

# Understanding Persistent Pain

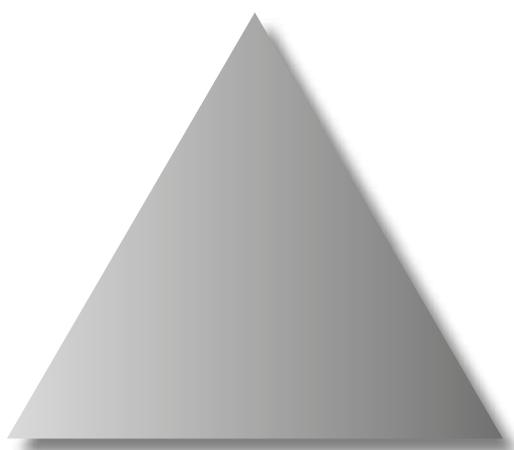
A guide to helping you understand persistent pain and its causes

**Our nerves work by sending messages to our brain from all parts of our body. This is a normal process that helps us to respond to our environment and to injury. In persistent pain conditions there are changes to how this system works which this handout will explain further.**

There are three common reasons for messages to be sent to the brain which can cause pain. You may have a mix of each cause and therefore we need to look at each of the three areas to more effectively manage your pain and reduce its impact on your life.

## **Structural cause e.g. inflammation or infection**

**Neural sensitisation**



**Muscle spasm  
or stiffness**

## **Structural Cause**

The main reason for pain is to tell us about injury and disease, so that we can use this information to change our behaviour to protect and heal ourselves.

An example of this would be if we accidentally stood on a nail, then electrical messages would be sent from our foot along sensory nerves to the spinal cord, and then sent up to the brain. These messages act to warn us of threat and make us change our behaviour to protect ourselves e.g. attend to the foot and look out for more nails. Once the injury is protected/ healed then the pain subsides.

However having pain does not always mean that there is any damage to our body. Think of a headache or migraine. This does not usually mean there is any damage, yet the pain can be severe.

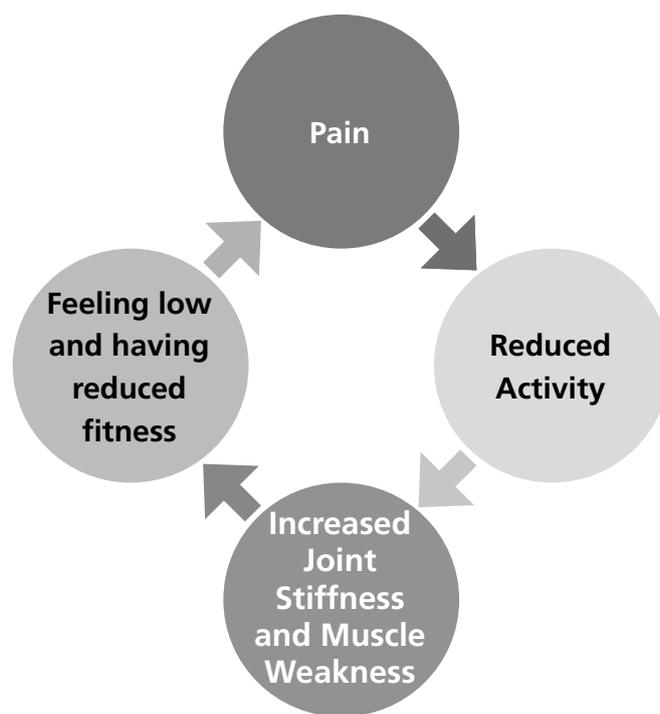
Alternatively, someone may feel no pain in the presence of something causing great harm e.g. a tumour. So why is this? We shall explain later.

# Muscle Weakness, Muscle Spasm and Joint Stiffness

When experiencing persistent pain, it is typical for muscles to tense up or spasm, and for people to become less active. This can result in muscle weakness and joint stiffness, because we don't move as naturally as we previously did. Unfortunately, this can further increase pain, as the central nervous system is not receiving normal messages of sensation. A vicious cycle can be set up.

If we are feeling low in mood due to pain, we may feel less motivated to do exercise or continue with previously enjoyed activities. This reduction in activity can lead us to become more out of condition, less fit and experience more pain.

When muscles tense in response to pain, they squeeze around sensory nerves, which increases pain further.



## So what can I do?

- Regain ease of mobility by practicing normal movements. As you move, allow your tummy to move in and out with each breath. This will help you to move in a relaxed way reducing muscle tension.

## Neural Sensitisation

In persistent pain, the central nervous system within the spinal cord becomes sensitised and more alert. Its resting electrical charge level is heightened, and is therefore more easily triggered by sensory messages (e.g. touch, temperature changes, pressure), even when there is no on-going harm or damage to the body. This means that even the slightest sensation can fire off the central nerves, repeatedly.

