Dr Mike T Nelson: [00:00:00] Welcome back to the Flex Diet Podcast. I'm your host, Dr. Mike T. Nelson. On this podcast, we talk about all things to increase your performance, add muscle, and also improve body composition, all without destroying your health within a flexible framework. Today on the podcast, my good buddy, Dr. Dylan Seeley, and we are talking about a whole wide range of everything related to performance.

A little bit more on the neurology side. We start off talking about working with mixed martial arts fighters, visual training in sports, visual processing also, we even get in a little bit of drills you can do for the visual system, potentially considering microdosing for training techniques, automatic nervous system testing, HRV.

And a [00:01:00] whole wide range of other awesome stuff, even touch a little bit on concussion. I first met Dr. Dillon, I think it might have been, I can't remember if it was through one of Coach Kavanaugh's things, or if it was at a Keurig event, or somewhere else. But, we had wonderful chats about all things neurology, and just sports performance in general, and he is a wealth of knowledge.

And it was awesome to have him on the podcast here. Make sure to check out his website, which we'll link to down below, which is inferno pr. com. All the great stuff he has on Instagram. He's currently in the Columbus, Ohio area, although I know he does a fair amount of traveling. So if you are anywhere in the Columbus, Ohio area, then you have the ability to see him in person.

I would definitely recommend it. And now as I'm thinking back, I think I might have met him in person the first time at Ali Gilbert's [00:02:00] Silverback Summit, I think. But anyway, it's all kind of a blur. But I think you'll enjoy the podcast with him today if you like all things sports performance and are looking at it from a slightly different angle.

And we got sponsors today. If you want more electrolytes to help with your performance. Check out our friends over at Element. They are my favorite electrolyte by far. I had two packets today. I had the lemon, lime, and the raspberry, and I always bring them with when we travel. We're recently in Mexico. So I brought a whole bunch down there while we were spending our time there in the heat.

So we have a link down below. Also, check out our friends over at Tecton Ketones. Shout out to them, I am an ambassador and an advisor to them, and they're working on some pretty big things coming out this spring. I can't say

what they are yet, but I think you'll really enjoy it in the process of reworking a whole bunch of stuff to [00:03:00] match.

In the meantime, if you're looking for ketone esters that taste pretty darn good make sure to check them out. Use the code DRMIKE to save 15%. What's cool about the ketone esters is they can get your blood levels of ketones much higher than the salts and you have way less risk of any GI disturbance when you do that.

Currently each can has about 10 grams of the BHB molecule that is bonded to a glycerol that allows it to get into your circulation quite quickly and you can raise your blood levels quite high. So check them out there, and as always, if you want to get on my newsletter, you can go to the link below. And we also have a special Flux 4 in this edition, so for the people on the newsletter, or if you want to hop on and get this one, I asked Dr.

Dillon what would be his top 4 things people should check into, once they're pretty [00:04:00] good with, the basics. They're good at sleep, pretty good at nutrition, pretty good at training. What would be the next four areas based on his significant experience that he would recommend them to look into? So if you're a coach or someone at advanced level and you want to look into what are the top things you can add to your repertoire Check out that question.

That is in the Flex 4. We'll put a link to it down below It does put you on to the daily email list Also, if you're on the insider email list already, you will automatically get this one delivered directly to you And you'll get all the past Flex4 questions, too, that only go out to the newsletter. So check that out below, and enjoy this conversation with my buddy, Dr.

Dylan Seeley.

What's going on, doc? How are you? Not too bad, man. How you been? Good. It was nice to see you again [00:05:00] in Virginia last time we were out there. Yeah, that was pretty fun. Good to see you again.

Dr. Dylan Seeley: It's awesome to connect again, man.

Dr Mike T Nelson: Yeah. And today we wanted to talk about the kind of lesser known things for human performance. We were just talking before we started recording that my prediction is, I think visual training will become popular again at the later part of this year, maybe into next year. And my fear is that it'll go the same way. The last time I saw this trend, which was probably 12, 15 years ago.

Intention, good ideas. Horrible execution, in my opinion, and the assumption was, eh, we can only make people better. We can't really make anyone for worse. We can't really someone up with visual training. And I would say, maybe if you're dealing with really high level people. Maybe on a good day, if I'm feeling incredibly optimistic, I might give that to you, but as you start going down the ladder and you start finding people with visual [00:06:00] issues, vestibular issues, and other issues, you can, as my buddy Jeremy Shmoa said, you can definitely have someone turn into a melted candle, like right in front of you.

And that's not going to be good if you don't have the skill set to know how to get them out of being a melted candle by the time they leave.

Dr. Dylan Seeley: Yeah, exactly. I think of it akin to the breathing kick that probably happens 10 plus years ago when people were first getting into it.

And then I think there was a video, I think it was the UFC video game or some video game where like you get dealt with fighters. And one of the things was you could train. It was like a little side thing on it, but you would essentially, your fighter would go for a run and only use like a snorkel mask.

Dr Mike T Nelson: Oh yeah, I remember all the snorkel masks, the altitude mask, and all the restricted breathing, and

Dr. Dylan Seeley: Yeah, so that made its way into the video games, and we realized, eh, it's probably not doing much of what we thought it was doing. And yeah, I think it's circling back around to the to the Vision Realm of things, where, everyone's becoming a little bit more [00:07:00] familiar with the pencil push ups.

And people are just running with that not realizing that's the final product of things It's not usually something you just start off with off the bat

Dr Mike T Nelson: yeah, and the snorkel training was funny because You saw all sorts of top usc fighters doing this and I remember Seeing these videos and if

you don't even know anything about training then yes, there is some Aspects of training that look crazy that actually Potentially work.

I would put Cal Deets is go drill in that area. It looks bat shit crazy, but it's actually works pretty good. Anyone would look at snorkel training and would be like, this is the dumbest thing we've ever seen. And they're pretty close. And it was even worse because the marketing didn't even match any physiology.

The marketing was you can train at altitude. And I'm like. Okay, I may not know a lot of stuff, but one of the things I know is that altitude has a pressure difference. Like, how the fuck is this thing making a pressure difference? I know what you found out later was just, oh, it's just [00:08:00] restricting breathing.

Oh, okay, At least say that. And maybe there might be some use for it, but yeah, that was wild.

Dr. Dylan Seeley: Yeah. I saw that. That was massive thing. What was that 10 plus years ago when that was really cracking into the market. Thankfully it's died out along the way and I don't have to deal with as many stupid questions from the athletes that I worked with about it.

Dr Mike T Nelson: Yeah. I think from every potential UFC person I worked with at that point. The first question was not what do you do for training? What do you do for nutrition, etc? How can you help me? It's hey, I want to do this insert crazy ass video of whoever Running down the street with a snorkel duct tape to their mouth.

Like, how do I do it? And I'm like, just don't

Dr. Dylan Seeley: I've got an auto reply set up on my Instagram because my fighters will send me just the dumbest shit on videos. What do you think about this? Should we throw this into training next week? And I just had the auto reply, please don't send me this stupid shit again.

Dr Mike T Nelson: Yeah, here's my answer. [00:09:00] No.

So for, let's start with visual training. Like why my first question is if someone is at a very high level in a sport that requires integration of vision, vestibular, proprioception stuff. Like I'm thinking of receivers in football, even a lot of defensive people in the NFL. One, are you going to really find many hardcore deficits?

And then as you go down the line, like what are things that you look for? Cause my premise is. At the highest level, there's things they can probably work on and get better in terms of skills and integration, but you're not gonna find a lot of just flat out, what I would say is, defects. For example, I don't see in 3D.

There's not a chance in hell I'm gonna make it to a sport where I have to catch a ball real fast. I worked on a guy who was a top in the NHL for a while at deflecting pucks midair into the net. We [00:10:00] tried for 20 minutes, I think I was telling you this story, to find any weird stuff in his visual system.

We found one error that he unconsciously corrected for on the second rep already. That guy's visual system is pretty solid, and able to do that. So what are your thoughts on that?

Dr. Dylan Seeley: Yeah, I'm in agreeance with that. What I find is with a lot of athletes, they're already at a high level.

And they're there for a reason. Like they're just genetically built different to be able to handle things. You might find some small deficits here and there, and that makes a big difference in the grand scheme of things. Cause we always, something as just if it's 1 percent better or 0.

5 percent better, average person is that, statistically meaningful. Maybe not for a pro athlete, that's the difference between another million on your contract for not getting renewed the next year. We're trying to take those small wins as much as we can. But yeah, similar to what you find, it's very small stuff.

Their eyes are functioning pretty well. It just might be a subtle thing where this eye is just tracking in, a split second later than it should be. [00:11:00] Which kind of distorts where, our visual field is at. Or it might be that they're, have a deficit in regards to say the color green in their peripheral vision.

