Academy of PHYSICAL MEDICINE

Transcript

348R- Functional Neurology with Darren Barnes-Heath

Steven Bruce

Good evening and welcome to this week's second broadcast. This one is all about functional neurology. My guest this evening is chiropractor Darren Barnes Heath who teaches this topic along with developmental neurology to health professionals across Europe is a particular interest in young people and was last year made Director of Academic Affairs for the paediatric and pregnancy faculty at the Royal College of chiropractors. Darren, good evening to you. We're not going to talk about children this evening. Particularly are we so what have you got in mind for us?

Darren Barnes-Heath

Well, I thought I'd talk about the functional neurology approach and how I use that and integrate it for adults with a variety of I guess neurological problems, whether it be migraines, chronic pain, rehab, stroke, concussion, or

chronic pain.

Steven Bruce

Mr. Avila rehab. Yes. Okay. And again, we we've talked about this before, haven't we? And we said we're coming up in the the agenda for next week with that Alan Seeley, so we won't try and encroach on him too much. But as I've already explained, we have no idea where the questions will take us. So we're here to sort of go off down rabbit holes as and as in where it takes our fancy Royal College chiropractors, your Director of Clinical Affairs at the paediatric and pregnancy faculty, does that mean that everything you say has to be absolutely evidence based and research data today?

Darren Barnes-Heath

Like to present changing the way the met people can develop through the faculty? Because there's the master's degree they can do in paediatrics, current, ACC and Timmy. And they're both quite different master's degrees. Or we've just been setting up a more experiential way of logging cases and showing how you've, you're developing really through a logbook. And if people then do enough of those with a good variety that you can then develop up the membership structure in the RCC.

Steven Bruce

You and I were discussing this before we came down here to the studio when we're that seems to be a an almost a problem with the way that people are being driven down the sort of evidence based path to the extent where they don't feel they can do anything, which doesn't have an RCT point. Yes, you see that being a growing problem or something we can manage in the professional.

Darren Barnes-Heath

I do think it's a problem.

But at times, understandably, so.

I just like the pragmatic approach. And almost everything I do isn't very evidence based. There's some research showing that this works in some people, or we know that when we activate this pathway, it's going to go up the spinal cord into this part of the brain. But just because it gets there, we don't know quite what's going to happen until we retest afterwards. So I never 100% Confident anything's going to work or not work. It's always a question of doing what seems to be a good idea, and then reassessing and having some hopefully decent assessment tool to figure out right is the patient now functioning better have I made

Steven Bruce

students were allowed to come out of their courses these days, wherever, wherever they might be, whether they're osteopath or chiropractor or physiotherapist, accepting that we can do things which don't have an RCT behind them, we understand the limitations and explain those to patients properly. And I've got experience where I've heard that this is can be beneficial, I want to try it. But anyway, let me let you get on with telling us about functional neurology. Okay,

Darren Barnes-Heath

well, functional neurology, I guess is really looking at how, first of all, I think we get into it through manual therapy. In terms of understanding, when we do manual therapy, where in the brain, is it affecting? What structures are we affecting and changing? Is it part of the sensory area? Is it more than motor planning? Is it through the coordination through the cerebellum? Are we able to get into the brainstem? Sort of amazing Cephalon for more fight flight and activating more the medulla for Vegas and parasympathetic stimulation. So we're looking at that, and quite often seen that there's a

bias between left and right hemispheres as well. So there's a difference in the way one sides functioning to the other. A bit of a disconnect, or a dominance if you like,

is predominant one quarter, more than the other, or at least some parts of us seeing this.

Steven Bruce

How are you seeing is it's just from clinical experience and outcome measures? Or are you using some form of MRI to assess what's going on in the brain?

Darren Barnes-Heath

Well, when you look at the research for this in terms of how each side of the hemisphere functions, you can look at it through lots of different windows. So if it's a functional MRI or a PET scan, looking more at the uptake, the functional minimum was the activity the is it? What are they called the very accurate MRIs that can look at volume. And then EGS they all see that there is this one is a lateral ality so different parts of the brain lateralized for different functions. And what we do on the left side, we don't just replicate on the right. If we take speaking, we've got brokers on the left where we process and say the words, but then brokers on the right, which is already called bad, but the inferior frontal gyrus. That is where we then add facial expression and the intonation to our voice. So we see one side is sort of delivering words, the other is then delivering the emotion. And both are needed for speaking in for language, right, and that's a lateral lateral ality. But then, when I assess someone, I may find that their sensory system is more sensitised on one side

is the main weakness, perhaps

in the core spinal tracts or the reticular spinal tract that give clues again as to the imbalance of brain activity. And when you're talking to someone, you can get a reasonable idea if they are more processing the world and explaining it through their right brain or left brain or whether it's fairly well balanced. So you can pick up sort of social and cognitive cues, as well as doing the examination, right. Some of the clever equipments I've got, for instance, looking at cicadas quick movements, you can see quite nicely differences between cicadas going one side and the other, which is a function of the frontal eye field, sort of in the middle of the frontal lobe up here. And so you can get some data and or other ways of doing it. I,

Steven Bruce

there's all this stuff being taught at undergraduate level, not at all right. Okay. I'm glad to hear that. Because it was emphasised to me how much I've forgotten since I came out of

Darren Barnes-Heath

college. No, I've, I've been on a journey. I'm a bit of a near a geek, and I've really enjoyed learning it, really, because I can apply it. If I'm just reading it in a book, and it doesn't have a practical use, it'll quickly leave my brain. But then if I think ah, that could be good for that patient, or, yeah, this is going to be worth trying, or I see someone demonstrating it, then it sort of sticks more, no, I tend to use it.

Steven Bruce

We're going to look at some practical later on. I know once once we've exhausted or at least tried to exhaust the academic side of this. You've made it sound to me as though in order to make use of the sort of techniques that you make use of in clinic, we need lots of expensive equipment. No, I

Darren Barnes-Heath

I know good functional, almost no equipments. But the probably is a tendency that you know, I'd say we do geek out on it. And we do like to buy toys as well. And there's pros and cons with that because you can get all sorts of very clever makeup equipment that is measuring eye movements whilst people are spinning their head and seeing how the vestibular ocular reflex is working and measuring the pursuits Cades to very detailed. But the problem with that is you get into understanding that, but they're so connected with other parts of the brain. So if if you have all that expensive equipment, the danger is that then you start trying to do rehab specifically for that, rather than things actually, this person with their pursuit problems we can see. We know for instance, that the vestibular nuclei send signals up to the eyes and down to the spine. So either manipulating the spine or doing some isometric spinal activity is going to activate those and that might make the eye movements better. So the system isn't sort of closed in that way where you have to now do a an eye movement exercise because you've seen an eye movement problem, right? So talk me through them, first of all, how manipulating the spine has that effect. Okay, so when, when manipulating the spine, you're going to activate muscle spindles. And that's going to go mainly up the spine or cerebellar tracks into the cell. Some go up into the let's get our brain hit. Some will go into the sort of medial areas of the cerebellum, and a bit of it will go to three Broca's area here when we come and see three here where we've got our sensory strip, we've got part of that 3d For proprioception. So as we can and do the manipulation, one of the things that happens is that you get more activation in the cerebellum. And that be linked to the vestibular nuclei, which are about here. Now, as I say they're sending signals up to the arteries and down to the spine. So we've got two pathways there, the medial vestibular spinal tract is only going down, or a sort of T tube, and is not doing much power. But it's doing a lot of fine movement with the intrinsics so that our neck and eyes can be controlled. So this helps with the vestibular ocular reflex, keeping our eyes fixed on something as we move as we walk along, we bounce a bit, but the world shouldn't be doing this. Because this working, so does a relationship between the two there. So it's, it's certainly possible. And I see it sometimes that I do some either spinal manipulation, which is sending a very high amount of to this area. Or maybe I'll just use a device with gentle vibration or percussion, which is just activating lots of spindles or smaller amounts, because I've decided that this area is fairly fragile. So I don't want to over

Steven Bruce

stimulate it. What would give you the clue is that that was a fragile area, as you describe it, it would

Darren Barnes-Heath

be testing. So as I'm testing someone's balance, for instance, during the run Berg's, you can see if if this is oversensitive, they're going to feel like they're moving a lot more than they actually are. So you might see that the patient just moves a couple of centimetres, but they're kind of panicking, thinking they're going to fall over, right? Like to avoid stimulation optokinetic, or just getting them to move their eyes, and they feel dizzy, or nauseas. Because this particular area has input from proprioception vision, and the vestibular apparatus. And so if the proprioception tends to go down, we tend to rely more on the vision. And that can lead to points where people then feel like they're moving because the visual field is moving, rather than they're unable to assess where their body is, it's been over.

