**Kristen:**

hello, and welcome to discuss this is discussions in spinal cord injury science brought to you by the APTA- ANPT spinal cord injury special interest group. In this podcast we bring you interviews with researchers and clinical leaders and spinal cord injury rehabilitation Thank you guys all so much for joining us today, my name is Kristen Cezat

**Uzair “Z” :**

And I’m Uzair Hammad

**Kristen:**

And we are your hosts of DISCIS. We hope everyone is really excited for today's episode, because we have a real treat for you guys today, we're going to be speaking with Dr Edelle field Fote. Dr field Fote has been a leader in spinal cord injury care and research over the past 30 years.

And she and her group have recently published a study in the archives of physical medicine and rehabilitation this year titled characterizing the experience of spasticity after spinal cord injury and national survey project of the spinal cord injury model system centers.

So a little bit about Dr Field forte before we get started.

She is the director of the spinal cord injury research and whole spinal injury laboratory at shepherd Center. She leads a team that's dedicated to improving motor function in persons with spinal cord injury through development of rehab approaches. Informed by the latest neuroscience research her contributions to the SCI literature include the largest study to date of locomotor training for persons with chronic motor incomplete SCI.

As well as the first ever study of rehabilitation interventions to promote neuro plasticity for improved hand function in persons with Tetra plegia .With a clinical background as a physical therapist and a PhD training in spine in animal models of spinal cord injury.

She has over 20 years of spinal cord injury research that has spanned the breath of basic and clinical research related to spinal cord injury.

Her research has been funded by the national institutes of health, since 1997 as well as National Institute of independent living disability and rehabilitation and research and the Department of Defense.

She is the editor of a textbook that I have sitting on my shelf in my office, as well as she is currently the Co-director of the NIH funded training and grants Minh ship in rehabilitation research.

Dr field forte is also a professor at Emory university school of medicine and then the Department of rehabilitation medicine and as.

A professor at the Georgia institute technology of school of biological sciences, so today, we want to welcome Thank you so much, Dr field forte for joining us.

**Edelle Field-Fote:**

Well, thank you please call me Eddie and I’m really happy for the opportunity to discuss this important work.

**Kristen:**

awesome we're so excited to have you so well we'll kind of dive right in.

So we're going to start a little bit with the background of spasticity following spinal cord injury, so one thing that I really love is the definition that your paper describes.

specificity, we all kind of know that general definition from school of specificity being resistance to passive stretch, but could you tell us a little bit more about the definition that your group used in this paper.

**Edelle Field-Fote:**

Yeah, I think it would be valuable to have a little bit of background about that lance definition from 1980 that we all learn in PT school.

Interestingly enough, if you look at the reference it says it comes from a symposium on spasticity and.

 In fact it wasn't like a group of scientists or a group of clinicians got together and decided on, you know what does fast what is fast to city and what does it mean it was essentially. Lance was listening to these presentations in this fast disobeys. Symposium that was health and everyone was measuring specificity, in the same way, which was basically doing a quick stretch of the muscle and looking at their resulting.

movement or emg activity and so essentially you know that's what they could measure, and so they basically defined it based on what they could measure.

But if you ask people with spinal cord injury and other neurologic conditions, you know what is their spasticity mean to them very few of them will say, well, will you stretch my mom.

I got a spasm and so in 2005 there was an international consortium that got together and said we you know we really need to have a definition of spasticity that's.

Really describes the way it's experienced by people who have spasticity and they came up with a different definition which this time was based on a consensus of clinicians who actually you know something about how spasticity.

is seen in people who have neurologic conditions and they defined it as.

disordered sensory motor control resulting from an upper motor neuron lesion and presenting as intermittent or sustained involuntary activation of muscles.

And the thing that I think is so valuable of that is that in this study that will be talking about today, people who talk about their spasticity.

say that the stiffness that's associated with specificity is even more problematic than the spasms and that that piece of the definition that talks about sustained involuntary activation really captures a specificity keys or the lance definition doesn't.

**Kristen:**

 Yes, I love I love that definition culture, especially in clinical practice you're exactly right the clients describe all the time, the stiffness that they have and how problematic, but it is difficult to measure that so I I’m I love the definition that you guys have used today.

**Uzair “Z”**

Eddie Can you also describe to our listeners what exactly led you and your group to this current study so.

