## Introduction and upcoming think tank schedule

All right. Excited for this think tank. I'm Veronica Campbell. We've been doing this since 2013 with the idea of pulling like-minded practitioners together to learn.

And super excited for the Zoom presentation that we're going to be having today. Just to kind of give you a reminder of some of the ones that are coming up next month in May, John Kettermoll will be doing one.

In June, we have Dr. Dunning on regenerative medicine. And in July, Jennifer Kay, she does some different work. She hasn't determined her topic yet, but that's going to be coming September, Amy Vanderland in On Pelvic Health, and October, Paris is a chiropractor who treats pediatric postpartum pregnant moms and that sort of stuff.

So August is open and November and December are open if anybody's interested in presenting. But I'm excited to learn more here, so I am going to let Dr.

Emily take over, give her presentation and this will be recorded so people can come back and watch it later. Super excited and can't wait to Wonderful.

Well, thank you. And I am super excited. I'm new to the think tanks. So I very excited for this and honored.

## Dr. Emily's background and functional podiatry approach

Thank you, Veronica, for giving me the platform to share about my unique approach to foot health, to podiatry, as I a podiatrist, but to specifically today where we will be exploring chronic plantar heel pain or chronic planter fasciosis.

Now, before I jump into the actual education side of it. I do want to share briefly a little bit about my background and then how I got into regenerative podiatry because it may be a specialty that some of those who are listening have never heard that before.

They're just like, I don't know. Actually, maybe you've never of a functional podiatrist, but I am very, very proud to be both a functional and regenerative podiatrist.

I am also a human movement specialist. My master's in human movements from AT Still. So very excited that that is local here. And then I started my first education company 13 years ago called EBFA Global.

Was eventually was acquired, but it was an education company for health and wellness professionals, all focused around feet, facial integration, foot to core, and really the unique perspective of how I look at feet and human movement from a neurosensory perspective.

And if you start to follow any of my work, you will very quickly realize that I'm obsessed with the nervous system and neurosensory stimulation and just how our body perceives the world around us.

So that's at the heart of EVFA's education, which I mentioned was acquired and it was a acquired by Noboso, so which is my products company. And I launched Nobo.

We are in our seventh year. And it's a whole product line of textured neurosensory products. I'll speak about it very, very briefly today, because this is all about plantar fasciosis and a regenerative approach and an whole body integrated approach on how we can better find success for our chronic heel pain patients.

Those are my social handles. If you want to follow me, please come say hello. And I will happily follow you back.

Okay, so I just want to briefly share about my background because I feel that it is important whenever I refer a patient to another provider or provider refers me a patients, I want you, if you are referring me, a person to feel confidence that what I will communicate with the patient is going to resonate and we're not going say conflicting things.

And I know, unfortunately, podiatry can be very focused around surgery and orthotics and supportive shoes. And it's kind of the opposite of functional medicine and functional movement that sometimes, and I've heard this, that providers will be a little bit nervous referring to podietry because they know that it is just going to go opposite to what they believe in and what their trying to tell their patient.

We need to make sure that we are all kind synergistically on the same mission and how we look at the human body. So I was trained East Coast, so New Yorker, New york in the house.

So trained in Newark City, practiced in new yark city in Manhattan for 10 years. I Was trained as a surgeon like every other podiatrist is trained. It's actually required that we have to do a surgical training.

i did surgery for five years out of residency. A lot of did in a sense that it paid well, but not really where my passion was. And even from day one, when I was doing surgery, I still carrying this lens of functional movement.

My background is actually in fitness. I've been in the fitness industry for over 25 years. And so I carried this functional perspective as I went through very traditional podiatry training, trained as a surgeon, to think like a sergeant.

And then I tried to weave it in. Eventually I left surgical and traditional pediatrics in 2017. I pulled out of every single insurance. So I'm a direct care fee-for-service podiatrist.

Don't do surgery anymore. Put down the scalpel for the last time, 2017, and I switched my practice to be entirely functional and regenerative podiatric.

So I now see most of my patients virtual. I see patients in near Awatuki and I specialize in chronic tissue injuries or chronic patient presentations.

A lot of it does happen to be soft tissue, but it can also be chronic movement compensation, chronic movements disorders. But there's typically a chronicity to the patient that I'm working with.

Why I share this at the beginning is that it really helps for context.

## Understanding plantar fascia anatomy and biomechanics

When I shared with you the very specific and unique protocol that I have around chronic plantar fasciosis because I follow patients for three months and I am trying to cover every aspect of their healing journey and their return to function journey by understanding the way that our tissue models and response to load.

So that context is important. And eventually towards the end, when I talk about exercises and functional movement that I give my patients, it is because I have a background in that human movement and in fitness.

So actually a lot of people used to think I was a physiatrist, not a podiatrists, based off of how I look at things. Anyway, that contact is as important so that you understand just the depth of my look my patient.

So let's jump on into it. So we are dealing with chronic heel pain, chronic plantar fasciosis. Fasciosus we know is a degenerated tissue state. It is highly, highly frustrating.

This is where you are getting the patient with the heel, pain and they are just not responding to your typical protocol. Maybe you're starting to recommend and tap into shockwaves or little peptides, maybe some PRP, and they're just still not getting better.

And maybe you are just like, I don't even know. You throw up your hands and there's a little bit of a frustration. This is the patient that I see. The patient I that see has exhausted and seen 10 other providers by the time they come to me and their just, like Dodger's legal please.

finally help me get past this. So we need to help our patients finally get out of that heel pain. knowing that plantar fasciopathy is one of the most common presentations.

