important details, such as their current address, or telephone number, even the name of the college or high school they went to, and many times they're confused on the date and time and the season. And they're going to have trouble if we're asking them to subtract, okay, subtract two from 100. Or by fours. They're having an issue. And also they're having inappropriate clothing, or you may see them wear the same thing over and over again, they're wearing something or their pajamas, they're wearing the pajama tops, although, you know, I go to the airport sometimes, and I watch people travel, some young people, and they look like they just rolled out of bed. So I don't know if that's, you can't tell that anymore. But they usually can retain substantial information about themselves, and they know their own name and names their spouse and children. And they are usually independent, that they can feed themselves and still go to the toilet, it's stage six, this is we're definitely they're going to need help

Kelly Miller 07:45

in their day to day activities. They have more and more difficulty with their personal history. And they have trouble distinguishing certain faces and trouble remembering names, even a spouse and caregivers. And they they're going to need help dressing and, and even go into bathroom sometimes. So one of the things that will happen in these later stages, particularly stage four or five or six is they're going to have really erratic sleeping patterns, you know, they may be sleeping 12 hours a day plus naps or they may have their sleep is during the day and they're up at night. People are sometimes having to lock their door to keep them out from wandering around on the streets at night. And stage seven the final stage, they lose their ability to respond to their environment and carry on conversation and eventually control movement. So they, you know, like Parkinson's is a form of dementia also, which is more known for its movement, but in the later stages of Alzheimer's, they have very slow and restricted movement. So lots of times in the later stage, they're having problems swallowing. And again, the reflexes are abnormal muscles very rigid. So one of the things about Alzheimer's, there's been somewhat like 350 drug trials, and they've all failed. And the reason is, is as we know, as the drugs work on a single pathway by inhibiting or stimulating it, and there is not a single pathway that causes Alzheimer's. In fact, there are many pathways and that's really what my book was about, Saving Your Brain and saving your brain is an acronym for different things that are really important in brain function. And my book came out probably a month later than Dr. Branson's book who was a UCLA researcher on pharmaceutical solutions for Alzheimer's and he the big three for Dr. Bredesen was chronic infections, which we covered ours and also environmental issues and then the other was metabolic Issues usually blood sugar dysregulation. But sleep is really a big

thing. And when we have sleep disruption, it's really an indication of brain problems. So when we have patients reporting trouble getting to sleep waking up frequently, we should be thinking that their brain and nervous system are under a lot of stress. And when we see patients, we do something called heart rate variability, and probably 80 to 90% of our patients are locked into a sympathetic response to the fight flight response, they're not getting into parasympathetic, they're not getting rest, and they're not getting into a deep Delta sleep. And it's really important to get a Delta sleep because that's when we actually our brain shrinks almost 50% is like, you know, sponge, dirty sponge, we, we clean up metabolically. And if we don't get into that delta sleep, we usually don't recall our dreams. So eight is autonomic balance. This is something as chiropractors we should own. And this is something that you know, I don't think our many of our medical doctors really think of this level, but this is a huge problem. And in the aging brain, more times than not, I would say, you know, 80, maybe 90% of the patients I see in the 60s and 70s and 80s. They have a left hemispheric weakness. And we'll talk a little bit more about that, but versus the ADHD autism spectrum is usually at 90%. Right hemispheric weakness. So it's a different animal. But the approach is very similar. It's just a matter where whether we're going to approach put sensory input to the left to the right. But the big, big thing about the fight flight is that it creates cortisol, cortisol is very bad for the hippocampus. It basically kills our neurons. Cortisol short term is okay stress, but not long term. It's very bad for the brain. V is for vitamins, minerals, and antioxidants. Again, hundreds of studies, about different nutrients are very important in protecting the brain preventing Alzheimer's. And again, infections, inflammation. So I'm in Florida, mold is everywhere. It's wet all the time. It's moist all the time. And

Kelly Miller 12:40

one of the things about mold, to make you aware of is that one in four people have a genetic predisposition to developing a mold infection and they don't really mount a good immune response. So you're going to see a lot of people, so to say 25% of your population, potentially, if they've been exposed to mold could have a chronic mold infection, and these mycotoxins are very neurotoxic. And we find a great deal of our patients with mold and other chronic infections, you know, Lyme, things like Lyme's is a spiral kete. We know tertiary syphilis causes brain damage, you see a lot of brain problems from Lyme infection. But one of the things we know about Alzheimer's is that we have this beta amyloid production. And really, we need to think about is the production of beta as a normal function based on physiological needs. And really, this is a protective mechanism to help protect the brain from different things. So one of the things that beta does, acts as an antibiotic, so if we have infection in the brain, it's better to seal that up and plaque it up and take 15 years 20 years to kill you than to die of an acute infection in your brain. Also, beta is a something called a ligand which means it actually binds with heavy metals. And we also see beta production increase with high blood sugars. So again, those are the three key that Dr. Bredesen and pointed out in his book with Alzheimer's. And when we see this chronic epidemic of brain problems, we see that there's a tremendous amount of CO



