

TRANSCRIPT 1009

Diving Deeper into the Pain Triangle Analogy

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Kevin Cuccaro, DO, Pain Consultant

[Founder of Straight Shot Health LLC.](#)

Corvallis, Oregon USA

[00:10:00] Thanks for that introduction, uh, Rolly. It's always good to see you guys and I just absolutely love what the **Oregon Pain Science Alliance** is doing. And of course, I do have some biases about that because, many of the, actually a lot of the participants here were fundamental in kind of creating that, and I'm seeing a lot of really cool names as well as faces, some of which I haven't seen in a while, actually haven't seen you for a while. So this was exciting to see you, um, but just really amazing. Amazing people doing some really, really amazing things in the Willamette Valley.

[00:10:36] And while there's a lot of work to be done, I just wanna kind of call attention to that. We are so lucky to have the number of clinicians that we have and the number of community members that we have that are really **interested in this topic** and have really gone forth and become advocates because there's a lot of hope here.

[00:10:53] So we're going to be talking about the **Pain Triangle** a little bit more. We're diving deeper into it and deconstructing this analogy of the fire triangle to the Pain Triangle. But most importantly, kind of my journey and how I created this model.

[00:11:06] So this is a **brand-new presentation** for me. There will be some slides that you have seen before, because I tend to use them. There's certain things that I use over and over again, but there's also some slides that have not been seen for almost a decade now

from some very early presentations, that hopefully give sort of a, a little bit of a model on how my thinking changed. Because there's a definite process to this.

[00:11:30] So who am I? For the people who don't know me, I'm Dr. Kevin Cuccaro. Yeah. I went to Chicago College of Osteopathic Medicine. I got my, the residency training in **anesthesiology** at the University of Chicago. So anesthesia, we do a lot with consciousness and we do lots and lots and lots of things with peripheral nerves.

[00:11:46] Then I did a fellowship in pain medicine at the University of Michigan. Went into the Navy, well, they paid for medical school, so they told me I had to go into the Navy and, uh, served at Naval Medical Center San Diego. Very quickly there was associate program director of the pain medicine fellowship program there, and that's a long way to say is I learned how to put needles into people. And I bring that up because as a **fellowship-trained pain specialist**, there's theoretically nobody who has the training, who has the specialty knowledge involved with pain.

[00:12:16] And, and I kept coming to this thing as **things aren't making sense**. We're doing all these injections. People don't seem to be getting better. And so there was this huge disconnect there. I thought it was the model with the military because we had a group practice model, and my colleagues, all great people, we all practice very different ways.

[00:12:34] Sometimes I thought they were too aggressive. They probably thought I was too conservative with what I was doing. So **I thought it was the model**, rather than the science. And so when I left and came to Corvallis and I joined a medical group here as the sole pain specialist, I was convinced I had all this knowledge that somehow because I was really attentive to my patients and I was following very aggressively and I was following all the guidelines, like the medical guidelines that we had that said you would only do a procedure in this situation.

[00:13:00] This is how you do the procedure. And you do it very, very strict and you do these little micro doses of local anesthetic in these scenarios and you only use these medications in other one. **I was convinced** that I was going to see this dramatic improvement. And I didn't.

[00:13:12] And now I didn't have anybody else. I could say, Well, it's not the military model, it's not my colleagues, even though they're great. I had to look at myself and I had to come to this idea that, well, if you are treating something and you are not getting the results that you want, then you **probably don't understand what it is** that you say you're treating very well.

[00:13:28] And that was very humbling to me. It broke down a lot of beliefs and a lot of ego. And then I started this journey here. And that journey has really transformed who I am and what I do, and especially personally. So let's get into that.

[00:13:41] So, that first presentation that we did back in February, I talked about these kind of **key transformation concepts**. These are things that I think are absolutely critical to understanding pain.

[00:13:50] The first one is shifting the idea that pain equals damage, that somehow is a damage indicator. And really fundamentally to your core understanding there is a reason why we hurt. **Pain is not this bad thing**. If you did not experience pain, your body would be unprotected, would have no warning signals at all. You would have wounds. You would have basically infections in your skin that would rot pieces of your body off. So this is something that we want and we need. So the first thing is understanding, there's a reason why we hurt. And that reason is to protect us. So we need to make sense of how that applies then to us as the being.

[00:14:25] The second part was about pain and construction, and we talked a little bit about the Pain Triangle last time, and that's a very quick way to sort of bring all these concept complex processes together to recognize that pain is essentially irreducible. That requires at least **three critical components** coming together in order to construct a process. And that process is pain. And people have a tendency to get kind of stuck on that. They'll either gravitate and say, Oh, well, Dr. Cucarro, that makes perfect sense and kind of works here, but then they kind of stumble over it. That makes sense for chronic pain. We all know acute pain's easy, but here's all these weird scenarios, and this doesn't seem to apply.

[00:15:01] And it really comes down to truly understanding what it means when we say something is **constructed versus** something is **caused by**. And that took me a couple of years for sure of a lot, a lot, a lot of questioning and research and reading and thinking and looking at a lot of different sources.