As a podiatrist, it is just one the common conditions that we will have is heel pain. Heel pain can be plantary, could be posterior. Of course, there's a lot of differentials.

But when you are thinking of prevalence of this presentation, just it's critical to understand how to navigate Probably the 1%. A majority of our plantar heel pain patients will respond to conservative care and to the very stereotypical rest, ice, physical therapy, orthotics, supportive shoes, a majority, probably over 90% will response to that.

But it is those outliers, and that is my passion. That is what I love. And that's my specialty. So for that, we need to understand how our planter fascia actually functions.

How does our fascia function? Your plantar fasci is like a rubber band that is found on the bottom of the foot and it is critical to the way that we potentiate energy with every step that It is not a stabilizer of the arch.

That's actually what I thought when I first started podiatry school is that your plantar fascia held your arch up. It does not. that's held through your ligaments and through you posterior tibialis.

Your plantarfascia is this potentiator of energy transfer. And that is going to be important to understand this. Okay, so here, this is going to be your plantar fascia.

Your plantarfascia is a thick band of tissue on the bottom of the foot. You have three bands, you have your medial, your central, and your lateral. I'm sure you're all familiar with this, but the one area that I wanna focus on is that your planter fasci actually has two layers.

you a superficial layer and you've have a deep layer. This is, again, something that is really, really important when you patients that are not responding to the typical care, maybe they're not responding to even the shock wave or whatever modality that you're approaching, is to understand the unique physiology of our plantar fascia.

So you have these two layers. You have a superficial, you the deep, of course the central band, that's where you see a majority of your injuries, but it's going to extend through the arch.

It's gonna split into five slips, becoming your plant or plate. The planter plate is the other area of the bottom of foot that I see primarily in my office.

So I say plantar fascial injuries and planar plate injuries. Those are the two most common injuries I've seen in office, but all of these are critical to foot stabilization.

Here you can see it a little bit more. So you see the medial band, the central band going into the lateral band. How it goes into to the plantar plate.

And then what's really, really cool when you look at cadaver studies is not only is your plantarfascia going towards your toes, but you have these little fascicles that attach into the skin.

So your plantar fascia, which the bottom of your foot, I'll show my hand, but the the foot skin, you can't lift, right? If you looked at your food and you try to lift the off the bum and the foots, You can lift it like you on the top of the food or the hand.

Those little fibers that are attaching the skins to the fasci, that's actually continuous with your planter fascial. You

go further into the toes and your plantar fascia becomes what is called your deep transverse metatarsal ligament.

Your deep, transversive metatal ligaments runs from met head to the met-head to methead. And it is this ligamen that is essentially going this way through the forefoot, creating fore foot and met atarsals splay stability.

So that broad attachment and fascial extension and continuity of your foot is really, really fascinating. But to me, this is also why sometimes it can be quite difficult to get the results that we want with the tissue.

So, dynamically, our plantar fascia allows for energy transfer through arch compression. Now, arch-compression is, of course, the dropping of your arch, and that stretching of the plantarfascia, when you compress the arch…

Of course you're going to get a lot of it at the origin, at your plantococcanial medial tubercle, right? But you are getting this stretching or the potentiation, then you get the recoil back.

Why orthotics are often used in plantar fasciitis is that stiff orthotic block arch compression. Not the falling of the arches, not over pronation, but what we're talking about is dynamic arch-compression for potentiation.

It's essentially just blocking the fascia. Then, because of this attachment here, how it goes forward into the plantar plates and then into deep transverse metatarsal ligament, it is creating a four foot horizontal metatarcel splay stabilization cascade, which is called your tie bar mechanism.

And every time you shift forward onto the front of your foot to become what's called a rigid lever to take a step. Your foot widens. It widers five millimeters.

This is by design. Physiologically required to trigger a stabilization cascade. We essentially roll forward, splay five millimeters, pull on the deep transverse metatarsal ligament, which activates then the whole plantar fascial system, and it is called tie bar.

It is a tie-bar mechanism from the front of the foot to the back of foot. This is where your windlass mechanism comes in. But your winless mechanism is not as simple as dorsiflexion, toes, titan fascia, invert heel, like that.

And that's really what the simplest way of saying your windlass mechanism is, but really it's connected to the tie bar mechanism. Again, this is important for understanding load, the dynamic nature of the foot.

And then honestly, where does this start to unravel, right? Why are certain patients getting plantar fasciitis in the first place? And why does their fasciaitis become an osis?

Okay, so really, really important. Last thing that I will say on that is If you have ever had a patient that has had an endoscopic plantar fasciotomy, an EPF, where they cut the plant of fascia, this is the surgical approach to plantar heel pain that is non-responding and you've tried everything and the patient is still in pain, you will go in surgically and release two-thirds of the plantars fascia.

That is why if you look at the research of patient status post, a EPF, they will report back forefoot instability. It's because you just unraveled or undid half of the tie bar mechanism.

So of course that makes sense that now the forefoot and the weight distribution around the parabola and met heads and transverse arch gets completely destabilized.

That's also why I'm very passionate about regenerative podiatry. as let's get all these chronic plantar fascial patients who are considering doing an EPF to first do an attempt and exhaust the regenerative podiatry options before they go into the surgical, right, versus just jumping to surgery.

All right, so what plantar fasciitis is, again, I'm sure you're all familiar with this, but I am just setting the stage here. So we know we have the arch compression.

Someone has the arc compression and they've overloaded the tissue. They have insufficient foot stability. Maybe it was a timing, maybe it trauma induced, whatever it is.