I find

Dr Mike T Nelson: there's more color differences than anything else in my limited testing. If I were to pick one thing.

Dr. Dylan Seeley: That's what I've noticed too. Yeah, cause I've tested that a handful of times with some of the athletes and I might have a guy that, doesn't pick up the color green or color blue or whatever it might be.

So then. Like for example, for the hockey guys, if you got a big body in front of the net and all their job is to deflect the puck in, but they can't sense, that someone is on their side because they can't see that color coming into their periphery as easily as it should be.

Like they're going to get knocked out of the frame when they go to put their stick up, they're going to get bodied. So it's really important to to make sure these little things just get cleaned up along the way. Now, as you work your way down, that's when, the visual impairments become more and more apparent.

All right. People tend to weed themselves out of sports, that they're not naturally good at. So if you've already got visual issues, you're probably not playing a hand eye coordination sport. [00:12:00] No. So it tends to make my job a little bit easier because people at least have some capabilities to get into it early on.

But yeah, even, just small stuff like visual processing, making sure like we're seeing the image clearly, making sure we can see it in 3d, like you've been talking about all these things makes a big difference because a lot of times we think, if we just get the athlete bigger, faster, stronger, they're going to get better say on the ice.

If that athlete, there's a visual delay or there's a processing delay in decision making. They're just going to be a bigger, faster, stronger problem. Once they get to the puck, because they still haven't processed that information or what to do with it. So they're just going to get there faster.

So they're going to, their screw ups are going to become way more prominent now, if that makes sense.

Dr Mike T Nelson: Yeah, and that's why I think you see in some older athletes, especially I'm thinking NFL, NHL, that like raw power and speed, they're definitely not the top on the team. They might even be, lower bottom, but yet their performance on the [00:13:00] field, if you were to grade them, is still really high.

They just always seem to be in the right spot at the right time. I think a lot of that just goes back to that. visual vestibular and that cognitive processing prediction. Like they've seen the place so many times they have that half a second or whatever to move where the play is going to happen because they've seen it so many times versus just being purely reactive.

I don't know if you've seen something similar.

Dr. Dylan Seeley: Yep. I always tell the guys that I work with, be a PhD in your sport and not in the weight room. It doesn't matter if you're getting, it helps, to be bigger, faster and stronger, but if you're sharp between the eyes, like we, we've watched enough film, we know how to read a pattern.

We know where we need to be. You're just become more efficient overall. If you look at all the top athletes, it doesn't matter what sport. They're testing numbers. Aren't always the best. Like they're in that middle pack, like you talked about, but they're just so efficient and have such a high level of understanding in the game that there's no wasted movement.

Who cares if they don't have the highest VO two max, because they're probably not going to [00:14:00] expend as much energy because they're going to be in the right place at the right time. All right. Same thing. Do they need to be the fastest person to get to the ball? Like it can help. Yeah. But if they already know where that puck's going to go to after it deflects off the board, it no longer becomes like a pure foot race.

They already know where it's going to be at so they can just get to that spot right away rather than taking a poor angle and then trying to play catch up.

Dr Mike T Nelson: Yeah, I just think of if you watch film like just the reaction, the Not getting taken in by like misdirection, right? So in the NFL, if they're running a reverse or they're running a play with a quarterback, everybody has shifted all the left, even though the play is designed to go to the right, you'll see them not get taken in going with the flow, right?

You'll see them. Okay. Just wait and then react back the other way. So in the. The Vikings, I think of like Andrew Van Ginkle, who, very physical person definitely has a lot of the physical capability. But everyone who's interacted with him says that his [00:15:00] ability to know the game and to know the plays and to know where it's going.

And if you watch film of him, you'll see him almost delay and then end up in the exact right spot. And if you watch at full speed, you're like, Oh my God, that guy is so fast. But if you look carefully. It's that efficiency. Like you see this, like you mentioned the NHL too, pucks are reflecting off, you'll see the person go directly to where that puck was going to be, not even break stride and just run with it.

Versus someone who may be overshot a little bit and now has to correct to get back to it. Exactly.

Dr. Dylan Seeley: Like this is really prominent in a jujitsu, but yes, you ever watched like a white belt role with a higher level belt, like they are, they don't know how to connect their moves yet. And so they'll get to one spot really fast spaz out and they get there and they go, shit.

I don't know what to do to the next step. I don't know how to link things together. So like luckily, my buddy beats or is one of the best in the world at what he does with Jiu Jitsu. And he always tells me slow is smooth and smooth as fast. [00:16:00] Yeah. Yeah. Yeah. Don't rush to do to get to one spot or the other, slowly connect these parts.

And if you connect these things in a fluid transition, they're going to look pretty damn fast.

Dr Mike T Nelson: Yeah. And that all the way across sports from, watching athletes on film or on tape, you're like, Okay, yeah, that looks, pretty doable. And then when you see a 340 pound human run that fast in person, it's just it's another level.

There's something about seeing high speed, large mammals moving in person that is just mind blowing in my experience. Oh,

Dr. Dylan Seeley: it's terrifying.

I've seen it. I've seen it plenty of times firsthand. Yeah it's pretty cool to watch. Yeah, especially like it's most prominent in football. Cause those guys are just built for speed and it's terrifying to watch.

What was it? I'm probably gonna butcher the name. I think it was Don Terry Poe ran like a four horse, four, seven, maybe as a line. Yeah. Combine a few years back. That was [00:17:00] just terrifying, but I think it was. Yeah,

Dr Mike T Nelson: but all of them, you see that. It's surprisingly still looks pretty smooth. If you look at, the higher upper echelon versus medium, you can tell it just looks a little clunky and you see this across even I think of just, a rowing an ERG, like you're running your garage, like a concept too.

Like you watch like an elite person break a world record on a 2k and at the end you're like, yeah Still looks pretty damn smooth Like I couldn't tell the last 10 seconds from like the middle 10 seconds from almost maybe the first 10 seconds because I remember the first time I watched a video of that And then I

watched my video of it and I'm like, Oh my god, I turned into a spaz monkey like halfway through and it was a disaster looking thing.

But you don't notice it at the time because you're, in your head I'm just thinking if I just try harder it'll solve everything. And and no, trying harder very rarely solves anything.

Dr. Dylan Seeley: What makes an athlete truly elite, as compared to an amateur is their ability [00:18:00] to relax. Athletes will relax at a much faster rate than anybody else.

So it's not really trying to muscle it and stay tight. It's just creating a slow, smooth rhythm which then appears to be very fast. So you can stay in this even keel rhythm. You're going to get that relaxation down pat. So that's a big thing that I focus on with training. My guys is, instilling rhythm back into what they do no longer just muscling, where we need to be.

Dr Mike T Nelson: Yeah. Not a side note. You mentioned jujitsu. I was having a discussion with this, with my tattoo guy the other day. What are your thoughts about jujitsu people? Did they generally roll with their eyes open or closed? And what are your thoughts about that? This was our discussion for a couple of hours.

Dr. Dylan Seeley: I would say, Ooh, that's a that's a kind of a good one. There's some spots where it's really just feel like they're not even looking, they can just know they're going to be at. I think there's still a bit of eyes open into the spot, but it's not so much [00:19:00] like necessarily looking.

at your opponent as it is, looking towards your coach and what they're trying to tell you. It's the same thing with an MMA. I work with an MMA a lot more than the jujitsu guys. But yeah, it's the same thing. It's just keeping like eye contact and your coach to see what they're telling you, or like just eye contact around to see if you can set up a move, like maybe looking where their feet are at or something else like that.

But a lot of it. It's just proprioceptive work. They just know where you're at. They can feel your body pressure and then they can know like how to set up a sweep depending upon where your body pressure is at.

Dr Mike T Nelson: Yeah, I've gone back and forth because on one hand, you could argue because you're physically interacting with the other person.

Visual field, probably not going to buy you a whole lot of information because you can feel where they're at. You're literally in contact with them. So it's mainly a hundred percent proprioception, but then my brain goes to, like you were saying, could you look at the coach? Could you look at, not all positions, but tension on [00:20:00] their face.

What are they doing with non contacting limbs? Like my thought is if you could get to the highest level possible would be the proprioceptive component would almost be. more unconscious and you can still use your eyes to try to pick up other cues that you may not necessarily get proprioceptively only even though i get that the sport is you know primarily you're just you know have contact with another human

Dr. Dylan Seeley: yeah i find a lot of it also comes down to what's your style like if you're someone who's going to pull guard you know very quickly I find that their visual processing is not as great or the visual skills aren't as great.

