



## The Power of Context

In my last article, I talked about the brain's role in pain, and how it produces pain as an output based on a great deal of information.

A lot of this has to do with context.

As usual, I'll start with our definition.

Pain is 'an **unpleasant sensory and emotional experience** associated with **actual or potential tissue damage**, or described in terms of such damage'<sup>(1)</sup>.

If we rehash a little bit, I spoke about how pain is an *emotional and sensory experience* and that it is produced by the brain based upon the information received by the central nervous system. This evaluation process is very comprehensive, and involves complex processes of memory, reasoning and emotion, and takes into account the potential consequences of any response<sup>(2)</sup>.

Let me put forward a question:

**Have you ever been in a situation which has caused you to experience more pain than you would otherwise expect?**

As an example, imagine you were walking down the street and stepped on an uneven piece of pavement, rolling your ankle. Chances are, this would be rather painful, and this would begin to hurt immediately. Most would probably chastise themselves for being silly enough to hurt their ankle just walking. I know I would (I have!).

Now let's change the scenario a little bit.

Imagine you are now hurrying across the street, when a similar thing happens. Same injury, likely the same damage sustained. Only this time you're on the road, and a bus is coming toward you rather quickly. You don't really have time to stop and feel sorry for yourself, or you might be run over.

How do you think it would feel then?

It would stand to reason there would still be some pain, but would it be to the same extent? Possibly not. I mentioned previously that the central nervous system produces pain to *protect* you. It does so based on what it feels is a threat or danger to your body. In the first example, the only danger to your body was the risk you get walking and potentially caused more damage to your ankle. Pain was produced so you would stop and inspect it. It's a safe environment, there are no other dangers, so that response is warranted.

Now, in the second example, would it have been advantageous for your brain to force you to stop and inspect your ankle?

Probably not, because generally getting squished by a bus is *more* of a danger to the body than an injured ankle. So the pain response is halted by the nervous system until you can get yourself away from

the immediate danger. Once you reach the safety of the other side of the street, your ankle likely begins to hurt. A lot. Possibly because you have just run across the road on an injury. Silly you. But at least you're alive.

Now this all happens in an instant, subconsciously.

So what would happen if an injury (or potential injury) occurred in a situation where the brain interpreted it as a greater threat than it actually was? Might the pain response be significantly greater than would be expected?

I will come back to that, but first let me tell you a story.

About me.

A few years back I thought it would be a smart idea to break my finger playing football. Because hey, it's not like I use my hands for work, right?

Anyway, this happened during a game. At the time I was playing in the backline. No glory hunting, unlike those blokes at the other end of the field. The game was a close one, with only a few points in it. The ball was in our backline, tension was high. There were a lot of tough contests and the ball wasn't really going anywhere. During one of the stoppages, for some unknown reason, I looked down at my hand.

It looked a little something like this.



*Please note: this isn't actually my hand. I pinched this from the internet. I didn't think to take a photo of it at the time, but it looked something like this, probably a little bit worse.*

Now I was somewhat surprised by this.

Particularly because I hadn't experienced any pain.

The first thing I thought was that I had dislocated my finger, so naturally I pushed it back into place and kept playing. Smart I know, especially from a health professional. I then proceeded to let the ball hit me

on that finger again. Out it went. There was some mild discomfort but nothing too bad. I tried to relocate it again without much luck, so I came off the field. After a few attempts by different people to 'put it back in', I went to the hospital to discover it was in fact broken quite badly, and needed to be surgically repaired.

Now, up until this point, I hadn't actually experienced any pain. None. It wasn't until I was sitting in the waiting room that the finger began to throb. It hurt quite a bit for the next few days until I had surgery. After surgery, I couldn't use my hand for quite a few weeks afterwards. Very inconvenient.

Fast forward a couple of years and to preseason training. I hadn't trained for some time, wasn't that fit and probably could think of a thousand things I would rather have been doing at the time. Coming through the end of one of the drills I received a fairly looping handball which hit me right on the end of my little finger. The same finger. I heard quite an audible 'popping sound' followed by significant pain. I looked down this time to see this:



*This one **is** actually my hand, as dainty as it looks. Doesn't look as nasty but I can guarantee it was more painful. Not enough to stop me from taking a photo however...*

Only this time it hurt like hell.

I took myself off to the rooms and put it back into place (after taking a photo of course). That eased the pain a bit, obviously from removing ongoing deformation of the surrounding joint tissue, but it still ached quite a bit. I then went to get it checked out. All clear, this time it was just dislocated, so I just had to look after it for a little bit and it would all be fine. Relief.