[00:15:20] So Sandy sent me some questions. So some of the things that she wanted me to cover is: how did you come to **design the Pain Triangle?** That's the one I'm gonna focus on the most. How did you apply it early on? We kind of will try to intersperse that a little bit. And then through this process, I can't focus on this question as much, but hopefully that you learn some of the thinking as well as some of the reasons I do what I do in presentations for how I've learned to use this process and facilitate change.

[00:15:47] And then lastly in the Q & A, we may be able to get into, what I'm reading now and discovering and learning to further my understanding of the science of pain. Because

the **learning never stops**. There's never a point where you know everything and what you end up finding, when you start learning and deep diving into pain, is it opens up like this entire universe of things that you never thought about. And it truly is one of the most amazing things, and I'm absolutely blessed to have these really early experiences where are quite traumatic that could put me on this journey.

[00:16:16] So I always use this [slide] lightly: **pain or no pain?** This is like the classic one, because this prevents this kind of conundrum that we have. You guys have probably all seen this. This is the person who has got the nail through the boot, had lots and lots of pain, got really strong opioid medications in the emergency department because he couldn't touch the boot without him screaming in pain. And when they cut it off, they found that the nail was between his toes.

[00:16:39] So lots and **lots of pain, but no tissue damage**. On the other one we have the person who I got from a YouTube video, who'd put a nail through his thumb with a nail gun. This was not the first time they did it because this is a very typical injury apparently with people who use nail guns and are building. He didn't get fentanyl in the IV. I'm not even exactly positive he went to the emergency room. He did experience pain, but what they were doing is laughing and joking with him and they're trying to cut this nail and pulling it through his thumb and basically so you can go back to work. So how is it that you have somebody who has tremendous amounts of pain but no tissue damage. And you have somebody who's got **actual tissue damage but really moderate** to minimal amounts of **pain**. And we very quickly realize that this idea that there is either physical pain or there is psychological pain or emotional pain is simply false.

[00:17:27] This is what we call **mind-body dualism**. It's a very reductionist idea that says you either you got **physical pain** or you got **emotional pain**. One is caused by biological factors, like a broken leg that's physical pain that's somehow fundamentally different. And then emotional pain, which we'll say is associated with trauma or repressed emotions or whatever. That's completely distinct. And that is simply not true because these two pictures, and the reason I bring this up in every single presentation that I give, these are both examples of what we would prototypically call acute pain. And if your model where it's supposed to work, where nociception is the cause of pain. And yet we have a clear example where it doesn't, there's something wrong here.

[00:18:11] So we know that **mind-body dualism doesn't make sense**. And it clearly doesn't make sense when you look at all these different patterns. You see people who have imaging like this middle one [slide] here, where you have **scoliosis**. And a lot of people say, Well, that person must have back pain. That person doesn't have back pain.

[00:18:25] This person has a normal **spine radiograph**, and this person had tremendous amounts of pain. You can have someone with a broken leg and no pain. Etcetera.

[00:18:33] So, this **model doesn't work**. And I want to make very clear, the way we typically present and talk about pain, even in some of the more advanced scenarios, doesn't make sense because it doesn't apply to acute pain.

[00:18:49] So way back when, and I started noting these sort of dichotomies, and these are literally slides that I had to do a couple little things to because I was a little bit embarrassed by them. I was like, Okay, well this doesn't make sense. **I'm doing these injections**, and we're blocking the so-called nociceptive generator, or we would call it the pain generator, which is total nonsense, and things aren't working.

[00:19:09] And we have people with a lot of trauma and a lot of people who seem to have a episode of pain and they come in from treatment and then we end up doing this **whack-a-mole** game where we're doing injections here, and that seems to get better, but then all of a sudden flares somebody else. And overall their whole experience has not improved.

[00:19:24] So I started focusing on the neurobiology, like most physicians would do. And I went back to this old papers, and I'm like, Okay, let's learn more about pain. So very, very, very far back, when **Melzak and Casey** published this idea that we have basically **three dimensions of pain**.

[00:19:38] There's the sensory-discriminative aspect, there's what they call the affective-motivational aspect, and the cognitive-evaluative aspect. And what these are: The **sensory aspect** has to do with localization and characteristics of a stimuli. Is something sharp? Is something dull? Is something electric-like or shock-like? And where in the body that would be: toe, hip back, et cetera.

[00:20:00] The **affective-motivational branch**, what they described, is that's the emotional coloration. What does that sensation mean? And then the **cognitive-evaluative branch** is the fore brain, the higher learning centers coming together and deciding, well, what do I need to do right now?

[00:20:13] And this was, this paper is amazing. Like I know we have a lot of clinicians on here, go back and **read the original publications**. Go back and really delve into it and see. Because those are really, really good. And what I found is actually a lot of times that they were translated, when people talked about them, or certainly the way I was taught about them, didn't actually line up with what Melzak and Casey was saying.

[00:20:31] So I'm looking at this, and I'm going, Okay, well there's three dimensions of pain. Well, how does it all fit together? And then I started looking at the **neuroanatomy**. You know, I'm an anesthesiologist, and I'm an interventional pain specialist, and I'm looking at the brain and I'm looking at all these nervous tracks. And they'll talk about these different pain systems.