As opposed to a wrestler, like he's picking up on cues because they're looking to level change. They're looking to catch someone off guard. So it's just, subtle differences. But honestly the jujitsu guys, cause I'll do just like a really simple single eyes search and it's like scan drill with people.

Like we're all, I essentially have a. piece of paper and it's got a bunch of numbers around it. And then it's got [00:21:00] my logo in the background. That's like a, on a gray scale. And what I'm looking at is obviously if it's, a black number against the white background of the paper, it's really easy to pick up, but then it gets a little bit tougher when some of the numbers are over top of the gray or they're half on the gray, half on the white.

So we'll do single eye search and then see like how well they go through that. My athletes that are in striking sports. So like the boxers, the Thai fighters, they are phenomenal at this stuff. My guys, not so much, not so good. Yeah. Just because they don't have to rely upon it because they're not looking for these little subtleties of someone reaching out with an arm or whatever.

Because honestly, within jujitsu technique is extremely important, but when you look at it from a training standpoint, you're really looking at isometric strength and maximal strength. Cause it doesn't, it helps to be fast, but it's not like a key whole thing in the sport, whereas once you get into striking based sports, velocity based training reigns a little bit more supreme within that.

Dr Mike T Nelson: Yeah. And the handful of people I've [00:22:00] worked with at a lower to maybe at best intermediate level, the lower level, the person is the more. They gravitated towards wrestling, jiu jitsu, weight training. In the back of my head, I'm thinking, I wonder if they have some eye issues. Because everything, and I'll ask them like, Hey, did you like playing ball sports when you grew up?

No, hated it. Do you ever play tennis, pickleball, or anything? No. Can you juggle? No. What do you spend your whole free time doing? Bro, I lift weights and do jiu jitsu. Okay. In my head, I'm thinking, I wonder if you have some visual issues because every you've gravitated towards, sports and things where you're proprioceptive, so it doesn't matter so much visually what you're doing, you just you're you're gravitating towards the thing that you're better at, which is just hyper proprioceptive work.

Dr. Dylan Seeley: Exactly. Yeah, that's what I find a lot of the time. Mostly I just see the split between striking. So whether it's like Muay Thai, Jiu Jitsu guys, or if it's just the grappling guys. Now what's really [00:23:00] interesting is the MMA because You're going to have to do both have a good assessment and to see where somebody is at.

Like I have a handful of guys where we've tested them and their visual work sucks, but they also tend to be very good grapplers though. Yeah. And I got other guys who like, and they're phenomenal strikers and can pick people apart on their feet because their vision is just so crisp.

Dr Mike T Nelson: Yeah. In that case, then is it.

Because I would imagine that's a key differentiator, right? I don't know what they would typically do for training, but to me that makes 100 percent sense. You have a guy who's at a high level that's either in the UFC they're not quite, upper echelon. They're, just entered, and they're notoriously for, once they get you on the ground they're really good.

I can think of some names of people, and I know their trainers, so I won't say their names. But striking wise, Yeah, not so good. They're a little bit hit or miss. So my assumption is that you'd be looking at maybe a target stuff, like special specific visual stuff with that [00:24:00] athlete, because obviously they've shown that they have the skillset.

They probably have pretty good muscle. They probably have pretty decent power. Like they're probably pretty good. And I think most of the things that

most people would be training, and again, I'm not saying not train those but I think you'd be then correct looking at visual and integration issues or things you could work on to improve their striking game, correct?

Dr. Dylan Seeley: Yeah, I think that makes a massive difference. I also think like what weight class they're in also plays a pretty big role in the heavier, you get greater chances of knockouts just because you guys bigger. So you tend to see a lot more guys who are just going to stand up and bang, like they're just going to, makers of each other.

You see that way more in the heavyweight division than you do or light heavy. Then you would to say at a flyweight or something like that. Whereas grappling is key within those divisions. I think like Sean O'Malley was the exception to that rule. Yeah. Until he got up against, again, someone who had like just decent striking but really good grappling.

And then that [00:25:00] was all it took. Yeah, I think it, it really depends upon weight classes, and then I think as well like with the visual stuff, yeah, we can train it up a whole bunch, but I had this conversation the other day with he had just retired out of UFC, but he was, we were going back and forth on, should he really train up your weaknesses or should you just.

Bury yourself further into your strengths. And he was of the school of thought, like we, it'll be 80, 20 or 90, 10 focusing on your strengths rather than, trying to bring up your weaknesses. And I found that kind of interesting because within, mixed martial arts. It is mixed martial arts.

You got to be good at everything that you do, but it's really hard to be good at every single thing. And if you chase all of these qualities, you're going to be average at all of them, right? It's it's like CrossFit. You're good at everything, not great at anything. Yeah, so it's that same thing.

And you're seeing the guys who are just really good at one thing are the ones that are winning the divisions.

Dr Mike T Nelson: Yeah. Yeah. My thought [00:26:00] is maybe you could do some type of visual screen, some basic, I don't want to say basic, but. Easier work that's not super taxing because there is a cost to everything and I'm sure you've probably seen this too where I could do some visual vestibular work with a couple athletes and you know it's pretty good like you know we could still probably train after everything's pretty good.

A few other people if I do the wrong thing they just looked like I pulled the string out of their back and the rest of their training session is F. Yeah. For that day.

Dr. Dylan Seeley: Cause usually it will throw it in the afternoon cause they'll have a morning session and an evening session.

So it could be like, so Tuesday, Thursdays, they do weights and cardio with me in the morning and then they have evening sessions that they do. Whether it's MMA practice or Muay Thai or Jiu Jitsu. And so what we'll do is we'll try and stack it up on days where they only have one session. Whether it's a morning or a night, preferably a morning thing, because then they can just fry their brain in the afternoon and be done with it.

So I find that tends [00:27:00] to help a whole bunch. Yeah, because like you said, there is a cost that comes with it. You put your guy, you put the guys through it and it's, you can tell their brain's fried after doing just, five, 10 minutes of work on it. Yeah. 'cause it is very taxing.

It's very hard. And especially all the different domains that you're trying to chase within it, whether it's whether you're looking at like a dynamic, like dynamic or static visual acuity looking at contrast, sensitivity, all of these things. And then you get into convergence or divergence work.

Steropsis, so like death perception going into that, you can really go down the rabbit hole on each thing and really work somebody hard. But then they're absolutely cooked. Like you said, the rest of the day. So it's just giving them enough to where they, get a little bit of enjoyment, get the benefit out of it, but then not enough to where they get really good at it.

If that makes sense, because that's, it helps, but it's not the main focus.

Dr Mike T Nelson: Yeah. You're not, there's no, visual Olympics per se. Man, I'd be

Dr. Dylan Seeley: crushing it.

Dr Mike T Nelson: Yeah. You're looking for transfer. And I think that was a part that when I first started [00:28:00] doing this stuff, I was very.

underappreciated, I think probably still is. So I did some training originally through the Z Health system is how I was exposed to it through Dr. Aqab and,

eventually went on to their master trainer and then a bunch of work later on through the Kerrigan Institute. But I remember the sports vision course the first time I was there.

And everyone in the class was like coming up and testing my eyes going, holy shit, look at these guys eyes. This is crazy. Hey, can we test your eyes? And I'm thinking, Oh, fine. Whatever. Like I show up on day two, more visual testing. I remember at lunch, going to get lunch. I got I got a coffee that was like a liter tall.

Drank the whole thing and I could have taken a nap in the back of the class. I was completely Utterly worthless the rest of the day It felt like I got hit by a semi truck of like air quote CNS fatigue Like my joints feel fine movement was a mess Everything just felt like my brain got just absolutely fried and if you were to watch it from the outside all it looked like was you know, a lot of [00:29:00] convergent stuff a lot of It doesn't, if you don't know anything, it doesn't look like you did anything.

It just looks like, why would you be tired from moving your eyes around? But in certain circumstances, especially if you have a lot of heavy compensations it's hard to understate how incredibly fatiguing that can actually be, even though it doesn't look like it at all.

Dr. Dylan Seeley: Oh yeah. It makes such a big difference on that.

I had the same actual experience. Cause I wouldn't I was doing the concussion course with Carrick and Dr. Insanucci, like some of the stuff. Cause I had failed. I had six concussions throughout my life, but I was the perfect case study. So yeah, so like literally every test that we did, I think I failed it.

But yeah, we were going through some of the vision stuff and we were doing, maddox rods, like testing for ISO and XO and all this stuff. And we're sitting there and they're like, the line should be either like vertical or horizontal. And I'm like, every single one I have is diagonal. And so we went through

Dr Mike T Nelson: that test is a pretty big issue.