Steven Bruce

And if you've got any idea, let's say you, you've decided that manipulation of the spine is appropriate. How long lasting? Is the effect going to be?

Darren Barnes-Heath

That's a really good question. And I think it's, it's so variant on the state of these neurons. And this quickly expands to, you know, if the patient's got anaemia or blood sugar dysregulation, it's probably not going to last as long. So you have to consider more than just the neurology here, it's like, well, but the functional neurology helps with that, I think because if you find with a patient that there's one discrete area, somewhere around here, and everything's dysfunctional in this area, then there's been some, some damage or something developmental and then right, we need to really target that. If you see everything is a bit brain foggy and a lot of fatigue and not really functioning, then you think, Well, is this really a specific brain problem? Or is this more of a liver toxicity type problem? And then we've got to look more at the diet, nutrition, lifestyle factors, as well.

Steven Bruce

Can you talk me through the sort of the patient pathway if you like in this because most of the people watching the show will be some people that come to me got this sort of problem, they come to me because they've got a neck ache and backache or shoulder pain, those things? Are your patients coming to you for other reasons? Where were you defined as part of your rather more specific examination process?

Darren Barnes-Heath

No, I, I've been slowly transitioning for some years to seeing more neurological patients, which is a longer appointment with more testing. And it's sort of in three bits, there's an assessment with me for about 50 minutes. Then they go into a room where my colleague administers some visual processing and auditory processing, testing. And I've usually sent them cognitively, online

beforehand. So I get lots of different windows into their function. And then the second 50 minutes with me is explaining to them what I've found and my kind of plan of what I'm going to do. And so over the years, I'm pleased to say through word of mouth, other chiropractors often referring when they've had a tricky patient, they might think, I've been on a call. So I kind of understand a bit of this, but I'm going to send you to Darren if you want to. So I'm getting more patients from further away. More specifically for these royalties is great because it's a lot of fun.

Steven Bruce

It always is when you've got a specific skill and you can see results as a result of your dream. So that's fun. osteopaths and chiropractors refer to you because they trust you and they understand the way you work. What about the rest of the medical world?

Darren Barnes-Heath

Well, that's quite interesting. I've had various people from the medical establishment

whether it's a neurologist

who's read a letter that I've written, and then phoned me up and said all kinds of this is interesting. Can you tell me a bit more about it to the director of rehab that the local hospital coming to see me because I had seen patients improve? And

Steven Bruce

I remember just interrupt you to warn you for a second that Ellie is coming out to fiddle with you because of problems microphones. So we'll have to we'll have to put up with that for a second. Not sure exactly what the problems are. I need to know whether you that's a first that's that's Ellie's first words on camera. So I have to give a credit.

Darren Barnes-Heath

Sorry, that's fine. And then when I teach in England, it tends to be very much chiropractors and osteopaths. When I teach more in Eastern Europe, then there aren't chiropractors. There's a few osteopath. It's mainly physios. But there seems to be a much more open minded approach. So I've had paediatric again, rehab specialists, orthopaedic surgeons come along, because they're interested in more of a functional approach. I'm

Steven Bruce

disappointing that you're not getting that sort of interest in this country, isn't it?

Darren Barnes-Heath

I guess the the time pressures been able to go and learn something new when they've got such a big caseload and so much,

Steven Bruce

yeah, you'd have thought there's a bit of you might be helping to solve their own problem there, because they understood what you could do, they could perhaps get rid of some of that case load onto you. Absolutely. Anyway, sorry, what comes next.

Darren Barnes-Heath

So I've been talking about manipulation and muscle spindles, stimulating the vestibular areas of the brain. And so then, what I tend to find on doing with a lot of the treatments is summation. So this is now rather than just doing some, let's go with the manipulation for whether I'm trying to go more midline with spinal, or if I'm doing something more on a limb, that's going to get more the lateral cerebellum, though, intermediate, but it's going to go more, more distal. And that then feeds through into some of the frontal and corticospinal areas. So what may then do is be performing that treatment whilst they've got then exposure to light from one side that might be flashing. If they're photosensitive, then it will probably be a filter, decreasing light from one side, there might be sound, I might have that vibration or a 10s machine on a particular area. How do you decide? Well, I guess there's part of the experience and part thinking, Well, what what's the common pathway, what's the area I want to do? So if I'm trying to get a lot of sensory input in, then we're going to this area. And that can be fairly passive, because we've got sensory information coming in the sensory strip, then we've got auditory around area 42 there and vision from sort of 17 as that gets them processed it all kind of in the particularly the superior parietal lobule here. So if I'm trying to improve their sensory processing of a level, then I'm probably going to be using those inputs. If it is something more from then these will feed in there, but I want them to be using their frontal lobe. So then I'm going to be giving them more of a task orientated thing where they've got to plan how they're going to move, they might be doing a coordination task, which could be sort of fine motor things or more gross motor movements. And if I'm wanting to activate cerebellum with that at the same time, so if I'm going to activate this left, frontal area more, I would be trying to get them balancing on their right leg or doing right coordination exercise, whilst perhaps doing some manipulation at some point into their, they might have to, like, speak in time to a beat, right? So that they're using the speech areas. They're, if they're doing a times table, for instance, that's activating more at the left side so you can add cognitive exercises to it.

In terms of motor planning, in terms, more abstract thinking, Yes,

maths or visualisation. Some things if it's going to be on the right side,

Steven Bruce

it was happening at a cellular level, I mean, it just precinct pathways, changing the function or changing the I think it's

Darren Barnes-Heath

basically the neuroplasticity. So the theory is that if we send signals at one pathway that will have the effect of, then when a nerve is activated from another signups, the nucleus then starts to upregulate. And we get a bit more protein produced to get transcription and translation when they've done that in the wrong order. And so the cell gets a little bit stronger over a period of time, if you're getting enough stimulation or a little bit over time. So then when we do summation, we're getting several pathways then come in and colliding on that area, which seems to be more more effective. And the seems to be that often practically, if some are inhibitory, and some are excitatory, then you're getting more activation of that nerve, not that it's over firing, but it's giving it more to up its metabolic rate. Right. Okay.

Steven Bruce

Right, what's next answer?

Darren Barnes-Heath

So

what would you like me to?

Steven Bruce

Well, I know you've got a number of slides here that I don't know if you want to run through those at this stage, and the kids

Darren Barnes-Heath

do a couple here. So this is the brain tree. And a patient of mine has got functional neurological disorder, this is a another condition, I treat quite commonly ended up becoming an artist, because that was much better for a brain than what she was doing beforehand. And I really liked her artwork in a way she did trees. So I said, do something like this, which is really a metaphor for how the left side of the brain has more connections with itself and does more logical processing. Whereas the right side of the brain is dealing a lot more with the what's going on around us. It's more vigilant looking for danger in our environment. And it's more aware of social interconnections, how we're interacting with others, and the things is not looking at the detail. So every piece of art is really pleased with it, and of particularly, right brain dominance, they get the metaphor, and they will understand it like that, and then can ask more detailed questions, if they want, I suppose,

Steven Bruce

is a very interesting part of your treatment process. A lot of what you have discussed so far, is complicated enough, even for medical practitioners to understand what

Darren Barnes-Heath

makes what you're doing to push it.

