

A sunburst graphic with numerous thin, light gray lines radiating from a central point behind the text.

Healthy Moms Podcast

BY Wellness Mama[®]
simple answers for healthier families

Episode 151: How a New Technology from Brain Harmony is Improving Autism & Sensory Disorders

Child: Welcome to my Mommy's podcast.

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Katie: Hello and welcome to "The Healthy Moms Podcast." I'm Katie from wellnessmama.com, and you are going to love this interview, especially if you are a parent. I am here with Carol Garner-Houston, who is a pediatric occupational therapist with 22 years of experience in treating childhood disorders without pharmaceuticals. She is a recipient of the Health System Innovation Award from the National Association of Public Hospitals and Health Systems for serving vulnerable populations in her hometown in New Orleans. She's the co-founder and Chief Medical Officer of Brain Harmony, which specializes in applying the principles of neuroplasticity, which we're gonna get into, of the brain through the experienced hands of occupational therapists. And her company has provided life-changing interventions in their clinic, in schools, and in homes nationwide. And we're gonna talk all about that today, but she specializes in the treatment of disorders, including sensory and auditory processing, stress and sleep, speech and communication behavior, autism spectrum, attention and regulation, learning and dyslexia. And I've gotten a lot of questions about that, so I cannot wait to jump in. Carol, welcome and thank you for being here.

Carol: Thank you so much, Katie, for inviting me to the conversation.

Katie: I think it's gonna be very fun and very enlightening. So I'd love to just jump right in and kind of start at the beginning because I think this is a new topic for a lot of people. So when you have someone come in or a child that you're gonna work with, how do you evaluate a child's neurological system and what does that tell you about what's going on in the brain?

Carol: Well, that's a good question, Katie. We have many friends who come to see us and the families are concerned about certain areas of deficits that their children are either not performing in school or they're having a hard time with their peers, they're having a hard time with attention or behavior. And I immediately pull out my "Pyramid of Learning," and I carry this around with me everywhere. And it is a very good way to help parents understand why their child is behaving or performing in the manner in which they are. And when you're looking at the pyramid, at the top are what the families are usually coming in for, academic concerns, behavior, attention. But all of those areas are dependent upon the organization of the lower levels of the

central nervous system such as vestibular system, the vision system, reflex maturity, postural control, ocular motor control.

So when they come into the clinic, we assess all of their skills, so we can get a great snapshot of where they are and where their neurological system is and if there are any holes. And when we identify those holes, we have fantastic protocols and modalities that quickly fill it. And then, what you see is, what comes forth, is a more organized, happy, well-adjusted child and you begin to see more of who that unique person is. Because before they were trying to sort through, whether it's sensory processing concerns, auditory processing, just different layers of difficulty with them trying to communicate and exist in their environment. Once you organize the central nervous system, you begin to then see more of that unique child, which is one of the joys of what we do.

Katie: Yeah, that's so fascinating. And I hear from a lot of parents, usually on just regular blog posts, even just things about picky eating or getting kids to do certain activities when they say, "Yeah, that's great if you have a neurotypical child. But I have a child with, for instance, sensory processing disorder or ADD or on the autism spectrum." And so, I think, a lot of times, those parents can feel somewhat helpless, like there's not really much they can do. And that's why I was so excited to get to chat with you because it sounds like, based on the research that's coming out and the ability of the brain to change, the neuroplasticity of the brain, you're actually able to change that. So can you kind of explain that concept and delve into it a little? What does neuroplasticity mean and then what are some of the interventions that can affect the brain?

Carol: Absolutely. Neuroplasticity is the theory that the brain can change itself, depending upon the type of input that it's given. The idea originated around the 1940s with "Head's Law," which stated that simultaneous synchronous firing of neurons in different areas of the brain promotes increased neural conductivity between those two areas. What that means is, is that if you don't have the connections in your brain or the highway paths of information are inefficient, you can just rebuild it. And it's fascinating. That idea did not really take hold, though. And, I mean, I've been a practitioner for many years, you know, it used to be if you had a stroke or a motor vehicle accident or you missed that speech window when you were eight, you just were pretty much, you did a short stint in rehab, you got to maximum medical improvement, you were discharged and then you had to deal with whatever deficits that were there.

That is not how we are approaching rehabilitation at this juncture. Right now, we know very differently, with the rapid changes of technology, that we now have these modalities that are portable that can fit in a waist pack and that can stimulate organizing connections in the brain while providing a very calming and organizing input to the vagus nerve, which helps to combat all of those sympathetic types and fight-or-flight responses. I learned much of what I do, the specialty of what I do, through Dr. Minson, who is the Clinical Director of iLs, and Dr. Porges' work, he's the author of the Polyvagal Theory. They have created these tools that allow for sound frequencies and bone conductions to exercise the muscle of the inner ear, which causes a chain reaction of the central nervous system to organize. And it is changing everything in the rehabilitation of childhood disorders.