But that arch-compression potentiation of the led to micro tearing, oftentimes at the origin of the plantar fascia, and that micro-tearing creates an immuno-inflammatory response.

It's an immunoinflammatory and I know I can have the whole conversation around is there inflammation or not inflammation in plantarfasciitis. We'll just not focus on that right now.

because it's less about inflammation and it more about vascular permeability. That's what happens. We create an acidic environment.

## Plantar fasciitis, tissue stress, and chronic degeneration

Your body thinks that a injury happened, an infection, a foreign body, your body doesn't know, which is why there's an initial, hey, send the soldiers to the fascia, right?

And then they go. And they try to repair the micro tear, And then unfortunately they repair the micro tear in a chaotic way. And the patient is like, Oh, I'll be fine.

So they keep running on it. Then they kept interrupting the repair and then that's essentially how they get that plantar fasciitis. understanding that nature is important.

It's important for the patient to understand that it's for them to. Understand that this is a scale or a spectrum. Not every plantar fasciitis acute to chronic presents the same way physiologically or microscopically.

They would all look slightly different. it just depends on the unique nature of the patients. Oftentimes, I'll even tell patients you have a subacute plantar fasciitis, right?

It's just giving you the initial inklings that if you keep pushing through this tissue and you don't balance your stress and recovery or the repair mechanism, you will get a legit plant of fascia.

So on this, this is an important concept that I explained to my patients and that, I think, is important for providers to understand, particularly when it comes to plantar fasciitis and trying to finally get that patient pain-free.

And it is this tissue stress threshold. I think of this kind of like anabolic threshold training. And I don't know if anyone, you know, in the, In the space of fitness and performance has ever done an symbolic threshold, training, I love doing this.

Not so much anymore because I'm into lifting versus cardio, but an anabolic threshold training is you are essentially going right to the edge of where your body will switch into an Anabolic metabolic state and you you go right?

To the threshold and then you pull back and Then you got right in threshold, and it's your way to try to slowly increase that threshold you're trying to push that anabolic threshold just a little bit higher by doing this similar of any tissue in our body if you stress your body, if your stress, your bone, If you do anything you want to stress it and then back off.

Let the body come stress it and then back off. If you do not balance the stress recovery scale, think of like two legal scales, stress versus recovery and the stressed tips a little bit higher compared to the recovery.

You can hit your threshold and you will get plantar fasciitis, you'll get a stress fracture, a bicep tendonitis and a muscle strain. Pick whatever tissue you want to respond to.

And you will essentially hit that threshold. When you hit the threshold, you've essentially crossed the line, right? So this model is important. And it also just shows that, I mean, we're human, all of our tissue at some point is going to

fatigue.

Take a stick or a twig and fold it and, fold in, and think like the young green ones, right? And you're just back and forth, back, forward, backward. Eventually it is going to snap, you've hit the tissue stress threshold.

So it's about understanding this concept. One, You never get plantar fasciitis, but On the flip side, when we are taking that chronic plantar fasciosis patients toward the last phase of their protocol.

We need to think about tissue stress threshold during that time because the last thing that you want is that my regenerative protocol lasts three months.

I follow a patient for three month. The last I want to do is after three-months the patient gets a little bit too eager and they stress the tissue more than they should and then they slide back down.

And they're right back to square one. And there's been all that money in the time and the emotional investment. Right. So it's just important to understand that.

Okay. Now, in the acute injury, this is where a lot of our patients are going to be. This is going be 90%, probably even 95% of heel pain, plantar fasciopathy is gonna be acute.

And when you get that acute-injury, you're going through these different phases, these inflammatory phases or this immunoinflammatory response. You go through a repair, or a organization of the tissue, and then eventually there's the remodeling.

The more acute the injury, then of course you're staying here on this, the first two stages. When you have chronic tissue injury well now you'll have to go through an organization and fibrinolysis, right?

That's going to be on the later part of it. So if you can get that patient early, we all know this, it could be, you know, several days, right? If you're just like, woo, I'm sure we've all felt this where you were like okay, back off, stop whatever I am doing and just rest, rest rest.

Within a couple of days you are like it's gone, awesome. Or it can take up to six weeks really. So this is of course our protocol. I'm sure you have some extra ones that you can add in there.

We have our very typical acute plantar fasciitis protocol that we are recommending to patients. Now, what happens is if you load the tissue, tissue stress threshold, If you stress these new fibers too early or with too much load and they don't have the resilience yet, you can essentially interrupt and this whole thing unravels and then they start over again.

right? So this transition from an acute injury where we thought that they were going to stay healed quickly to a chronic tissue injury is we have a very chaotic environment here.

You have these immature type three collagen fibers when really instead we want to have type one collagen. I will say to my patients it's a little bit like scar tissue just Again, you're trying to explain it in a way that a patient will get, that I will just say, okay, instead of it being a young, healthy rubber band, we have this different type of fibers that is kind of like scar tissue.

And scar tissues, think of, like, a keloid, which is just a little bit chaotic in the way the fibers were laid down, doesn't have as much elasticity and rubber-band effect is what we could say.

It is no longer organized. Everything is chaotic. The fibers are laying in all these different directions. When the fibers aren't in different direction, like a haystack, it is very difficult to load that tissue properly without creating more stress.

There is haphazard neovascularization. And this one is so important that you get these immature blood vessels

that start to grow into the tissue to accelerate healing.

You get these other immature blood vessels and then they die off. So it's called neovascularization, which is in that tissue. And then you get, of course, ground substance.

