CHAPTER 3

THE 3 CHRONIC PAIN TYPES

Over the last 14 years of running my pain clinic, I've noticed there are three basic chronic pain 'types.'

Although you may have characteristics of all of these, I've noticed that generally one type will be dominant.

In the next 3 chapters we're going to explore what these type are and how they work. And then - we'll get to the exciting part - how to treat them.

There are some insights that go deep into the roots of chronic pain and apply to every pain type. And there's some basic principles of practice that will help you- no matter what type you are.

However for each pain type - there's an optimal course of treatment.

The three types are: Reactive, Hotline & Autonomic.

These pain types represent the ways in which your body and mind has reacted to being in chronic pain. Once you identify your type and understand it a lot of what's been happening so far with your pain will become clear.

Things that have puzzled doctors and specialists will now make sense to you and you'll have a clear plan for getting out of chronic pain.

I encourage you to read up on all three types and understand them fully before you decide which is your primary pain type.

You may find elements from one or two types - but identifying your dominant type will tell you where to start and what treatment course to take.

Before we get on to the 3 Types however - you need to understand how you can get pain - sometimes excruciating pain - when there's no physical damage taking place in your body.

I've spent the first 2 chapters laying the foundation for this understanding and explaining why having a scan that shows damage in your body doesn't necessarily explain why you have pain now.

So - let's continue on and see what is very likely causing your pain if you have been in pain for years.
Understanding the Underlying Mechanism of Chronic Pain

To understand this crucial question - I'm going to tell you 'The Story of When I Smashed My Thumb.'

It happened like this....

I was working with my son to put a ceiling in our garage (a task I had successfully put off for 25 years.) It was the end of a long day and all I had to do was hammer in one more nail. It was in an awkward corner though. So I gingerly held the nail, took a wild swipe with the hammer - and missed it completely. What I did manage to do was smash my thumb.

At this point I would like to relate I became as calm as a Hindu cow, and retained a state of serenely mindful presence. The truth is that I yelled out something unprintable, dropped my hammer (just as well there was no one below me) and wobbled down the ladder so I could curl up somewhere and moan.

That's what happened on the outside. Inside my body - something complex and marvellous was going on. When I first hit my thumb I stimulated three types of nerves. First was an A-beta fibre nerve. This is a myelinated nerve fibre and therefore carries messages extremely fast. The message I got through this fibre was that something had touched the outside of my thumb - very (very) firmly. This first message was carried straight up my arm, to the nerves in my spinal column, and then to my brain.

This was followed almost immediately by a message from my A-delta nerve fibre. The A delta fibre is also myelinated - but smaller and slightly slower. This second message was interpreted in my brain as a sharp intense pain (that's when I yelled and dropped my hammer.)

The third and final message was from the C fibre. This is an unmyelinated fibre that acts more slowly than the other two. It transmitted a deep nauseating ache about two seconds after the blow. This is the part where I stumbled down the ladder to look for a corner in which to assume the foetal position.

But by the time I reached the floor, I noticed the pain was changing again. When I looked down at my thumb, I saw a vague bluish tinge underneath the nail. Already my thumb looked swollen, hot and red. The pain started to throb. This was the start of a process called peripheral sensitisation.

The blue colour under my nail meant that blood vessels in the area had been broken and I was getting a haematoma.
Then began the start of the inflammatory process. My body immediately started to produce a group of substances called the inflammatory soup. This arose from the C fibres - which send the deep aching pain. This ‘soup’ includes substance P, bradykinin, and others. These cause blood vessels in the area to further dilate - increasing the hot redness. All the substances in this inflammatory soup are algogenic - meaning they induce pain.

The thing is - this inflammatory process is again part of what keeps you safe. All the substances released into my thumb - the things making it sore and red and hot, are the same substances that start the healing process.

I went inside and started looking for a painkiller. I work as a pain specialist and used to be a family doctor, so as you might expect in the whole house I could not find even the simplest painkiller. I therefore resorted to the good old fashioned anaesthetics of our civilisation - alcohol and television. I poured a good slug of whiskey and sat down to watch some TV pulp and try and take my mind off my throbbing thumb. The whiskey worked a bit - the TV didn’t.

And then something fascinating started to happen. Over the next 60 minutes I was now aware that the pain from my thumb now extended up my forearm to my elbow. It was now about 11pm, so I went to bed. I tossed and turned, trying to get to sleep. The pain now reached all the way up to my neck, the left side of my head, and across my shoulder and chest.

This was a different pain from my initial swollen thumb. It was not a throbbing pain, but a burning intense pain. At this stage I was sweaty, grumpy, exhausted and nauseous.

The question is - what on earth was going on?

I smacked my thumb with a hammer - and now I have a weird burning pain extending all the way up my arm into my neck? I thought to myself ‘This is not normal.’

And I was quite right. A process was taking place that occurs for everyone in chronic pain. And it's one of the main drivers of pain that continues for longer than 3 months.

Here's what was REALLY happening.