**Edelle Field-Fote:**

I’d love to talk about that Thanks “Z”; I mean one of the things that we experience as clinicians is when you talk to people who.

 don't know anything about spinal cord injury or their neurologic conditions they think about the movement impairment, they think about the fact that the person can't walk they think about the fact that they can't see themselves very well.

If you're lucky they'll might think about in terms of spinal cord injury, the impact on bowel and bladder function but, most people have never heard the term spasticity and so.

The experience of people with spasticity in helping us understand how it feels to them and how it impacts their daily lives is really important, and so that was the primary motivation for this study.

**Uzair “Z”:**

amazing it is it's so meaningful to have such a large sample size you guys manage to include in your study as well with those living with specificity, to give researchers and clinicians insight into their experience awesome.

**Edelle Field-Fote:** Yes, so we were only able to collect that large sample because we did this as part of a collaborative project with our other model systems collaborators, and so the models that shepherd is one of 14 model system centers in the United States and.

Part of that model systems grant provides funding to allow people to collaborate on questions that are important people on a country.

**Uzair “Z”:**

amazing and for those of our listeners who haven't read the article yet and Eddie correct me if I’m wrong you guys had nearly 1200 participants in that survey right.

**Edelle Field-Fote:** yeah we had 1000 we had actually like 1400 something, but when we pulled out, the people who actually didn't have because we were focusing on spinal cord injury when we pulled out the individuals who didn't appear to really have spinal cord injury or who said that.

: They had some other type of neurologic condition.

He had 1076 usable verifiable responses from people with spinal cord injury.

**Kristen:**

that's so meaningful so let's dig a little bit into some of the findings from the study so we'll start with.

The types of injuries, which types of injuries reported experiencing the most spasms and I’d like to dig a little bit into how the specificity was affected by the age of the clients that you had surveyed.

**Edelle Field-Fote:** yeah so we found that people all across the board in terms of severity.

there that they have spasticity I do want to say, though, I think it's an important caveat to make in that we had people.

Report their severity of injury using a self report, so we, but it was an algorithm where we ask them questions about do you have leg movement, do you have bowel and bladder function can.

You have a voluntary no contraction do you have sensation below your trunk and so based on the responses to those questions we developed an algorithm where we classify people as a or B or C and D together and.

So that's kind of a caveat that we didn't have weren't basing the categorization on an escape Sam.

: We were basing it on this algorithm that was developed to identify categorization based on the responses to those questions.

And so people across all injury severity is reported that they had spasticity and one of the things that I think was valuable that came out of the study was it, it confirms that those individuals who are older report fewer spasms.

: In a day, and so I want it, I think that I will slip into.

Calling spasm spasticity and calling stiffness spasticity and I want to first acknowledge that spasticity has many different characteristics.

And I’ll try as much as possible to stick with the characteristic that we're talking about, but I do like everyone else, I kind of lump them all together into this spasticity category, but people who are older recorded having fewer spasms.

In their day and I think that part of that maybe others have reported that too.

I think that.

Part of it may be due to the fact that we lose motor neurons as we age and so as motor neurons die, you have less units that are going to respond to those reflex.

inputs and that may be why people are experiencing fewer spasms, but that was one of the things I thought was very valuable that came out of.

The self reports.

**Kristen:**

Yes, absolutely it was something that I hadn't really thought about in that kind of detail, and then, when I when I read it, I thought I was you know clinically just thinking over the past 11 years and it.

Your I did notice that same thing kind of thing with my patients those with most of your specificity do tend to be the younger folks so I thought that was really neat to see.

Next I’d like to dig a little bit into how often where the clients describing the frequency of the spasticity or the spasms throughout the day and then what types of spasms were most reported.

**Edelle Field-Fote:**

Um so most people reported that the spasms were due to some kind of trigger.

like somebody moving them or touching them that kind of thing which is kind of what you'd expect if you think of.

spasms as being kind of a reflex response, but a very large number of people reported that they would have.

:These involuntary spasms that came out of nowhere that really just didn't appear to have any type of trigger and, in fact, one of the people who's an author on this paper is a very close colleague who has Tetra Asia and.

When we were developing the questionnaire, she said, and we actually included this as a question because I hadn't had someone talk about that, before she said that she.

will move or you know do a shift of her body when she feels like she's going to have a spasm and she says, by doing that she has these like she triggers these small spasms in her day.

And that prevents her from having a big spasm that really displaces her and I hadn't really thought about that, before but it made me think of two things first of all, people can sense when they're going to have a spasm and that they had developed strategies for how to deal with them.