All in all, I tell the patient that if you have chronic plantar fasciosis that on an MRI shows degeneration and thickening, where the actual millimeter thickness of your plant or fascia is increased, Think of it like a haystack.

It is a chaotic environment that does not have integrity and it is not going to be able to bear the load. The only way, and mind you, if that's what your plan of fashion looks like or is presented as, just resting, Just doing a mobilization, how is that going help the patient?

Many, many, I get so many referrals or patients coming from other podiatrists who that's what they do. Oh, well your heel pains. I don't know, i'm going to throw you in a boot for four weeks.

And that is it. Like that. Is it? I dunno how that chaotic haystack is going get organized by just immobilization, right? So really, really important to understand this chaos that we are trying to create organization around.

and then that healing time can take months. Months, months, month. So why are our patients not getting better? Why are these chronic heel pain patients, not any better.

Every patient has so many patients who said they tried PRP, they did shockwave, maybe some peptides. They did physical therapy, They digress and they do dry needling.

You name it, you've done it. Why are they not getting better? This is what I believe the reason is. Them. They are getting in their own way. It is the patient's fault for this.

And again, respectfully saying that the patients doesn't know, a patient doesn' know the true tissue healing remodeling process, which means someone has to come in and essentially be the captain of the ship or the chef.

And that's what I will tell them. I'm like, okay, and I'll guide you. But I am dictating every single step of that way. from the way that we prep your tissue, all the ways until you are fully back loading your tissues and you're good and consistent, till that time, I'm in charge.

Right? So that aspect is important. And again, it's no fault of the patient. They don't understand. So I am taking control of this situation. And this aspect of taking control, even though I take control of the situation, it is still highly dependent on the patient being an active participant in the healing process.

And what's actually interesting is on my intake form, I have a patient fill out and say, Hi, Jane Doe will be an actor participant. In my healing. And they saw, I'm not a, body worker.

I am guiding you to understand how your body is designed to heal itself. Give you certain things to really optimize that, but everything is based off of your tissue and your healing itself, which means you are part of that process.

So that autonomy and control is really important. Health literacy, I educate all of my patients. I want them to understand what happens when tissue is chronic.

What does degeneration mean? What is a partial tear of your plantar fascia look like, right? Because that would scare them. They just think their fascial is going to like rupture and not necessarily, so I try to get them And then they need to understand how to be consistent.

## Two-week fire-extinguishing protocol for heel pain

Whatever we are doing, you have to super, super consistent, You need be a rock star. Okay, so this is my flowchart that I take heel pain through. And actually every connective tissue presentation that i get, i take them through the

same thing.

But I am for this, let's say it is a patient who has had plantar fasciosis, heel pain for over a year. And, you know, sometimes it'll go quiescent, and let say you've actually been two years, so it becomes a little bit more.

Kind of complicated so for 2 years and then but sometimes it'll totally go away so it's kind of that waxing and waning presentation but their first presentation was 2. Years ago and every time they get a flare up.

It'll last for maybe like 6 to 8 weeks and I'll go dormant for 6-8 weeks. I don't show face again. And it's that waxing waning. Okay, so I'm seeing them now before I do anything else, of course, there's imaging and all of that, but I need to get this patient.

under control. And what I do is I take every patient through the same initial two weeks. The reason is that I'm trying to gauge the way that they respond to this two week protocol.

Then based off of that, I start to differentiate how are they going to go through this flow chart. If they've had it for more than six months, we're over here, greater than here.

We're gonna consider that chronic because by definition that is chronic plantar fasciosis. Boom, they go into my putting out the fire, right? If it's less than 6 months then first episode, I'm still gonna put them through putting through the virus.

So literally everyone goes through my two week putting-out-the-fire protocol. And I wanna show you what that it right now. This is my protocol for putting out the fire every day consistently for two weeks.

You are going to be a superstar. This what I tell my patients, because I told them this and they're just like, oh my gosh, I don't think I can do this.

I'm not sure. Do you want me in supportive shoes? No, i believe in minimal shoes. this is for 2 weeks Two weeks, okay? There's four things that are involved in this and you must do everything under this.

All four steps must be done every day, two weeks. Support, stress, SMR, and the systemic enzymes is really what falls under inflammation. There are some other things you could do, but honestly, I just wanted four S's.

So here we go. So you got something for support, stress, SMR is going to be the self-body work, soft tissue work and then the systemic enzymes. For here, support.

The purpose behind the support is to essentially push pause on everything. Time out, everybody time out. If you don't believe in orthotics and arch supports, not relevant right here.

I want the tissue to time out. i need to stop arch compression because every time your arch compresses it is essentially irritating the already existing micro tears and i do not want to continue to stress those micro tears.

So we are going to use arch supports. The arch support that I love, a little bit biased because it's Noboso's. the one here in the photo is called Nobozo Form.

It's an arch-support with texture, so you are stimulating the nerves and waking up the muscles. Other ones, the PowerStep, if they want custom orthotics that they have, fine.

We're going into supported shoes. we're not using minimal shoes at this time. Maybe you want an elastic arch strap. and then we're doing some sort of taping, but all of this is designed to be a timeout for the tissue.

Next, very, important, is that we need to remove stress. If you work out at the gym, I need you to not do lower body exercises. You cannot do deadlifts.

you cannot your squats. Of course, you can not run. Walk your dog excessively. If you have a standing desk, I need you to sit down. if you stand for your job.