So what was the difference, and why did the second time hurt so much more, and so immediately?

There's probably something to be said about pain in dislocations vs fractures, but that's not the focus for now.

What we are looking at is the context.

In the first scenario I was mid-game. Adrenaline was high. I was distracted, my mind was focused on only one thing; not losing the game. It wasn't until after the adrenaline had worn off and the game was no

longer of a concern that I really experienced the pain. I'd also never experienced anything like this before, and as far as I was aware it was dislocated. So my brain basically said 'that's annoying, but no big deal'.

The second time around, I didn't have the distractions of the game. The worst that would happen was I would stuff up the drill. No imminent danger, except my finger. It probably didn't help that I heard and saw it happen.

What I can do is run you the thoughts that went through my head, which had most likely already been weighed up by my brain.

**Is there anything more important right now that worrying about my finger?** No (I wasn't that enthused about training anyway).

**What could be wrong?** It could be dislocated, or broken. Again

**Have I experienced this before?** Yes! That didn't work out well, I broke the damn thing. I needed surgery. And time off work. I have people booked in to see tomorrow. Do I have enough sick leave? I'll have to go and wait in the Emergency Department for ages.

The list could probably go on, but I think you get the drift.

Now all of this happened subconsciously and it happened in a split second. I had no control over it, the same way anyone in pain can't just tell themselves its ok and have the pain disappear. Because that's what the brain does. Its job is to look out for you, and pain is one of its most effective tools to get you to listen.

So going back to my point from before.

**What would that happen if an injury (or potential injury) occurred in a situation where the brain interpreted it as a greater threat than it actually was?**

What if you were at work and you hurt your back? You might never have injured your back before, but you might know of someone who has. What if you knew a few people who had hurt their back and needed surgery, or were unable to return to work? Would that change the way you felt about your pain? Would you worry more?

Chances are you might, and even if you were able to rationalize it consciously, subconsciously your brain would likely take that into account in its instant appraisal of the situation. Then it might create a heightened pain response to ensure you stop what you're doing, as it sees this back injury as *threatening* or *dangerous*.

Now let's say later down the track, your pain is improving and you are back at work. Yet you find that some of the tasks you do at work cause your back some discomfort, yet you are able to do very similar thing when you are at home or at the physio or in the gym. So why do they hurt now? Possibly context has something to do with it. Subconsciously your brain is trying to protect you from a *potentially* threatening situation. Last time you were here, you hurt yourself, so it's trying to protect you.

What if you had sustained an injury from which you had taken some time to recover, but later began experiencing some discomfort in the same area? Possibly the fear of reinjuring self may make the pain experience worse, as though it is most sensitive.

Post-mastectomy patients who attribute pain to returning cancer have more intense and unpleasant pain than those who attribute it to another cause, regardless of what is actually happening in the tissues<sup>(3,4)</sup>.

Let's step away from pain for a moment.

If you had been involved in a major accident (or even a minor one) and you were only just getting back behind the wheel, might you feel some anxiety about this? What if you felt ok, but then you drove down the same street where the accident occurred? Might that trigger some reaction? Now, it's likely that this would be very subconscious. You may be very confident in your driving and know logically the chances of another accident are slim, but your brain is taking everything into account.

It happens instantly and subconsciously.

And it refers to the neurotags I mentioned yesterday.

As I mentioned, these neurotags are not specific to pain. How might they work in other areas?

What about if you are someone who drives the same way to work everyday? Have you ever been driving along the same route, but heading for a different destination, yet found yourself unconsciously taking the same route to work? That is part of a neurotag.

What about sounds or smells which recreate a feeling, memory or emotion? It might be a favourite song from your teenage years which brings back memories. It usually comes with emotions and sensations.

As I said before, if you were injured at work, getting back on the floor might stimulate that pain neurotag.

Personally, I struggle to watch slow motion replays of people getting injured playing sport, ankles in particular. I have injured my ankles so many times that watching it happening in slow motion is very uncomfortable. It borders on painful and makes me a tad ill. It is quite likely this is because that pain neurotag is firing off whenever I watch this. Mirror neurons are probably also at play (these are the things which can help you to learn skills by observing)

Context is important.

For those that are interested, check out this video:

<https://www.youtube.com/watch?v=RYoGXv22G3k>.

It is a presentation by Lorimer Moseley, a physio and one of the world's preeminent pain researchers. He is also a lot smarter and funnier than me. The whole video is good, but it's mainly the first 9 minutes where he tells a story that will help to tie yesterday and today's articles together.

Tomorrow, I'll look more at pain and its relationship to tissue damage. Or lack thereof.

## References

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