

# Understanding Pain

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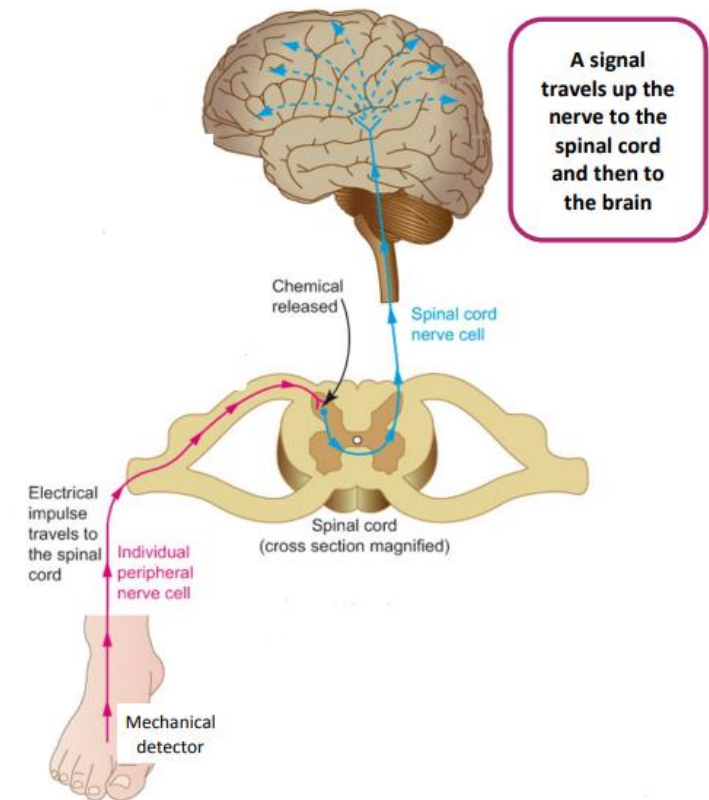
# Why do we feel pain?

- Pain is the brain's way of telling you about danger.
- Eg pain you feel when you put your hand on something hot should make you move your hand to stop you burning yourself.



# A brick drops on a foot

- Mechanical receptors detect pressure from the brick
- An electrical signal travels the length of the nerve to the spinal cord.
- The electrical signal travels up the spinal cord to the brain
- The brain receives information that the mechanical detectors in the foot have been activated.
- At this stage it is only a danger message, not a pain message. Before the person can experience pain, the brain has to combine a lot of information to determine if there is any threat or danger.



# What the brain has to think about:



Immediate environment



Memory



Thoughts and Feelings



Lifestyle and work



Other: Future plans, personal and cultural beliefs.



No one centre in the brain is responsible for the experience of pain.



The parts of the brain that are active include areas responsible for

Sensation  
Movement  
Emotions  
Memory



This is why every pain experience is unique.

# If the brain thinks there is danger it produces a pain output



The sympathetic nervous system which can increase your heart rate and make you sweat



The muscle system to protect your foot and keep it still



The endocrine system to reduce your gut activity so that energy is diverted to help the healing process



The immune system to produce chemicals which promote healing

## Persistent pain

Pain that continues past the expected healing time of 3 months.

Does not (for most people) indicate on-going damage.

The pain is more to do with changes in the nervous system than with an on-going injury.

# Peripheral nerves



Chemicals, in the case of inflammation, can linger in the tissues = Signals are sent more frequently.



Mechanical detectors are activated more easily during movement.



The brain becomes more interested in the painful area and allows more detectors to be formed.



New nerve endings grow into the surrounding tissues = pain can be felt in areas where there was no damage.



Over a longer period of time nerves which do not carry 'danger signals' start doing so and sensations of touch is now experienced as pain.