**Kristen:**

That is so interesting kind of eliminating the large ones, by creating small ones throughout.

that's a really interesting.

Inside view to living with specificity.

What did your group find as the most problematic aspects that the clients reported.

having spasticity throughout the day what were the most reported problems to having it.

**Edelle Field-Fote:** yeah so there were a number of items that they encountered in their daily lives that they cited as being impacted by their spasticity.

I think, for me the things that were most meaningful were you know that it really does impact their physical comfort it impacts, the feelings of control and or lack of control that they have over their bodies.

It the stiffness piece was one of the things that people have recorded to me for many years, which I don't think is.

Well, characterized in the literature and so that was that came out of the study is being stiffness its associated with spasticity.

Was came out as being most more problematic than the spasms that we typically think of as being specificity and you think clinically we really understand that, but.

Going back to that original definition from lance of specificity it doesn't capture that piece, which is the piece that people find most problematic, I think.

Part of the difficulty is measuring stiffness is very difficult and so that might be part of the reason that it's not well discussed in the literature.

**Kristen**:

Yes, and then, lastly, from the study itself, maybe, very briefly, if we could just talk about what the actual specificity management strategies are that are available to our clients.

And then, what are the surveys that that you sent out what was the most perceived value what was the most helpful strategy to the clients that that you surveyed.

**Edelle Field-Fote**:

yeah Kristen if you don't mind I just thought of something else that would be valuable to kind of mentioned related to the things that were cited as being impacted by spasticity you know clinically we sometimes tell our patients and clients, that there are benefits to spasticity and.

That That may be true, I mean there were things so, for example, if you think about big picture, and particularly things that we actually didn't measure in this study.

We know there's very good evidence that spasticity reserves muscle mass and so that in people who have spasticity they're likely to have better.

glucose regulation because they have more muscle mass which is really important, and it's something that's problematic for people with spinal cord injury.

But in terms of physical functioning, there were only a couple of things that people cited as being helped by their specificity and the amount that it was being helped by their specificity was really.

Little so, for example, as you might expect things like dressing things like being able to change position in bed transfers were some of the things that people cited.

That where there's fastest he could be helpful, but those were the only three things that people cited that could be helped by spasticity and only 10% of people responded that spasticity was helpful for those physical functioning activities.

So onto your question about what was MIT what manager strategies were helpful, so we specifically asked about things like stretching and exercise and other activities.

And people will be ported that stretching.

Was the most helpful intervention.

**Edelle Field-Fote:**

To help manage their spasticity it was rated as being more helpful even than medications for managing specificity.

And it makes you really realize that there's so much that we have in terms of our toolbox as physical therapists to be able to help people manage their spasticity so that was really exciting to see.

**Kristen**:

That is so exciting to see that the exactly that that they value movement, which is our expertise in our area of Practice, even more so than some of the other common and sometimes even you know first line of Defense type options is not necessarily what the patient's themselves are seeing, so I thought I thought that was one of the most interesting things out of out of the paper.

**Edelle Field-Fote**: Yes, I think I mean beyond the things that we asked for.

We asked about in terms of stretching and exercise, there are other things that we as physical therapists have access to like.

there's good evidence in the literature that 10s, for example, can be valuable for.

Managing spasticity my own lab has done quite a bit of work, looking at the effects of whole body vibration on spasticity and.

we've done some early work to contribute to the emerging evidence that trans cutaneous spinal stimulation, which is essentially you know kind of using 10s but in a new way and also be helpful for managing spasticity so if we have a number of things that we can.

use in our toolbox to help people manager specificity, particularly when it's not really clear if the meds are helpful and for some people that don't want to go on meds anyway.

**Kristen**:

 Absolutely I love the different options that you discuss because sometimes when you look at the literature, depending on what.

region you're in what setting your end, you have just different available tools to you so knowing what the literature supports and then being creative if you don't have an fps bike that things like 10s.

that's such a great idea, because that is something that's so accessible and even accessible to clients at home.

And having your toolbox that you select from versus just we all kind of get comfortable in our, this is what I prefer but it's bigger than that it's bigger it's knowing the literature that you guys have worked so hard to produce for us.

**Uzair “Z”**

Absolutely I couldn't agree more okay so Eddie one of the elements we love about this podcast is helping clinicians put the findings of research into clinical practice.