Dr. Dylan Seeley: And so yeah, you got [00:30:00] some issues going on here. So then they were just teasing some things out. And it was just super interesting because everything's just so tightly connected, between your ears, your eyes, your neck, all these things, and we try to do a bunch of drills to fix some stuff up.

And I came in the next day and I was cooked. I would like, I didn't even. Usually I would at least go out and get some food and, hang out with everybody for a little bit after the course. I think I like went straight home and then slept in or I went straight to the hotel and I think I was in bed by 7 30.

So yeah, I was absolutely cooked. So yeah, there is a cost that comes to a lot of this stuff. So it's just giving small doses. That's the other thing I'll do is micro dose it too. So they just might have one. Drill that we do for the day, but they might have it seven days a week. So I'm a big fan of that when it comes to training their vision.

Because same thing with vestibular work. You can. You're better off undershooting it, but doing it extremely frequently rather than doing just one big go and then not touching it again for the rest of the day or for the week. And it's because [00:31:00] as you train that up, as say like we're doing a little bit of a stibular work, we do a little bit of a stibular work, we get that hypo functioning thing back to, an even state with the other side.

But then you don't do anything the rest of the day, it's just going to down regulate itself. And now you're back to having a hypo and hyper issue like this mismatch. So I'd tell my athletes we're going to do this one drill. You're going to do it for, like a set of 10 reps, and then you're going to do it again in two hours and then you're going to do it again in two hours.

And we're just going to keep doing that until you go to bed. And we might do that for a few days and then things start to equal out. Because I made that mistake early on. Because I didn't put it in the directions and coach catalysts. When I was coaching one of my athletes, I'm like, you have 10 sets of this.

And then he did 10 sets at once. And I was like, Oh, thankfully it was preseason for him. This is for one of my rugby guys, but yeah, so we learned that mistake real quick. So I made sure we didn't do that again, but yeah, just hitting it more frequently throughout the day. Same thing with visual stuff.

If I can give slight visual inputs throughout the day, that makes it [00:32:00] way easier and you adapt way better than saying doing it a different way.

Dr Mike T Nelson: Yeah. That's what I found too, is you can do I'll do muscle testing and range of motion testing or whatever. And you'll find, when you find a couple of those key drills, it's like, Ooh, everything feels better.

Like a lot of times athletes will report, okay, things look better, feel better. And then I've made that mistake too in the past where I'm like, Oh, this is the thing. And then you take the big hammer and you whack them like 20 times with it. And they just degrade into a puddle in front of you.

I went a little too far there. Sorry, buddy.

Dr. Dylan Seeley: Yeah. And it applies across so many different domains, whether it's just visual or vestibular or even training. Like I use that for my rehab, honestly. Yeah. Same idea. Yeah. We don't just do one big session. I give people like a total time, say if I'm doing like foam roller, hamstring bridge, I'll give them a total time for the day that they have to do. So they might have 120 seconds worth of work, but they can chop that up however they like. And usually they're doing that four to five times a day to get that one 20. And we get much [00:33:00] better results than if they just did it that one time.

Dr Mike T Nelson: Yeah. That's the argument for. Some strength training stuff, even maybe some velocity based training. Hell, I could make that argument about dietary protein, like just, get most of your protein in and then we'll worry about, distribution and moving it around.

And what you realize is If you had to eat 180 grams of protein, Oh, shocker. I probably have to distribute this in order to get that much down. I'm not going to eat 180 grams at one sitting, so it's like the same idea as apply across, multiple domains too. Yeah, exactly. That's what I

Dr. Dylan Seeley: found.

Dr Mike T Nelson: So the

Dr. Dylan Seeley: more that I've implemented that the better and the faster we've gotten results.

Dr Mike T Nelson: And then with that, and then after this we'll back up to talk about some of the visual stuff and what people can do for testing and everything, but how do you integrate it into their movements, or do you find that if you find the right things, the brain will just accept it?

So what [00:34:00] I thought is Your brain, your body always wants to be more efficient. So it's always trying to find the most efficient pathway. It's just, if

we're looking at breathing compensations, I stuff is visual stuff. You may have some things that need to be fixed, but for that person's brain, that path they're currently going down is the most efficient for them.

So how I'm thinking about this is that. I need to make another better path more efficient. And when I've done that for, breathing mechanics, visual stuff, vestibular stuff, it appears like the brain wants to go down that direction and then it's just getting a little bit more of that frequency embedded so that it becomes normal.

But to me, it was fascinating that even doing hands on stuff, like all of a sudden you'll hit one or two drills and you'll see oh, wow, all of a sudden now they're getting air into their, upper lobes of their lung or their ribs are laterally expanding, that I never coached them to do that per se, that the brain figured out, oh, now I have this capability, [00:35:00] this way is more efficient, so I'm going to almost subconsciously go that direction.

Dr. Dylan Seeley: In regards to incorporating it into weight room or anything else, I'll usually embed it into the warmup with a lot of this stuff that we do. I find if we can get them to, so the more parasympathetic, they are like the greater the visual field, because there's no stress.

As we get more sympathetic, like it'll start to narrow down. So I make sure like early on, like we'll open up with some breathing drills and do some, easier things just to get a baseline for where they're at today. And then what we'll do from there is we'll start incorporating it into say, you could use a figure eight walk.

I'm really big on. Targeting things like on a Swiss ball. So we'll lay or a physio ball. So we'll lay on our back on the ball. And then we'll drop what like say they have a right posterior canal deficit. So we'll drop back into the right and then give them a visual thing to look at too. It could just be a kettlebell laying back into the right.

And so they have to look at it. And then do a sit up and come back to center and look at me. [00:36:00] So we're getting like the eyes out to the periphery. We're getting that dropping the head and ear to the side to get into that, right posterior canal. And then we go back and then we'll just feed that.

So that's a really easy warmup. Plus a little bit of core work gets thrown into that too. I find it falls apart with higher threshold movements. Yeah, because we're, at that point, we're really just chasing the strength adaptation. And yes,

we could, have them put their head in a certain position and do a lift, but it defeats the point of what we're trying to train that day.

So if I'm really just trying to get them to strength train, I'd rather just, push it hard, doing it in a normal position rather than just half ass two different drills and by trying to combine them.

Dr Mike T Nelson: Yeah. One thing I've done that seems to work is. If you stress the system, whatever you have going on will further cemented into your nervous system.

So I found this out by really messing myself up. If you have really bad movement and you're all goofed up and you put yourself under high stress, you almost like further in bed, those changes in your nervous system. So I'm [00:37:00] like, Oh, okay. So that makes me a lot worse. What about if I do a drill and then do a lift?

So if I have something that, in my case right now it's a lateral, fast lateral shift to the right. And then similar thing, I'll lie down and I'll roll back to my right and back up. Like my range of motion, it's pretty good now, but like when I first started doing those drills I would gain like almost four inches instantly.

And everything would feel better. It's oh, I know where the ground is everything you can see better, etc. It wouldn't stay real long. And so what I ended up doing is I would drop that into before I would do a lift. So I would do two reps of that. Check my range of motion. Cool. It's better. Okay.

Then I would do a lift. I wouldn't worry about trying to put myself in that position during the lift. I would just do the lift. Okay. Lift was still good. Great. And then I found by embedding those into the training. That those changes then would stick a lot longer. So now after having done this for, four to five months, on some days I can go to the gym and get through a whole session without having to do it [00:38:00] once, other days where I'm a little bit more buggered up, I might have to drop it in a little bit here and there, but it's way less frequency.

And it feels like my baseline is just that slow process of etching up because I've had better movement. And then I put myself under load under the better movement and then oscillating back and forth.

Dr. Dylan Seeley: Yeah, we've used that actually a fair bit. I just, yeah, I didn't mention that, but yeah, we do use that one a fair bit as well.

Just, throwing in some subtle things to balance out the system in between. But usually what we'll do more often than that is stressing the visual system. So we might just do that. So we might just hit a heavy set because as you Valsalva, like you're going to drive up intracranial pressure.

You're going to essentially set off, we call this like the Turk murmur. I don't know if you're familiar. Oh, so Dr. Dr. Clark at the University of Cincinnati, who also teaches for Carrick. He published a research paper and it's based around, it's called a Turk murmur. So transient exercise related carotid murmur.

And for a normal population, you'll hear it go off at around 150 beats per minute. So if you hold the stethoscope up to the carotid. I [00:39:00] remember him

Dr Mike T Nelson: talking

Dr. Dylan Seeley: about this

Dr Mike T Nelson: now.

Dr. Dylan Seeley: I got you. If you hold it up to the carotid. That's when you'll see like the or it's when you, sorry, that's where you'll hear like that murmur come into play.