infections with us. So 50 to 70% of MS patients are having an infection, 80 to 100% of autistic children, have abnormal yeasts and bacteria have most of the ones that I checked have mold infections that I'm seeing here in Florida. So this is something that if you're not checking, there's a nice screening test on from www.dotsurvivingmold.com it's a visual acuity test has been around about 40 years is probably 95% correlates with a mold infections. But looking at putting your hand over one eye, you're going to look at 45 images with one eye and 45 images with the other eye in shades of grey. And if you fail that you're highly likely so if we do that, we use that as a \$15 screening test. If someone fails that then we'll go do mycotoxin test and quantify that. That's a great tool if you're not using that, I highly recommend. So again, this is one of Dr. Bretsen's research on mycotoxins and again, causing that to the mycotoxins from mold to cause through just inhaling these mycotoxins to create Alzheimer's. So N is for neurohormones. Our hormones are neuroprotective. And, you know, men and women from their testosterone and estrogen helped protect the frontal cortex. And we have in those patients with Alzheimer's and cognitive decline, their hormone levels are much lower than their peers that are functioning better. And I really see that as the cause of the sympathetic and parasympathetic and our autonomic nervous system is not functioning well. And the hormones are trying to compensate for that. So we see a low thyroid function is doubles the risk for Alzheimer's, we use a instrument called the thigh reflex, which was actually developed by an Australian, if you guys don't do this, a great instrument, it actually measures intracellular t three levels through the brachioradialis reflex. So you can go to fiberflex.com get more information on that. G is for genetic variants, there's 50% of the late onset. So 95% of patients who get Alzheimer's are over 65 when they do that, and in fact, Alzheimer's, encompasses 90% of all dementias over the age of 71. And

Kelly Miller 17:29

only 5% of people are diagnosed with Alzheimer's under the age of 65. And there's a few genes related to that. Interestingly enough, when we talk about genes, genes are not definitely your destiny. But those individuals that have those genes that predispose them to an early onset of Alzheimer's, when we actually look at them, only one in five have those genes. So what does that tell us? That tells us that the other 80% is to their lifestyle, so they've just earned you know, neuron death at an earlier age. So if we have the APOE4, it's pretty just by supplementing more niacin, getting some regular exercise and maintain your insulin sensitivity can compensate for that. So why is for your lifestyle belief system, your belief system dictates our choices and what we're going to do. But just the difference between our patients, when I asked my patients, what is your stress level from zero to 10, those saying eight, nine out of 10 versus those saying one, two out of 10 or 400% more likely to develop Alzheimer's just from the stress. Because again, stress is creating cortisol, destroying the brain, but it's also creating lots of anxiety and sleeping problems. So O is for obesity, oxidative stress, the higher body fat the more inflammation The higher the body fat, the more oxidative stress. And the higher body fat the smaller brain we get.

So one of the things is very common in all these brain dysfunctions, whether it's ADHD, autism or traumatic brain injury, post traumatic stress disorders, they all have oxidative stress. So getting a little leaner is very important in helping reduce your, your risk, use for an unfriendly environment. And, you know, we know mercury and aluminum are neurotoxic they accumulate in the brain. So again, we have a beta formation and beta plaquing is trying to seal off this mercury and aluminum. Things like DDT and glyphosate are also linked to Alzheimer's. So basically, you know, when I test patients here from environmental aspect, most patients we have a huge agricultural area here in Florida, but most of these people are loaded with glyphosate and herbicides and pesticides, and these can all cause brain problems. And one of the things that EMF is a real stress, you know, European models show that about one in five people have a genetic predisposition or more sensitivity to EMF and you know, with the those increasing to the 5g, you know, increasing the radiation. So at something there's a great book called Radiation Nation if you haven't read that, that talks about all those things. And even things like high fructose corn syrup is a neurotoxin, MSG, aspartame, these are excitotoxins and can cause cellular death by over exciting, overactive activating glutamate receptors. R is a repetitive head trauma, I'm the poster boy for that, played rugby for 21 years played center. I must have got tackled or tackled 10,000 times. And they'll remember a lot of those games and had a couple of car crashes, where I was knocked out. So that's definitely a stressor for me. But some of these things with these concussions and then with the apoe4 gene increases significantly increases g factor. One of the things if you're dealing with people with repetitive head trauma or a big concussion, they've been knocked out, you know, for hours, day is that probably 40 to 50% of these people will develop problems in their hypothalamus and pituitary and have a lot of hormone dysfunction. So that's something that they need support, they need for the rest of their life. These are some slides from Dr. Daniel Amen. And SPECT imaging. And this just shows, you know, an injury to the right frontal cortex. And you can see this is a 3d evaluation of the circulation the brain and we just see that there's, we have a big problem in that right frontal cortex.