Way back when I went to school, you were either lucky, you know, you were either smart or you were athletic and then if you were super-lucky, then you had both. But if you didn't have those traits and you were presented with a disorganized brain for whatever reason, well, you were tagged with a learning disability or a behavior problem, provided with specialized and very expensive tutors, private schools, and compensatory strategies as you limped along through the education process. For many families now, despite the offer of

pharmaceuticals, IEPs, expensive therapies, those outcomes have not changed and the disorganized brain continues. And it seems to be plaguing this generation.

Katie: Yeah, that makes sense. So I think there's kind of a tendency in human behavior to think that if we can't, like, really see something or quantify it, that it doesn't really exist or it doesn't make an impact on it. And I want to delve into light more later, but I see that when people, when I talk about like, for instance, blue light at night affecting your circadian rhythm, people will be like, "Well, you know, you can't really feel it in the moment, so I don't think that's actually true." But I'm looking at this pyramid and I'll make sure it's linked to in the show notes, but you're talking about things like their posture and their vestibular system and their visual and auditory senses. So I'd love to go a little bit deeper on that. You also mentioned the word, "The vagus nerve," so can you give a definition of that for anyone who isn't familiar?

Carol: Absolutely. The vagus nerve is an important branch of the parasympathetic nervous system. It emerges from the brain as the tenth cranial nerve and carries 75% of all parasympathetic activities. The calming, relaxing effect and decreased stress response of the sympathetic nervous system are mediated by stimulation of a branch of this nerve as it emerges onto the anterior surface of the ear drum and ear canal. Virtually all children who have a learning, attention or behavioral problem are under considerable stress. And in turn, they often lack resiliency and have little ability to calm themselves. When stressed, the flood of chemicals streaming throughout the body inhibits one's ability to take in, assimilate, and learn new information. For children at school, this has a compounding effect as they fall further and further behind creating even more stress. As they begin our protocols, the parasympathetic system puts the brakes on the over-reactive sympathetic response resulting in what can be a profound calming effect.

We have a case study, that I forwarded to you, that has to do with a young boy who came in for fine motor delays. And he was not doing well in kindergarten, it was affecting everything from his behavior to his self-confidence. Mom and dad did not have any idea what to do to help. So they brought him to come and see us and, with him, we were able to take a writing sample of him sitting at a desk and he was to write a couple of sentences. Then we put on the Integrated Listening System, focus system that uses sound frequencies and bone conduction that immediately begins to stimulate and calm that vagus nerve. Within four minutes of donning this headset, we had him write four other sentences. And it's right there, super-clear in front of you. You can just see the organization visually on the page, the spacing, the legibility of the writing and just the child's ability to get his thoughts down on paper. It's really quite remarkable. And that's after four minutes.

Our programs when they come into the clinic, and when you're listening in the home setting, and even listening in some schools, during their PE class, for example, at the New Horizon Country Day School where they have several of their friends don their iLs headset for PE to get that organizing input so that they can function at a higher level during the day. So we use these tools for about an hour at a time and by using it frequently for that length of time and with the amount of intensity that has been synthesized into the music, you can make long-standing changes in the brain, you just build the highway paths of efficiency that were not there before or if they were not there very well.

Katie: Got it. And the Integrated Listening System, the iLs, that is... I'm looking through your website, that's something that's really well-studied. There's a lot of science that backs this up, correct?

Carol: Yes. It's fantastic. And the best part is, is that the outcomes in our clinic are happening so quickly, we've had to hire somebody who's half of their job is just to produce the case studies to continue to get this

information out there. Because there are so many families and so many children, they're suffering needlessly when we know that there's these tools out here that is changing everything. And we are producing as many case studies as we can, we've actually set it up as every person comes in, we've already started the case study because it's about 99% chance that you're going to be a good case study that we can share with other families who are still struggling.

Katie: Wow. And I'll make sure that the ones you sent me are in the show notes, as well, so people can see them on their own. But I love to hear that. I've seen this in friends whose kids have worked with you. And I'm curious, so how long typically, you mentioned even in just four minutes, a child started to see results, but how long is a typical course of treatment? I'm guessing this is not something they have to do, like, every day for the rest of their lives? So what does a typical course of treatment look like?

Carol: We give a time frame of three months as a typical benchmark of anyone who comes in to start the program. But hands down, you will begin to see improvements, if not in that one session, much less within five days of experiencing not only the iLs focus system, but a new addition by Dr. Porges which is called the Safe and Sound Protocol. Which, for those sensory friends that you were talking about with the feeding issues, this is changing everything. We just love the Safe and Sound Protocol, it calms the autonomic nervous system through similar waves with sound frequencies, but this one uses music with words in it. And it helps to train the inner ear to process human speech better while calming the autonomic nervous system. When you reset that autonomic nervous system, you are decreasing those defensive behaviors whether it's tactile defensiveness or oral motor defensiveness or behavioral defensiveness, just the general note and just the general, you know, retraction of your hand when you're trying to soothe the child. Those things can be incredibly heartbreaking, it just feels terrible if you witness it.