Now, if people have had a concussion and then there's a bit of autonomic dysregulation, you're going to hear that murmur at a much lower rate. It could be one 20, it could be one 10, just depends upon the severity. And what he found was symptoms didn't resolve until they got back up to that original starting number of whatever it might be.

On average, it was around 150 beats per minute. So when you get into these lifts and you start stressing it, doing a Valsalva to brace for, heavy squat bench day, whatever you're doing for that day. What we'll do is then throw ourself into a vision drill that, requires having some sort of peripheral vision or using the search and scan, or even we can use red green glasses and then separate out each eye to see if you have eye suppression, meaning like when I just shuts off, I had the, so the rugby player I was evaluating He very high level [00:40:00] guy.

He was struggling with perception to the right. And what we were doing early on is we were doing breath hold walks. So my buddy Brian Peters, who

phenomenal breath coach it was putting him through just a little bit of an evaluation thing of seeing how long we can hold our breath and take it into the.

Into these walks, go until you feel like the walls are closing in on you, all that type of stuff. And then I got thinking in my head I'm curious. I just want to test him after this and see how he does. So we put him through one of the breath walks, sorry, the breath hold walk. And then immediately after he stopped, got his breath back real quick.

We threw the glasses on and his eyes shut off. And it's because we starting to stress him to the point where his brain was having to make a decision. If he doesn't fully trust his right eye, your brain in a do or die situation, it's just going to say, get rid of that input only focused on your left eye.

So now for him in between, lifts, if he's doing a really heavy lift where there's a lot of Valsalva going on, or we're starting to increase intracranial pressure, the brain's going to go, Oh shit, I don't want to die. Let's shut off whatever [00:41:00] extraneous information that's not helping me. So now we just reinforce that.

By then having him do these drills, initially, it's just going to be single eye work to develop the strength in the eye to get comfortable around it. And then we can go into red green glasses and really separate out the eyes and start training it up.

Dr Mike T Nelson: Oh, that's super cool. Yeah, that's super awesome.

Related to that, I've had this idea that when people are watching film on a certain player, And there's technology to do this and someone's probably doing that. I don't know who, but their heart rate would be their biometrics would be displayed on the bottom of the screen, right? So you could see heart rate, maybe you could see HRV.

And then you would know do they make more mistakes at certain heart rate ranges? And if they're always making mistakes that the high end range, or heart rate accelerating too fast, Like you said, that may give you some clues as to, okay, are they dropping certain information at a certain point?

Maybe they're just flat out not conditioned. So everything is this, high stress input, which we know is going [00:42:00] to, start collapsing some peripheral vision, et cetera. I don't know. I was just thinking if at a remote thing, that might be something you could look to see and be like, Hey, this person doesn't really move like that.

They're in the same position. Their heart rates were similar, but this person is always making mistakes to the right side. They're missing the player coming in or, whatever.

Dr. Dylan Seeley: So I actually test that with a lot of people. We'll get their heart rate up by just putting them on a bike or something else.

But like you said, you can track it in game situations too. Dr. Clark actually does that in his lab. So those, Oh

Dr Mike T Nelson: yeah. I remember him telling me about that. They'll strap on, we stress the crap out of them. It's pretty fun.

Dr. Dylan Seeley: Oh, that's brutal. But yeah, it's pretty cool. But no, so yeah, I'd be really curious.

I know the NFL has the capability because one of the guys that runs their injury prevention programs, a buddy of mine, and they've got some really interesting metrics that they've been tracking and they got some data that they're going to be rolling out here pretty soon when he publishes his PhD on it.

But yeah, so they, they do have the ability to actually track that stuff. And then, so the rugby player that I work with, I can get access to [00:43:00] his metrics so I can see his heart rate in the game. And then we can timestamp it to some of the decision making that's going on. So now we can start to track, to see where he's at, looking at even some of the GPS data, like how many times has he come, yeah.

Like how stressed is he within this? Okay. What's his heart rate in this situation? Looking at all these different things and then looking at the decision making that then branches off of that.

Dr Mike T Nelson: Yeah, because to me, I think that's like the next level because you, it's one of those things where you can see it in some players and now I think about our Vikings quarterback performance the last two games, it's Was not very good to say the least, but people are like, Oh, he's just bad.

He's not very good. I'm like, you don't win 14 games by being really crappy at your job. You know what I mean? Like you don't, and most of those positions, like you, you just don't get to that level without being pretty damn good. But when he got more stress, the pockets, going around them, my bias, and again,

this is just [00:44:00] purely guessing that there's something peripheral that's escalating his nervous system and making him.

Very uncomfortable. And that's just enough at that high level to be off by a couple inches, to be late by like half, half a second, all those things at that level make a massive difference from a performance. That looks amazing to a performance that looks horrible. And you see this if you take quarterbacks through the NFL, like you'll see why to do some games they have are just amazing against a pretty good team.

And then the following week, it looks horrible. Like it doesn't look any different, but my guess is that there may be some deficiencies in those areas. And then if you add in the fact that they're playing a contact sport where they're literally getting their bell rung, how many times a game, and if those poor games are showing up in the playoffs towards the end of the year.

I start wondering about concussion and, just being hit in the head so many times that yeah, they're probably [00:45:00] not going to fail concussion protocol or anything like that, but it's just enough that's damped down or change some of those circuits that when they need them the most, they're just not where they were say at the beginning of the year where they haven't got hit in the head so many times.

Dr. Dylan Seeley: Exactly. Yeah, I'll test that with a lot of the athletes that I work with. We'll go through a full autonomic breakdown looking at, pulse pressure side to side and like within pulse ox and all that stuff, saturation rates. We'll go through optic nerve testing for red eye saturation to assessing Turk murmur.

Supine seated, standing blood pressure, trying to just assess or table tilt tests, like all the autonomic testing to see where they're at to have a baseline. And then you can track that throughout their season too. Which then helps when, decision making starts to deteriorate.

So the more parasympathetic we can get them, the healthier that autonomic system, yin and yang are between sympathetic and parasympathetic. I find it better to decision making. Like you said, it's when they start getting a few more hits to the head, it's sub threshold, [00:46:00] but it's probably enough to swing them a little bit more sympathetic, which has done throwing them faster into that fight or flight than they normally would be.

So now the walls are going to close and their vision is going to shorten down a little bit. They're not going to think in probabilities where if, I throw here, then this defender comes here. All they're just going to see is the receiver and say, okay, let's hit this. So then I don't get hit. So the decision making comes down and become far less cerebral about what they're doing.

And it just more becomes a survival based mechanism. So yeah, I find that a lot funny to talk about though, with the tracking the heart rate and everything else and seeing if like decision making breaks down. The UFC actually did that, I think by accident. I don't even think they realized that they were doing that because the so they have the mouthpiece that has the heart rate sensor embedded in it.

Oh, I heard about that for that one time. That's as what I've seen. I haven't seen it on any other cards where it's popped up, but you can start to see when guys were breaking down in their fights. And you might've picked up like that, at this heart rate [00:47:00] or their heart rate recovery between rounds.

Yeah. It's really poor. You'll see that even at the high

Dr Mike T Nelson: level, you still see that, which is amazing to me.

Dr. Dylan Seeley: Yeah. So that's super interesting to get into that type of stuff. And then you can start to classify that out. Now I'm super pissed at myself. Cause I had that idea like six years ago. No market.

So yeah, I'm kicking myself for that now because I started to talk to, I think I was talking to some of the sports scientists at Ohio state about that. I'm like, can we get these for my guys? And you guys can run a research study on it. And then literally the next night was that UFC, I think they were fighting in the sphere.

And then that's when they rolled out that technology and I'm just sitting there son of a bitch, I could have just retired off the millions I would have made on that.

Dr Mike T Nelson: Yeah. Yeah the first time I saw this, I think was the old, God, the strongman stuff. I think when it was on, was it ABC worldwide of sports when they had the polar heart rate straps and it was wild to see heart rate city, one 80, one 90 on the plane poles and stuff like that.

And it was cool to see [00:48:00] that data. And then I remember asking someone, I remember who I was asked David Sandler, somebody. And I said, That was like super cool and like novel that was done like years and years ago Like why did they get rid of it because everything now is trying to become more interactive like nfl baseball You're seeing you know each pitch speed and you have all this data coming in and the rumor was he told me that They had too many fans were getting freaked out and thought all these athletes were going to die of a, massive coronary that they had to stop displaying all the data.

They had so many complaints, about it.

Dr. Dylan Seeley: It's super cool. Yeah. To see that data when it comes through. Yeah, it's funny. Like we're in an age where we can collect so much data now. And it's, I feel like we've also shied away from it as well. I think it's a good thing as well.