So in New York, i've worked with a lot of, you know, NYPD, TSA employees. I get it. Teachers, right? There's a lotta professions that they cannot sit, down I understand.

so we're trying to do the best that we can under each of these. Okay, so again, no stress to the foot as much as we can. We're trying to minimize that.

Sorry guys, the other S is going to be self myofascial release. The self-myofacial release is gonna be addressing the soft tissue. Now what's important here, during this two weeks, acute or chronic, doesn't matter, everyone is putting out the fire, there is no stretching.

No stretching and I know sometimes this is people are surprised by this they would think that we would still do that but there's no stretching we're going to be doing self myofascial release and you are going be Perry to the tissue.

Parry means around. You are not directly on the plantar, calcaneal, medial, tubercle. No, you are going distal. So in the forefoot you can do the planar fascia here, and then you're doing the soleus.

you could do pelvic floor, the deep hip, other muscles, but you cannot be directly where you feel that pain. soft tissue work, using the neural ball, so it's a texture ball.

You can see the photo here that splits into two pieces. So you're stimulating the circulation, the nerves, and the muscles. If you are bringing hydration to the fascia, if you want to do dry needling, acupuncture, Graston, toe spacers, whatever you wanna do, it has to be consistent and it is always peri to tissue.

And then the final one is you're doing something for the immunoinflammatory process. Now, this again, if someone has had their heel pain for two years, you might be like, why would I do a leave?

Right? This is clearly chronic. There is not inflammation in this chronic tissue. However, it is just helping me to understand where their tissue is at and how it responds to something like this.

Now, systemic enzymes in my practice, I love them because they are going to modulate the natural inflammatory process. They're going support fibrinolysis.

And this is something that I will talk about a little bit more when I go into my regenerative protocol, but I'll start patients on it early during the two week.

Okay. And then you could do NSAIDs, you can do icing. You can, do whatever modality, but I just want them to address that component. Okay? One moment.

Okay, so we have our four steps. You have the support, the stress, self-myofascial release, and then the systemic enzymes are something for inflammation.

They're doing it consistently every single day for two weeks. This is where we want to see how do they respond within two week. If they had coming to you day one in your office, they were in eight out of 10. and then we did two weeks like a superstar and they dropped 50%. Boom, that is exactly what you wanna see.

Because if you can get a patient's tissue from an eight out of 10 for a four out 10, I mean, actually quite impressed. I may say we are on a good trajectory.

Let's do another two weeks. And can I get that four out of 10 to like a two out 10? And then we go into foot strengthening and a functional protocol. We could do that.

I love that, I'll do with a patient. Or if you have someone six out of 10 to a two out 10, as soon as I hit a 2 out a 10

I'm starting a functional foot strengthening protocol.

So these are ones that are responding really, really well because just because someone has waxing and waning heel pain for let's say two years, does that mean that they have a full blown degenerative presentation of the fascia fibers?

Not necessarily. some will like skirt by and not have any of that degeneration, right? Or I'm not suspecting a partial tear, which is one of the most common things that I will see in chronic plantar fasciosis is partial tears of plantarfascia.

So these are ones that are actually on a really, really good trajectory. And then I'll put them through my functional protocol. This functional protocols is going to be involved sensory stimulating the foot, I need to wake up the nerves and wake the 26 muscles that are on the bottom of the foots.

I'm gonna teach you how to control natural foot alignment. And if you have a little bit of overpronation, we're going to learn how set our base, tripods, spread toes, rotate.

Let's start to strengthen our glutes, strengthen out pelvic floor, strength in our foot. Right, and you're starting to incorporate the way that your system, your musculoskeletal system creates stability for your foot.

And then of course, daily foot recovery because that is so important. You are trying to always balance that tissue stress, stress recovery, they always have to maintain balance.

Essentially, that's how I'm transitioning that patient. Here again, sensory stimulation, I'm just gonna quickly go through how I would incorporate it.

30 minutes of barefoot stimulation using the Noboso products, minimal shoes, earthing, right? But we're starting to get that stimulation. Natural foot alignment.

Maybe they use orthotics and that's fine. Depending on their foot type, maybe they have a ligament lax over pronated flexible flat foot. I might have them use arch supports to really just Keep that plantar fascial stress at bay.

Totally fine. Using things like the foot wedges, which was on the prior photo, those are from Noboso, incorporating strength, foot to core, short foot, forward lean, balance exercises.

Short foot and forward leaning are two ways that you can strengthen your feet and your core through your toes. It is one of the most effective ways to access foot to pelvic floor stabilization.

## Functional rehab and when to order imaging

I'm not sure if everyone is familiar with the deep front fascia line, but it is a really, really important connection that runs from the bottom tips of your toes up your neck to your tongue.

Every single patient that I have is going to be taught how to access their deep, front, fascial line. And then the daily foot release, right? Use toe spacers, use the neural ball, which is the ball that's within the two pieces, release your soleus, wait, you're just doing something.

Right? And then we're there. Okay. That's the focus here around those patients that are not responding. We put out the fire, we did the two week protocol.

They started as an eight out of 10 and they're like, I did everything that you said. And I am still an 8 out 10. Immediately, my mind is going to say, okay, I almost guarantee that you have degeneration and thickening of your plantar fascia.

I'm also quite confident that probably have a partial tear within your planar fascia. So I am always going order an

MRI. Do I order ultrasound? Sure. When I was in New York City, I had an ultrasound in my office here.

I don't have one, which I think is fine. Even when I did ultrasounds, i would always order MRIs. The MRI is really where I need that specificity and I'm ordering it to justify this regenerative protocol.

