

Chronic Pain and Central Sensitisation



Pain persisting for longer than **3-6 MONTHS¹** is defined as **CHRONIC PAIN** and may be the product of tissue damage producing neuroplastic changes²

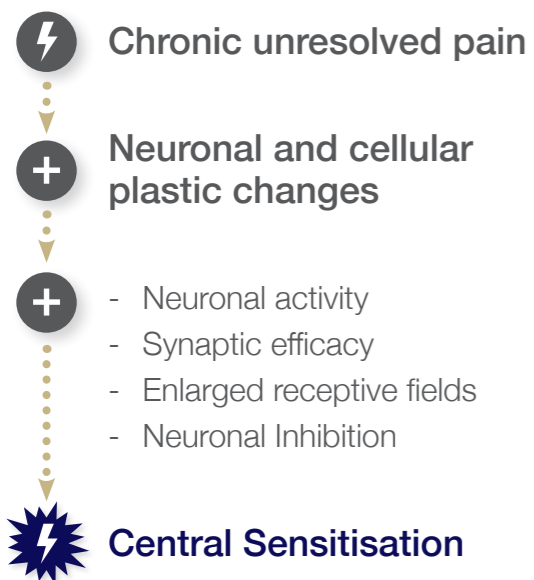


People with chronic pain have a **30-60%** increased risk of major **DEPRESSION³**, and **44%** meet the criteria for a **SLEEP DISORDER⁴**



POOR SLEEP LEADS TO LOWER PAIN THRESHOLDS, which contributes to **HYPERALGESIA**, which in-turn worsens sleep quality⁵

The Development of Central Sensitisation^{6,7}

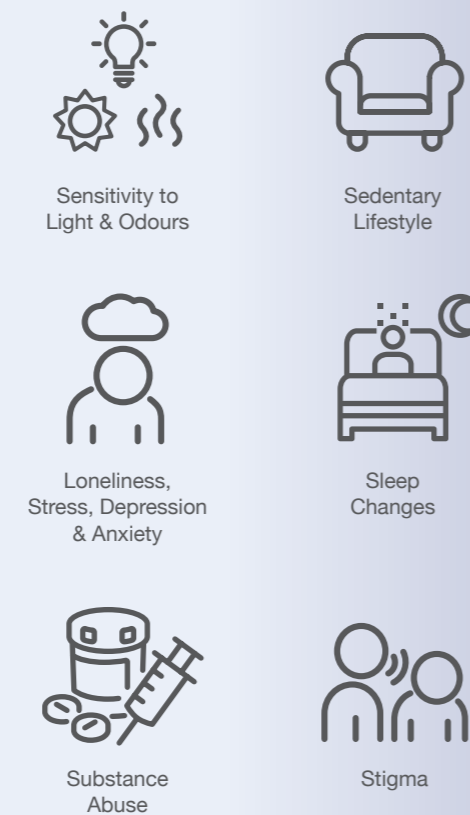


Central sensitisation is the amplification of neuronal pain signalling within the central nervous system that elicits pain hypersensitivity across many other organ systems, with or without the presence of painful stimuli

Chronic pain conditions that may feature central sensitisation:^{6,7}

- Fibromyalgia
- Rheumatoid and osteoarthritis
- Musculoskeletal disorders
- Irritable bowel syndrome (IBS)
- Headache
- Inflammatory, visceral, and neuropathic pain
- Endometriosis and chronic pelvic pain⁸

Central Sensitisation Risk Factors⁹



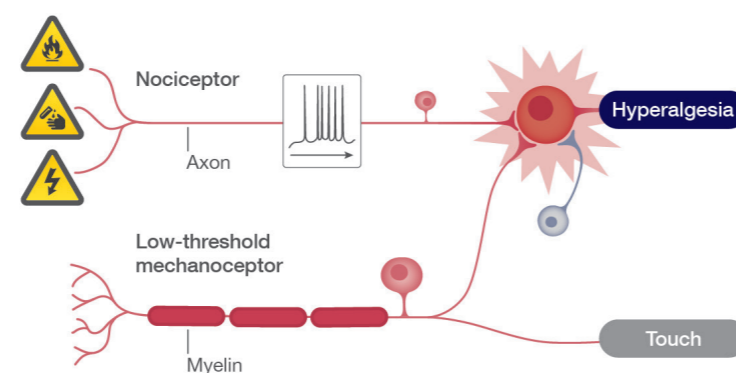
Signs of Central Sensitisation⁶

- Hyperalgesia:** increased pain perception
- Allodynia:** perception of pain to nonpainful stimuli
- Visceral sensitivity:** pain in abdominal organs
- After-sensation:** pain following stimulus cessation

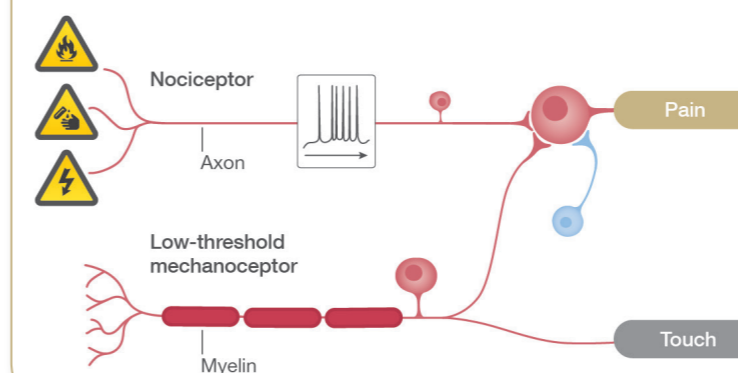
Central Sensitisation Support⁹



Central sensitisation at the neuronal level¹⁰



Normal response to pain at the neuronal level¹⁰



Herbs and nutrients to support the multidirectional relationship between pain, mood, sleep and immunity

Crocus sativus (saffron)

- Promotes healthy mood and emotional balance**
- Hypothalamic-pituitary-adrenal axis modulator for stress regulation¹¹
 - Induces the uptake of dopamine, norepinephrine and serotonin¹²
 - Prevention and treatment of stress, mood disorders, and mild - severe depression^{13,14,15}
- Improves insomnia, sleep quality, mood and alertness upon waking^{12,16}**
- Promotes melatonin production to regulate circadian rhythm¹²
- Anti-inflammatory¹²**
- Neuroprotective and influences neuroplasticity¹³**

Palmitoylethanolamide (PEA)¹⁷

- Relieves pain**
- PEA at recommended doses can be used alongside commonly prescribed pain medications¹⁸
 - Endocannabinoid-like lipid mediator with analgesic properties
 - Analgesic benefits for chronic pain conditions including endometriosis, pelvic, peripheral neuropathic, back and post-operative pain
 - Reduces joint pain and inflammation associated with rheumatoid arthritis and osteoarthritis
 - Supplemental PEA 'tops up' endogenous PEA which becomes depleted in chronic pain conditions
- Supports immune system health**
- Anti-inflammatory and mast-cell inhibitory properties

Vitamin D

- Nervous system support and mood enhancement**
- Modulates neurotransmitters including acetylcholine, catecholamines and serotonin^{19,20}
 - Inverse relationship with vitamin D levels and anxiety, depression, seasonal affective disorder, major depressive disorder, fibromyalgia and premenstrual syndrome^{11,15,21}
- Improves sleep duration and quality²²**
- Modulates the healthy immune response²³**