Steven Bruce

How much in detail, how much do in depth do you go in? Or do you just leave it as let's look at the outcomes and see what happens.

Darren Barnes-Heath

I think a couple things I've with each, I think when I was first learning it, I was giving too much detail almost to convince myself that I was doing the right thing. And as I've done it more, I've given them less less detail, and let them

test that when they come in, kind of just check in and ask any more questions about it, and what we're doing and why. And

they're trying try and relate it really to their their symptoms. So why they might need to be pacing, why they might not be doing particular things because it's overstimulating these areas. So understanding their their limitations at the moment, I think it's important,

Steven Bruce

what's the danger in overstimulating areas,

Darren Barnes-Heath

I use the analogy of lactic acid. And so we overworked muscles too much lactic acid buildup and they can go into cramp, etc. I say if, if you're overworking nerves, you actually get a similar lactic acid and some iron ferrous compounds and things that are rare then in the cells, and that causes metabolic changes, which are basically slowing the sale down. You've got more, I guess, more toxicity in the neuron. So you don't want to overload it. And I think that's a lot of the art of what we do is trying to stimulate the right amount, just like when you're prescribing an exercise. You want to do enough to work the muscles but not enough to fatigue. So it's got to be significant and useful, but not overdoing.

Steven Bruce

It's relatively easy for an individual to judge what's going on with a muscle though, isn't it? How easy is it for them to judge whether they're over stimulating the

Darren Barnes-Heath

well that really because the test Don't really lie. So if you're looking at, say, let's see the cerebellar function, then you can quickly see that balance gets better or worse, you can see that the board of the finger to nose gets better or worse when you're looking at it subtly. So you can see changes very quickly. And that gives a good indication then of how you're doing. When I'm looking at the autonomic I use the pulse ox quite a bit. I'm looking to see then, if I spin someone one way, maybe their pulse stays the same, I spin them the other and it suddenly goes up. 1520 is Satan. Well, look, you. You didn't need to expend any energy with me spinning you there. But your nerves thought that you were moving far more and it was becoming

a flight really your SIM

is these nerves aren't processing how you're moving properly.

Steven Bruce

So you're only using the pulse aspect of the pulse ox, the oxygen concentrator

Darren Barnes-Heath

sometimes as well, yes, you can see that dip down, I think probably the pulse is more helpful. But you see commercials are more rapidly reacting. Yeah, perfect. And there are some really nice heart rate variability monitors that I occasionally look at thing, maybe that'll be my next purchase.

Steven Bruce

Another toy? Yes. I wasn't extra one after the

Darren Barnes-Heath

eldest was the sensory homunculus, I thought we might discuss that at some point, haven't come to that nice picture of the cerebellum. cerebellum has got more neurons in it than the rest of the cortex. And you can just see here all the surface area that it has and the density of neurons there. That's almost a piece of artwork in its own right.

Steven Bruce

And the hours that have been produced is

Darren Barnes-Heath

that is with one of these funky new imaging techniques. I think they're staining.

Different, but I don't know much about it.

Steven Bruce

Another one worth having on the wall. Yes. And

Darren Barnes-Heath

when you look at the cerebellum, you realise that, although so the left cerebellum is always connected predominantly to the right side of the brain. And they're processing things together. So it's not just movements, you get processing thoughts and emotions as well. You know, when you see someone with some sort of mental illness, you'll find that there are changes in parts of the cerebellum. The same with cognitive decline, which also means that there's the potential when you start activating it through movement coordination and timing exercises, that there will be a knock on effect that might change those as well.

Steven Bruce

Okay. You've Sorry, I was just gonna say you've talked about testing and so on, do you have a specific range of tests that you use? Or could you range across the whole gamut of tests known to man?

Darren Barnes-Heath

I, I guess I do like, like we all do, really, when we're testing someone with biomechanical problems. You're not going to do every orthopaedic test out there, you're going to decide, okay, I'll scan that area seems okay, that area seems okay to history. And what I'm seeing tells me we've got to dive into this. So I tend to do a scan, what I try and do is get a look at, right, how's the medulla doing? How's the mesencephalon doing? How's the midline and lateral cerebellum doing on each side, then is the disparity between one side of the cortex and other owners the we seen particular areas that they're coming with where there's a

Steven Bruce

problem, but we'll have time for you to sort of demonstrate how you would put that into practice? In shortly. Another question occurs to me. We've had a number of speakers on the show who said that actually, we're moving away from showing patients models of the body or the skeleton, so long

as some patients bizarrely find those quite frightening. How do you find it with patients and models of the brain?

Darren Barnes-Heath

They tend to like to play so I often give it to them and let them have a feel and move around. It's quite nice, big model. And I think because it's coloured and it's not, you know, bloody unlike the brain, it doesn't seem to be I've not had an issue with it. I guess there's always a danger that we what's the word I'm looking for? We then structure lies, the problem isn't there. It's like, right? I've just got to get this bit better and everything's okay. And one of the things I see time and time again, when people have had concussion or stability problems, or, you know, they've had a chronic condition for a while. It changes areas of their frontal lobe and The Olympics in the protection, and so it changes the way they feel. And this is where I think a lot of the sort of pain science and sometimes the cognitive kind of rehabilitation can be helpful as well. Because you have to have to miss the time, it seems people need to figure out where they are now, and not just expect to get back to where they were because they have changed as a result of this. irreparable accident or condition. Not irreparably. But if they, it's almost like if they don't accept it, then the particularly the polyvagal system, and the amygdala is still seen as a problem. And so that's still driving them into an autonomic state, which isn't really helpful for healing. So when they can begin to figure out, okay, this is where I

can begin to move forward. And

that you can't really explain with a model, it has to be discussing with them, and finding out really what cues they are and beginning to, you know, interpret it for them. It's then how I think it's best for them to proceed, right. But I tend to see that if people like Well, no, I still can't do this. Therefore, I'm no better. They're, they're not going to get better. They have to kind of realise right, I can't do that now. I now hear what steps I take. So I can do that again.

Steven Bruce

Right. Okay. Yeah. You mentioned concussion briefly that we had a speaker on the show. I can't remember how many months ago, talking about concussion. And I found it quite a surprise that concussion can occur outside impact in boxing or Judo or wherever it might be. And they she was saying that it can happen in you know, in whiplash situations and so on. Are you seeing more concussion patients? Are people more aware of the potential causes of concussion? Now, do you think? A

Darren Barnes-Heath

little bit, but I mean, it just yesterday or Monday, colleague was having lunch, and he called me up said, can you just have a chat with my patient. And he preached it a couple of times for RAS neck and back issues. And as we're talking, realised that there was something going on with a concussion that she'd had three years ago. And the doctor said, it's not really taking it on board. And she didn't really

understand any of the symptoms. So I had a two or three minute chat with her, just about you feeling a lot of where do we start? I think you're getting a lot of brain fog, I find it difficult to concentrate asleep changed, do you find your heart racing, the tsunami changes is what I'm looking at. So the areas that we tend to see affected with concussion, frontal areas where we have concentration focus, the brainstem tends to go out of sync. So you get autonomic change. Or you get problems with the midline cerebellum, particularly if there has been an impact because affecting the neck and signals up from there, to the cerebellum. So we see these areas, why

Steven Bruce

specifically those areas you think I'm sure there's no definitive answer to this. There's

Darren Barnes-Heath

research showing that like, the frontal areas, the long when you get the conflict, two movements long, trying to get stretched and pulled. So that seems friendly. There's something about the brain as well, with the forces that go through which I can't quite remember, though, that there were five or six, there was a couple of good concussion papers back in sort of 1415. Now, I think a chap called Ellis, they're probably a bit old now. But he was beginning to sort of segregate the types of concussions and whether it will likely respond well to some work on the neck and a bit of vestibular, or whether there's more frontal activity, or whether there's a lot of metabolic because it can be a very mild concussion. But the the astrocytes the microglial cells, then cause inflammation. And what should happen is that they turn off after a short period of time, but often they don't. And the people that have had concussion over sort of a three month period, seem to have this constant activation of the microglial cells. So they're getting inflammation, though. It's like having a bad flu all the time. Everything is harder to do. Even if

Steven Bruce

you went to your GP with those symptoms. Now they would just say, well, it's a post COVID thing was something you wouldn't Yes. Or if you're a woman it will be a whole monal absolutely lucky they might test you can be 12 reps. And I don't think many practitioners of any description. Think that concussion lasts that long. You said three years in the case of the patient is Well, recently we know if it's not getting better soon, then why will it get better in a while if

Darren Barnes-Heath

nothing else is changing? And the hasn't the assumption always been that it will naturally change? Yes. And I think this is like anything this isn't you go to that particular practitioner for a bit, and then realise that they say, Oh, it'll get better, and it's not so you stop going. But then maybe they think, Oh, snap show.