And we set them up with a five-day listening program, with the SSP, we call it for short. We've created Safe and Sound rooms in all of our clinics and we teach our parents to set them up in their homes, as well. And the child dons a headset and listens to the music for one hour at a time for five days in a row. It trains their inner ear to be able to respond better to your voice when you are attempting to soothe them because it has opened and exercised the social portal in the human system.

And as mammals, we are all intended to be social creatures and actually require it to survive. But for whatever reason, we have lots of friends whose social portal has not been activated yet or has not been activated very well. And then, when they go through this listening program, you can begin to see the eye contact that's not... They're not picking their head up and looking at you because you've rewarded them with a Skittle, they pick their head up and they're looking at you because they're trying to talk to you through their eyes and you can feel it with your heart. It is that interpersonal connection that's uniquely human that is really what can change the entire human experience for the child and their family.

And from there, you can build skills on top of that because they're now teachable. And it's really quite exciting and we have parents that send us text messages and emails and videos. And they'll come in six months after the SSP and say, "My child is now eating," listen to this, four years old, "my child is now eating salmon and steak." When before, she could hardly get her child to drink a smoothie because she was trying to pack so many nutrients, as much as the mom could in a smoothie, that's how she would get her to drink her nutrients. Now she's initiating, "May I have some of that salmon?" She chews it and swallows it. I just haven't seen anything like that ever.

Katie: That's incredible. And I'm so glad, this is why I couldn't wait to have you on the podcast, because, while I'm super-grateful that I've never had to go through with this with any of my children, I have close friends who have. And I see in these moms and the dads the, like, the pain and the struggle of seeing their child go through that and, also, the frustration it brings to the family. And I know, like when I get questions from readers that this is, obviously, definitely something that is very real that these children are struggling with, so I love that there are now things that are helping. And I feel like getting a child to wear a headset is so much easier than a lot of other interventions that they've tried over the years. Like, my kids love to wear headsets because they think like that's what we do when we're on our computers, and it's super-cool to them. So that's awesome that this is something that's very, like, low, I would guess low resistance intervention that has such a dramatic effect so quickly. And I'm curious, so you mentioned, like, these areas of the brain are not all activated and it seems like, at least from my perspective and the number of questions I'm getting, things like sensory processing and autism and these other disorders are on the rise. Do you have any ideas as to why we're seeing an increase in these right now?

Carol: Yes, and that is one of the other reasons why I love your website is the topics of your podcasts are the conversations that the moms are having with me in our waiting rooms or families are asking me on the phone. Although I am not a physician, I'm not a nutritionist, I'm not a pharmacist, but I can share with you the trends that we're seeing in the community, I can share with other families what is working for them because all of those things that you're touching on, everything from genetic abnormalities to food sensitivities to... We're actually seeing a trend with increased number of in vitro fertilization children who have been conceived that way or having some... You know, they have all their pieces and parts, but the actual flow of the information and the functional output, there's some deficits there, but, again, we can tighten that up with a good listening program. But there's all these different factors that come into play for each unique child. So I would encourage the listeners to begin to ask those questions of why this is happening and begin to listen to your podcast and begin their journey on finding why it's happening, specifically for their unique child.

Katie: Yeah, I think you're so right. It's a whole body approach, it's not like one single thing that's changed. But I'd love to go deeper with you on... Obviously, I think it's great that you have these headsets that are very unique and amazing acute interventions for children, but I know from talking to friends that have worked with you, you also do a lot of, like, physical interventions in the occupational therapy side, just simple movements that kind of help rewire the brain.

And I'd love to go deeper there because I feel like if I have seen one change even just in kids that I see and interact with on a daily basis, kids move so much less than they did, even when I was a kid. And, like, we used to walk on balance beams and hang off of things and jump off of things and we were constantly moving and doing things that now a lot of parents would tell their kids not to do because they're dangerous. But we were always doing things that I feel like kind of address points in that pyramid, that interact with the brain in certain ways. So I'm curious, first of all, do you see the lack of movement or the changes in movement and children playing into this at all? And also, what are some of the ways that you are helping children through movement in your practice?

Carol: Absolutely. It hurts my feelings, actually, to see what a decrease in movement that's allowed for children or what they have available to them. And when you referenced that "Pyramid of Learning," the reason why that lack of movement has such a negative impact on the entire development of the child, and for the adult human also, because based upon the neuroplasticity of the brain, the brain knows no age and no diagnoses. So there is no ceiling for anyone, no matter how old they are, and this pyramid applies to them,

too. And when you're looking at it, it's my favorite new word. If you don't know this word, you're gonna love it, you should embrace it, you should Google it, it's wonderful, it's the vestibular system. It is the first system to develop in utero and it is your innate ability to know where you are in space or, in other words, your sense of balance. And it is, not so much your balance with your eyes open because you're using your vision system to help compensate for any vestibular balance weaknesses, we measure it with your eyes closed. We have very coordinated athletes who come in, who can do nice, wonderful, fantastic things with their eyes open. But as soon as I ask them to close their eyes, they fall over.