Something we've frequently accomplished by the work that you do so I’m wondering what advice you might have for clinicians to address spasticity and or educate clients to manage spasticity and what honestly feels like an ever decreasing length of stay in outpatient visits.

**Edelle Field-Fote:**

so glad you asked that.

So, first of all I think it's valuable to think about what the literature says.

about the interventions that seem to be effective for spasticity and.

Kristen kind of touched on this they're all kind of movement related or activity related and so when you think about the neurophysiology of why people have spasticity when we think of.

Upper motor neuron damage we mostly think about you know the loss of descending activation of volitional movement and motor units, but in addition to that, loss of descending activation of that activates movement there's loss of the descending.

circuits that excite the inhibitory circuits to damp down movement.

And all of the things that we've talked about whole body vibration can't retain his final stamp 10s stretching those all activate aspirants and movement is a very powerful way of activating Africans and it's very clear that African input.

is so valuable for damping down the excitability of neural circuits when they're hyper excitable, and so I think we can.

It gives us the opportunity to be creative and work with our patients clients and identify what seems to work best for them educating them about what we know about what the literature says in terms of the interventions and seeing if what ideas they have for being able to.

manage spasticity and keeping track for themselves about what things seem to be helpful and what things are just helpful, so they can develop their own management strategies.

another kind of important point about that is that you know some studies that we've done, you know.

We have one study that we've just recently finished, where we show that the effects of whole body vibration didn't seem to last, to the following day.

And, one might say Oh well, you know we're short term effect, why would you even bother with it, but we think about medications right.

There taking medications twice a day three times a day, so why shouldn't they stretch three times a day and so educating the on.

The client that you know they are such an important role they have such an important role in the management of their own spasticity.

First of all, figuring out what seems to work best for them and then making the time in their day to actually do those things that help them manage their spasticity.

And this kind of goes to the point to about you know, there are opportunities to use these anti spasmodic physical therapeutic interventions in the clinic but.

educating people about their own ownership of their home programs is really an important piece, there are some people who do really well with just stretching in the morning and then stretching in the evening, but some people may need to do it another time during the day.

In terms of other management strategies, for example, in one of our whole body vibration studies we showed that the effects of whole body vibration vary depending on when you measure it.

If you measure it immediately after the whole body vibration session you actually increased spasticity.

And then, if you measure it 15 minutes later the specificities decreased, and so that tells us as a physical therapist we can use that information, maybe I have someone who.

really needs their spasticity and benefits from their specificity, to help them in their local motor training.

And we might want to put that person on the whole body vibration device and then immediately do their local more training Program.

But someone else might be impaired by their specificity and they might have you know more spasticity that interferes with walking.

: And so, in those people, maybe we want to put them on a whole body vibration device and then do some upper extremity strengthening.

And then you know 15 minutes later when the spasticity has decreased, then we can have better outcomes from our local motor training and so us learning as clinicians the timing of the.

Of the intervention is really valuable and we still have a lot to learn about dosing you know how much of something how many times how long we're still trying to figure out some of those things.

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**Uzair “Z”:**

 amazing that was such a wonderful answer I feel like as clinicians and especially as a newer clinician we tend to kind of get attracted by the shiny objects, so the vibration plates, and you know.

All those things and it's It really is a multi-dimensional individualized type of management so those examples and inside that you just provided is super helpful in the clinical setting I mean we prescribe home exercise programs to our patients all the time, but it your work or really assist clinicians and being more strategic but their approach.

**Edelle Field-Fote:**

I’m glad to hear that.

**Uzair “Z”:**

Dr field so I’d say thank you so much for joining us today your work influences and guides are spinal cord injury clinical practice, every day, thank you for doing this important work is there anything that you would like to leave with our listeners today before we sign off.

**Edelle Field-Fote:**

um I think that one of the most valuable roles that a physical therapist can play is in educating and so we talked a little bit today about the importance of educating our patients and clients about you know what.

They can do to help manage and be for them to be alert about the things that are helpful for them and not helpful for them when it comes to specificity and so that's kind of like the final message that I would I would leave our listeners.

**Uzair “Z”:**

Okay, thank you well that's the end of our chat for today for our listeners, please check the show notes of this episode for a link to this crucial study and read it today.

And thank you for your consistent support of discuss and for joining us with our discussion with Dr Eddie field Fote; we are.

**Kristen :**

Kristen Cezat

**Uzair “Z”:**

And Uzair Hammad, your host until next time.