[00:20:50] Listen to that language. Anybody who knows me now knows I hate what people call them **pain systems**. There's no such thing as a pain system. But in the medical literature they'll say the lateral pain system and the medial pain system. And what they're really referring to is these nerves as well as areas in the brain and where they fit, in the lateral area or in the middle, the medial area?

[00:21:11] And what they saw is there's **different signals** going up in these different aspects of your nervous system. And then the nerves that we're firing in this **lateral pain system**. And that, again, that refers to the actual anatomy. Those seem to be more involved with this sensory-discriminative aspect: the location, the timing, the physical characteristics, whether they're sharp, dull, et cetera, and prompt these reflexes that you have. So you touch a hot stove and it pulls back. What really fires is that lateral pain system.

[00:21:38] And then the **medial pain system** is much slower and provides this kind of unpleasantness, this emotional coloration there, and seem to be devised with defensive behaviors in the future. So you had an experience and now this kind of coloration, this medial aspect starts getting on here. Sometimes would call this the emotional component of pain. And this was providing kind of the slower information that provide meaning to that sensation.

[00:22:03] Some of the fascinating these studies did here though, is if you could go in, and what neurosurgeons would do is they would actually **cut some of these nerves**, they would cut these fibers in the spinal cord and they would do what was called the cordotomy. And when you cut that lateral pain system, what was really interesting is people couldn't localize a stimulus.

[00:22:21] So you cut that lateral cord or that little area where those nerve fibers were going, and then you can crush their toe and they would be like. You'd be like, Well, where are you feeling this? They're like, I don't know, but something's not right here. On the other hand, they would do a cordotomy in the medial pain system, and when they lesioned that, people now could identify things. Oh yeah, that's in my toe. But there was no unpleasantness associated with it. That whole **emotional coloration** would go away. And so what that was telling us is like, well, there's something different here when

there's this sensory characteristic and then this meaning or this emotional coloration to it.

[00:22:58] Now, they used to actually use that as a therapy, by the way, where they would go in and do these cordotomies. Unsurprisingly, pain is much more complex than that, and the **long term data wasn't very good**. So don't go in rushing off. If anybody has pain and says, Oh my God, I have persistent pain. I need to have this neurosurgeon cut my spinal cord. Don't do it. It's bad news.

[00:23:15] But for, research purposes and experimental, and the data it gave us, it actually taught us that there's all these different fibers sending different signals throughout your body up to your brain, and the brain uses them differently.

[00:23:26] So, what that did is got me on this kick of, Okay, well I kind of understand that sensory-discriminative aspect, because that's where, you know, when we're looking at needles and actual anatomy and this peripheral stuff, that **made a lot more sense** to me at the time in my training.

[00:23:40] But the emotions was not something that I was well trained in. This understanding about trauma. And depression and all these emotional states and how this comes together. So I started going a little bit deeper there. I started looking at some of the **theories about emotion**. There's actually no clearly defined definition for emotions still in the medical literature, which I found really interesting.

[00:24:03] It's still kind of nebulous out there. And there's a lot of theories around it. And this also brought me into sort of the realm of **John Sarno**, if any of you guys remember that name? And John Sarno was a physiatrist at Columbia who had some very, very early observations in, I think the early seventies where he was like, you know, we're doing all the stuff, and a lot of these people that I'm seeing who have pain, and particularly back pain, seem to have all this like trauma.

[00:24:30] And what he saw a lot of was what he called it repressed anger. So what Dr. Sarno did is we'll say, Well, you know, we've done all the x-rays, we've done all the images, and we can't, "find anything wrong." Must be something else. So he got this theory about, **repressed emotions**, published very popular book, *Healing Back Pain*. Had a lot of very prominent people, in the media and entertainment world, who came out. And a lot of people got good results. But a lot of people didn't.

[00:24:57] And what was a little bit frustrating for me about Sarno is he said, Okay, well there's acute pain, but when we've looked through everything and we've done all the x-rays and we've done everything and nothing seems to be responding and we can't

identify a physical cause anymore, then the cause of your pain is something that we're going to call that **tension myositis syndrome**.

[00:25:16] We're going to say that there must be something that's constricting the muscles in your back, that's repressed emotion, that's then causing that pain that shoots to your brain. So again, it was very reductionist. A lot of people got some really good results with it, but it didn't line up with what we knew about science, and it **didn't explain these discrepancies** when it comes to acute pain, how someone can have an injury and yet have no pain, right?

[00:25:41] You can't say, Well, you **drop a hammer** on your toe. Oh, you know what, that hammer, because it's not hurting now, is because I don't have any repressed emotions. That doesn't work. And it certainly doesn't mean if you have dropped a hammer on your toe and then all of a sudden you're gonna express your anger that that somehow is going to make a, it actually can make a little bit of a difference for different reasons. But it's not gonna have that fundamental shift that Sarno was describing.

[00:26:03] These **transformative behaviors**, where people would see Sarno, they would go through his presentation. It was like three presentations that he gave in the basement of Columbia, and people were walking out of there with no pain.

[00:26:15] The Sarno stuff didn't quite understand. I didn't quite, couldn't put it together. The science was incomplete, but I was really focusing on that emotional aspect to it. I really started buying into, very early on, this idea that there somehow is acute pain, and that there's chronic pain, and that these are **fundamentally different processes**.