People aren't coming back. So it's

Steven Bruce

okay. Yes, yeah. So it's very likely the case, I think, isn't it? Good? Let's face it. If you don't go back, if you think about your GP now, it's probably because you can't get an appointment as mean, you can go better. Anyway, I interrupted you. We had a slide up on the screen a second ago, I think it'll come back up in this area.

Darren Barnes-Heath

So this is the cognitive assessment I send out, takes about 40 minutes to do. And this is probably the most research thing that I have all do. Because it's it's chaos. They've got 2530 years of psychological assessments. So it comes for as I stand for something or they used to be Cambridge

Steven Bruce

doesn't matter. They

Darren Barnes-Heath

changed their name, but I don't know. I don't know why. And it gives a nice initial thing. So we've got 12, different cognitive functions that it tests. And it will then give a normative data for how that person is doing over the 12. So

Steven Bruce

when you send this out, how do they physically fill this in? They get it question by question. And they have to

Darren Barnes-Heath

know it's like a game. So they get a link, and then they have a demo, they spend a couple of minutes doing the demo. So yeah, I understand what I've got to do. And then they do a three minute games. So this one digit span is giving them 2473. And then they do that, and then it's a longer one, or then it goes backwards, and it sort of pushes them till they fail. Feature Match is one for attention. So noticing differences between the two types of shapes. And double trouble is a response inhibition. That's a bit like a Stroop test, which is where we'd like Stroop, the Stroop test is where you've got a font that's green, but it says yellow, always you have to say, the colour of the font or what the Word says. And the rule may change that this is a lot of prefrontal cortex mental flexibility. So with these, we then get a nice score of those. And you can, as you understand it, there are some that are more right brain and some that more left brain and some are a bit of both. So you get another window into which areas are functioning. And this is this particular chap had a concussion. And he was redoing it, he does see that, first of all, on this one, he scored 99, then he went down a bit, so 94. But that wasn't significant. So each time you do it, there's likely to be a bit of change. And they've done a lot of research to sort of figure out right is that a learn amounts. So one, you might improve by 3%. On average, if you do it a few times, others you can't improve when you do it. And they put

all this into the algorithms. So this one doubled, troubled response inhibition, which is also your ability to think before you do things. So when you get something reflexive, do you then respond straight away? Or do you pause? Do you say something before thinking these types of activities, so a good prefrontal cortex, and his Well, after his concussion, it wasn't too bad, it was on 100. But he was a smart chap, then, after a couple of months treatment three months, maybe we see that it's at 111. And that's a significant increase. So we can say that this has made a difference or at what point you regarded a significant loss 10% down there when this tells me when it's okay to understand it, but having spoken to them, and it could differ between all these different between the different ones. And so with each one as well, it gives, I haven't got it on here, but it says what it does, and then below or in the first one that they get. It then says this type of test is in everyday life. It's remembering where your car is when you go into a shopping mall and come out for a different door. It's been able to process one thing and get distracted and go back to the other thing without forgetting about it sort of episodic memory so so far I've got a failed all these. Well, this is really nice as well because some patients come to me and they say, oh, you know I can I'm losing my keys or whatever it might be. And all they say, Oh, my husband is doing this. So we say, well, you know, it's 25 pounds to do this, let's just send it to your husband and see. And they do it. And actually everything comes back with a normal. And they're sort of reassured that okay, maybe there's a bit of decline, or they've got many other things to think about as well. But actually, the brains doing okay. That's

Steven Bruce

an interesting point you've made there is it is it very often that someone's partner will will draw your attention to the fact that someone needs to have some sort of assessment, if not rehabilitation? Yes.

Darren Barnes-Heath

Yeah, I think so. I think I mean, I, I really, try not to get into too much cognitive decline and Parkinson's and things because it's, it's hard, treating those looking to get a little bit of increased function or decreased decline. But obviously, because of what I do people ask those questions. And then, yeah, these types of things can pick that up,

Steven Bruce

excuse me, we're gonna have to get off our backsides and limit and do some practical stuff to keep everybody entertained and informed. But I have one question that just occurred to me. I don't know if you're aware of Malcolm Kendrick GP who talks a lot about statins. Oh, yes. In fact, he's annoyed most of the conventional medical profession because he's pretty damn hot on the research and so on. Yeah. But he's one of the things that he has argued is that the questioning which is applied, whether the medical professional or someone who comes in who is on statins, doesn't really assess what the effects of statins are? Because they'll say things like, are you okay with your drugs? And the person will say, yes, but they don't do anything objective. Or any of these tests that you apply, are you likely to be able to attribute not to statics necessarily, but to pharmacological influences or anything like that would that is part of the assessment.

Darren Barnes-Heath

I can make assumptions. But I guess the stat is the obvious one is the inhibition of Coenzyme Q 10. And then the lack of mitochondrial function. So where it tends to see with that, because the brain is consuming, what 20 odd percent of the energy, that's going to be one of the first areas you see. And that tends to be in the inhibition areas. So the prefrontal cortex, the Purkinje neurons in the cerebellum, which are inhibiting Sarab movements, so, excuse me, we don't get too much. And areas of the basal ganglia, again, which are kind of inhibiting additional movement. So who's going to notice this, the partner rather than the person with the problem will,

Steven Bruce

again, will they attribute it to it? Because they think there's a problem with my yes, they wouldn't know what it's caused. I saw

Darren Barnes-Heath

one chap last year, and his balance was getting worse and worse, and walking was a real issue for him. He had a increasingly a toxic gait. So started doing some rehab, which was held it. But then the partner brought up the conversation about well, he has been on these for the last two years. And then we look at the timeline and think maybe there's something in this. Obviously can't say, well go off them, but say, Well, maybe it's worth seeing GP or pharmacist and discussing the symptoms. And are they connected with it? Yes. So they did have a trial off.

Steven Bruce

I always shove a copy of Malcolm Kendricks book under there. So you might want to read this book. I can't tell you to stop your studies. But this bloke would Yes. Exactly. So we go and do some practical shopping. Let me take this with us. Right now, this is Grace. Allah grace, thank you for coming in to be our guinea pig for the evening.

Darren Barnes-Heath

What I'm going to do, so if I'm looking at someone, sort of like a scan of how how they're doing if we don't look at a particular gait, so you can see a lot neurologically through gait. So when would you be able to pop shoes off and then can walk

Steven Bruce

up? And when you're doing this? I mean, is this going to walk around the block or genuinely just a couple of bases up and

Darren Barnes-Heath

down? And so obviously, there's the biomechanical things, but then you're also looking for things like arm swing, right? Is there a decreased arm swing on one side, if, if my left frontal parietal areas going down, then you're likely to see that the left arm is swinging more than the right.