## Pain does not always equal damage

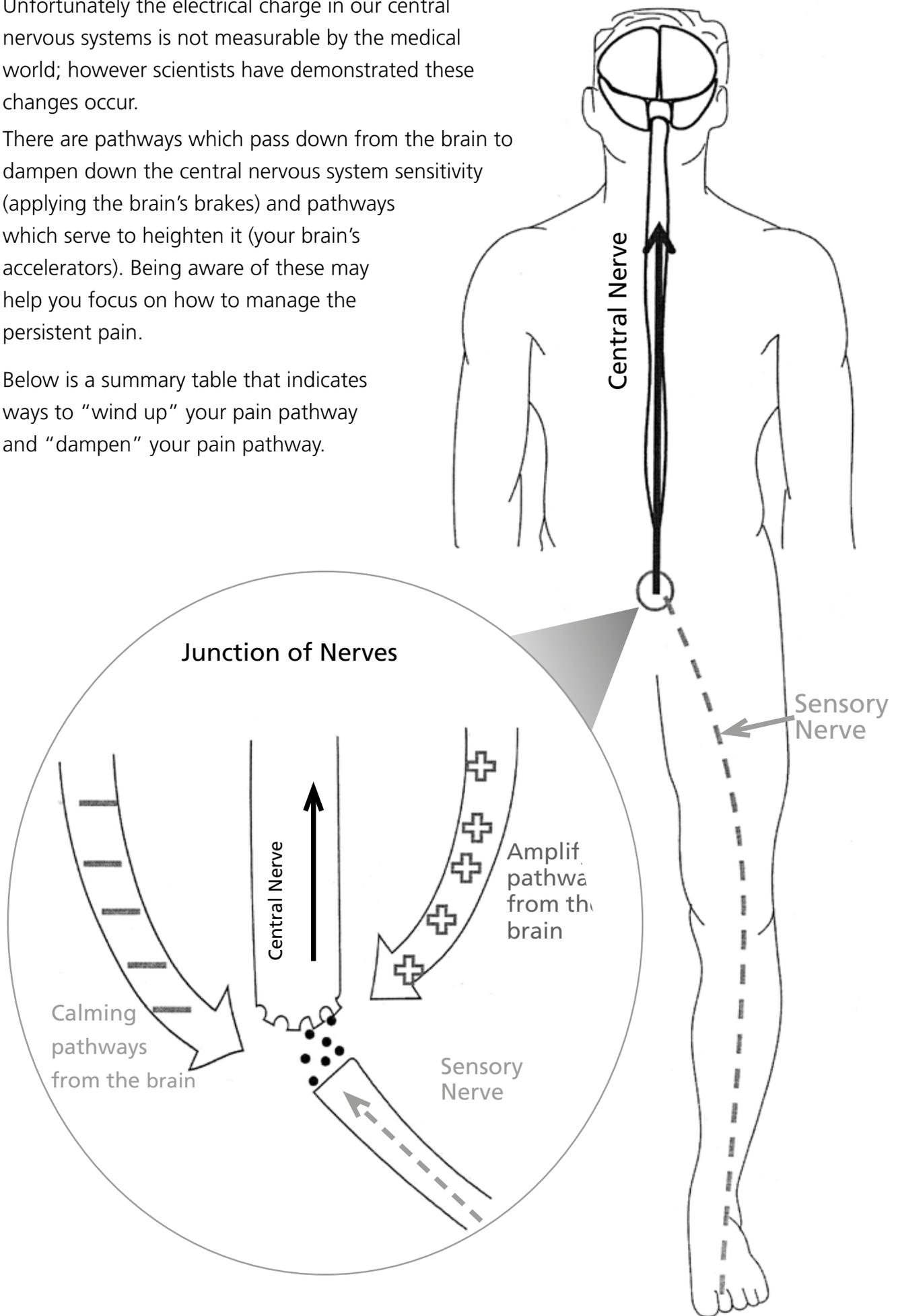
When the central nervous system has become more sensitised, it is more excited and efficient (supersonic), so the messages are amplified, like turning up the volume dial on a radio.

The effects of sensitisation can be illustrated by thinking of when we last had a cold or flu, when everything tends to ache and feel sensitive. Even gentle touch to our skin feels painful. It's as if the atmosphere has become charged, such as leaking gas into a room. The slightest spark will cause an explosion. Yet the same spark without the charged atmosphere would go unnoticed. The trigger was the same, but the atmosphere was different. The atmosphere relates to the electrical charge in the central nervous system.

Unfortunately the electrical charge in our central nervous systems is not measurable by the medical world; however scientists have demonstrated these changes occur.

There are pathways which pass down from the brain to dampen down the central nervous system sensitivity (applying the brain's brakes) and pathways which serve to heighten it (your brain's accelerators). Being aware of these may help you focus on how to manage the persistent pain.

Below is a summary table that indicates ways to "wind up" your pain pathway and "dampen" your pain pathway.



## Amplifying pathways heighten sensitisation

- Tiredness/poor sleep
- Feeling low
- Feeling fearful or anxious
- Too much rest/ lack of normal movement
- Overdoing activity
- Pain memories- pain messages are more easily accessed by the brain, just like a distinct smell or piece of music can bring back memories.
- Stress
- Previous trauma/ Emotional distress

## Calming pathways dampen sensitisation

- Good sleep
- Feeling positive
- Exercise - releasing endorphines
- Pacing activities
- Some medications
- Mindfulness and relaxation
- Enjoyable activity/ distraction
- Hot/cold temperatures, massage, TENS, acupuncture
- Kindness to self

Can you identify which pathways are relevant for you? Being aware of this is the first step towards managing your pain more effectively.

When the central nervous system is sensitised, the brain is bombarded with messages. The brain has to attend to these messages coming up from the spinal cord, which takes time and energy. The space in the brain to think about other things is reduced, thus the ability to concentrate, be patient, remember things, or feel able to stay in a deep sleep is more difficult.

It's as if the filtering has changed in your email account. The processing has changed so that the junk mail messages fly into your inbox to be read, flashing away until you open up each message to read them. This takes up your time and energy. The brain sees these messages as a threat thus sets off the brain's alarm system and pain arises.

## So to summarise and remember

Your pain may have a component of each of the three causes explained (structural/muscle tension/central nervous system sensitisation). Persistent pain is complex and unfortunately there is not a 'quick fix' or 'mind over matter' strategy you can adopt. But understanding these strategies will support you in knowing how best to manage your pain.

Remember you did not choose to have persistent pain. It can be really difficult to live with, and sometimes leads to self-criticism and frustration, which may further increase sensitisation/pain levels. Therefore it is helpful to develop ways of being kinder and supportive to ourselves.

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