[00:26:41] And people will still present it this way: that acute pain is adaptive. It's the **good pain**. It tells us where the quote unquote "source" of your pain is coming from. It's easy to treat, and it's predominantly that pain source (again, I hate these terms. I'm just going to use them because this is my old presentation here) was out in the periphery, meaning it's out in your toes, it's in your back, it's in your knee, or whatever.

[00:27:04] But **chronic pain** was this different entity. Chronic pain is completely maladaptive. There's no purpose for it, which always question if you have something in your body, even if it persists and it's unpleasant, that there's probably a reason it's there. You know, there's probably a reason there. Evolution does not like things that don't work for you. But chronic pain was also nebulous, poorly located. There's no signal treatment. Fibromyalgia being the prototypical kind of thing where your whole body hurts. But this was somehow brain pain.

[00:27:38] So we had **acute pain** that was somehow broken leg; that's out in your body. And then we had this **brain pain** here. And this is the most common way that I still see pain presented today. And so we have this dichotomy now where you have acute pain and chronic pain and we kind of say, acute pain's, focal, sensory, peripheral. Chronic pain is all over the place, emotional, kind of moves all over throughout your body. And then we proceed from there.

[00:28:02] And so I'm trying to take this information. Okay, well, if acute pain's different and chronic pain's different. **How can we still make sense of chronic pain**, then? With understanding that we have the sensory-discriminative aspect, we have the affective-motivational aspect, and we have this cognitive-evaluative portion. How does this make sense for chronic pain?

[00:28:22] And so I took this, and I was trying to make sense of it, and I was giving these presentations. And I'm like, Well, if we know that trauma in your emotional state impacts your pain, **what's a model?** What's an analogy that I could use to explain this? And so this was my very, very first pain model.

[00:28:42] This slide is actually what I said. **Pain sensation, and Experience.** Now, I know I have some people who are in a lot of my programs in here, who should be going Dr. Cucarro, Pain Sensation? What the hell does that mean? What does that mean? Because now we're saying that pain is predominantly a sensation, and then there's this experience that's associated with this.

[00:29:09] And so in this model, what I was saying was, okay, the sensory-discriminative aspect is the **microphone**. That's the source. That's where the pain signals go in. And then this affective-motivational aspect is once those pain signals are going in, then this **mixing board** can either amplify, or change, or modulate those signals. And then the last part, this whole process where these signals are going down, these pathways, now comes out through the speaker system. And that is the pain.

[00:29:41] I struggled really, really hard with this. I knew that emotions, I knew the trauma, I knew that early life experiences impacted pain, but I couldn't put it together. And this was the model that I had. A **very sequential** sort of fashion where there's inputs, these pain signals that are then influenced by these bad, awful emotions, and then the end result coming out the speaker, this is where pain comes from.

[00:30:12] And what I was really trying to do though, and this I'll tell you basically this model kind of works as well as anything out there. And it kind of makes sense, just enough. But what I was really trying to do is make sense of the science with the concepts that I knew. That my brain in many ways, because of the way that we both perceive the

world and the way we're taught, sees things in a **cause, a stimulus and effect**, result fashion.

[00:30:42] And so I really focused on my early talks about this **mixing board idea**: that how trauma and childhood adversities and adult conflicts and victimization post traumatic stress really is just affecting the quote unquote "pain signals". Be either amplifying them or dimming them down. And I see this often in a lot of ways with the current ways people say mind-body integration.

[00:31:06] In fact, my biggest kind of thing, I think Sarno did a lot of great things, but I think he stopped learning at some point, and he just stopped being curious. And I call this kind of the **stage two thing** where people identify pain as a sensation that is then influenced by biological and psychosocial factors.

[00:31:27] So we'll say **biopsychosocial**, but that pain *sensation*. If we're equating a sensation as the same thing as pain, as the input that then is being worked upon, this is really what I call stage two. And I see most people in the pain science world are usually about this place. But this still doesn't make sense. Because you can see all these **contradictory examples** again, particularly in the acute pain entity world.

[00:31:58] Where we have this thing and we're like, Well, okay, you can have acute pain, you can have the same sort of stimulus, and you may not have any experience associated with it, depending on the day. You can have chronic pain that we can say is purely emotional. And yet it has **different responses on different days**.

[00:32:18] And for different people who have the same different experiences, they may have completely different pains. We have situations where people have, a lot of people say these are learned pathways. Very, very commonly "**learned pathways**" or "learned patterns." And yet this is where I somewhat disagree with a little bit about, **Dr. Mosley's stuff**, is, these are learned, learned, learned. Yes. But then how do we then explain on the Sarno side, these people who have gone to a presentation, seen something, read the book, and their pain goes away? How does that make sense?

[00:32:58] So I was **straddling these two worlds**. You got Sarno on the full emotional stream. You have the interventionalists going purely after whatever they can poke needles into. That's all sensory-discriminative. And then you have Mosley, who is, without a doubt, one of the finest pain researchers in the world, but really is in this kind of cognitive-evaluative space, really into this thought and this patterns and this learning thing.