And the vestibular system is a primary building block of the central nervous system. All other skills, including speech, attention, coordination are all dependent upon that solid foundation. And every time you don that iLs Focus System, it has a bone conduction piece at the top. And it speaks directly to the vestibular apparatus inside the ear, and inside the ear then connects to all the muscles in the face and all the muscles around the eyes and then further connects to the brain and stimulates connections. They do that by gating, filtering the classical music to impact certain parts of the brain.

So for example, if speech and communication is something that has plagued your child, we, of course, would start with the Safe and Sound Protocol to open up the social portal system. But then, after that, we would add the Focus System because that music has filtered out other frequencies and has focused on the mid-frequency range around 750 to 3,000 Hertz. And in that range, as the information is sent to your brain, it builds phonetic decoding, intonation, it speeds up processing, it improves speech and language, it improves reading skills, memory, concentration and attention. It is the only way to go if you're working on speech skills. And if you're going to therapy and they're not using this tool, then they're just way behind. They're trying to manually create changes in the brain, and they're beautiful, wonderful people, but it's just not fast enough, which means it's just too expensive and it's just too time-consuming when there are other tools out there that can speak straight to the speech part of the brain, then you ask them to speak. Then after that session is over and they're at home by themselves and a friend comes over and they self-initiate conversations that they haven't had before, it's just magical to watch it happen. And it happens all day long here, every day, wherever the therapists are. It's really quite exciting.

Katie: Wow. And so, I'm thinking of, trying to think through practical examples of this. So you said that the vestibular system is the first to develop in utero. So I would guess then even like a baby's movements in utero are impacting the development. Or I would guess like crawling, is that something that impacts the brain in a certain way? Like, I know they say it's really important that your baby crawls and they shouldn't skip crawling. Does that actually help the vestibular system develop?

Carol: Yes, absolutely. And you definitely want them to crawl. You don't wanna be one of those moms that says, "Ah, my child skipped crawling and they were walking at 16 months," every time my hands go to my head. Like, "No, get them back on the ground." And we put them through exercise absolutely. Think about when you're crawling, you're alternating your legs and your hands, your head is looking down, your eyes are tracking, hands and the head, you're in prone extension, you're building the muscles of the back, you're building the muscles behind the neck to hold the head, so that you can perform basic human functions. And with all of the wonderful baby shower gifts and all of these wonderful plastic toys that are immobilizing our children or, even for safety reasons, the car seats that we put our children in, it's got them in this collapsed fetal position.

And then, back when I was, you know, carrying my kids around, they would fall asleep in the car, I was all

excited. And I'd say, "Okay, shh. Let's unclick it and let's bring them in, and then, we'll keep them in that position because they're sleeping, I don't wanna wake them up." And then, after that, if you would take them out, they woke up. You're like, "Okay," so you played with them a little bit. But then, you put them in another contraction when actually what would be most beneficial is the floor. We need them to roll and tumble and crawl and figure out the lizard crawl and the army crawl, which are all, not only helpful for brain development, but very important in reflex maturity. That is one piece of the magical programs that we put in place that really does springboard the child out of a lack of full development. A trend in the community that we're seeing is not only these very weakened vestibular systems because they're not outside, they have too many contraptions, whether it's the iPad or anything that keeps them physically contained, but then also they still have these very primitive, infantile reflex patterns.

So for example, we're all born with reflexes that helped us survive outside of the womb. Like the rooting reflex when you would stroke your baby's cheek, they would turn to breastfeed, and the Babinski where you scrape the bottom of their foot and they lift their leg and begin to walk. Well, those are all there for a purpose, but they're supposed to be integrated by about year one. And for whatever reason, the trend is, is we still got 9, 10, 11-year-olds with infantile reflexes that are keeping them from developing coordination skills, ocular motor skills and even emotional regulation. So it's really quite fascinating how you take all of these pieces that are typical OT-type topics that are in very typical OT settings, you work through these protocols, but if you add the iLS system to that same session, you are going to see exponential results. You can see changes from one week to the next.

So much so, that it's really fun when you have a new employee or you have an OT student who's come in for training and they've just started and the second time that child comes in, they'll pick their head up and they look at me and they go, "Did you see that? I really think I've seeing some changes." And I start laughing every time, "Yeah. I saw that, let's write it down." So it happens that quickly. And it's very exciting because when you're talking about developmental delays or children who are years behind in their reading level, we just don't have any time to waste, we have lots of time to catch up. And this is the best, most efficient and the most long-standing interventions that I've ever worked with before.

Katie: That's so fascinating. And for anyone listening, if you're driving, all the links and everything, Brain Harmony is Carol's website, that will be in the show notes if you guys wanna find it. And there are, I believe, systems that people can use at home for the iLS, right?