As the hammer struck my thumb a message was sent along my nerves. At this point - it was just a message and had no intrinsic meaning. It's the same as putting you ear to a telephone line and trying to interpret the signal. Until it's decoded at the other end you won't be able to understand the conversation.
The message decoding happens in your brain. But first (and this is important) the message has to pass through two different nervous systems (think of them as communication networks.)

There are two main nerve systems in your body. There is the peripheral nervous system and the central nervous system.

When I smashed my thumb, the pain message turned on little nerve endings in my thumb which then transmitted these messages down the nerve in my arm - this was the peripheral system. Then the message reached the spinal cord. This is where it was transferred from one nervous system to the other.

This point is where all the magic (and mischief) happens. For the message to go from the peripheral nervous system to the spinal cord the one nerve ending needs to talk to the other.

I don’t know about you, but when I was a kid we used to play a game called telephone whispers. It works like this: a group of kids sit in a ring, and one kid whispers a message in the ear of the other. The next kid whispers what they thought they heard, and the message goes round the circle. And - no surprise - by the time the message has gone a full revolution - it has morphed into something completely different.

This is what happens to the message going from the area of pain - in this case my thumb - up to my brain. When the nerve carrying the pain message reaches the spinal cord there are several receptors waiting to receive the message.

Imagine it like a relay race where the runner is carrying a message and reaches a point where there are five different fresh runners waiting to carry the message. The runner has to choose someone to pass the message to so it can reach its destination.

In the case of the nerve - the pain message is attached to one of the receptors and continues up to your brain. Here is the most important part: depending on which receptor is chosen - the pain message will change.
If the AMPA receptor is chosen - the pain message will be passed on accurately. I thump my thumb with my hammer - it hurts - and the message I get up in my brain is just that - ouch! my thumb hurts.

But.

If the message is passed to another receptor - the NMDA NK1 - it will get amplified. I thump my thumb with the hammer, and a few hours later, lying in bed, I have pain not just in my thumb, but also all the way up my arm, and into my shoulder and neck.

This ability for the pain message to get changed is due to neuroplasticity. Messages are continually being altered and either amplified or reduced by our nervous system.

How Pain Messages are Amplified:

What you’re hearing here is laying the foundation for a profound insight. When you realise that the pain you feel is not always an accurate representation of what is going on - it changes your relationship with chronic pain completely.

As I lay there at 2am, my whole upper right side on fire with a strange burning nerve pain, I reflected on what was happening.

There’s an important thing you need to know about how you feel pain. Only the final message that reaches your brain has any meaning to you. So if that final message is amplified - you will feel a giant, extreme pain - even if the damage in your body is minor (or non-existent.)

This is known as pain sensitisation.

If you look at how my pain spread - it highlights another aspect of pain sensitisation. We are segmental creatures. All the information from a particular part of your body enters a designated segment of the spinal cord - and nowhere else.
In this picture you can see the segment that covers my thumb - and then extends up my arm to my spine. In this segment are WDR - wide dynamic range cells. These respond to many kinds of sensations - including pain.

Trying to get to sleep that night, I pictured these WDR cells as the village gossips. I could just see these gossipy nerve cells talking to each other, saying things like “You'll never believe what happened in the thumb. I heard it was REALLY bad.”

And then: “Yes, well you know what I'm going to do - I'm going to tell the all the WDR cells in the segment above us about this - they really ought to know.” And so my pain spread up into my arm. And then: “Well, you know, those nerve cells up in the next segment up have no idea what's going on, and I heard it really was a Big Deal.” And so the pain spread up into my neck.

As these gossipy nerve cells start spreading the news, the segments above and below them in the spinal cord get activated as well. They pick up the pain message and start transmitting it back to the brain.

Again - your brain only receives the last message in this chain of communication. And if this last message is not accurate - if it's mixed in with all the other messages and chatter from the nerves in the neck, arm and shoulder - then your brain has no choice in the matter.

It receives this giant message of pain from your nerves, and has no way to stop and say “Hey wait a minute - you say the thumb got mashed. Well and good - but what's all this about pain in the shoulder? What's that got to do with it?”
Like a trusting newscaster, your brain believes everything the nerves tell it, and now you have Pain. Or - in my case, I had an awful burning pain covering a quarter of my body - and all I'd done is hit my thumb.

Which brings us to the next piece of the puzzle. For anyone who's hit their thumb before (you have my sympathies) you would know this is not a normal reaction. In my case, there were other factors at play here.

I mentioned before I felt awful - sweaty, grumpy, heart racing. This is part of what's known as a fight or flight response. It's an important evolutionary survival response we all have. We see something dangerous - like a charging bull - and our system goes into overdrive. We're flooded with adrenaline, our heart pounds, our muscles get flooded with oxygen rich blood. Between one moment and the next we are ready to run top speed away from the danger - or make a desperate stand and fight it off.

For some reason, after hitting my thumb, I had a massive flight or fight response. Lying there at 2am trying to get to sleep, this inappropriate survival response was also amping up my pain and making my life miserable.

Why did I have such a reaction? It came down to history.

When you have an injury, the physical damage is not the only ingredient in how much pain you feel.