# Spine

In persistent pain the chemicals in the spine linger for longer

More detectors are laid down and they open up for longer

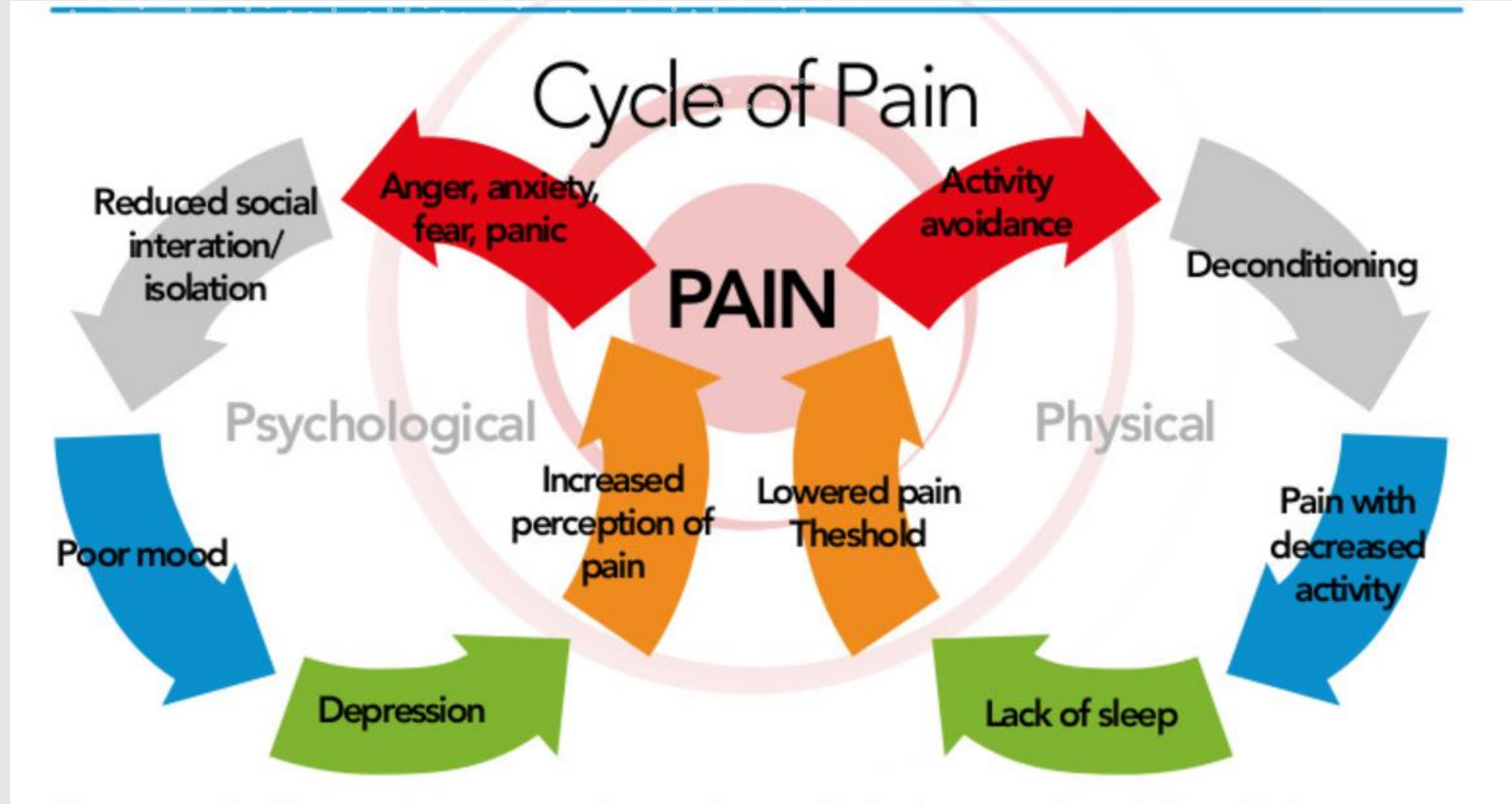
More signals to be sent = more danger messages make their way to the brain

# Brain

Under normal circumstances the brain inhibits signals being sent upwards.

In persistent pain, the brain releases chemicals such as glutamate which increase the amount of signals travelling to the brain.

# Pain and mood



# The hormone system

Body's fight and flight centre kept on

You may experience:

- sleep disturbance
- poor memory
- your heart may beat faster
- you may breathe quicker
- your muscles may become tenser
- over a period of time this may cause you to feel exhausted.

In a sensitised nervous system, pain can be experienced in the absence of damage



# Key messages

1. Pain is always real

2. Pain does not necessarily mean damage or further damage

3. Pain is a protective output of the nervous system to perceived danger / threat

4. The nervous system becomes sensitised – goes into overdrive and does not switch off after an injury

5. There are many things which will influence your experience of pain

# Ways to treat persistent pain

Some medication can help but many cause more harm than good

High dose opioids (morphine type drugs) harmful

Movement / physio

Mindfulness / relaxation

Pacing yourself

Set goals

Pain management teams – multidisciplinary including physios, phycologists

Get help

# Resources

<https://www.retrainpain.org/>

<https://www.paintoolkit.org/>

<https://www.britishpainsociety.org/>

<https://my.livewellwithpain.co.uk/>

- <https://my.livewellwithpain.co.uk/resources/true-stories/life-after-opioids/>



Any questions?