Carol: Yes. And that is one of the most exciting aspects of where our company is going now because we are no longer in the space, "What do we do with these children?" We know exactly what to do with the children. Now it's about accessibility to care. So if you can't get to us because... I mean, we have three clinics in the Panhandle, we have one in Grayton, one in Niceville, and one in Fort Walton Beach. Not everybody in the country can get to us, but that's okay. We will ship you the modalities and we will coach you through telemedicine over the Internet. And we can assess some reflexes, some basic skills, we will create a personalized listening program for your child and give them the specific exercises to do while wearing the iLS to exponentially experience those outcomes that they're looking for. And that is happening much more quickly now.

Sometimes even friends here locally, you know, say, they're teenagers, it's really hard to get a teenager in their schedule. Not only their academic schedule, but they have extracurricular because you're trying to, you know, support them with moving and being part of teams and their caseloads. So it's hard to chisel out an

hour, so instead we bring them in the clinic, I teach them a series of exercises specific to them, we train them on how to use the modality and they go into their home. And then, they consult with me either once a month or once a quarter. And what we're really doing is fine-tuning the program so that they can continue to get weekly input, you know, five or six times a week, as opposed to being dependent upon getting to the clinic for neurological organization. We want you to have the tools, we want to give you the Cliff Notes, we want you to have everything you need to get that organization and graduate from us.

Katie: That's so great, and I love that technology is allowing that to happen. And I'm so curious, I know we definitely encourage everybody to check that out, especially if you feel like your child can really benefit, but I'm also curious just from, like, an every mom listening-type perspective, if there are things that we can do, starting with a very young baby, to help support the vestibular system and, like, how can we set up our homes and our yards to kind of encourage kids to do these things that they should be doing to get their brain to wire correctly from an early age? Because I'm envisioning, like, things like... Like our kids, we do GymnasticsBodies with them. So we're, like, balancing and trying to do handstands and stuff. But are there things, as parents, like, what can we facilitate that will help at least promote, to whatever degree we can in the home environment, a good vestibular system?

Carol: I would limit the technology. I know it sounds easy to say and, of course, it's a whole lot harder to implement in your home, but there's a lot of negative things that happen with the use of the technology all the time as their central form of entertainment for a child. But to me, what is the worst part is what they're not doing when they're on the technology. And I'm not just talking about, even if they had... Even the Wii, I mean the Wii had some movement in there, but you're not tumbling and rolling. We need actual flipping over, rolling down hills, we do need the outside of the climbing, the alternating... And we need for them to fall over. And we need for them to get skinned knees. And we need for them to reach and build things and use their hands in a dimensional world, not on a flat screen. Because I will tell you that another trend in the community is my friends don't have convergence and divergence skills. And that is the ocular motor skill that's required for near to far point copying and for depth perception.

So what that means is that when a child is sitting at their desk and they have to look at their paper, both eyeballs have to come in and converge, so that they can see clearly the close-up images. But then the teacher writes something on the board and begins to speak, the child has to pick their head up, their eyes have to diverge apart as a team, so that they can focus on something far away, then store it in their brain and bring it back to their page, converge and then have the motor skills to get it out on a piece of paper. So many things have to be going well in order for that to happen. And if that child is only looking at a two-dimensional screen, they're lacking that ability to perceive depth and then to be able to function within it. So we're beginning to see children who don't jump... I mean, that might sound hard to believe, but they don't like their feet to leave the ground, which is absolutely a flag that their vestibular system is so weak that they don't know where they are in space, that's why they're not about to leave the earth.

They're also the children who will not climb up a ladder to go down a slide, that's way too dynamic of movement for them to say, "Okay, I'm comfortable where I am in space," even with their eyes open to attempt dynamic movement. And you'll see it on the playground, you'll see a more typically developing child who's gonna go running into things and crash and jump and play and gregariously explore all of these different pieces. But then, you're gonna see that other child who is playing lovely, but the feet aren't leaving the ground and they are very stationary. And they might pick their head up and watch what the other children are doing, but they're not about to go try it because it's too overwhelming for their system.

Katie: Wow. Yeah, I've noticed that actually in playgrounds that some children definitely are more comfortable staying on the ground. And that makes perfect sense because if you don't have that space and your perspective in the space where you are, you wouldn't wanna change it. That totally makes sense. So then, with things, like, in a backyard, like a trampoline where they're jumping or like a balance beam or monkey bars, would those be good examples of things that we could incorporate?

Carol: Absolutely. I love all of them and we have all of those things in our clinics. And we have treadmills and bicycles, and all of those are incredibly helpful. The bike is very interesting, along with the swimming, the swimming and the bike are very interesting. Those are great activities to expose them to, but I can tell you, though, that there might be a level of frustration when the child cannot perform alternating arm and leg motions like swimming the crawl in the pool. Or they're not able to coordinate their breath, or they're not able to coordinate the balance piece of riding a bike with their legs going one way, their arms going another, their head and eyes tracking for obstacles. All of those things not are only dependent upon a secure vestibular system, but also upon reflex maturity so that they can separate their extremities from their core, and their eyes from their head. So if you've created these beautiful environments in your backyard and you've gotten the sparkliest bike in town with matching, you know, knee pads and a helmet, but they refuse to get on that bike, you can begin then to start to say, "Huh, I think I might notice that something's not quite right." And it's when that something's not quite right is a great time to come to get a nice baseline of their neurological system, as opposed to...not fighting about it, but trying to force the skill on the child, because I see that frequently. But in the end, the child just doesn't have the neurological skills yet to do it.