Steven Bruce

She knows exactly what you're looking for now, don't get me wrong. But

Darren Barnes-Heath

then I may do a dual task. So I see them walk. So if you walk to end of the room and back, and we're looking at just another stage, how the Yes. Then I'd go again, and say so how did you get here today? And I have to answer a question. So And then there's suddenly thinking and not thinking about that. So you see, then there's the frontal lobe managed to control both things together, or is there a breakdown there? I

Steven Bruce

find that patients often find it quite difficult walking when you when they know someone's watching them don't. Yes. Difficult to do it normally. Maybe that takes their mind off it a little bit. Perhaps

Darren Barnes-Heath

So, yes, sometimes. I guess it's more with a kid. So I'll throw a ball and get them to kick it. And then they walk normally. And then kickball. So yeah, see?

Steven Bruce

Before you go, if I'm if you're going to come on to this later, then please tell me to shut up. And why am I making? You talked about rhomberg? Earlier on? I'm just curious. Have you got Can you give us any guidance on how do we do a really good Runbooks test?

Darren Barnes-Heath

Well, I can say how I do it. And I think that works pretty well. Yeah. If I'm looking at balance, Romberg is really looking at the, the proprioception through the legs up, and then how the brain is processing that. So we're not doing any vestibular movements because the head still, and we're not doing any vision because the eyes closed. So much, really. The number of patients I've seen, I've been to the neurologists, and they said, Oh, yeah, they've run birds. It's fine. Their food is good. They've got good finger to nose, and I test them and I find all sorts of problems, because I'm looking functionally, right? They often seem to think, Okay, we do this, they're not falling over Romberg says, Okay. When I do it, are we in view here? Is Yep. So I'd ask you have feet right together, arms by your side, and then close your eyes, and I'm looking to see is the movement. So we've got a tiny bit of movement and right. Did you feel yourself go to the right, yeah, yeah. And it's like you're leaning

slightly that way. So that would be an indication, but no more than that, that the signals from the right side up to the cerebellum are not working quite as well as the left, right. You can't hang your hat on it. But it's the initial indication you think, and then you've always got to do more than one test to figure out. So then we think, well, let's, let's provoke it a bit. So now what I'm going to do is give a little tap on each side, if you close your eyes again. And then I'm not going to tell grace by pushing, I'm going to do more of an impulse. And then there, we say as it did that, there was a little move back. So what's happening there is that the left cerebellum is realising as soon as you go this way, but then when you go back, because there's always a little bit of sway, as it's going back, the right cerebellum is taking a little bit longer to process, right movements. So you see a slight change one side to the other. If eyes closed again, then then I would look forward some back as well. So you can look there at the what's happening perfectly, then there's all sorts of options you can do. So what I may then do is say, okay, eyes closed, now turn your head to this side. So that's it, turn your head all the way. So looking there. And so now we're seeing as we get neck movements, does the proprioception in the neck cause a change, then turn to this side? Or is everything stable? There? That's good. Then what I'll ask you to do now, if you open eyes, again, is put your arms out like this eyes closed, and march on the spot, quite high within ease. So that's good. That's it keep going a little bit higher and a bit quicker.

That's it. And so what we're looking for here, mainly, is is there a rotation one side or the other? Right? So this is more a function of the horizontal canals. Because when you've got your eyes closed, and you go, there's always a bit of a wobble one side and the other. And then the vestibular system is working out, right? Am I moving one way or the other? If, let's say the right side is underactive, then you'll feel that you're moving to the left more. And so what the patient will do is begin to compensate. And so they start turning to the right, but they think they open their eyes and they think they're going to be there, they have no idea because they think that their vestibular system is balanced. So I think you have to put those together. And then as well with looking at the balance, you need to see what's happening with the eyes. So I would then have feet together again, on someone that's functioning. Well, if they have a lot of balance problems and come

up with what says

can you look at my finger and turn your head left and right. That's it. And so we're seeing now is the VISTA Have your ocular reflex for race, look at my finger whilst turns. And as you're doing that, is there any sway as he might be doing this perfectly, but then you're swaying because the centre of the neck, the eyes, and posture, so you can get all these small functional changes. And then if someone's got slightly decreased activity here, it could be simply that they're, you know, sacroiliac joint is fixed, or there's some restriction in the shoulder blade or the neck, and then do some manual therapy there. And everything's much better

Steven Bruce

immediately. Yeah.

Darren Barnes-Heath

When there's more of a central processing problem, then you will see more issues. So some people doing that will feel quite dizzy or nauseas, as the cerebellum is, then you get a flow of activity from the vestibular nuclei down into the vagal areas, and that can then cause the nausea. You know, if you go over a humpback bridge, you suddenly feel that's the same sort of mechanism that's happening. And so some people are feeling sick when they move or when they turn one way, because this system is unbalanced. So what I then do, I might check that further. So I might then get grace to like look at a button or so and take the head and keep focus on the button. And then I turn the head quickly, one way and the other. So I can look more specifically at the vestibular ocular reflex. And then you'd watch my finger. And we do pursuits, as we go diagonal diagonal up to the left is using all the eye muscles connected with the left cerebellum, and then diagonal up to the right down to the left, and this play is all the right cerebellum. So you may see sways or that the eyes are not moving so smoothly, one way or the other with those. And

Steven Bruce

if you saw that, where would that lead you in terms of treatment rehab. So

Darren Barnes-Heath

okay, there's problems with the, the eye movements, the head is still. So we're looking at how we're getting control of neck muscles, two eyes, so probably doing those three, kind of quite simple things with the rehab, where you can die head movements, which would be getting you to look, then turn your head back and forth kind of quite slowly at first. So if we saw problems, you can simply do the test at a lower level, so that the patient can cope with it and not fatigue, then you can watch and follow. So Excel, eyes moving, or eyes focus neck moving, or the last one would be that you watch your thumb, and you keep your nose pointed on the thumb. And so then you turn, so you'll turn your head with your thumb. That's it so the eyes shouldn't move.

And what I have is getting them just born

with a laser head. So then they have to keep their head moving and the eyes are still the AI. And as they get better the practice so they're more active. So you see improved spinal testing, glutes or lumbar lateral flexion, something like that. You can then activate the vestibular spinal tracts on one side and see changes, right? That then tells me that okay, maybe I want to do some rehab with the muscles. But at the same time, we'll incorporate some of these vestibular parts with it. So that when we're sending signals down, where it's controlling the muscles, activating them, we get our information. Again,

Steven Bruce

I just haven't gotten you haven't got on to single leg stance yet. So

Darren Barnes-Heath

I may look at that, or I may, I'd probably next to the tandem walk. So trying to walk heel toe, like there. So I'd ask you to walk a few paces like that, and then seeing Excuse me. And so here are looking to see can the heel and toe, that's great, then turn around and come back again. Can the heel and toe the touch each time. And again, if we continue with the right cerebellum been a problem, what you tend to see is as they're on this leg, they've got to get off it quicker because they can't balance so well. So they're putting this leg down. That's better than this one's coming down quicker right or not so accurate. And again, this may be fixed by adjusting the feets or getting the pronation working better So it may be that it's, it's a

Steven Bruce

really pronation in there.

Darren Barnes-Heath

So then if I'm going a bit further lateral with the cerebellum, if you have a seat on here now,

Steven Bruce

just while you're getting off the table there, and so apologies to the audience that might have suddenly had loads of questions arise in the, on my pad here, and I haven't asked any of them yet. But I'll get around to it after we've gone through your process.