Kelly Miller 22:16

So blood flow is very important in the brain. So we check, we have a device called the max pulse, which checks for cardiovascular functions, but one of the things we want to look at and we put a pulse ox on all our patients as we rehab them to make sure they're getting good oxygen. But arterial elasticity is one of the measurements that we look at as a big indicator for potential problems in the cardiovascular system and brain problems. So here's another one of Dr. Ayman slides on Alzheimer's so we see this advanced stage and we see circulation problems throughout so are is really important for helping protect the brain and long term and it makes a difference whether you read from a screen or read a book so I know a lot of people are, especially young people, are now are reading lots of things off screens, but it's really good to get a some paper on there and read like with that that's very good for the brain. relieves



stress, lowers blood pressure improves sleep makes us more empathetic, something we need in today's world for sure. You know, generally speaking, I would say that we are becoming more and more a left brained society and less right brain or left brain is our intellectual IQ and our right brain is our EQ emotional cue. So I think this is part of the reasons we're having some of the issues in today's world but just throwing that out there. As for activity, got to get some exercise. Regular exercise increases blood flow, improves our insulin sensitivity. short bursts of high intensity exercise increase our growth hormone which is going to help stimulate acetylcholine, one of our stimulatory neurotransmitters is for insulin resistance sensitivity. So as we get more insulin resistance, we produce more beta and as we get on conversely, if the more insulin sensitivity we have, the less beta formation there is in us for neurotransmitter transmitters and we have a marked decrease in dopamine and acetylcholine and the end for free by treating Parkinson's. Parkinson's you want to enhance their dopamine but you do not want to enhance the acetylcholine out will actually increase their memory and motor dysfunction. So this is just a very busy slide that kind of shows you a little bit about the different parts of the brain and, and how they're important. And specifically, the different parts of the brain, even though they're connected, have more specific functions, they're influenced more by specific hormones, specific nutrients, and specific brainwave activity. So this is a slide just to introduce the concept. Hopefully most of you have been exposed to this, this is probably the most prevalent or most preponderance or the greatest amount of research on the hemispheric is done by Dr. Robert Milillo. And I was fortunate enough to just recently go finish this fellowship. And wow, what a brain, right? They're amazing individual. If you have not studied with IV, I highly, highly, highly recommend is one of the best things I ever did in my life. It took me 40 years to get there, but well worth it. But even though the left and right half of the brain looked very similar, they actually they function a lot differently. And the left brain is analytical logic, language science and math on the left brain dominant person by for sure. right brain more holistic thought, intuition, creativity, art, music, and in our approach to treating patients, we analyze that and there can be older patients that will have the right hemispheric weakness, we see that

Kelly Miller 27:00

they're definitely a minority. But when you find this hemispheric imbalance by specifically, putting the sensory input into the weaker side, so if we have a left sided, so we're talking about Alzheimer's, most of these are left sided hemispheric weakness left when we say that we're talking about left frontal cortex. So we're going to put information in there, right side, you know, everything up there, right, it's going to the cerebellum is going to cross over. So in our brain assessment, we do consultation, neurological examination, and we follow the Milillo method and that examination, and we're looking for symmetry tone. And we're looking for primitive reflexes. And this is something early on, I did not until I was exposed more to Dr. Milillo's work is that the Alzheimer's patients this well may be an early sign even in early cognitive is that they're going



to get a return of a rooting reflex, snap reflex Paulo mental when you're doing their palm, because these are all controlled or overwritten by the frontal cortex. So as that frontal cortex gets weaker, you will see that so in your older patients, if I'd really encourage you that you can even go online and probably get YouTube things on primitive reflexes is something you definitely want to start checking your patients. And the other significance of the primitive reflex that I didn't get for a while is that that is the integration of those primitive reflexes into the brainstem is really the the development of your first development of your parasympathetic nervous system. So these patients who have primitive reflexes are going to have an under-functioning parasympathetic nervous system and they're going to be in fight flight all the time, they're going to make noises, they're going to have sleep problems, so forth. So this is the different things that we do here we do max pulse, which is a circulation check, we do heart rate variability, we do a thyroid flex to get an idea of what their thyroid is doing. We use an instrument called the right eye, which is an infrared camera that measures eye movements, because the eye movements again are controlled by the brainstem, cerebellum, parietal, frontal cortex. So abnormalities are reflective of weaknesses in those areas. We also do a 14 test on the interactive metronome. Again, these are all great tools for brain rehab. The interactive metronome is checking kind of the timing between the cerebellum parietal and the frontal cortex. And we can check it with using both hands writing in Left hand, both feet right left and right hand left foot, left hand right foot. And it shows you the dysynchrony. And it follows the hemispheric pattern pretty much and a great deal of improvement, multiple improvement when we get that timing better. And we do brain mapping and with that we do some cognitive testing and some neuro behavioral questionnaires. So again, from a physical exam, we're looking again, this is following the Melillo method, tone symmetry, primitive reflexes core strength, checking their canals, checking ocular motor. So just with the primitive reflexes, again this can be done very quickly, we check the tonic reflex, tonic labyrinthine, asymmetrical tonic neck reflex, and the Moro reflex standing. Then we put the patient on all fours, check the spinal galant, asymmetric symmetric tonic neck reflex then turn the patient over do the babinski, palmer, rooting-sucking, ASTNR. And I have on my YouTube station I have go through those on Kelly Miller, DC and MD. So if you, but I'm sure there's many other people have those out there. So again, our core strength, we do a pelvic lift, we do side plank, and we do Superman. And we have three different stations. For example, when we do a Superman, we'll just have them lift their one arm and one leg for 15 seconds. Do another arm for 15 seconds, one leg for 15 seconds, the other leg for 15 seconds. If they can do that, then we graduate to right arm, left leg for 30 seconds left leg and left arm right leg. And then if they can do that, we'll go for 60 seconds in the Superman or Superwoman position. Very critical to stabilizing the brain. The cerebellum core strength and one of the things I found is if I'm this is an absolute truth, and I've treated hundreds of patients and and didn't get this done. But when you have a patient has primitive reflexes and they have core strength, and they can't do push ups and things like situps, you absolutely have to hammer that first before you're going to get any changes in that



