



Pain Management Unit
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East Suffolk and
North Essex
NHS Foundation Trust

Understanding your pain session – changes to pain processing

This leaflet summarises the key information presented during the 'Understanding Your Pain' session at Ipswich Hospital Pain Management Unit.

How we process pain is very complex. The part of our nervous system that sends pain messages is not a 'hardwired' system and, in common with the rest of the nervous system, it has the ability to remodel depending on the signals that are sent through it. This is called 'neuroplasticity'; the more we use nerve pathways the stronger they get. This is how we, as humans, can learn new skills all the way through our life and why the more we practise something the better we get at it.

Unfortunately neuroplasticity happens with **all** messages that are sent through the nervous system, including pain. The more practice the pain system gets at experiencing pain, the faster and better it becomes at telling us about pain. This process of the pain system getting better at reporting pain is called 'central sensitisation'.

We all have a point where sensations builds up enough to get reported to us as pain. For people without chronic pain, the reporting point is normally set at a level where there is injury to tissue and the pain is a clear warning signal to change behaviour and do something to stop the pain.

When central sensitisation has happened, this reporting point becomes lower, meaning that pain is reported sooner or with less signal.

One example could be sitting in a chair. Without a chronic pain condition you could expect to sit for several hours before feeling uncomfortable enough to move. With a chronic pain condition, it might mean that the length of time you can tolerate sitting in one position before feeling an increase in pain becomes shorter. The pain system has become better at picking up on the signals of compression and stiffness involved in sitting and reports pain earlier.

When the pain system is running a 'normal programme', in the way it does for people without chronic pain, it works a bit like a car alarm – it only goes off when someone is trying to break into the car.

When the pain system has become more switched on through neuroplastic changes and central sensitisation (in the way it does with chronic pain), it behaves like a car alarm that has become oversensitive. It is still a real alarm, just as loud and noisy but it goes off when someone is walking past the car rather than when someone is breaking in and causing damage.



Things can influence the pain system, either exciting and ramping up the pain messages, or calming down the messages; hence the pain level can be quite widespread. These can include physical, psychological and environmental factors.

One of the aims of learning more about pain management is to discover which things help to calm down the pain system,

and to start practising these activities and skills regularly. The more we practise, the more our pain processing system changes and adapts to being in a calmer and quieter state. We use neuroplasticity to our advantage.

Some of the factors which can influence how active or calm the pain processing system is are shown below.

Things that can increase pain signals (make it more painful)	Things that can reduce pain signals (make it less painful)
<p>Physical</p> <ul style="list-style-type: none"> • Doing too much or too little • Poor posture • Muscle tension • Body de-conditioning from reduction in activity • Poor diet and lifestyle • Being unwell • Being tired • Stopping/Changing medication rapidly 	<p>Physical</p> <ul style="list-style-type: none"> • Pacing activity • Gentle posture correction • Gentle stretch • Gentle increase in activity to strengthen muscles and improve overall fitness • Good diet and lifestyle • Good quality sleep • Being in good health generally • Taking pain medication
<p>Thoughts and feelings</p> <ul style="list-style-type: none"> • Difficult emotions, such as stress, tension, upset, anger, fear, frustration • Negative patterns of thinking • Negative thoughts and beliefs about pain • Low mood 	<p>Thoughts and feelings</p> <ul style="list-style-type: none"> • Pleasant emotions, such as happiness, calmness, being relaxed • Positive, hopeful patterns of thinking • More positive, helpful thoughts and beliefs about the pain • Good mental wellbeing/positive mood
<p>Social and environmental</p> <ul style="list-style-type: none"> • External situations which cause stress such as financial or housing problems • Extremes of temperature/bad weather • Poor social support 	<p>Social and environmental</p> <ul style="list-style-type: none"> • Social / environmental situations which promote well-being (for example support from friends and family) • Moderate temperatures, good weather • Good social support

Further information

YouTube – Neuroplasticity video at <https://www.youtube.com/watch?v=ELpfYCa87g>

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