We organize the central nervous system, we integrate the reflexes, we build the vestibular system through our listening programs, we increase the communication by opening the social portal, then the child can respond better to what you're trying to teach them with the bike and swimming and then their body is able to do it. And with that, one of the other sparkly things of having our job is that their self-confidence... All the parents are so concerned because they have such poor self-esteem and lack self-confidence. Well, of course, they do. If you can't get your body to do what you wanna do or you're on the same playground with your peers and you are terrified of the slide or you can't, you know, cross your bodies and do a jumping jack or, much less, cross the soccer ball across the field because you can't cross the midline, that's incredibly frustrating, but it just doesn't have to do anything on whether or not you're quote "athletic" or have those skills or that's not your personality. Let's come in, get a nice neurological baseline, give you some central nervous system organization, integrate your reflexes, then put you out there on that field and see what you like to do. And then, that in itself is self-reinforcing, continues to build your vestibular system and you see sequential growth, all of those things that the parents want to see for their children.

Katie: I love that, and I love how obviously passionate you are about this. And I love you and your languaging that you keep saying things like, "They don't have those skills yet," and it seems like everything is just in process and there's nothing that can't be helped. And I love that, that there's finally something that's very tangible that's helping children. Because I know, like I said in the beginning, these are huge frustrations for a lot of families and I'm so excited that we're getting to delve into this.

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Katie: So how early can someone start using the iLs and is there, like, a cut-off when it stops working as well? Like, do our brains ever get set in stone or can it help adults, as well? Because I noticed, like, when you're saying these things, like, "My kids all have great balance and climbing and all this stuff," and I'm like, if anything, I probably need to work on my climbing trees or my balance. Like, is there a maximum age?

Carol: There is not a maximum age. The neuroplasticity of the brain knows no age and it knows no diagnoses. So that is very exciting because there is no ceiling for anyone, no matter what condition you're in. I've had experience with adults with traumatic brain injury and stroke with the use of these tools, along with Parkinson's, and it's absolutely fantastic. We had a woman who sustained a traumatic brain injury to the occipital lobe 10 years before using these tools, which means she went through the insults, she went through rehab, they put her on a bunch of medications, they set maximum medical improvement. She's on disability and she's gained a significant amount of weight because she's too dizzy to get up and move around. So once we started with her, and after a short period of time, her memory began to be better, she began to drive a car and she now has a full-time job. And this was 10 years post-insult.

I mean, it's so exciting that it's almost unbelievable. I mean, you just wanna get to the top of a mountain and yell it to everyone. So pay attention, listen, you don't have to take what you felt you've been given. There are so many things that we can do to help absolutely whatever skills your brain does not have, we just build the connections. So stroke is super-fun, too, I love that. And wherever the brain does not have the connections because the stroke has the bleed there, it has, you know, tissue death, the brain is always working for homeostasis. And you've just given it classical music, groovy sound waves to rebuild those connections around the insult, and function returns. It's really quite exciting.

And then, since we ship these tools to the home, the child is the catalyst that brought us all together, but it's the parents who've been carrying this the whole time. So we frequently encourage the moms and dads to don the headset and do their listening program also. Why not? You have the most powerful tool in the world in your home. Let's use it.

Katie: Absolutely. Like with all the research because I'm a nerd that likes to read PubMed, and just see what studies are coming out with all the research I've seen about the vagus nerve and about the central nervous system. And, like, the way we're seeing brain changes throughout society, I think that's a super-amazing tool that people can use. And really, you could use this even on, like, a baby or toddler if they started showing signs of not completely neurotypical behavior. You could use it even on a young child, right?

Carol: Yes, 18 months of age is the earliest that I have used the iLs. And we've actually have very interesting and comical ways to have an 18-month-old toddler wearing the headset. But we have these little pediatric headphones and we have these 1970s-like thick headbands and we usually have the mom or dad bring the stroller, so we've got them in there and we begin to get them used to tolerating the headset while we're rolling them around. And then, once they get used to that, we wanna get them out of the stroller as soon as possible. And then, we get them walking and moving and putting them on a balance beam. And my favorite tool is so easy, it's a ball on a string. I mean, a ball on a string, it's so easy. You hang it in your garage, but then tapping on the ball with a racket or their hands over the head or some of them try to lower the string and do their feet. Or you can lower the string and drop it into some objects to knock them over. All of those are depth and ocular motor types of activities, which are just another way to build a basic human skill that contributes to the functioning of the whole system.

Katie: Yeah, or even, I don't know if it's the same thing, with, like, tetherball. That was, like, a mainstay of my childhood was playing tetherball with my brother. And that's kinda that same hand and eye coordination thing.