patient, you need to do that before you start need to start working with their eyes or anything else. So just go Just take it from my failures or my shortcomings is that is critical to do on every brain patient.

Kelly Miller 32:57

So again, just checking the balance and we, you guys all know this, you know standing with your feet tandem. And we look for that. And again, what we're seeing is whichever way they're leaning or falling or stepping to that's the weak cerebellar side and they're hemispheric weakness is on the opposite side. And we're doing the nose, finger to nose to tests and many of those functions to determine that we use a system called the balanced tracks. I like it a lot, it's relatively inexpensive tool to get in and you can check the canals with a patient. And while they're standing on the plate and look for excess sway, you can rehab the patient and has five different tests as five different rehabs. It's just a great, great tool. So again, we can see you know, we I guess got to tell you, you got a pretty good you can see some things but there's lots of things when we video it, or we take a picture of it, you can see so much more in the eyes. And when we're talking about the, you know, our eye movement, our canals are balanced as part of our vestibular system. And they're finding more and more problems when we have a chronic problem in or a singular system that that's related to many things and one of those is chronic pain. And just a reminder, vestibular system is what stabilizes our intrinsic muscles and our spine. So we as chiropractors should be very involved with that and even vestibular dysfunction has been really related to major depression. So this is just a whole video here. If we can get playing this as a younger patient, actually gentleman in the back is his grandfather brought him in and concerned about in school, but let's just look at some eye movements. So we're just having him go laterally back and forth. Again, these should be fairly symmetrical. And we're going to see, the more he does this, the more abnormalities occur. So now we trying to go up and down, now when he really goes in these saccades, and these were verticals, the saccades you really seen a lot of abnormality.

Kelly Miller 35:52

Okay, and this little devices, very inexpensive, it's, I think it's like \$750, this is a great tool, you know, anything, we can show a patient, you know, this visual, is just so powerful. So this is one things I like that us that we this is the right eye, this is the infrared camera. And then the bottom of this screen, there's infrared cameras that follow the patient's eye tracking, this is one of our 80 year old plus patients who's a CEO, and still goes to work every day. He comes in twice a week just to keep his keep sharp. This is a right eye examination. So it's giving an overall score. But it's evaluating pursuits and this individual in pursuits was in the 13 percentile very lowsaccade not too bad. 72 percentile fixation was pretty good. But definitely a problem with the pursuits. And here's areas of brain this cerebellum, parietal, in this case is more of the cerebellum. And again, it gives you a score. So again, it's just another tool, it's a score you can

get so when you rehab the patient, you know, you're looking for that score better. And you can specifically target different therapies for the pursuits or seconds or the fixation, and you see an improvement. So this is just something for those who may not have seen the right eye, we're going to show you a circular tracking. And the cool thing about this software is we can play this back for a patient so they can actually see what their eyes were doing as they did. As they did, you can see that this right eye is really off.

Kelly Miller 37:59

Okay, now we've got some vertical tracking. Again, the same person. Vertical tracking is reflective of dopamine. I'm not getting these backwards and horizontal and serotonin, I'm not reversing those. So if we see more disturbance, and this vertical tracking, and they're just following something going up and down. So there's watching an old dog go up and down. So again, we can see this isn't now horizontal tracking. So we see a lot of aberration again. Both these are the patient. So again, it's nice, you know, after you do your therapy, you can redo this and you can see big improvement. And again, the horizontal and the vertical tracking are reflective of dopamine and serotonin. This is our patients getting the heart rate variability and the maximals simultaneously can't see your left hand but she has a clip on her left index finger. Here is a picture of some have the balance in the heart rate variability. This is a Russian software that we use, but this is this is actually a patient same patient before and after some therapy. And this one on the left but her total power of their total power was like way down. It was like 700 or something and they got an adjustment and the total power of their system came way up and definitely activated their sympathetic nervous system. But again, we did for two years, we did every patient before and after every therapy we did, we did heart rate variability on them, and a circulation check to give us all kinds of data on making choices for patients. So this is a, I call the max pulse it is for functional things this DPI is overall, hopefully you can see my arrow on the screen. And just think of as overall heart function in a percentile. And then this is the eccentric contraction to the left atrium. Again, this is a 60 something year old female, arterial elasticity 38 percentile remaining blood volume, stress score, 89, stress resistance, see this means any net any other thing something's going to happen, the type five is reflective of the intima, and the blood vessel. And right here, and again, that means it's getting some thickening. So this is not a this is not a healthy cardiovascular system by any means. So we have a very cool before and after. And this is demonstrating a therapy we do call the brain tap. So any of you guys if you are ladies, gentlemen, and ladies, if you have not looked in the brain tap, this is a great therapy that can be done in the office or in our case, we actually do brain mapping, we do recommend specific therapies for that. But this was a 20 minute stress reduction therapy. And we see 100% improvement overall in heart function, we have a 300% improvement in the contraction, left atrium, we have a 200% improvement in arterial elasticity. And we see the blood vessel just functioning much healthier. So this is, you know, to me, this is proof positive that people have strokes and heart attacks. You know, from stress, this particular individual's