[00:33:17] And I'm going, all these people are saying super, super amazing things, except for the pain specialist poking at the sensations all the time. But none of them are actually making sense consistently. And most of the time, people just throw out the acute pain. And they're like, Well, **acute pain** is easy. It's always nociceptive, and we don't really have to think about it. Let's just talk about the **chronic pain** stuff.

[00:33:40] And I was really stuck on this. That doesn't make sense. And if I can't explain it, I'm not understanding this whole pain thing. So there was obviously **something missing**. And so I started looking, and I was reading, and reading, and reading.

[00:33:52] And then **Melzak, revised Gate Control Theory**, because they, these really phenomenal scientists 50 plus years ago, even they recognize that something was missing with Gate Control this sort of sequential model here. And **Neuromatrix Theory** then puts together this idea, there's, all these things acting at once.

[00:34:14] Now I tell you, I read this, and I thought I understood it. But I still am like, okay, affective-motivational. Okay, well, which one? What kind of pains would be cognitive-evaluative? **What kind of pains would be affective-motivational?** What? Which ones would be sensory-discriminative? Like these are primary like pain signals. Again, I hate that term, but pain signals that somehow are being influenced by other things. But the primary source was whatever the input was.

[00:34:37] Until I was listening to a podcast. And for anybody who's interested in learning, Try to **learn from as many different areas as you can** because you'll always be shocked that you'll hear something in a different field, and you're like, Holy crap! This is completely relevant to what I'm doing.

[00:34:54] And I was listening to this podcast, it was a business podcast because I was an independent consultant at the time, and I was trying to figure out the stuff about marketing. And this marketer starts talking about a **concept called emergence**. And what emergence is, is the idea that you have enough contributions coming together that construct a process that is **unable to be explained** when you take away those components. And emergence is actually present all over the place.

[00:35:23] **Your health is an emergent phenomenon**. It depends on what you eat, how you move, your emotional state. Business in his example is a emergent process depends on your sales technique, your backend, all the stuff coming together in order to construct a system that is basically irreducible.

[00:35:45] And I went. I'm trying to remember the exact moment. I can't remember if it was in my car or if it was on my deck, because I was like painting. I was refinishing the

deck, listening to these podcasts, like hours and hours podcasts, and all of a sudden I was like, holy crap! **Pain is an emergent process.** You cannot reduce it from three things.

[00:36:07] It's not one being influenced. It is **all of them coming together.** And that process then constructs an experience of pain. So there isn't physical pain or emotional pain. There **simply is pain.** What matters is how that experience is constructed.

[00:36:28] So I was looking at this paper, I'm like, Okay, we know that there's three major divisions to this thing. What's a model then that represents an emergent phenomenon? That represents something that if we take one piece of it away, we no longer have that entity? And that's where the **Pain Triangle** came from. Because what pain is literally, it's just like this thing where you have these **three critical components.**

[00:36:56] And I'm not saying there's only three critical components. I'm saying there's lots of different components, but there's **three predominant ones** that you can subdivide these different things into. But for fire, if you take any one of these away, the fire's gone.

[00:37:12] If you have **an experience of pain,** you have to have **all three elements** when it comes to pain. I think I put the fire triangle instead of the Pain Triangle, but you have to have that sensory input. You have to have that emotional oxygen to it, and then you have to have that cognitive-evaluative heat, the attentional heat to it. You take any one of those away, and the pain goes away.

[00:37:35] This doesn't mean it's permanent, but it can be. What are examples of this? Well, if you go in for surgery, as the anesthesiologist, if I do what's called a regional technique, and I go in and I inject and numb up the nerves that are going to your leg, where you're going to have say, neurosurgery on, what am I doing? I'm taking away potential fuel. The **absence of fuel** with that heat and oxygen. no pain.

[00:38:10] If you have even a broken bone, lots of fuel, and you know what that broken bone means, you can see the bone sticking out of the flesh. So you know there's something bad with it, but then there's something that grabs your attention. Maybe a Tyrannosaurus Rex is all of a sudden run down the highway. Something big enough, threatening enough, scary enough that it pulls your attention away from your broken leg. You take away the heat. What do you have? You have **no pain** because there's no heat. There's **no attention there anymore.**

[00:38:41] And then the last one was if you have say, sensation, and you're paying attention to it, but now we **change the meaning,** that oxygen supply somehow it changes. It is no longer threatening. The narrative changes. The meaning is no longer, there's something wrong with your back. But say that, "Oh, this is an example of

repressed emotion, and I'm okay." You take away the oxygen, and the heat goes away. And finally I was able to **start making sense of things** like, how is it that someone with 40 or 50 years of back pain can get better in really short amounts of time?

[00:39:25] Some of the people who went through **Sarno's stuff** when he changed this narrative, **changed the meaning** of what that sensation was to them. And they were literally 40 years of back pain, and really no back pain. You're taking the oxygen supply away. So that business podcast plus that Neuromatrix Theory **absolutely changed my mind**.

[00:39:46] And changed my understanding of pain because I realized then that these are **fundamentally different models**. The idea of this mixer is seeing pain as a source that is being acted upon rather than recognizing that pain is the end output. It's the final summation of all this stuff coming together. And these are not the same thing.