I think we got to a point where we were so data driven that it was handcuffing our decision making. We were just collecting data points for the sake of collecting data points, not doing anything with it. So yeah, I, yeah, that. We lost the art of [00:49:00] coaching along the way I found but it looks like it's starting to make a little bit of a comeback where people are learning how to actually coach athletes again, and not just relying on a data point to drive their whole decision making, which is awesome.

But yeah it's super funny when you get into just the everyday person, starting to get interested in these metrics where we've been tracking this stuff for a while. And then people are just making these really rash decisions now. HRV, my things in the red today, like I shouldn't train at all.

And it's only been read for one day, right?

Yeah, that, that stuff always cracks me up.

Dr Mike T Nelson: Yeah. I remember seeing I went to the design of medical devices conference, which is normally in the twin cities here, which is great. So I try to go to that whenever I can. I think this was, god, probably five or six years ago.

There was a mouthguard company that was putting accelerometer strain gauges in the mouthguard to determine head impacts. And I remember talking to them, they were like, Ah, it's pretty accurate, we can get it, it's not noticeable, and it sounds like they had most of all the bugs, worked out of it.

It was still very new. And I kept following up with [00:50:00] them even a couple of years later, and I'm like thinking, oh my god, this is gonna be huge, right? Everyone's worried about concussion, we can quantify, we can know all this, and maybe, and hopefully it's changing now, but The feedback I got from them was yeah, the technology works pretty good.

Everything is great. He's the guy, I won't say the name of the company, but he's I don't think anyone really wants to know what these impacts actually are because then they may be held liable because they actually have data. And I was like, Oh, crap.

Dr. Dylan Seeley: Yeah. It makes perfect sense on the, into that regard of things.

Dr Mike T Nelson: I didn't think of that.

Dr. Dylan Seeley: No, that's funny. Yeah, that's super interesting on some of that. It's same thing with the guardian caps that they had the guys wear for the NFL, putting them over top of the helmets. It was a big thing when it first came out and now you don't really hear anything about it.

And I think if I remember looking at the data, it caused like a 10 percent reduction in force, but if you're getting hit at [00:51:00] something that's, 65 G's and then you drop it down to whatever, 59 or yeah, it's still a lot of G's going through or whatever it might be. Or the amount of force that's going through something, it's just.

It does scare the general public around that when they start to find out about that. And then, obviously the higher ups in the sport don't want the data to get out because then it's, decreasing the likelihood of people playing that sport or even watching that sport.

Dr Mike T Nelson: Yeah. I remember back when I was, I did my Master's in Mechanical Engineering at Michigan Tech.

It was back in the mid to late 90s. And there was a guy there doing research on helmets and concussion. And so he was testing out, different designs and try to reduce, different, simulated impacts in the lab. And I was asking him, I said, Hey man, that's pretty cool. Like you must just get a ton of funding from the NFL.

And he's Nope. I'm like, what do you mean? He's they don't want to know. I was like, Oh, and granted, this is 25 plus years ago. [00:52:00] So hopefully it's different now. And I know they have done more testing and, better stuff, but it's interesting because at one hand. If you're the NFL, yes, you want to do everything you can to protect players.

You want to make it a safe game. Obviously, they've had, numerous rule changes to benefit that. But at the same point, I think companies and organizations have been very careful about what data they show the public now. And it tends to be only beneficial performance data. Like how far did the ball go?

How fast did it go? Like they're not showing a lot of, oh, this person got hit with these many Gs or, those types of potentially negative impacts. The good thing is they are

Dr. Dylan Seeley: collecting it internally. Yeah. There's a lot more data now than there ever used to be. So it's pretty awesome.

Cause I've got to see a few of like the comic, the player scorecards where the metrics the less and less is getting out around that. And anyways, call it like a, that's a tomorrow problem. Not a. Today thing for us, . That's how, that's [00:53:00] all, it's all that to the fighters all the time. It's like they know the risk, they know what they're getting into.

It's just a, that's a tomorrow problem, not today thing. So we're just trying to mitigate that as much as humanly possible through supplementation or, some of the autonomic testing and visual vestibular stuff that we can to help them. But ultimately there is a price to pay within any type of sport.

Dr Mike T Nelson: If you were to break down just the visual field at a very. Like, how do you think about it for testing? So if someone's listening to this and they're like, yeah, that's cool. Visual testing sounds good. What would be the things you would want them to think about? And do you have a. Maybe like a progression order.

Like in my brain, I'm thinking about just simple stuff like tracking first, and then at the end of the line is, maybe, pencil push ups, stuff like that, binocular versus monocular, like those things in my experience seem to be more deeply embedded and wound, and if you start Really fussing with those.

You can the risk is a lot higher with [00:54:00] some of those things. Does that make sense? Like in terms of, okay, look at this because the potential upside is pretty high, but the downside is like small, like in terms of a progression,

Dr. Dylan Seeley: yeah. So usually say I got a new patient or new athlete coming into the clinic.

The first thing I'll test is actually like the autonomic stuff. Just cause that's going to be an underlying thing for everything else. If their sympathetics are through the roof, then I know their visual stuff is going to suck. Yeah. So I got to get baseline on that first. And then from, that'd

Dr Mike T Nelson: be like the blood pressure differences, standing, seated, left like the ones you talked about before.

Dr. Dylan Seeley: Yeah. If there's like a change in 20 millimeters, mercury in the systolic, like that's a positive for it. Another thing, this is the easiest one I use, or the two easiest ones I use is the the red saturation test. So look at it could be a towel, a cloth, a shirt, whatever. So you're going to cover one eye.

You're going to look at it and then you're going to switch eyes. So then cover the other. I look at the same thing. And all I want to know is does it look the same side to side? Within each eye. Is that, is [00:55:00] the intensity of the red, the same side to side, or is it paler one, I ever see other. If it's paler in one eye, like it's that red, isn't it as isn't popping as much.

It's not as intense. Then we have reduced blood flow to that optic nerve. So we know there's something.

Dr Mike T Nelson: I think you found a pretty crazy case study with that. If I remember, correct. Yeah.

Dr. Dylan Seeley: So even that's cool stuff with it. I actually had some, I had a, so he just got out of the military as paratrooper had a handful of like long term concussion issues.

And I actually just did that test with him over the phone. I'm like, go grab a t shirt, stare at it, go switch eye to eye. And sure enough, like we were able to, just pin it down based off of that. I'm like, I already know you got a bunch of weird stuff going off of that, like test alone. But then the other test that I'll use, it's really easy one is you'll just have, you'll get someone's blood pressure.

So there's systolic and diastolic, and then you'll pump it back. So you'll release the valve, let it bleed out, give them a minute or two, and then you'll pump it back up to that systolic you [00:56:00] were just at. And then what I'll have them do is with their other arm they'll take their hand up to their mouth, blow into it as hard as they can, which is creating that bell Salva.

And I'll just give you're supposed to go at 10 percent of whatever their systolic is. So usually it's around like 12 to 15 beats or 12 to 15 millimeters mercury, which is usually just like one squeeze of the sigmometer. And you're listening to see can you still hear the pulse pressure going against the stethoscope?

If, and they're just doing that breath, like exhale for three seconds, really hard into their fist. If you can't hear, if you go like you're hearing the systolic initially, you'd give the squeeze, they blow into it and you don't hear anything. Then that's a massive issue because it means that they don't have the ability to properly regulate blood flow to the brain.

So they'll just cut it out. So

Dr Mike T Nelson: they're just occluding right away. Yeah. So they'll include the area

Dr. Dylan Seeley: to not get turbulent blood flow up to the brain. So you also see the decreased Turk murmur with that as well. So what normally should happen is you should be able to hear their pulse pressure and [00:57:00] that's, and like this within the stethoscope, when you're taking their blood pressure, even when they blow into it really hard.

And then when they let go, it'll fade away and then it should take about roughly 30 seconds to come back. Now that's pretty

Dr Mike T Nelson: cool. I haven't used that one at all. I like that.

Dr. Dylan Seeley: Yeah. If they're concussed or they have autonomic issues and they blow into it, you won't hear anything because they're

Dr Mike T Nelson: basically just occluding right away to save blood flow.

Dr. Dylan Seeley: So that's the two easiest autonomic tests that I use. And then in from there, we'll start to just do some like real simple stuff of like smooth pursuits, like just checking in each direction. Then I'll switch it to single eyes, smooth pursuits. From there we'll do saccades. You want to

Dr Mike T Nelson: explain what a saccade is for people who may not know?

Dr. Dylan Seeley: A saccade is just bouncing from side to side. So like a smooth pursuit would be if you just followed someone's finger, like across, if they moved it from left to right or up and down. And they just moved it at a really slow, easy rate. A saccade would be like if they stuck out one thumb to the left, one thumb to the right, and then [00:58:00] you had to switch from like staring at one thumb to the other.