mother was dying, and her favorite poodle or fourth poodle of 14 years was getting ready to on the last leg so she wasn't getting any sleep. And so this is just something a therapy 20 minute therapy did for this patient. So this is the thigh reflex. So again, you use a little thumper on the brachioradialis reflex, and there's a measurement tool on the hand that measures the speed of the brachial radialis reflex. So the research from Dr. Turner showed that an ideal function the thyroid would deliver a reflex speed of 50 to 100 milliseconds.

Kelly Miller 43:10

This is individual so their reflex speed was 187. So again showing underactive thyroid, not adequate t three and the nerves and muscles individual. So this is a brain map showing you, this is a 19 point reference that we use in our office. And this is something that we see very commonly This is a high delta. So high delta is low brainwaves, zero to four hertz. So this is like when you're in your deepest sleep. So, in this case, this is with the person is conscious. So we you do not want to see a lot of high Delta in a conscious person. This comes about from, can come about from concussions, repetitive head trauma, big head trauma, or it can also come about from environmental issues. Heavy metals, herbicides, pesticides and infections. Again, someone has Lyme, or they have mold infections, this can happen. But this is something we commonly see and a cognitive decline in the aging brain. And we also see it in ADHD, autism. So usually when we see this people don't dream when they have a lot of high delta. So this is something else that we do in the brain mapping. This is very common. Generally speaking, our brains should have a little more beta in the left frontal cortex, and a little more alpha and the right frontal cortex. And if that doesn't occur, that creates anxiousness. And over time, it'll create depression. So this is something, again, that we show this asymmetry in the left and right hemispheres. So normally, we would like this bar over here on this side, so it should be more on the left side of this individuals more on the right.

Kelly Miller 45:33

Okay, so now we're going to talk about some treatments that we do, and for Alzheimer's patients and other brain patients, and this is a sign I have up in the rehab room. And this is true for all of us, you know, if we can't ever get anything better if we don't challenge ourselves. And so when we rehab the brain, I want you to think of it just like a bell curve. So just like, if we worked out our bicep, and we're doing multiple repetitions, we're going to go to fatigue, and we're going to do repetition and frequency, okay, and the brain is the same way. But we don't want to over train the brain. Okay, so the difference is, if you over train the brain, just like if you're over train your body is going to take you longer to recovery. So one of the things and working out people is put a pulse ox on them. And if you see their oxygen drop a couple percentage, and you see their heart rate, go up six or eight more points, it's time to rest them. So this is just sort of core strength rehab. So again, this is an 85 year olds. So we do this, if you'd like this little table because we cut out the arms because so many elderly people have

shoulder problems, so it's kind of hard for them to get their shoulders up. But we can also do that with a Thera band off a wall and do like whities, things like that. Again, this is one of our eighty year old patients on the balance track. So they're actually looking at a program. So this plugs into a big screen. So they're watching the big screen. And in this case, he's doing a diagonal which is going to go left to right and right to left, but also goes straight left to right front to back moving circles so we can do different focus on different areas of their weakness. In one of our tools, this is our all our patients go home with a brain tap. So again, we use specific therapy therapies are therapy apps on the brain tap that are specific to that individual. So one of the things we did working with Patrick Porter and brain tap, is we created left and right hemispheric treatments. So if someone has more beta on the right side of the left will actually increase their beta through the frequency and this is coming through sound through the ears and also through the lights and the eyes. And then we also have a right left where we're increasing the alpha on the right if needed. So this is using the heart rate variability This is just showing a before and after therapy with a patient so this patient went through active therapy. And again, I just lived with this is under 10% and had an 800% improvement and brain activity. So one of the things other tools we use is neurofeedback. And again neurofeedback is two ways you can use it visually, and also auditory is very good for the autistic children. Most of our aging patients Alzheimer, we're just using the visual neurofeedback, so the patient is watching Favorite TV, movie, whatever, preferably something, make them laugh. And they have grounds on their head and their ear and then in this particular patient, her frontal cortex has been treated so we can either f1 f2 f3 for F seven, eight. And as she's watching this movie, as her brain is functioning better, the picture will be brighter, and then when it's not functioning as well. It will get darker. That's what the neurofeedback is, is the brightness of the screen. So after a while the brain is built for survival. So it will try to mimic those frequencies that will produce a brighter picture and it self corrects. It's just showing one of our stroke patients working on the interactive metronome. Again, it helps resetting, improving the timing of the cerebellum, parietal and the frontal cortex. And it helps so many different things. This is one of the tools. If you're not using this, this is really one of the best things that can produce changes in a patient for all types of patients, brain patients.