When a pain message comes up to your brain it goes to the midbrain - the thalamus. The thalamus is like the switching station of the brain. Messages come from all over the body and the thalamus decides if they're important or not and sends them on to various other parts of the brain.

The midbrain is a fascinating area. It's a primal part of the brain - one that we share with all other mammals. Its main task is to ensure our survival. Because of this it's more likely to over-respond to threats - particularly if they're similar to other threats we've faced in the past.

The thalamus an ancient part of the brain. Back in the caveman days, if you saw a rustle in the grass, it could either be a dangerous predator, or just a harmless breeze. Our great-great-great-ancestors had two choices when confronted with a possible threat. They could run, fight, or do nothing.

If they got it wrong nine times out of ten and the rustle in the grass was nothing - no big deal. But if they got it wrong once - and the rustle of leaves was in fact a sabertooth tiger getting ready for the final attack - then they were lunch.

So we - the caveman survivors, the ones who didn't end up on the menu - survived in part because our midbrain will overreact to possible threats. It will trigger a fight or flight response first - and then verify if we really needed to get the surge of
adrenaline, heart thumping rush of fear, and leap back ten feet. (Or if the intruder in
the house was just a jacket someone left out by mistake and now we look a bit silly.)

In my case, my mid brain decided that my thumb was under attack. I needed to
escape. My heart rate went up, my breathing increased (setting off hyperventilation)
and I was in a cold sweat. I was ready and primed to run top speed away from my
attacker. The only problem with this otherwise excellent excellent strategy? My thumb
was quite securely attached to my body. I could not escape the pain. The fight or flight
response only served to make me feel worse.

This is the next manifestation of pain sensitisation and now we are getting to the crux
of the matter.

Why did this process turn on in the first place? Not everyone who smacks their thumb
can't sleep at 3am because their whole arm and shoulder feels like it's on fire.

The reason I had such an extreme reaction has to do with history. Eighteen years ago I
was hang gliding above the cliffs of my home town and I crashed. I hit the hillside at
about 50 miles an hour, smacking into it shoulder first, and then the impact ripped
down into my back.

Following my crash I had 6 years of chronic pain. The first impact had been my
shoulder on that same side. You had better believe my pain system took this new pain
sensation seriously.

My survival instincts had leapt into action because my pain system was already
primed. In the years after my crash I had learned everything I needed to know about
how to amplify pain. For years I had (unknowingly) reinforced pain pathways that
were now thankfully dormant.

But reviving old neural pathways is just like riding a bike. You may not ride a bike for
eighteen years, but hop on one - and you'll find you can still pedal your way down the
road. The neural pathways laid down when you learned to ride a bike are still there
ready to be switched on. And similarly the neural pathways from my hang gliding
 crash and the years of pain that followed were still there, like old circuitry - just
waiting to be switched on.

Let's repaint the scenario.

When I smacked my thumb, the initial message reached my brain. The thalamus
received it and had a look.

“Ok - says here we just smashed our thumb,” I pictured a guy in office reading the
message. He scratches his head. There're tons of messages coming in all the time, but
this is a red PAIN message - so it might be important.
So he picks up the phone and dials the head office - ACC - the anterior cingulate cortex - otherwise known as the prefrontal cortex. This is where memory and emotion live.

“Hey boss - says here we just got our thumb smashed - what do you reckon?”

“Hang on a minute,” snaps the even busier guy at the top. He rifles around in some filing cabinets. “Ah - here we go.” There's a silence on the other end of the line.

“Boss? What's up?”

“Well...let's see. I remember we damaged the arm and shoulder on that side in a hang gliding accident. We were in awful pain for years. So yup - you were right to call me. This is VERY important.” And then the key words: “We had better keep a very careful eye on this!”

The head honcho puts down the phone. Turning in his chair he flicks some switches - lights blink on and all systems are go. He's just turned the nerves coming from that area up to maximum sensitivity.

This means all pain messages from my arm get amplified. Added to that the nerves in spine where the arm nerves feed into it are going to be gossiping with other spinal segments. So instead of a sore and throbbing thumb, I know have pain going all the way up my arm and into my neck, chest and shoulder.

This is how pain sensitisation works. It is an incredibly important part of chronic pain. Every day people come to my clinic whose pain started years ago. It could have been from a small accident, or a serious accident, or from nothing at all.

They've had many investigations and no one can find the true cause of their pain.

The truth is this: their original injury healed long ago - but their pain system is still stuck on red alert. It is amplifying all messages coming from that area up to the level of pain.

Now you understand how pain sensitisation works. This is the first - and most important step.

The rest of the book will deal with what you can do with this knowledge. By the end of the book you'll know the steps to follow to take back control from the pain that's stolen it away - and get back in the driver's seat of your life.

**Action Steps:**
1. Do you understand pain sensitisation?
2. Think - how could this knowledge apply to your pain?
3. For the next day, carry a notepad around with you. Every time you feel your habitual pain - write down 3 things:
   - what you think caused the pain.
   - what thought runs through your mind when you feel the pain
   - what emotion you feel

Doing this practice is training a very important part of your brain - which we are going to discuss in the treatment section.