Most of them, as I had said, will come back as thickening. Possibly they may show denervation, they show atrophy of the foot intrinsics, partial tearing of plantar fascia, When you get partial tearing of the plantar fascia, typically the way that it is, is it will be central band and it would be read as either the deep layers or the superficial layers.

So it'll be one of those superficial or deep, and its kind of like a fraying. I'll tell the patient that the rope is fray-ing, essentially it's a Frayed tear to the Superficial or Deep fibers, which means The top fibers are fine, but the bottom ones have a tear like you frayed a rope.

So there's no way that these layers can slide next to each other, right? Just so they understand the nature of a partial tear of the plantar fascia. Okay, and then from there, once I have the imaging and I'm showing the patient, you have degeneration, You have thickening of your plant of fasciitis or you've a partial tear.

That will not heal itself. Period. It cannot heal itself through just rest and not stressing it or me throwing you in a boot. I wish I did that, but it does not heal it self, which means we have to look at these incredible regenerative modalities to really help our body heal its self and get the tissue into a state that has essentially integrity and resilience behind it.

So when it comes to regenerative podiatry and the regenerate protocol that I use for patients, it's really about orchestrating this healing environment.

I do not rely on just one intervention. Maybe when I first did PRP. And that was 10 years ago. And then I would just be like, okay. Cause I don't know.

No one taught me a protocol around it. Then I started to just study. chronic tissue injury a little bit more, studied tissue remodeling, used kind of my knowledge base within regeneratives and just kind physiology in general and started to shape and incorporate and essentially stack different modalities to essentially control the outcome and to follow the patient longer.

And that's now essentially this protocol that I do with patients. So drum roll, this is my regenerative podiatry protocol, that i do on my patients, it is something that I would love to get more and more podiatrists doing one.

I'd love Regenerative Podiatry to be an actual accredited specialty within the profession. But for those that are doing regenerative modalities is to understand the timing of each one, how do they work synergistically?

How can we stack them or integrate them to the most out of our patients' program or patients healing and success? And essentially, so this is what I'm doing.

So again, partial tear, plantar fascia, let's say that's the patient. When I speak to them about this, about the regenerative options for them is I tell them that one of the most important parts of it is the biologics.

I use Wharton's jelly and exosomes in my office and I will always do two injections. This is important. This Is my protocol. this is how I do it with patients.

And the logic behind it is that I'm telling the patient that i'm essentially piggybacking and just giving another wave of fibroblast and growth factor stimulation.

So the first one is done and then two weeks later, I'd do a second injection. I piggy back it. With the second. Okay, now during the first four weeks, so this is a three month protocol.

This three-month protocol is broken down into four blocks. The first month, again, we have the same patient, they

have a demonstrated partial tear degeneration on the plantar fascia according to MRI.

Boom. In the four first weeks they're in a boot. No exceptions. They're in a boot. Now the reason why they're In the boot is that I need to manage the stress, the tissue stress.

I Need to make sure that as I'm stimulating the fibroblasts and the fiber blast is laying down new collagen fibers that i'm not disrupting it. And I'll explain it to the patient kind of like a fracture.

## Regenerative podiatry protocol for chronic plantar fasciosis

If you have a And as the osteoblasts are trying to lay down bone and they create the bony bridge across that as they're doing that, if you were just moving the pieces and you continue to stress the tissue, that fracture would never heal.

So I take that same approach and philosophy when it comes to fibroblast and the success of maintaining integrity in the fibroblast and collagen that they are laying down.

Okay, so they are in a boot for four weeks. Now before I do biologics and I Do these injections, I need to prepare the tissue. I Need to Prepare the Tissue and that's where I look at shockwave.

So I Look at Shockwave as essentially just going in there and like shaking up the snow globe, right? It's going to essentially try to kickstart this healing process and irritate and start to get, it's starting to mobilize the soldiers to come down to the tissue into that site.

So I will have a patient do three or four shockwave treatments before I do the first injection. I need them to prep the tissue and then I inject the biologic.

And then the biological is stimulating the fibroblast. So that initial sequence is important. Now, at the same time as them starting the shockwave to prepped the We are starting to add in systemic enzymes.

We're doing photobiomodulation. So we're adding some of these other modalities. The peptides are at the start of the first injection. Okay, so we're in our first month.

The first months, they're doing three to four sessions of the shockwave. They get two injections of The Biologics. they are doing peptides. So they doing BPC 157 TB 500. so the Wolverine stack, 5 days on, 2 days off.

And they gonna carry that for 8 weeks. but in this first four weeks they're doing systemic enzymes, two pills morning and evening on an empty stomach.

This is going to help modulate the inflammatory process and that fibrinolysis. The red light, they are doing this to support microcirculation and the mitochondrial function.

So they re doing that 15 minutes once a day, six inches from a box. I have them get a red-light box and they That is their protocol for the first four weeks.

After the four week, I am then getting them out of the boot and they're getting into a supportive shoe and a art support, an orthotic and art supports, support support but we're essentially downgrading the immobilization state.

And they're going to be in that environment and nothing else changes. They're still doing the peptides. There's doing that enzymes are still during the red light.

No more shockwave, no more biologics. That's in the beginning for two weeks. Then after six weeks, now we are on the second half of this protocol, which is gradually introducing myofascial work to the foot, stress to their foot.

You're starting to load the tissue and then we downgrade. So by the eight week, you are getting them out of the

supportive shoe and into a less stable shoe environment.

And then there I introduce more functional foot strengthening. But I will follow that patient and during the last six weeks. So even the. Last month, they're still systemic enzymes, red light, the peptides are for the first two months.