Kelly Miller 50:30

This is called the neurosensory integrator, and it's got, I don't know how many 100 200 different programs so we can use this to do specific weaknesses. If we have someone, for example, didn't do well on the stroop test, we can actually do go no go with colors, letters, numbers and things. We can work on pursuits, saccades, we can work on spatial orientation. It's a 55 inch touchscreen is a great tool. This is a neuroscience and this was developed by Kyle Daigle Kyle Daigle, when brilliant minds and functional neurology. And guy named, he's in Lake Charles Louisiana sees patients from all over the world. And Brandon Crawford works with him with this and he's in Austin, Texas. And then Robert Melillo is also involved in the neuro stage. But this is



an interactive screen. And we have sensory and visual input and auditory input with specific frequencies. This patient is also getting therapy on their right cerebellum with red light frequency using the shed light laser, which we use. And he's also getting you can't see the pictures, but he's also on his left frontal cortex is also getting laser. So here's just some results. However patient, this is an early patient early on a couple years ago. And this was I think in 60 days. And this was the patient. And this was before we were doing any hemispheric work. This was just global things we were doing with pulsed electromagnetic frequency, we were doing some infrared light therapy, we're doing the brain tap. But this patient and some nutrition and this patient also got the core exercises, which were important. And but we got a third of his brain changed in 60 days. So I think that's amazing. And this individual's change in his delta. So this was the same slide I showed before. But we can see green is good, green is normal, the red is high, then the yellow is very high. So this guy had, you know a lot of delta waves and in 60 days, I'm just telling you, that is a really good change. So much less slow brainwave activity, and he was talking better thinking better. Here's some cognitives, this is auditory working memory. This is remembering numbers backwards. So really, if people can remember four numbers backwards, that's okay, this test is I think it's six years is considered average. But you know, if I get an 18 year old, remember four numbers backwards, I'm okay with that. That's pretty good. So he went from three to five. This is attention. So he went from average to excellent. This is his auditory shirt. And this is eight numbers, remembering eight numbers verbally, I don't think I can do that. So I haven't tested myself. But that's really remarkable. So that really changed his brain. And now this is filtering. So this is a problem when we do the strip test. This is from the basal ganglion to the prefrontal cortex. And this is kind of like authors, should I or shouldn't I should I shouldn't do that? Should I say that? And so he has, he's better but he's still deficient in that area. So this is one of the tests that is indicative of cognitive decline and in the aging brain or anybody's brain, but his overall executive function went from below average to average. So great changes in 60 days and again, this you know, keep working with these people. And they'll get better and better. So here's my contact information, this is my website, savingyourbrain.com, that's my personal email. And that is my office number. And that's my personal cell phone. So, you're perfectly welcome to call my cell phone, just text me, because I'm probably going to be with somebody. But if you text me and identify yourself, I'll be happy to get back with you. And I think that's all I have Dr. Marcus.

Marcus Chacos55:38

That was incredible. Dr. Kelly, firstly, thank you, again, not only for, for taking the time out of your incredibly busy schedule, but for sharing that level of depth and clarity in that process. You know, I like to think that I have a neuroscience background, I have a strong love a passion for neuroscience. But when you bring this level of scope to the conversation, it's both humbling and inspiring. I just immediately before, I mean, I've taken pages of notes here about modifications and innovations, I can bring it in practice, my immediate mind went to, for the chiropractors



watching this, we may not be operating at this level, and doing neuroscience and neuroscience testing, and chiropractic neuroscience to this extent, it is incredible for recognition of the impact that we can have, the changes that we can make in the way that we can not only measure the decline, but measure the progress and improvement this, it's brighter. And this is available to us all by simply becoming more aware, more clinically skilled, and therefore more willing to implement and apply this process. So clearly that you have completely blown my mind in terms of, you know, set a challenge for upskilling up leveling my practice and implementing new strategies to even serve a higher level. So I just want to recognize and acknowledge you for bringing that into your presentation.

Kelly Miller 57:08

So one thing I would say, you know, I'm 65 years old, and I started studying the brain five years ago. So you know, young guys need to get on it. But this is, this is the future of chiropractic, this is a differentiator, in my mind, that will put us heads and shoulders above everyone else. And we're the only, you know, there are only people who are going to do it. And really, we're best suited for it.

