FACT SHEET — PSYCHOLOGICAL / NEUROLOGICAL

Central Sensitisation and Chronic Pain

Why pain persists long after tissues have healed — and what to do about it

Central sensitisation describes a state in which the central nervous system — the brain and spinal cord — becomes amplified in its response to pain signals. It is one of the most important concepts in modern pain science and helps explain why back pain can persist long after any original tissue injury has healed, and why some people experience more pain than others with apparently similar injuries.

How normal pain works

Pain is not simply a signal from damaged tissue. It is the brain's interpretation of threat — a protective output designed to make you take action. Normally, when tissue heals, the pain reduces and resolves. In central sensitisation, the nervous system remains in a heightened state even after tissue healing, continuing to generate pain signals that are out of proportion to the actual tissue state.

Signs that central sensitisation may be involved

- Pain that is widespread and does not follow a clear anatomical pattern
- Pain that persists long after the expected healing time
- Heightened sensitivity to touch, pressure, temperature, or noise
- Pain that is significantly worsened by stress, poor sleep, or low mood
- Multiple co-occurring pain conditions (headache, IBS, widespread aching)
- Imaging that does not explain the degree of pain experienced

The important message about central sensitisation

Central sensitisation does not mean the pain is not real or is imagined. It means the nervous system is genuinely producing pain — but the driver is in the system itself rather than in the tissues. This distinction matters enormously because it changes treatment. Treating the tissues (injections, surgery) has limited effect. Treating the nervous system — through exercise, sleep, stress management, education, and graduated activity — does.

Treatment

Pain neuroscience education	Understanding the mechanism of central sensitisation is itself therapeutic. Research shows that patients who understand why pain persists experience less fear, less catastrophising, and better outcomes.
Graded exposure to activity	Gradually increasing activity and loading, despite pain, to retrain the nervous system that movement is safe. The pain may initially increase before it improves.
Sleep	Improving sleep quality is one of the most powerful interventions. Poor sleep amplifies central sensitisation significantly.

Stress management	Chronic stress amplifies central sensitisation. Mindfulness, CBT, and exercise all address this.
Exercise	Regular aerobic exercise is one of the most evidence-based treatments for central sensitisation and chronic pain.
Social connection	Social isolation amplifies pain perception. Maintaining relationships and social engagement is genuinely therapeutic.

Related fact sheets

Fibromyalgia	The condition most associated with central sensitisation.
Fear-avoidance and back pain	How fear of movement amplifies central sensitisation.
Sleep and back pain	The sleep-pain cycle.
Why self-management produces better long-term outcomes	Active rehabilitation over passive treatment.

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