Darren Barnes-Heath

So simple cerebellar ones, then this is more for the lateral cerebellum, now how we're coordinating the limbs, that would be putting your arms out like this with eyes closed, and then you're going to put the tip of this finger on to the end of your notes. That's it, and then back and then do the same on this side. And so this again, is that tends to be the standard neurological test, I'm wanting to see is the subtle dysfunction, particularly if you've got a shoulder problem or an elbow problem or something like this, do I need to do things to get the cerebellum working better, or am I just working on the periphery. So what I would do then is asking you to cover if you cover that I put finger on your nose, and I'd stand here but I went from the camera. So if you look at the number five there, I would then that would be looking at my nose, probably I'd then say touch my finger. That's it and back, try and keep looking at the number five. That's it and back, then here. And so here we're looking for intention, tremors is the accuracy, and then comparing it side to side. And you tend to see subtle differences. And the patient often says, Oh, yes, harder that side, I'm not quite sure. Or they have to keep looking, because their frontal lobe isn't able to inhibit the response. Yeah. Then if I'm going to look at the frontal lobe, more stockades, quick eye movements. So I might be getting you to look at this finger, and then this finger, then look at the number five, and then look there, look here, or what's a very good one for seeing how the frontal lobe has been able to inhibit things. And then response inhibition succeeds. So here, you'd look at number five again. And if I move this

thing up, if

they find their finger, you've got to look at that one. So the reflexive action is to look at the finger that moves because it's something that's happening, your brainstem is saying, We've got to look over there. But there has got to ride that and say no, we're going to look at the other one. So if I do this, that's it, then look at the five there. And I'd be doing like that. And I then try and trick them by kind of doing a couple of one side and the other and seeing how far they can go. And so this, that's quite a nice one with the frontal lobe. And what you tend to see when the frontal lobes going down is that there's still tension of reaching a reflex, face, the hands, the feet coming back, if there's been a head injury or cognitive decline or so then, perhaps if you've gone to bed, when I'm looking at the brainstem, it's probably best to come this side, I'd be what we're doing. So looking at the mesencephalon, so the top of the brainstem, I'm going to be seeing how the pupil reacts. So I'm shining light into one pupil to the side. Because as I do it like this, I'm activating the mesencephalon on this side, and then the editor West smile is causing the constriction. So I'm seeing how the right one works here, how does the pupil constrict? Is there a different side to side and then how the left one and what we commonly see is that down the brainstem on one side, there is under activity particularly if the cortex so if the left cortex is not so active, you tend to see that the pupil may be bigger, there may be like with the corneal reflex could be more stiff. So for your hand to use a puffer and just do a and then looking to looking to see if it's the same and does it feel the same as well. Then testing sensation on the face with just the brush and pinwheel, which we're all familiar with. And testing in this post. Yes, so there's a lot going on, but um, you know someone's got migraines or so this is gonna begin to understand, okay, this area of the trigeminal is hypersensitive, and that's the yes light is affecting them as well. So you begin to quickly understand what's often doing the vestibular testing. It's like you do one thing and all that makes my headache work. So I can see that there's a component from the cerebellum going to the brainstem, which is they're not inhibiting pain.

Steven Bruce

But yes, I do take my time, you had some electric stimulation, you were, in

Darren Barnes-Heath

terms of you were asking briefly or saying was to talk about vagal nerve stimulator. And this is something that I find very helpful again, if, if you have maybe chronic pain, or perhaps the migraines. So when we activate the vagal nerve, with, we're doing quite a lot of different things. There's the parasympathetic activity, reducing the heart rate, and making the breathing longer and more regular,

is doing this sort of stomach

acid and all the release of the digestive enzymes and other gastric juices increase the motility, because that's all going down Vegas beginning to work on those. And then also finding now that I

forget the exact cells, but some of the cells in the gut when you activate the vagus nerve, then decrease the amount of inflammatory releases, so you can lower inflammation in the gut. When you lower inflammation in the gut, you've then got the potential to in the brain as well

and subtract from it. So

it can be very useful downwards for decreasing inflammation and getting the parasympathetics working better. And there's studies now showing that almost everyone, when they have a head injury, within two or three days gut function is altering. So they may not feel it. But it's been measurable, right, which is, again, really interesting and sort of says, well, we want to get these areas working again. So I'll test by looking at the pallet and the sensitivity, get the patients are and then look at the back of the pallet, which side is that both lifting up well, or is one side not lifting up so much. And usually the side that isn't lifting up so much, I'd be more sensitive, and when I do the gag, they might feel it more, or it might make them gag more. So we won't do that, though. So you can then kind of see, okay, we've got this, this left side where Vegas is not working so well. And then there's a number of things you can do to activate it, right. One of the things I often get patients to take home and do is the simple tense device, I better do this on the right side, so the camera can see it. But Simple Tense machine, it really helps if it's analogue, because as you discovered earlier, I've got a turn it up very gently. So I would put the electrode on the triggers. So it's going in the flap of the air on the inside there, and then

get that Roman

thank you then put a pad just sort of on the neck or shoulder there. And then as I turn this on, if you've got a digital one, you tend to turn it on a one, two, and at some point, it's like, Oh, that's really sharp, and then you turn it down and you don't feel it. So the old analogue ones are much better. And I think when we get to somewhere around three, you'll begin to feel it. And I'll probably have to turn it down a bit. Yep, so then turn it down a bit. And so

Steven Bruce

we'll have a reasonable accommodation to that eventually. So you can turn it up again, you want

Darren Barnes-Heath

to keep near this because particularly when you start doing other treatments with it, the you'll be co activating. And so you may then find that it goes or it's getting stronger. Okay? And what we want is it to you to be aware of it but not to be painful. So it's having those effects down. What's also really interesting is the research with vagal nerve stimulation on decreasing like epilepsy, cortical spreading depression in migraines, and just overall activity. So there are some pathways that go from the medulla, kind of at the middle of the brainstem, medial tegmental tract, I think, into bits of the I think the thalamus and basal forebrain which then have a inhibitory effect on the cortex. So

they're causing a decrease of activity. So when someone's got anxiety, which is overactive in certain areas, OCD

tics, or they're that migraines, are they get

turned off that the onset was

Steven Bruce

increasing in intensity? Yeah, yes, it's building up

Darren Barnes-Heath

a little Can you still feel it now? Let's turn it down a bit more. That Okay, now? Yeah. So we've got this potential to then decrease cortical activity on one side. And there have been a couple of people have treated who have had head injuries and then started having seizures, who have got to before they've been on medication, which are then stopped having seizures. Now, that's not us doing this. I've been doing this whilst I've been activating parts of the brain. I've been using low level laser, which we can come to and doing some metabolic work as well. So the combination of things has been helpful, but which bit is most helpful?

Steven Bruce

Yeah, and we could get into all sorts of convoluted arguments about about that, could we do what we want is a fixed patient? Yes. Are we done with grace? Now that's,

Darren Barnes-Heath

so we can turn that off there. I guess. They wouldn't just do this when that's on there. If I'm then doing it on the right side to try and inhibit the cortex here, I may be doing some right brain activity or some left cerebellar activity. So I'm combining the two and that may be manual therapy at the same time. There are quite a few other things we can use to stimulate the vagus. This device is called a Reza max. And basically, it vibrates at a very slow, a very low amplitude, so you can feel there's a resistance. And each time you turn up, it's like 10 hertz 20 3040. And so if you put this or just like a toothbrush on the air, then you're getting some activation of that vagal nerve into there. But this funny little device, it's like close word. Yes. You can then put on the carotids. So as the patient's name there, I

made it there. And there it is.

And it's only carotid body. So that's activating the stretch receptors on the carotid body, which is then making the new tractus solitarius. The sensory part of Vegas think, Oh, the blood pressure's going up. So it activates more parasympathetic activity. Okay. So another way of doing it more bilaterally doesn't look like a desperately expensive machine that spent $500. Yes, yeah. It's well made. And there's, they say, so when you press these buttons, you've got different colours, and the vibration will change over time. And they say that these particular frequencies for the vagal nerve, but then you ask more about it, and it's trade secrets. Okay. It seems to work. And patients definitely like it and feel karma

was because people were

Steven Bruce

a bit more training before they start using it to get the effects of online training.

Unknown Speaker

Yes, oh, yes.