Marcus Chacos57:35

Well I have a host of questions up to that point because I think that's such an inspiring message. So you know, you've got a mess of clinical experience you've qualified in multiple areas, prior to five years ago, then what digital practice look like, what were you doing in practice, that was different than to now, before we go into the evolution process,

Kelly Miller 57:56

Just totally different. I just, once I published the book, I just said, From this day forward, every patient is a brain patient, every approach whether they had chronic pain or whatever, just my analysis started from the brain down. And, and so I used all every, you know, everything I've learned before that, but it was just the way we explained it and, and quite frankly, people will do more when you when you relate this to their brain and nervous system than they will for a bad back. And they'll do more for their children and, and we have these epidemics when you just encourage people to learn this because you have so many parents that have children that have ADHD, and autism in the spectrum that you can change, not only them, you change that whole family's dynamics, and, you know, you can treat someone who are five years old till their I've got patients 96 years old, you can treat everything in between. So it's very rewarding, it's rejuvenated, makes it fun, you know, makes it fun to go in the office every day.

Marcus Chacos59:13

I mentioned what took place, you've got your traditional chiropractic practice, maybe the degree of functional medicine and because of your country naturopathic approach, so broader scope,

but all of a sudden you say you know what, I see the relevance of brain on bringing chiropractic new neuroscience to the fore and you simply started doing additional testing, having additional conversations and shifted the paradigm away from symptom-based pain-based brain lights. It was received well and change the scope of practice. Tell me about the experience in that transitional process.

Kelly Miller 59:45

Well, it's, I just did it, you know, it's it's I think we sell ourselves short because when people come to us, they have confidence in us and you know, if you believe in here, in your heart that this is the best thing for them, they perceive that, you know, they innately perceive that. So you're working in their best interest and they go with you. I mean, I've changed. I've always, I've had a lot of different types of practice through the years. And when I made a shift, they, you know, 90% of them shifted with me, so it can be done.

Marcus Chacos 1:00:25

And you spoke about the I mean, obviously, you know, your book, Saving Your Brain causes prevention of reversal of dementia and Alzheimer's, by the way, that the links that he put on his slide and the links of his books are all in the playbook, grab those and that Saving your Brain is, you know, it goes through the side of your brain one, we spoke about the beginning, incredible results to help blueprint and get clarity around the way you structure your protocols and proteins. But what I wanted to quit asking relation that was you spoke about also the book relates to the neurodegenerative aspect, and decline of a person's brain health, but you've highlighted that you can approach learning difficulties, ADHD, dyslexia, with a similar approach by measuring the idea in your own neurological pathways, the brain health and all those factors. So you, you're not limiting yourself to a neurodegenerative population of patients, you have a scope that can help children that have learning difficulties and adults that have behavioral challenges. Obviously, the age will have declined, but also peak performance. People want to improve their brain. So you're looking at executives and people, mothers under stress. So there's no limit to the scope when you bring brain cells to practice. I'm wanting to just talk about your influence in each of those areas.

Kelly Miller 1:01:43

Absolutely. And so one of the things I talk about when you have the anxious patient, when you have the insomniac patient, when you have the ADHD patient, when you have it, all those are going to accelerate the neurodegenerative changes. So we have these patients, if you're not doing this, you have patients that have anxiousness, you have patients that aren't sleeping, you have ADHD patients, or they have or they have children and grandchildren that have that. So you're opening up, you're just expanding, you know, the amount of people you can help. But yeah, so we have a mix of different people. So you know, I've got I think right now my youngest



is a nine year old, and you know, I've got a 96 year old, so little different, but the approach is the same. So when you when you learn this, and again, I have to give a shout out to Dr. Melillo. I think he has put this together, you know, he has a fellowship program, 10 modules. And he is his emphasis. Of course, document fellowswas always on the right hemispheric weakness. And because he you know, he had a son who was challenged and you know, many times we we learn things and do things because someone close to us. And but it doesn't matter, you can take the same information. And this is a right brain and you're just applying it to the opposite side of the body. And you're going to get changes in that part of the brain. So it's the same analysis, you're just, you're always trying to find the weakest areas and strengthen the weakest areas.

Marcus Chacos 1:03:27

And we see results in a broad area. And you spoke a lot about both the subjective experiences and objective testing that we do. So when you went through your patient that you saw those changes. When people go through a program of, brain health program, because of subjective experiences, they're having like how they feel, to some degree, how they perceive that they function, but then we have the objective testing as well, the brain mapping the HRV. But the balance tracks all of those elements. So there's one other capacity other than like its objective and subjective which will be structural. And so throughout this protocol, you're getting people to feel better experience and better results. The brain changing as well as the objective testing changes. So overall, we're seeing a real world not just neurological plasticity impact as well as functional capacity change. Is this expected even in advanced cases? Or do we tend to perceive the people in those first four or five phases of neurodegeneration such as the Alzheimer's model represented but also autism? So we will expect the early changes. Absolutely. But even the later changes that we've seen structural functional and subjective changes.