Carol: Absolutely. I love tetherball, plus you just get to pound on something. I mean, you need to have the outlet to pound on something instead of your sibling or instead of the furniture. Because they are kept up at school all day long and they're trying so hard to maintain, by the time they get home, you can either give them the opportunity to exercise some of that energy in tetherball and some... You know, we use therapy balls, and clay, and wonderful resistive types of things. And then, we pair it also with some decompression time and these, we call them the Safe and Sound or "Sparkly" rooms and they have very little light and they have little white sparkly light and they have lots of sensory toys in there, so you can help them to transition.

Frequently, sometimes from school, you can tell the state of the child when they come in the door when their hair's sticking up and they're just puffy eyed and they just look like they're one step away from a meltdown. I frequently don't use words at all. I just smile at them and we go into the "Sparkly" room. And within two or three minutes, I hand them the headset, and the headset begins to have meaning to them because if they have experience with it, they know that it makes them feel better. So frequently they will ask for the headset or they just go ahead and do it. It settles the central nervous system, their face begins to calm, they initiate conversation and then we get to work.

So not only do we do that in the clinic setting, families then can replicate that in the home setting. Just like you said, like setting up your backyard, the trampoline, and the tetherballs, and the things that they can pound on. And also though, making sure that you change that environment when it's time to start, you know, changing gears and getting ready for dinner and slowing the body down and doing all the things that you need to do to take care of yourself by lowering the lights and the beautiful music that I've heard you talk about on your podcast and in some of your writing, and you change the tone of what's happening in the household with the music and the lighting and having them connect with each other as they begin to slow down. And of course, at that time, would not be the time to have the television on and would not be the time to have those iPads for all the reasons why you've clearly, you know, explained to all of us. And at this point, it's just the logical choice not to include those after 7:00.

Katie: Yeah, I absolutely agree. And I'm curious, do you have any high-performance athletes who are using this for the central nervous system benefits? Because that seems like something that could be really beneficial to a

high level athlete or performer.

Carol: Absolutely. I love working with my child athletes. So both of my children are soccer players, so we're out on the soccer field all the time. And if you spend any time here at the clinic, you will learn how to stand on a soccer field sideline and be like, "Oh, yep. That one's gotta retain more reflex." "Oh, yep. That one won't bend over to go get the ball." I mean, you can diagram a neurological system very easily on the soccer field. And what happens is, is that when that one child is not performing up to their peers, they begin, at a certain age, to feel that they're a liability on the field. So the parents will bring them in, we tighten up the vestibular system, we integrate reflexes. Lots of adult athletes are doing lots of vision therapy because that's your first line of reaction and defense. And if you've got really great ocular motor skills, then you can respond a millisecond more quickly than your opponent, which makes you that much faster. Then if you have integrated reflexes, you can separate all of your extremities from your core. And if you have an intact vestibular system, you can perceive what's behind you without the use of your eyes. So we love working with the child athletes, making them stronger, faster, and smarter.

Katie: That's so cool. Do you foresee this... I mean, I wish I could, like, wave a magic wand and have this just integrated into schools, but do you see this ever being integrated into school systems? I'm just thinking of all the benefits that would have for kids and their learning.

Carol: Absolutely. And we are working on those partnerships every day because not everybody can get to us and so we just wanna get them access to the tools. And so, we have private schools who actually have one of the units on their shelves, let's say, like at a Montessori school, so that the individual can choose it like a calming program, which is just a...what a gift to give to these children. And then, we also, like I said, we have that one school who is using... There's actually several across the country, but that one, I have hands-on experience of integrating the use of the iLs in the PE class, which is fantastic. That way, everybody's running and jumping, you've got 4 friends inside that group of 10 and they all have their iLs and their 1970s thick headband and jumping around and tumbling and having fun, and getting stronger and catching up to their peers. And they're no longer, you know, the last in the race, they're starting to make strides. And it's really just a joyful thing to watch.

But I do wish the schools would move faster. It's not fast enough for me just because I see suffering and then it's very difficult, it makes me nervous, it makes me not feel good when I have to walk by suffering children when I know that, I know there's something that I can do. So we're continuing to educate the educators and the superintendents and politicians. And anybody who will give me five minutes, I'll talk their face off.

Katie: That's so awesome, I think we're very aligned in that. That was kind of the reason I got into the whole health world and into blogging was just seeing what the statistics look like for the next generation and what my kids and everyone else's kids were gonna face. And I think like you're in there right there with me and addressing it from the mind side, which is so cool. And, you know, I would encourage everybody to check out your website and to learn more about it. What I like to ask for at the end sometimes, if anybody listening is definitely resonating with this and thinks that this can help them, especially moms at home with kids who maybe are struggling through some of these things, what would be a couple baby steps that you would suggest to start? Obviously, I'm sure that the iLs can be drastically helpful and, hopefully, they'll check out the website, but are there other things like a couple baby steps that you would recommend?

