

Chronic Pain

When an injury occurs, pain receptors are triggered within the body which are processed by the brain and determined as a threat or not. If the message is a threat, we experience pain.

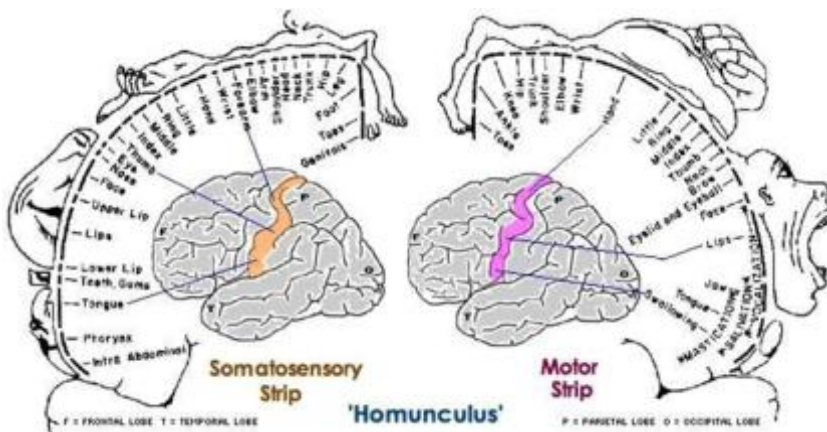
The usual process of pain is:

Acute injury → onset of pain → inflammation → healing → decrease in pain → return to normal

In the case of chronic pain (lasting >12 weeks), the pain is ongoing as the body's nervous system becomes highly sensitive to stimuli; this process is called Central Nervous System sensitisation. This means that the body sends more pain signals to the brain and ignores less of them. This explains why the amount and duration of pain you experience does not necessarily correlate to the amount of tissue damage you have sustained.

Changes also occur within the sensory motor homunculus, which is a depiction of a sensory map in the brain, which shows that the more nerves devoted to a particular area leads to a greater pain response, e.g. fingers represents a large portion of this homunculus, therefore a paper cuts elicit a lot of pain even though they're small and this is not a severe injury.

Central sensitisation involves an increased representation of the painful area and a 'smudging' of this representation into neighbouring areas, e.g. chronic back pain causes the area on the homunculus to become larger and take over other areas such as the hip or chest.



Chronic pain also has higher sympathetic nervous system stimulation. The sympathetic nervous system is responsible for 'fight or flight' which occurs in stressful situations and causes changes such as increased heart rate, sweating and increased blood flow to muscles etc. Once the stressful situation is resolved, the sympathetic nervous system activity is reduced. In the case of chronic pain, our sympathetic nervous system remains

'turned on' and the muscles are always active and tense. This causes us to use our muscles in different patterns as they are tight and overused, e.g. limping. This contributes to the ongoing pain process.

Chronic pain is also associated with immune system changes. After sustaining an injury, the immune system releases chemicals associated with inflammation. These chemicals remove the damaged cells and assist in tissue healing. This release of chemicals normally settles once the tissue is healed, however in chronic pain these chemicals continue to be released which contributes to the pain experience.

Emotions, attitudes and beliefs greatly affect the perception of pain. Fears of movement, particular activities and memories of painful experiences increase the pain messages in the brain.

All of these elements contribute to Central Nervous System sensitisation and explain why pain can become chronic.