I do not carry those into the third month. And then we're essentially continuing that those two steps for three months at that point. up to three months, three to four months for the full remodeling process to happen for tissue.

Now, what is important in this, one, all of my patients know that this is going to be a three month protocol. They're essentially signing on for three-month protocol, but it is the outcome expectation that is very important for patient.

And this what I tell them is that we are looking at a 50% improvement, 50%, improvement. So the patient who was in eight out of 10 did not respond to the two weeks of putting out the fire.

We did an MRI, we saw a partial tear of the plantar fascia and degeneration, so we did this three month protocol. What I would want to see is when they feel their fascia, is it kind of like three, four, and then they don't feel it every day?

I just had a patient that I explained this to her and reminded her, She was an eight out of 10 and every morning she would crawl out a bed and just be like hobbling all the way.

And she will just so pain. By the end of the day, she'd have to sit on her feet. She would be an 8 out 10, just all of that. Now she's like, no. I don't feel it when I wake up anymore.

Maybe if I have like a day that I'm on my feet a lot, I'll feel that by the end of the day. And when i feel by by end, it's like four out of ten. But then by time I woke up the next morning, boop, i don' feel again.

and then I might not fill it for several days. And then if I stand a lot again, like if do meal prep on Sundays, well then by the end of the day, it's like a four out of 10. Then I go to bed again.

I don't feel it in the morning. This is her describing it. That's a success. To me, that is a sucess. and I want the patient to understand again these intuit expectations.

then what we can, and i tell her it is still working. So the specific patient is four months out. And this is how she described it. And to know that you are still incorporating tissue remodeling, you were still building tissue resiliency and integrity every day that load the tissue and those days that get a little bit of like, Oh, I feel my fascia and then you back off.

That is also building, tissue integrity. So I guide them on it and that. Some patients, and I do this every once in a while, they wanna do a little bit of a booster.

And I essentially do the protocol, but on a shorter, I do it over six to eight weeks. And all you essentially, do a modified version of this, where I will do maybe, you know, a couple of shock waves.

I'll do one biologic injection. We'll the peptides again, because those are great. and we're essentially doing it, on more condensed state. It's just giving a little bit extra of that push to that tissue.

Now, when I do this protocol, I get, and I will tell patients, again, my success is if I can get them 50% better, if you think of your worst day and if it was half the time that you felt it, is that Is that considered a success for you?

And we need to be aligned of what's considered as success. And if we achieve that, then I put that as a Success to regenerative medicine and regenerate protocols and of that those that meet that I would say I probably have a 90% success rate.

And that 90% success rate that I tell patients is not the biologic, it's not biologics alone that's doing it. It is the

biological with the immobilization, with systemic enzymes, the peptides, progressive tissue loading, foot strengthening.

The whole orchestration that is what led to the 90 percent success rates. And then it is also patient selection. I'm not going to do the injections on any patient.

I will, I going select the tissue that I know is going respond. That's also why I don't do a lot of regenerative modalities to joints, because there's not a lotta good research around ankle joints or the first MPJ.

I just, if a patient says, I will pay you, then I won't. So that is my protocol. Now here, the next era of podiatry and foot health and the way that we think about chronic plantar fasciosis I truly believe belongs to the doctors who are thinking of it as this orchestration.

How are all of these modalities working together like a symphony? to heal the tissue. We are not just injecting peptides or inject biologics. Here, take the Wolverine stack and your fascia will go away.

Were not shock-waving tissue and thinking that it is fine. It's really about this larger orchestration. This is really my passion within regenerative podiatry.

So I hope that it was insightful to everyone as far as kind of their thought process around it. I am happy to answer any questions in relation to it, but as part of that, if you want to learn more about how I practice, my website is just my name.

And then if your curious about Noboso, we'll be doing something in the future with Nobo. So, I'm not going to go heavy into it that's just the products and then on social media, and YouTube.

Yay. Thank you so much for an amazing presentation. I'll let you take the floor for any questions. But I just loved how you integrated all that together.

And that was a really beautiful explanation. thank you. You I really, really appreciate that. and I am more than happy and enthusiastic to answer any question.

I don't know if people can pop in or raise hands or share, but it was so thorough, it's so amazing. Thank you. It's a decade of development for the protocol.

Are there any other places in the foot that you can apply this protocol to that your thinking about like the Achilles tendon or anything of that sort?

Yeah, absolutely. So like I said, plantar fascial and plantor plates are the two most common injuries that I see. And I don't know if everyone who is listening now live or to the recording is familiar with the plant or plate, but it is a ligament and the most commonly injured one is under the second.

And it's less about the pain for the patient, but it is more the destabilization of the midline of foot when you overload the plantar plate, which is a ligament that keeps your toe on the ground.

Surgical correction of it. There's so many complications, a lot of side effects. The results are always just not good because it's friable tissue. You just can't get good suture integrity when you re-approximate the ligament pieces.

So that's where regenerative, that was actually one of the first that I did regenerate injections on was plantar plates. And I kept getting referrals for plant or plate.

regenerative injections 10 years ago. But I'll do it in the post-tib. I will do in in perineals. In the lateral ligaments. Like I said, I don't get good success in a joint, like an ankle joint with arthritis.

You could do, again, let's say someone has an OCD, an osteochondral defect, and kind of a chip in cartilage, you

can do those. If they're going to scope, Then you stack these.

So I started to incorporate regenerative modalities in surgery, where if you were repairing a tendon and you wrapped it with the growth factors, you essentially would wrap it, with a sheath of growth, factors will then.