Carol: Yes. I would look into writing a list of some of the idiosyncrasies that you're seeing for your child. And

you can begin to look up things such as sensory processing, reflex maturity. You can check out, our website is a wonderful resource, Integrated Listening System's website is a fantastic resource, and you begin to collect information. But I don't want you to get scared of those big diagnoses that are out there. I don't want that to...intimidate a family to where they're dragging their feet to reaching out for help. Because you do not need a diagnostic for help. If you're just looking for fine motor or handwriting, that's a beautiful thing to come in for. Or if just coordination is something... We don't need these large diagnoses and, quite honestly, you should come and get some neurological organization first before you reach out for a neuropsych evaluation if you are concerned about one of those larger diagnoses. Because, let's say, for example, attention. Well, many people will go to the pediatrician and they'll write them a script for, you know, ADHD medication or they'll go to neuropsych first and go through a bunch of testing and then they're given that diagnostic code. Well, everybody's really good at giving a diagnostic code. But the treatment of it is what's so sincerely lacking.

And so, with attention, I always go...or if they're not reading well, I always go straight to oculomotor. I need to find out if you can do the basic functions that are required for reading. If you can't do saccadic eye movement and you can't keep your eyes on the letters which make up words, which make up a sentence, which makes up an idea, well, yeah, you're not gonna have reading comprehension. So let us tighten up your neurological system and then, if after that, there's anything that doesn't shake out, then we refer out for other types of testing. But for the most part, we are changing diagnoses or the severity of the diagnoses.

Katie: It's so great. And lastly, I'd like to ask kind of selfishly, but, both as a blogger and as a friend of people whose children are struggling through some of these things, are there things I can do... Like, what are the best ways to support the parent and the caregiver? Because I know that that's an extreme stress on a lot of parents. And so, both from my voice when I'm blogging and also just in personal relationships with friends, what are some of the ways I can support those parents, too?

Carol: And that is a very sensitive topic for me just because, as parents ourselves and managing children with different needs at different points and us managing so many children and watching the condition of these caregivers when they come in, I was introduced through Dr. Mary in New Orleans a tool called the Alpha-Stim. And the Alpha-Stim helps to produce the alpha waves in the brain which combat anxiety, insomnia, and depression without the use of pharmaceuticals. It's approved by the FDA and it was developed in the VA system. Well, I saw that, you know, their hair's sticking up, they've been crying, they're just consumed and overwhelmed with, you know, the characteristics that their children are presenting because it's 24 hours, 7 days a week, or they've just received a diagnosis or the school just called again and they had to come pick their child up. So I purchased an Alpha-Stim and began to leave it out for the moms, so that they can get some relief while their children are getting some neurological organizations. And by the time that they left, everybody was in a different space.

And that tool was so wonderful working with the moms... And I called the company, I said, "Please, tell me I can use this with kids," and they said, "We could." So now that's another tool that's there for us to use in the clinic setting. But those moms are really dealing with something that is... Like you said, you know, you're super-lucky if you have neurotypical kids. Otherwise, you know, that mom is gonna be further isolated from being able to do the things that allowed for her to recognize who she was before she had children. And they're isolated, they can't go to all the things they used to go to or they can't go to it as frequently. They get overwhelmed with the financial burden of trying to reach out or trying to figure out how the family is going to approach or address these types of things.

So listening to them, helping them... Sometimes I just send grocery gift cards every once in a while, because everyday life can sometimes just be so overwhelming. So to provide that listening voice, either to phone or going to visit. Childcare is also extremely difficult thing to obtain. So you can always just go to help and to continue to provide them with...connecting them with other families who are going through the same thing. For example, here on the Emerald Coast, we have the Emerald Coast Unique Kids, which is run by a mom and we meet once a month. And we all sit around and have a couple cocktails and we cry and we laugh and we just help each other feel better. And we share information, "This is working for me." "Did you see this?" "No, I got this." "Oh, and this just came for me."

So by doing that, you're able to continue to fight through a day that might sometimes feel incredibly overwhelming. But together, you build that network, you keep each other together, you build that support group and everyone can continue to grow, not only the parents as adults, not only the child, but the family as a whole. And then, of course, the larger community on top of that. Because we all exist within a school and that school exists within, for some, within churches and then the churches can exist within a community. And we will all evolve together. And that, I think, is a wonderful thing to keep in mind.

Katie: It's so awesome. And I think this has been super-helpful and I know that, hopefully, a lot of people listening are getting so many things that they can take and benefit from in their own families. But, Carol, thank you so much for your time and being here, this has been such a fun interview. And I know that you're gonna help a ton of people through this and through your work, and I just appreciate you so much.

Carol: Thank you so much, Katie, and I think the same of you. Thank you so much for your hard work.

Katie: Thank you. And thanks to all of you for listening and I hope to see you next time on "The Healthy Moms Podcast."

If you're enjoying these interviews, would you please take two minutes to leave a rating or review on iTunes for me? Doing this helps more people to find the podcast, which means even more moms and families could benefit from the information. I really appreciate your time, and thanks as always for listening.