[00:40:11] One is a cause and effect, which is how your brain wants to see things, and there's important reasons for that, for perception, and for safety, and for evolution. It's fast, it's quick, it keeps you safe and generally works pretty well. But our **brains actually work in an emergent fashion**, where we're constructing lots and lots and lots and lots of complex information in milliseconds in order to create a perception.

[00:40:36] So these are then different categories, and this was probably the biggest and most in where that podcast came in. Because **I didn't have an emergent category** for my brain. And if you don't have a category, it makes it almost impossible to learn a theory or to learn something new.

[00:40:55] And what categories are is basically if you don't know what a car is, so maybe you lived in the middle of the Amazon jungle and you've never seen a car, and you're presented with a car, you can't describe it. You will describe it in terms that fit your **knowledge, the concepts and categories that already are in your brain**.

[00:41:14] Until you learn and grow and actually **develop a new category** that contains cars. This was huge for me though, and it really made me go into the educational literature because this comes up all the time.

[00:41:24] And so if you guys, I'm seeing a lot of clinicians here. And this is by far the biggest problem that I think that we have when it comes to pain and pain education, is we're trying to **teach people about an emergent process** that either we don't know that it's an emergent process, or if we do, how do we build that category so it makes sense for someone else?

[00:41:52] And the **Pain Triangle** for me, has been the **fastest way** to do that without actually taking all the time to discuss and talk about what an emergent principle is. And a lot of you guys actually gone through the Pain Course, like the whole first lesson in the Pain Course is all about trying to build an emergent category.

[00:42:09] Because once we have that category, now we can start using it. And these **different categories require different types of thinking**. So people are saying, sensation, isn't pain, Dr. Cucarro? Well, yes, that's exactly what I'm saying. Sensation is not the same as pain. They say, Well, if you have nociception, how could you say that that's not pain?

[00:42:27] Well, because **nociception is a process**, a sequential process that's not the same thing as pain. So these are all fundamental, what we call **ontological categories**, categories of being. You have things like structural pathology. These are the physical objects. A broken bone, or a bone that is not broken, is structural. It is either there, or it is not there, right? So the thinking's really simple. Is the bone broken, or is it not broken?

[00:42:56] The second category of this process, the **sequential process category** is where nociception fits in. This is the cause and effect, stimulus response. So nociception being signals that tell you that there's been change in body tissues that go to the brain. So now you're looking stimulus and response. Where's it coming from and where's it going? That's not pain though. That's simply a process.

[00:43:20] But inflammation I've had people ask, "Well, what about inflammation? How's that work?" **Inflammation is a process**, sitting in the middle here, that amplifies sensory information. But it is not the same thing of pain. It fits right nicely in that sensory aspect of the Pain Triangle.

[00:43:38] And then finally, we have the **constructed experience**. In that constructed experience, we have to be thinking in a **minimum of three dimensions**. What's the sensory aspect, the fuel? What does that mean, that oxygen supply? And then how much attention are we focusing on it? And how threatening do we perceive it to be? And so we're thinking in three dimensions here.

[00:43:59] And so if we're looking at these, like when people are talking to me about pain, I'm always thinking in these... I'm categorizing it. Okay, broken bone, nociception, inflammation, **what's the process and what's the experience** here?

[00:44:10] And then it, but I know that they're not the same thing. A broken bone is not the same thing as pain. It's a different category. You can have a broken bone, with nociception, but you may or may not have pain. The **thinking behind them is different**.

[00:44:28] And again, so we're **looking at objects**. For treatment, this becomes a lot simpler, and particularly if you're working in acute care, because people are, "Well, how do you know whether or not something's wrong?" Well, you evaluate them! You're never ignoring the pain. But you are never also thinking that pain equals a different ontological category. What you do is you rule them out.

[00:44:52] Someone walks into the **emergency room** and they say, "Oh, I have horrible leg pain." What's the first thing that you do? History. Did they fall? Is there trauma? Is there impact? Mechanism, we would call that. What does your physical exam show? Is there an inflammation, swelling, etc. that suggest that the tissues are reacting, trying to protect that area? That's the process. Get the x-ray. What does it show? Does it show a broken bone?

[00:45:22] Now we could say, Well, okay, all these are positive. They come in, they fell down, their leg hurts. On exam, that leg is all swollen. The X-ray shows us a broken bone. Well, we have pain, we have inflammation, we **have a broken bone**.

[00:45:37] Let's actually address that broken bone, because that is actually associated with all of them. But there are other things that we can also do for the pain. Because that inflammation and broken bone are feeding into your sensory aspect. How can we **treat that with the cognitive and emotion of aspects** while we're in the middle of the emergency room?

[00:45:57] Well, you would use **non-threatening language**. You can do redirection. You can change the meaning of what that experience is. You can use humor to decompress the stress and the fear that's associated with it. And we also have medications, but we're not relying on medications alone.

[00:46:15] Now, on the other side, you have somebody who comes in with, in the emergency room with a **horrible leg pain**. And the same way we go, Okay, well what is, what is the mechanism? Oh, well no mechanism. I actually got **shot in the leg 15 years ago**. Okay. Hmm. That's interesting. So we got some past experience. There's probably some learning here. What does my exam show? Well, it doesn't seem to be actually an acute inflammation going on, but we're in the emergency room, and we do these things. Let's get a quick x-ray. There's nothing broken.