So you would just bounce your eyes back and forth, like they'd be darting side to side or up and down. I also like to see if that's trigger for visual like for symptoms, if they get headaches, dizziness, whatever. Because that again can link back into some of the autonomic or ocular motor dysfunctions.

So the eye so I'll use that one. We'll then break out into we'll test convergence, but not like actually testing convergence. And I'm just going to bring my finger in to see if their eyes, both eyes come in or not and what they do. And then same thing, I'll switch it single and then we'll go one eye, same thing, tracking in all that stuff.

I'm not measuring it at that point. I'm literally just looking to see if the eyes can move. And then from there, I'll check it's wild. You will see some people were okay. Do the test. And one eyes out here still. And then here's all the way in. I'm like

yeah. So at that point, I'm like, I don't even have to test their convergent stuff.

Cause I already know they're going to get in from there, we'll start to go into peripheral testing. And then you can get into checking it with colors as well. So I might [00:59:00] just bring a, like a colored, post it note around the side of their head, but you have to make sure that they're staring at the wall in front of you.

So it helps if you have somebody like standing in front of them, who's staring at their eyes because they're watching them. Yeah. They don't cheat. So we'll just bring the post it note around the side of the head and kind of score where they're at and then we'll change the colors. So I'll ask them like, let me know when you see something and then ask them, can you tell me what color it is?

If they can't tell me the color, then we just slowly keep bringing it forward until they can see the color. So just because they can see something doesn't necessarily, they're going to have the. The wherewithal to know exactly what

that color is. And you might see some changes around it too. Like some colors are easier to pick up on the periphery than others.

Cause then that honestly relates back into the sport as well. Yeah. If I'm a quarterback and I'm not picking up the color green and I'm playing against a team that's wearing green and you're like, you can bet there's probably going to be more sacks and interceptions that game. Yup. We'll test that.

Another thing that we'll do is like Bates field splitters, which is [01:00:00] literally just taking like post it notes that are two different colors and holding it up, at the bridge of your nose and staring forward and see do you see both colors or do you just see one? Cause then that helps with eye suppression.

So if I'm only seeing the one color, I know I'm shy. Yeah. Yeah. That's another easy thing as well. The other thing that I'll use within that is trying to think for suppression, you can use those like different colored glasses, like the red, green glasses, checking for single eye suppression as well.

And then we'll go through like that surgeon scan, like piece of paper, timing them, see how they function out. Cause that's a little bit more taxing on the eyes. And then from there we'll start testing convergence. So you can do that on a Brock string. Which is just like a bunch of beads along a string and seeing, do they make an X?

Do they make a Y? Is it just one string? And it tells me how your eyes are converging on the area. Which is

Dr Mike T Nelson: more of a prerequisite for 3D versus monovision, correct? It's what you're looking at there.

Dr. Dylan Seeley: Yeah, pretty much. You can line test people to which is just seeing if they can see, with both eyes or if it's just one eye then [01:01:00] I, to really ramp it up, then I have a computer program that I'll run where that'll take them through convergence, divergence, and I'll measure it in diopters.

And then we can record the time at which like they're doing their saccades at and then also doing it from like base in and base down. So essentially like when you deal with. Prisms. So that's what base in base down or base up base down base in base out is. So essentially it's like looking through a prism lens.

So say if you're looking at base like you're essentially the light is going to deflect to the left. So if I'm looking through a, a base, right thing, my eyes

actually have to shift to the left to pick this thing up. So you're always going in the opposite direction and that's really hard for the brain because it's really tricky.

I don't know if anyone's ever had to deal with prison lenses, but it's a really odd feeling because it's weird on one side and really thin on the other. So it's like forcing your brain to have to switch it on the fly.

Dr Mike T Nelson: Yeah. I had prison glasses for quite a while to fix. Some of the stuff I had going on.

And when I first got into this stuff, like the behavioral [01:02:00] automatrists stuck a 10 degree prism on my eye and I, it was still not even enough to fix it. That's crazy. And he's just I don't know what to do with you. I'm like, the prisms don't work. I'm like okay. He's Hey, we can try a bunch of stuff, it's going to be 20 to 30 minutes a day for a couple of years.

And I'm like. Okay, cool. Like I was under no illusion that it was going to be like an easy fix. And I was arguing with him and he's you're not going to do that. I was like if, if it's helpful, I'll do it. And then he's you're not actually going to do it. And so I ended up leaving his office since he didn't want to try anything else.

Cracks me up. And I'm like thinking the next guy I go to. It sets me in front of the computer program. That's, looking at, monocular binocular doing all the prism stuff, same thing. And by this one, I had played around with a Brock string and just started figuring out, Hey, I'll try a bunch of stuff on my own.

If I melt myself, it's my own problem. Not that I would do this on other people. And I realized midline scar. If I moved my scar to the left and held it there. on a brock string my right eye would stay air quotes on [01:03:00] for another 10 to 15 seconds the second i would let off pressure like that i would just completely shut off and so i'm leaving his office and i said yeah if i do a brock string and i push my scar to the left my right eye will stay on for additional 10 seconds so i said is that helpful and he looks at me and he's like I think we're done now.

I'm like, okay, this is not the dude.

Dr. Dylan Seeley: Oh man. I've yeah I've ran into so many doctors like that. Like I love the people that live on the fringe cause I'm in the same thing. It's I'm always trying to find the next cool thing or to deal with just some off the wall stuff. Cause most of the cases I get in the clinic are very off the wall.

I think it's all true. You see all the

Dr Mike T Nelson: crazy stuff.

Dr. Dylan Seeley: Yeah, like it's all just super odd things that people have had. So I, you have to get really good at the fringe stuff because they've already tried all the conventional things and then that's where you have to start majoring in the minors.

But I also find like it just helps the athletes to like, cause if you can fix up some weird stuff onto that, you can definitely, figure out simpler things. [01:04:00]

Dr Mike T Nelson: Yeah, and I've also realized, maybe you've seen this too, like the clinicians I've worked with in person or know pretty well, they don't really think in algorithms.

They know the algorithms, like they know the progressions you should go through. Like when I see Dr. Jeremy Schmoe here on the Twin Cities, I've been seeing him for many years. Does awesome work. You can tell, and I've asked him about this. He's I just know that if you're missing this is not there.

This is a part of the brain we want to work on. I know this thing works on that part of the brain, so I'm going to try this drill and see if your body likes it or not. It's not an algorithm of, I didn't see this, so I definitely need to do this, and then do this, and do this. And you look at, I've talked to Dr.

Karig about this too, and He doesn't think in algorithms. He just thinks in, okay, this part is missing. I know this thing does this, so I'm going to try this. If that doesn't work, that's going to tell me to go this direction, that direction. It's not a tree, but it's interesting to go to a lot of the trainings where people are like what's the algorithm?

And yes, that's helpful. And that's a [01:05:00] good start. But you also have to understand that. If you're working with more difficult cases, they're not going to follow the algorithm and a lot of those clinicians then just throw their hands up and get stuck and they're like you don't follow the algorithm and it's like to the patient, they're like, Oh, okay.

I don't know what you're even talking about. Like to just figure the shit out.

Dr. Dylan Seeley: Exactly. Yeah. It really just comes down to pattern recognition. If you see enough crazy cases, you can start to piece things together

and have really good pattern recognition. And I honestly, I find that's a common trade amongst like elite level performers, whether you're in the business realm, medical sports, it's all pattern recognition.

The person who can recognize the pattern, the fastest can get to the answer the fastest. And it no longer becomes like an algorithm. Like you said, we're. If this, then that, which is just I call it, just give me the, what what do I do rather than knowing the, why, if you know the, what, you only know the next step.

If you know the why, 10, 000 steps. And then from there, it's just thinking in like probabilities and then trying to forecast out. So like second, third order thinking, [01:06:00] if I do this, then this will happen, which will then affect that. But then if this goes wrong, then it can also affect this and that.

So then you start to create probabilities in your head where if I do this, it's a pretty good success rate, but if it gets fucked up, then I also need to prepare this person and let them know that this is, could be a potential outcome as well. And I think that's where the real skill of things comes in, where you can start thinking in, not just first order, but second and third order thinking, looking down the line of things, because then it makes it easier to string along the rehab process.

Dr Mike T Nelson: Yeah. And I think about the same thing with even hands on work. And this has probably happened to you too, where you're working on someone. I remember one particular case for an hour and a half and I'm like, okay, making progress. Okay. This is good. This is better. But you still get that sort of that gut sensation of I'm still missing something.