Kelly Miller 1:04:42

Yeah, I think are the biggest challenge in working with the Alzheimer's population is that they've got to have a someone to help them, you know, their spouse or relative or somebody because once they get to a certain level, they don't, they're numb to their dysfunction. And, you know, you see this in a lot of traumatic brain injury people. You know, they may, they may get frustrated, and like, they'll blow up but five minutes later, they've forgotten about it, but they've emotionally charged, you know, whoever else is their caretaker. And you'll see this in people who've had traumatic brain injury too, you know, they'll get volatile then they forget that in there. So the challenge with them is finding someone to support them and help them do these things. So I don't have an answer, because that's the biggest challenge when you get into the later stages, is that they need so much support.

Marcus Chacos1:05:54

We can absolutely see the brain change in the symptomatic patients.

Kelly Miller 1:05:59

You know, this lady, this one I showed you was a stage six patient what before and after heart rate variability. And she was probably one of the worst patients I saw and her husband brought her in, and they did different things. But she went from non-verbal to speaking again, she started to speak. I mean, she wasn't a chatty, but she, she started talking again, and she went from she couldn't, you know, she had to be taken to the bathroom and the diaper, and she knew that she could go to the bathroom. So that was a very advanced stage. And unfortunately, she broke her hip. And that's the thing. So that's one of the things I can say, with dealing with the most, a lot of these neurological problem patients, they will have balance problems, even the younger people will, and getting that balance, fixed with the core strength, and the primitive reflexes and the different things that you do is so critical to help helping them and so when we look at the aging patient, one thing I would say when you're looking at a patient, and they have significant balance problems, and particularly, you know, when they have the forward head lean, and they start intelligent lean at the waist, they are in cognitive decline, because we need to think about the pons, medulla, the reticular formation, which is an ipsilateral, to the frontal cortex, that we can check through extensor muscles like your thumb extensors your big toe extensors your fingers extensors that when they lose that, so because they're extensor, they can't hold themselves anymore, that that is a sign of a frontal cortex. So we're seeing patients way before you'd ever clinically diagnosed them. And from a postural standpoint, you know, we're thinking of forward head positioning different things. But this, think about this as a brain problem. So we're seeing this and you we could reverse this and change this way before they ever get to that stage.

Marcus Chacos1:08:09

And I think that's really important to recognize, we do get into those earliest stages at capacity, but impact is so significant. So there really is a lot to keep talking about, I'm going to bring in a conclusion with that simple question of when somebody comes in, and you know that they're in a state of neurodegenerative decline, that they're not going to necessarily progress if they get care if there is intervention, how do you communicate, as opposed to saying something as overt as like, Look, if we don't do this, we're going to end up with Alzheimer's, that's honestly counterproductive conversation. How do you share the message of what you can do? And how then, I get the neurogenic approach and chiropractic is positive and beneficial to people who are not yet exhibiting all the signs and symptoms. How do you bring them to acceptance of the protocols and programs that we deliver so they embrace, you know, preventative neurodegenerative care?



Kelly Miller 1:09:02

Well, I think we see, I see a lot of patients probably in their 50s and 60s, who had parents that had dementia and Alzheimer's, so they're very conscious, they're very aware, and they saw the decline and they don't want to go there. So they're proactive, and it's like anything you have to, you know, when you talk to a patient, you have to find out what is there. What are they afraid of? What are they concerned about, it doesn't matter if it's a pain patient or brain patient, because what their motivation, it could be a grandmother, I want to fix my back because I want to carry my grandchildren or I want to keep walking because I want to play with my grandchildren. So most of these patients when they have a problem, they have something like anxiousness or they have depression or they have insomnia and it's impacting them in a negative way. And so that's, you know, just say this is a sign of your brain not working well, if this isn't corrected, you know, neurodegeneration is going to occur. It's just, that's just the way it is. So let's get to it. So they have, and they may have anything. So you can, yeah, when you're doing the cognitive, it's just a matter of showing them where their dysfunction is, and because they're voicing it to you in some way. So it could even be their job, they're having slipping in their job performance, and you do a cognitive test and you go, you know, what, if we do this, and this and this, we can get that part of your brain working better. And because I always say, you know, part of your brain is really working well. Okay. And that's usually true. So what we want to do is we want to find the weak area, and we want to get that weak area working as well as the part is working.

Marcus Chacos 1:10:56

Preparing your messages in its simplicity on a level when you're early, I'm just saying, like, I just changed my practice, I just did it to immediate and dramatic action, and then your communication as well. This is part of a neurodegenerative client, let's get to it. He has such certain competence and belief in what you do. You take actions consistent with that, and the results flow on and follow from there, which I love, that people can really take that away that there is no point of no you can't make those changes, no time then you can move into that process. And Dr. Miller, you are a rock star of the profession, you are doing incredible things and I'm so grateful for your message and inspiration for me and I know everybody watching, it's going to be like, Okay, it's time to step up, move into the brain, focus that aspect of target and change people's lives. So excited. Thank you so much. I really appreciate it.

Kelly Miller 1:11:49

Thank you Dr. Marcus. I appreciate you reaching out to me and I enjoyed it. Thank you so much. Good luck with the rest of your seminar.