[00:46:42] Now we go, Hmm, this person has pain. But we know from that sensory aspect, we don't have any acute inflammation, we don't have any broken bones. This looks like there's predominantly heat and oxygen here. So what can I do now? And one of the **worst things that you can do is say**, "Well, you're faking it." Because what have we actually done by doing that? We've increased threat.

[00:47:04] But if you say, You know what? This is interesting. What else was happening? You know, you told me this experience that you got shot in Vietnam. What else was happening? Well, you know, I don't know, but my wife said that there was actually a **helicopter**, and it was as soon as that came over is when I dropped to the ground. Well, when did you get shot? It was in Vietnam. How did you get medevacked? It was a helicopter.

[00:47:24] So then we're seeing these contributors here now that provide insight into this experience. But we're not neglecting any one of these different categories. We've looked at the actions, we've looked at the structures. And we're servers. We're not telling people that they're lying or that their pain is not real, because it's a **hundred percent real**. It's just that the inputs are different than somebody who says a broken leg.

[00:47:47] And the key point being here is that a **sensation is not the same thing as pain**. This became very easy to gloss over. It's like once your brain switches and you're like, pain, all pain is pain. There's no physical pain and emotional. It's all pain. I actually forgot about this. And then a really good friend of mine who did a lot of work and a lot of training, and she's actually said she was struggling with this for a long time because she got stuck on this idea that, and I didn't explicitly state that a sensation alone is not pain.

[00:48:18] And then we were doing a presentation, and actually it was **Mo**, who I think is on tonight, who **provided the epiphany for her**, when Mo was asked in this early presentation. I don't know if you remember this, Mo. I think we're up in Dallas. And someone asked you a question about pain and you're like, Oh, you just don't feel pain anymore. And you go like, No. I still have sensations. **They just don't mean the same thing to me anymore**. And this is the thing that people get stuck on is they think the elimination of pain means the elimination of sensation. And that is simply not true.

[00:48:52] If you try to eliminate all sensation, A, you'd be non-functional. B, it's not going to happen. Because there are **always sensations**. There's all sensory inputs that are going to your brain all the time. And your brain is actually sending little inputs out trying to affirm that those sensations are true.

[00:49:11] So, sitting here, I'm probably talking too long and someone's going to ring a bell on me, but, you've been sitting here, How many of you are kind of **shifting positions in your chair**? Right? Because your butt's basically sending sensations up to your brain that's saying, Hey, you've been sitting on us a long time. The tissues are changing. This is not normal for us. Is this something you want?

[00:49:32] That sensation goes up, you notice it adding some fuel. **The meaning** though, is, "I've been sitting here for a long time. I need to change positions. I'm okay. Dr. Cucarro is going to shut up at some point. I'll be able to go out and do what I need to do."

[00:49:44] Imagine though that your associations are a little bit different. Somebody has told you you have **disintegrating discs or a degenerative disc disease**, which is a stupid name because everybody's got degenerative discs because I got wrinkles and bald head, and that's the same thing as having discs that are not 10 years old in your back anymore. But, someone's told you this. And so now you have sensations coming from your, You've been sitting here and you feel sensations coming up, sends up to your brain.

[00:50:09] You go, Oh my God, this is from my back. That doctor said, I have disintegrating disc disease. I've been sitting here for a long time. Whoa. So now we have sensations, the same sensation coming up, that still grab our attention, but now that attention is filtered through this **lens of threat** and the meaning is I have disintegrating disc disease.

[00:50:27] I guarantee you those **same sensory inputs** are going to have a **very different experience** for you. And that experience could be profoundly unpleasant to you? So a sensation though is not the same thing as pain.

[00:50:43] So this kind of culmination for me is when I understood construction, this concept and understanding of emergence, everything changed. Because a pain experience, now. We're not talking, a sensation is one aspect of that experience, but it's constructed from. It's not influenced by biologic and psychological factors. It requires them in order to construct this experience that is irreducible. Without those inputs, it would not be there. And this is **emergent thinking**. And the really fun thing about emergence is you start seeing it beyond pain.

[00:51:20] I have this saying, I've been saying now, "**Pain science is brain science, and brain science is life science.**" Well, the Pain Triangle is about experience and how experience is constructed, but pain's not the only experience that you have, right? So then you start playing this like Rubik's cube thing and you start looking at what potentials there are, because everything is now this constructed process, at least for our brains and how they go: the sensory input, the meaning that we have, and that cognitive evaluation of it.

[00:51:51] So **your perception of your health**. Whether you think that you're broken or not. What fatigue you're experiencing, whether that's a threatening thing or simply saying that to you that maybe you have not exercised as much as you've had, that you have not developed enough endurance over time. That you're aching because, oh, my

body is disintegrating versus, like me, you have horrible insomnia and sometimes your body and brain are saying, Whoa, you know, you haven't gotten enough sleep and this is a dangerous thing, so we're going to be really heightened to all sorts of information coming from your body in the periphery.

[00:52:27] And so for me, it's just **fundamentally changed not only pain, but how I view life**. And the recognition that when we diseasify things, that we emplace this implicit threat associated with them. We're not helping people. Very early in this presentation, I called out the fact that all these things that we call quote unquote "negative," we evolved with them for a reason.