And in her case, the second I did a technique on her right VMO, this is massive, traumatic release is crying for 15, 20 minutes, which You know, at some points will happen if you do enough of [01:07:00] that work. But after that, it was like the first night in two and a half years, she actually slept for an hour without pain, but it was all that kind of.

Lead up to just that one thing was enough to get them over the mountaintop and they just fall down to the resolution then at that point.

Dr. Dylan Seeley: Yeah. And it's it's that snowball effect. Like I was with the chronic pain patients, like it just sucks for you guys. Cause your snowball is starting at the bottom of the mountain, right?

So you got to push it up the hill, which is a pain in the ass. But once you get up there, it's smooth sailing all the way down. But yeah it's just doing a bunch of stuff until you get to that one little thing that makes the massive difference and I, it. You do it very well, just letting people know ahead of time, like we're going to have to do some of this.

And once you get to that point, it's like smooth sailing from there, but it's going to be a process to get to that point. And it's the people that actually buy in and trust within that process and do the actual work like they get the result.

Dr Mike T Nelson: Yeah. In the process, a lot of times, if I just use the example of, and I got this from Tom Myers too of [01:08:00] hands on work, it, it looks messy and disjointed and someone from the outside may look and just be like, what are you doing?

You're stressing the shit out of this poor person, but I think that's the difference between someone who does it better versus worse. They get to some type of resolution and you see a result of that session or that group of training block or. That vestibular work or whatever it is, where if someone doesn't have that same skillset, it just looks like a mess the whole time.

Like they never quite see these kind of smaller resolutions along the way.

Dr. Dylan Seeley: Yeah. Yeah. That's a pretty common thing. I find to like, when I was working at a, at another clinic, when I first started out, the clinician I was like working over top of me would look at me and be like, what the hell are you doing this for?

It doesn't make sense. Like, why are you treating, the foot for a low back issue? And it's. You just have to kind of branch down that thing. And the other thing is it's just pushing people hard enough, like giving them [01:09:00] the proper stimulus. I find a lot of things are just underdosed. And then you just create this massive gap.

So when you go back to return to play or whatever it is in your daily life, and you still have that gap, like there's a greater chance of reinjury. So I always tell my athletes your rehab is going to be like the story of Icarus. Like we're going to fly as close to the sun as humanly possible, but not try not to get burnt.

That's my job is to make sure I stand between you and the sun. As long as you trust me to let you push you to hard, to your breaking point, like you're going to

get better much faster. And that's why like the people I work with they're months ahead of rehab schedule.

Like I did a ACL rehab and we were jogging, at the end of the second month. And this kid is pretty much, good to go full testing numbers, everything else by month six. Wow. Nice. Surgeon cleared him and everything like he went through all the, all the steps and all the tests and kinetics, and he was just smoking.

The numbers felt fully confident on it. But again, it's, you got to push people to that point and like people just get freaked out about pushing that hard after an injury, but if you put them in the [01:10:00] right drill, they're going to be safe.

Dr Mike T Nelson: Yeah, and I think that's the key like and that's why I love using heart rate variability, which would be a whole nother podcast of to me that's a nice way of getting information from their physiology as an output at least on the autonomic nervous system level of Do we give you enough dose?

Oh, we went too far. Okay. Oh, man, you're red for two days. Okay. Sorry, my bad I'm gonna back off now before We fly completely dead center into the sun and burn the whole thing up.

Dr. Dylan Seeley: Yeah, it's a bit of a feeling out process, but yeah, that's where the HRV makes it a hell of a lot simpler. But yeah, it's, I always tell people, the first week's going to suck working with me because you're going to get pushed to the point where you're almost going to fly directly into the sun and then we'll pull you back because I want you to know what it's like to actually work hard.

And I think that's another thing too, is people are just afraid of the hard work to get to that point. But once they get through that, then they realize Oh, this isn't, it almost becomes a mental thing. Oh, if I can actually get through this, then the rest of it's a [01:11:00] breeze. I'm actually not as bad of a shape as I thought I was in.

Dr Mike T Nelson: Yeah. And just learning where that limit is. Like I do that with programming now with, assuming people don't have a lot of heavy issues or stuff they're working on, if they're generally pretty healthy, just mostly performance, they've got a few things we're working on, I just ramp volume, Hey, week one, two sets, week two, three sets, four sets, five, and I'm looking until.

Your HRV goes off a cliff, your performance starts dropping and you send me three emails about how much you hate me, then we're like, probably find your limit and then we'll back you off. And we'll start over with another session and then we're going to try to wave you over a couple of weeks back to that point and then back down.

And then over time, these waves are just going to be increasing, over the course of time. Yeah.

Dr. Dylan Seeley: It's like what we were talking about before we started recording for certain demographics, it's pulling them away from it another one. Oh yeah. Let me do it.

Dr Mike T Nelson: Yeah. And with the high level athletes, it's just okay let's start at two sets.

And they're like, you're an idiot. Why did I hire you? This is the dumbest thing I've ever done. I'm like. So I can almost [01:12:00] guarantee you're massively overreached right now and you have no idea. And if I just start adding more volume to you, I don't want to be the one responsible for pushing you over the edge.

And I also want you to realize like there is a path to this and then, oh wow, your numbers week two are like way better than they ever been. Shocker. And then they realize, oh, okay. Yeah. In hindsight. Yeah. Yeah. Yeah. Yeah. Okay. Yeah. Yeah. Yeah. Sorry.

Dr. Dylan Seeley: Yeah. It's I was talking with one of my fighters yesterday and he was talking with a former UFC a fighter and he's been going over there and getting some training in.

And he told the guy, he's Hey, I'm, I'm starting to feel a little bit run down and the former UFC guy, he's an old school guy. So he goes, you're not training right. Unless you get sick during camp, my fighter came back and told me that and I said, yeah, that's not the case. We're not going to get you sick doing that.

Dr Mike T Nelson: Yeah. Yeah. Where can people find out more about you? I know you've got an in person clinic. I know you do some online work, tell us all about it. Yeah. So I'm a bit of a ghost.

Dr. Dylan Seeley: Not too many people know, but yeah, [01:13:00] my, my website is www. inferno pr. com. My. I would say the easiest way to reach me,

honestly, is probably my Instagram DMs, because I'm usually just posting stupid shit on my Instagram stories.

So you can find me there. I think I'm Dylan underscore Seely DC. So D Y L A N underscore S E L E Y D C. I think, yeah, that'll probably be like the easiest place that you can find me. But yeah, those two spots. I don't put out content often. But I'll put out a lot of stories. I'm always open to chatting in the DMs.

I always just talk to, people about random stuff in the Instagram DMs. And then but if you have like more of a long format thing, or you want to hop on like a call or anything like that, they can send me an email to I think it's Dr. So D R Dylan, D Y L A N at Inferno dash PR. com.

Dr Mike T Nelson: Nice. And tell us about where your in person clinic is, if people are in your area.

Dr. Dylan Seeley: Yeah, so I'm in Columbus, Ohio, like more specifically, I'm out in like more of a rural suburb of Pickerington. So I work, in the office there, but I travel all around because I do a lot of [01:14:00] concierge work as well.

So I'll travel to people and treat them. And then I do a lot of online work or some hybrid stuff where people might come in for a session or two and then the rest is just remote. Pretty easy to access through all that stuff too. So I handle a lot of remote stuff. And then, I've got people from all over.

I've got athletes in New Zealand, Canada, Ireland, you name it. We're all, I'm all over the place now.

Dr Mike T Nelson: Awesome. Yeah, I definitely recommend your stuff. And I would definitely say if you're even remotely close to the area, get in an in person session, if you can, obviously there's a ton of stuff you can help with online, which is amazing.

But I think getting someone who's a really good clinician in person is. It's a very high value for what you'll pay. So if you're anywhere close to that area or you want to fly in like I would definitely recommend that it's definitely worth it So thank you so much for all your time. Really appreciate it, man.

Always appreciate you having me on. Thank you

Speaker: Thank you so much for listening to the podcast, really appreciate it. Big thanks to Dr. [01:15:00] Dylan, as always. I always learn wonderful stuff from him, it's great to chat, as always. Hopefully I'll be seeing him again soon in Vegas. I know we had a good time at the Neuro Sports Conference, which unfortunately I wasn't able to make it there this year.

I've gone to that conference in the past. It's been really good. So check out all of our sponsors below. Thank you so much for listening. Really appreciate it. Check out all Dylan's wonderful stuff. We'll talk to all of you next week. See ya.

Speaker 2: Hey, what are you doing? I dropped my gum. Hey lady, would you toss my gum up?

Speaker 3: You could have taken it out of the wig first.

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