Darren Barnes-Heath

Yeah, yeah. fascial release. So RAM, abdominal work is great, because 80% of the vagus is efferent. So then, whilst doing one of these things, working on the guts, you're getting a lot of vagal input, working on diaphragm, getting doing breathing exercises. Now, it can all be very helpful. So if I do a combination of these things, really good when people have got functional neurological disorder, and they're in a very stressed when they've had trauma and has that sort of disassociation, it can bring them back into their body quite well.

Steven Bruce

I think I might allow you to have one more thing, one more toy, because we've got so many questions here that I have not a single one yet. I need to get you back in the chair and sort of put you on the spot

Darren Barnes-Heath

to toys, I must talk. So this one very briefly, sensory evoked potential,

basically.

So we won't do that. But you can put it on trigeminal around here and it causes the muscles to tick where you can put it on the tongue, and then it will move a little. And that is another more powerful way of activating the vagus nerve. And so it's, it's okay. And sometimes there's some, there's two patients, one that had concussion. And when I do that to her, it just makes everything work. I work on her cerebellum in coordination, and I get a balanced feeling, and it's all better. And then at the end, I do that and she's like, Ah, I'm in my body. Now I'm walking. And so it just seems to

It's appropriate for that kind of maybe not for absolutely, to

try and figure out what's, what's going to be helpful. And then finally, low level laser, okay, know where this is within the light spectrum. And using this all the time, it's usually on a stand. If I'm activating the vagus with it, then I'd be working over either where the, again, necrotic bodies are there where the vagus nerve is going down, or this side, putting it right on over the just by the foramen magnum. So it's kind of pointing up a little bit. So the medulla, everyone's, yeah, 20 Plus, FDA clearances normal for brain. But they've done studies with, strike, and see that if you start getting the, the light spectrum

on, so let's talk about the stages, right?

Go through the brain go through the skull, only about two 3% of it gets through, but they see EEG changes on the areas that are activating. So if I put this on the cortex setting, and then

II

read, it probably can't see the violet two Well, that and the different wavelengths are providing photons a different energy, the violet tends to activate the beginning of the electron transfer chain, and the red the end of the electron transfer chain. So you up regulate mitochondrial, you get increased brain derived neurotrophic factor, so you get more dendrites and connections, and you get decreased inflammation. So it's great for the brain. Because if you can decrease inflammation and speed up mitochondrial activity, that's a lot of what healing is. Grace,

Steven Bruce

you know, off the hook, because we're going back over there. And this is going to turn into mastermind now, two and a half minutes and 60 questions, is what I've got sitting on my list here. Thank you grace.

Right, oh, where do I start with all of these? I mean, some of these will be relevant to what you've talked about, or what you've described, others will be just people asking your opinion for specific

cases. Marcus says, Can we ask if there's anything you recommend for stimulating nerve or muscle reactions in a spastic arm caused by a stroke.

Darren Barnes-Heath

So when, again, it's I saw the a chap who 40s, and he's had a left a right brain, parietal stroke. Sometimes with those, they'll be very sensitive to light or sound, sometimes they won't be. So most of the time when you work his his hand is like this. And if you work directly on the hands, you're just overworking the cortex, because already, it can inhibit through the cortical spinal tract. So you then want to this is the left side. So you've got problems here. What I want to try and do is get signals from other parts of the brain to get to here to help them function better. So that might be very light sensory work like vibration, or trying to do a bit of movement through the polymer reflex. Often, though, that's too tight. This chap, what I do is with my phone, use the strobe. And he's not light sensitive at all. And so I've got the strobe or his carer is holding the stroke to the left side. So it's going into the right cortex. And then I'm doing work on his toes, which aren't so badly affected, and I'm touching different toes, and he's trying to tell me which ones it is. And he can just about do that when he's not looking. So he's using his parietal areas here, and he's getting visual stimulation in front. And with him, as I do that, the carrier says, Oh, you can feel his hand relaxing. So because he's up, it's getting better. And so what I then do is say, Well, you need to do these types of things at home, because they see me for 15 minutes every three or four weeks. Part of my plan is usually I want to do this therapy, and then I want to set up some therapy that's doable at home. Right. So someone else the mirror box may work. Yes. Again, it's it's a question of trying and seeing so I didn't know the strobe was going to work. I thought, well, it's worth it. No, it's not causing fatigue. Sure.

Steven Bruce

Sorry if I move on to something completely unconnected, which might seem like a non sequitur, but Lauren says, would the tins that you use over there with that sort of treatment be useful for pots?

Darren Barnes-Heath

Very often, yes, I, I will use it for pots and probably, I get them doing isometric exercises whilst they're lying down, or beginning to sit up. So when you do isometrics, you get a lot of Purkinje activity. And that then helps inhibits the cerebellum, which stops the excessive outputs. So it often helps balance the autonomics. So I'm

Steven Bruce

assuming you'd have to do the the tendency on both

Darren Barnes-Heath

sides of the time to do it on the weaker side. So I have mentioned a couple of times putting the two clips on the air, when I've seen that it's just been, you know, fairly balanced. But most of the time, you'll see that there's dysfunction more on one side or the other. Right. Okay, thank

Steven Bruce

you. Rob wants to know, if you see people with tinnitus, and can you help them?

Darren Barnes-Heath

I have helped couple because it can be hyper excitability I've not there's

with hyper excitable cortical things like anxiety, migraines, as we get those calmed down, the tinnitus may decrease, but often it's because of inner ear degradation, and then I can't help it.

Steven Bruce

Right. Okay. John says, do you find a response to treatment for intention for intention, which I think you talked about briefly over there?

Darren Barnes-Heath

So yes, if essential tremor no but intention tremor.

Steven Bruce

If we can get the cerebellum working better, usually we can improve that. Okay. Hanna says How does low vision in one eye affect the ocular motor reflex a look at Elements ocular elements of diagnosis. That

Darren Barnes-Heath

can be tricky, because, you know, some people have had head injury, I've got one eye that's weak in one particular column. On one eye, you're looking at how one part of the brain does something and then the other is not like this side of the brain does this i and vice versa. As you understand pathways, you can work rounds most of it, but it definitely makes it more complex.

Steven Bruce

Okay. Sally is also and we did ask this that I did ask this earlier on, but certainly is asked how long are your neuro Rehab Effects going to be sustained?

Darren Barnes-Heath

And well, hopefully, it will be rehab and now improve bit by bit. So, you know, I find that you give a little bit as home exercise. Yes, yeah. So I, I, I offer people a sort of menu and get ready for this afternoon for five days, and they'll stay in Lincoln, and we'll do sort of intense therapy, I think

that the metabolic to

do, I want it to be useful if they're going to come for that period of time. And and I'll see month and get them to do a lot of exercises, or some exercises each day, they never did a lot but doing regular bits to build plasticity in the areas. And the idea is that we see one area begin to function better, and then you can move on to another one and they start doing it, presumably, they

Steven Bruce

are going to see these benefits that they have with the other side.

Darren Barnes-Heath

I always say at the beginning. I can't promise every anything because we notice isn't evidence base. And I've just been changing all the consent to make that even clear that you know, yes, this is an alternative. And I'm willing to try it if you are. And I also say in that, that if like if they're coming monthly or so, if we're not seeing changes in four visits, I'm not going to keep treating you unless we can come up with a different plan that's going to be challenging. So I'm expecting to see neuroplastic changes over over this time.

Steven Bruce

And just very briefly, if they were going for some sort of conventional treatment, would they be guaranteed recovery they wouldn't. Not with these things. So it's yours is as good as any other treatment and hopefully better. I guess so. Yeah. Lauren says he's heard that swinging the arm less on one side, presumably doing your gait analysis can be a first indication of Parkinson's. Is that something that can be? Yeah, again that that side of the cortex goes down. Sorry, I'm laughing as Lawrence also says, Can you cure seasickness?