That's of course awesome for tissue healing. Or in bunion surgery where they have a lot of arthritis on the head of the first metatarsal, you essentially wrap it with a regenerative sheath and now you're going to stimulate the chondrocytes for the cartilage.

There are other ones in the foot that you can.

## Q&A on applications, referrals, and orthotic strategy

Stumped neuromas, that's actually a really good one for people to think about because neuroma pain and then stumped neromas are just really, really frustrating for the patients.

And I've had some decent results with biologics for stump neuromas. Well, I just hope all of medicine that are doing regenerative medicine start thinking about your sort of protocol and how that can be applied everywhere.

Because I think it's quite genius and really beautiful to respect the tissue healing process, the inflammatory processes, and it can applied to the whole system.

So thank you so much for sharing. Yeah, there are two questions. I do want to add one thing real quick before I answer the questions are why I think, and this is one situation where I'm grateful to be a podiatrist is because I've learned and understood tissue stress in a whole different way compared to other musculoskeletal specialties because a rotator cuff or a labrum or bicep tendon or other connective tissue elsewhere in the human body handles load in a different way.

And the day-to-day stress of a lot of the other connective tissue in the human body doesn't have the level, the volume load and the force and frequency.

It's just like, you can't even stand without stressing your plantar fascia, right? So you're just, it's very, very difficult to navigate the environment.

That's where I've created a lot of this. And then I also do think being blessed practicing in New York, which is a walking city. I've also learned to understand like, how do I navigate this with my patient to get the best results, knowing that they have to commute?

What do i do with this patient who has to walk? to get to work, right? But then yes, the protocols for literally anything where you think of regenerative medicine, think these other things, totally stack them.

The immobilization is probably a little bit different for the reasons that I just said, but I would for sure be thinking of like, oh, could you shockwave it before you do the injection?

Could you stack with the systemic enzymes in the red light? Are you stacking peptides? How long do you follow the patient? Right? Yes, Veronica. Kathleen says, any work with acupuncture?

Yes. So the acupunture, I would recommend, honestly, at any phase of this three months, i would just say be peri to the site. You're not going directly on it, but if a patient wants to go and get acu puncture In the first four weeks when they're in a boot and they are in the middle of the biologics and the peptides, it's totally fine.

I'm a huge fan of acupuncture and its role. Paige says, when is the most appropriate time to refer a patient or client to me? So I would say if they aren't responding and you've tried a certain protocol, if The protocol that I described in the diagnoses is potentially out of scope, but you've ordered the imaging.

That's great. And if the image shows degeneration or a partial tear, great, right? Then it would say, Hey, Send them to me. I will take them through the protocol and explain them and educate them on why the Protocol is what it is and how it's important for the healing.

That would be one. If you're just thinking of patients that have nothing to do with chronic plantar fascia and you would refer them. To me is if they have something.

That they've exhausted other providers and it's not getting better. And it doesn't even have to be in the foot. I'll get referrals where people are like, can you please look at this and see if the put and their relationship to the ground and every step that they're taking is just something's off.

That's why they have chronic SI joint pain or something. Um, and then another one that I get is a lot of nerve related. This is Veronica's jam, but a of neuralges, neuropathies, movement disorders, And they want someone who's not going to give the same same Western medicine protocols and remember that I give patients actual exercises.

So oftentimes I won't necessarily need to send them to physical therapy. I love physical therapist role, but they have to do something at home every day on their own.

And I get those protocols. Um, so obviously those would be the ones, um, And I do do custom orthotics, so if anyone is like, but what about some of the traditional ones?

I still do customer orthotics. I don't do traditional podiatry as far as like derm and grown toenails. Don't pay me for that. Use your insurance. Teresa has a question.

Have a patient right now with significant pescavus and cocaine alvarez. and supinates during stans phase. Is there any orthotics you would use to support?

So just for context with everyone that the patient with a pescavus, cavovirus, all of that has essentially demonstrated rigidity. I would be curious the degree of it.

And are there other things like potentially a medeductus that is contributing to it? You may not want to go in the orthotic way. I've actually never, how long have I been practicing?

I don't know, 15 years. So I never prescribed custom orthotics on a Cavis foot. Just have not, I would rather mobilize the tissue. would use something like a blackboard or a, let's say the one black board is a board that rotates.

And there's a bunch on Amazon now that side, sidekick side. It's a board that rotates like this. And I try to get the mid foot to unlock relative to the forefoot and the rear foot.

So you're going to try and rotate on the middle foot, do fascial work, and do the releasing. That's the approach that I like to take in the KVIS foot versus orthotics.

I believe that was not confusing. No, it was great. Yeah, absolutely. If it's rigid, mobilize it first if you can. Yeah. Like rigid-rigid. So if have a rigid foot with a Rigid Arthotic and in rigid shoes, that's where a foot will just, it is fighting itself.

And then, you know, the Energy transfer during walking is just like, where does it go, right? You just kind of keep stuffing it in these things. And oftentimes it's knee pain.

It's IT band issues. Its SI joints. it'll show up somewhere higher up in the body. So that's where I try to unlock the foot as part of the spirality of gait.

Awesome. Well, thank you so much. awesome questions. Great presentation. Just an honor to have you here and

part Yeah, and you're doing a summit in the fall.

So keep an eye out. We'll post that on Facebook, put it out, but there'll be more to learn from her in future. Very grateful. Of course. Thank you all so much.

I really appreciate it. Okay. Thanks. Bye.