[00:52:53] And so then when we start viewing them through this threatening negative, these are **neither good or bad**, but something that's inherent to living, it really changes how you think about them. So we look at depression. What's the root of depression? Depression actually causes us to withdraw. It causes us to slow down.

[00:53:10] And one of the reasons that they believe that this occurred is so that you would pull back, be less active, so it gave you a chance to heal. Obviously too much of that prevents you from doing things that keep you safe, but it doesn't help to say, "Well, it's major depression. There's nothing you can do. It's inherent in your brain, and the only thing you can do is drugs for it the rest of your life." Let's **understand the process involved**.

[00:53:31] There's a whole host of examples here, but I know I'm running out of time, but when you understand how **emergence and construction fit together**, then pain isn't scary and it also makes sense, including the scenarios when it used to not make sense before.

[00:53:49] So **whether it's acute or it's persistent**, or you know, whether there's lots of sensory input or not a lot of sensory input. What it all tells to me is, what are we trying to do? What are the threats that are involved in this construction? What are the sensory? We're never ignoring body, ever. We're never ever just saying that all you have to do is focus on your head. There's nothing else we have to worry about.

[00:54:10] No! If someone has a broken leg, whether or not they had pain, you're going to want to do something with it. If the pain is associated with a broken leg, you're absolutely going to address that broken bone, but you're not going to ignore the other things that you can do through your words, through the actions, through your medications, if you need them, through the meanings, through the pro empowerment that you're giving people to the safety, the active modalities that you're introducing. The sense of increased perceived control that people have over their lives and their

experiences so that they understand why they feel how they feel. And they're **empowered to take actions for themselves**, to change those circumstances.

[00:54:47] And that's, I think, what's the **power of the Pain Triangle** is because once you understand how this stuff comes together, it is literally like a little Rubik's Cube, and it depends on what your strengths are, who presents in front of you, and then what you choose to emphasize.

[00:55:03] So Tina's here. Tina has taken this, and Tina has made it in such a way that she actually reforms and revises and **helps people to process trauma** in such a way that it makes sense, and that the meaning changes, and that they feel more in control.

[00:55:19] Sharna takes the same thing and she **asks where the fear is**, and then she helps them de-threaten through the fear.

[00:55:26] And all that you see is this, there's **a story that's inherent to people's experiences**. So how then can we take that story and help them to understand that in such a way that is more empowering to the individual rather than scary and that they're not under control.

[00:55:41] So I, you know, again, I'm a hundred percent biased cause it's my thing, but I, I just don't see anything else that works as well. But fundamentally is you gotta have **a model that addresses emergence** when it comes to pain, if you fully want to understand and really intervene in many, many different aspects.

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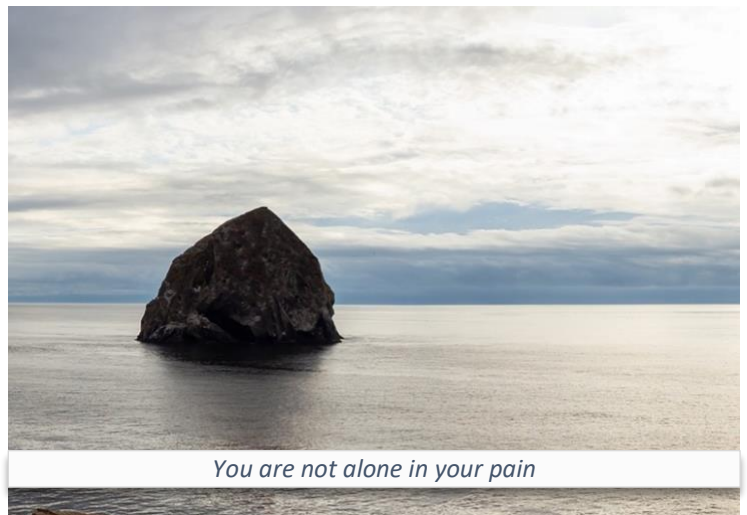
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About Pain Science Life Stories

Formed in 2018, the Oregon Pain Science Alliance (the Alliance) is an all-volunteer nonprofit 501(c)3 corporation. Our members come from the health care community, their patients, and others who follow pain science research.

We seek to share current information on how pain experiences are formed in the brain and influenced by biological, psychological, and/or social factors. Through community education events, health care workers describe how pain-science-based practices have changed their interaction with and care for patients, and patients tell stories about their experience with learned pain science tools used to help master chronic pain. We can now share these collected and curated stories, and other unique features, through the Alliance “story website” launched in early fall of 2022.



How to get involved?

Do new Pain Science insights and practices resonate with you?

We welcome anyone interested in collaborating to find or produce good stories and insights, then curating them to display on our website. Sharing in our discoveries and making them broadly available is both personally positive, and mutually satisfying.

The phone number or email address below will get you more information about us; then use the website link to the Member page for the steps to become an Alliance member, if that makes sense to you.

If you have a story using pain science tools and practices, and would like to share it with the larger community through our website, please send us an email. We would love to hear from you.

Phone: **541-224.8378**

Email: opsa@painsciencelifestories.org