Darren Barnes-Heath

Mal development syndrome quite often, right? Which is when they get really wobbly after being on a boat, right? They come off the boat and their vestibular system tells them they're still moving. Well, everybody gets older. No, no, no, this goes on and on. Oh, I see. So A Yes, one lady went on a cruise last January last year, and then came to me in about September having just been wobbling and going to Laureus vestibular rehab for. I think the problem often when they go to the vestibular Rehab Centre, is that and then spend them the and then get them to look one way or the other and do the eye movements and it's all bilateral. And nearly always when they analyse it closely, you see that one side's doing not too bad, and the other side is doing quite badly. Right. So if that was the

case, you had a weak muscle here, you wouldn't do everything bilateral because you're going to maintain that imbalance. So it's been specific.

Steven Bruce

Your rehab exercises useful for patients with dyspraxia.

Darren Barnes-Heath

Oh, yes. So that's the, the, my patient base is probably slightly more now children with autism, dyspraxia, dyslexia, or add Global Developmental Delay. And the cerebellar ones are great for dyspraxia if that's what the diagnosis is, right.

Steven Bruce

Graham asks, is there any suggestions or approaches when it comes to recovering from Bell's Palsy?

Darren Barnes-Heath

So the laser is really good for that the violet laser has quite good antiviral and antibacterial properties, and will help speed up the healing. I did see one lady years ago, and she'd had Bell's palsy like two decades earlier, and was really low down. And I wasn't sure if I could do anything. But I looked at that like there those tests and found that her vestibular system was really low on one side and more sensitive, and so did the rehab for that. And it started increasing the tone in the face. So it was up regulating the brainstem on that side, and then facial nerve tone was beginning to increase.

Steven Bruce

This is possibly a lengthy answer required. We'll see. Carrie has asked whether you could give us your patient explanation please, how you're treating the problem. How what you get them to do changes thing. You're performing most cognitive tasks? In layman's terms? I mean, how does it sound?

Darren Barnes-Heath

So like I say, I've tried to make it simpler and simpler, and then let them ask more questions. So it's really, you know, the test I've done have shown that these areas of the brain are a bit underactive, usually it's not, unless they know it's damaged for an MRI or something, but a lot of the time it's functional. So say that means that they're still there, but they're weaker, like weak muscles. And essentially, what we've got to do is get them stronger, but not overwork them. And that's what I've got to find out sort of how much exercise you need to do at home to work them. And I'll be trying to activate them in the, in the clinic here, with the various tools and gizmos and things that they they do. So I'll be working on your body, which goes up different pathways to different parts of the brain. And I might be doing it through eyes, sound, touch, even smell, sometimes, vestibular and

proprioceptive. Right. So I have explained that all these things go into the brain. And we can activate more one side or the other. And kind of leave it at that really, in terms of the cognitive. What was the question? Yeah, what am I doing when?

Steven Bruce

Yeah, carry us through? How do you how do you explain what it is that you're doing while they're performing motor or cognitive tasks. So

Darren Barnes-Heath

I'll sort of say it, they're asking now we're going to try and make this part of the brain work harder to exercise it more. So what I'd like you to do is, I don't know March, opposite arm and leg across March, and then do it in time to this beat now, which is a bit harder. Now we're going to get you to count backwards or maybe forwards as you do it or walking on time to it. So each layer I'm adding on I basically the say now this is going to work a bit harder, might struggle with this, let's say and just let them see how they do with it. Okay.

Steven Bruce

Jackie's asked what you think of cranial sacral therapy sacral occipital therapy and chiropractic terms, obviously in addressing vestibular or area.

Darren Barnes-Heath

So what I think's happening is probably, I don't know. There's a lot of different things going on with cranial work and everyone's got a idea and their idea is incompatible with everyone else's, it seems so you have to go out on a limb when talking about Sit. If we're improving threes, cerebrospinal fluid, then the cerebellum, probably that cerebrospinal fluid is a bit of a filter and a Koolance as well as providing some nutrients. And it's so dense that if we improve the filtration, maybe it's going to help that area more than others.

Steven Bruce

And so do you think that cranial sacral therapy is going to could help in these areas is that something you

Darren Barnes-Heath

tend to do a bit more forceful cranial than cranial? sacral mine isn't so intention based, it's a little bit more, I'm gonna push on these bones a little bit this way or that right time release talk or so. So that's more my I didn't do a course in CST, which is great. But I didn't quite figure out how to integrate it really.

When we're getting

hands on, and particularly when we go into rural pushing up on the palate or moving the sphenoid. With that, the stimulation we're getting through the nerves, I think it's the Sharpie fibres. And proprioception that gives is activating either the trigeminal when it's more external. And when you get internal, it's more nine and 10. And so I think a lot of the time, when I'm doing that, what I'm doing is getting more stimulation into those medullary areas through there. And that's how I look at it a lot. So I might be doing that whilst they've got the air clip on more while I'm doing some other form of vagal work, they might just have the vibration on the tummy to get the signals up as I'm doing our annual.

Steven Bruce

I'm gonna pick one more question at random before we before we have to close. Steve says what types of what types of an effect does a migraine on the brain? And is the effect only transient or could they lead to more accumulated issues from repeated episodes? Also, are there any detrimental consequences of taking frequent doses of sumatriptan?

Darren Barnes-Heath

Okay, so it would seem that, you know, when people start getting migraines, they tend to get worse unless they do something about it. And so as the migraines start, you get this cortical spreading depression, which we've actually got a slide for that.

Steven Bruce

You don't wake up in a seconder Oh, there it is.

Darren Barnes-Heath

So, yeah, this is just basically showing the red bit is where there's overactivity. Yeah, and that's causing the aura. So here, we've got sort of parietal temporal, so someone might be seeing changes with lights or getting a deja vu type feeling something like that there might be hearing different sounds. And we get this, you can't see that but where the red is, there's the over activity, and then the neurons get really fatigued or go into a post syndrome or prodromal area, which is the blue, where then they're not working for a while, and that's not good for the neuron. So if they keep doing that, it does seem to decrease function. Does sumatriptan mean, sumatriptan seems to stop the I think the sensitization that then happens of the trigeminal nucleus because all the blood vessels around in the brain they're when they're in that red bit.

murky getting all these

chemicals? Is it substance P and potassium and things going out? Which then sensitised the trigeminal nerve around the vessels, and that then causes the pain in different areas?

Steven Bruce

So the prolonged effects of sumatriptan? I'm not not sure No, okay. We're going to stop there anyway. I could have predicted this ages ago, we've had just very slightly shorter 500 people watching. And a lot of people saying can you run a short course for people in functional neuro rehab? How long? How long does it take to train someone to a level where they could use some of your skills in clinic? And

Darren Barnes-Heath

I think a good few days. So at the moment in, in Poland, myself, my colleague, if we go to the end here

Steven Bruce

that I can share this later on. People want better read that but okay. I will share it with email tomorrow.

Darren Barnes-Heath

Yes, yeah, fine. So there are courses available, the raw. We've not got much in the UK at the moment. So we've been doing the developmental brains ones, which is all about neuro development. And a lot of the tests and things that I do for children are the same as adults just in a slightly different way. But that's, that's certainly something. So in Poland We run for three to four day courses, and kind of everything. Now that's translated. So you can probably do it in less time because there's a lot of so we can cause my work. So a weekend course is good, because a lot of info hits heavy in fact, and the best thing to do then is go and try it. You know, we're getting rain, whether we know we're affecting rain or not. So it doesn't matter if you're there. Testing and thinking I'm not quite sure what to do. Because what we've been doing before, this is certainly what I thought when I started. And I've been doing manual therapy, adjustments, whatever and working the brain, I'm not really sure what I'm doing. I'm not going to suddenly stop that. I'm just going to start to try and refine.

Steven Bruce

Darren has been great. We have as the BBC would say we've crashed the pips, we've gone we've gone through nine o'clock, and we could have gone on for a lot longer. I know. I have thoroughly enjoyed this. The audience has clearly thoroughly enjoyed it. And I'm delighted that you came down here. Thanks. So well, hopefully we'll get you back again sometime soon.