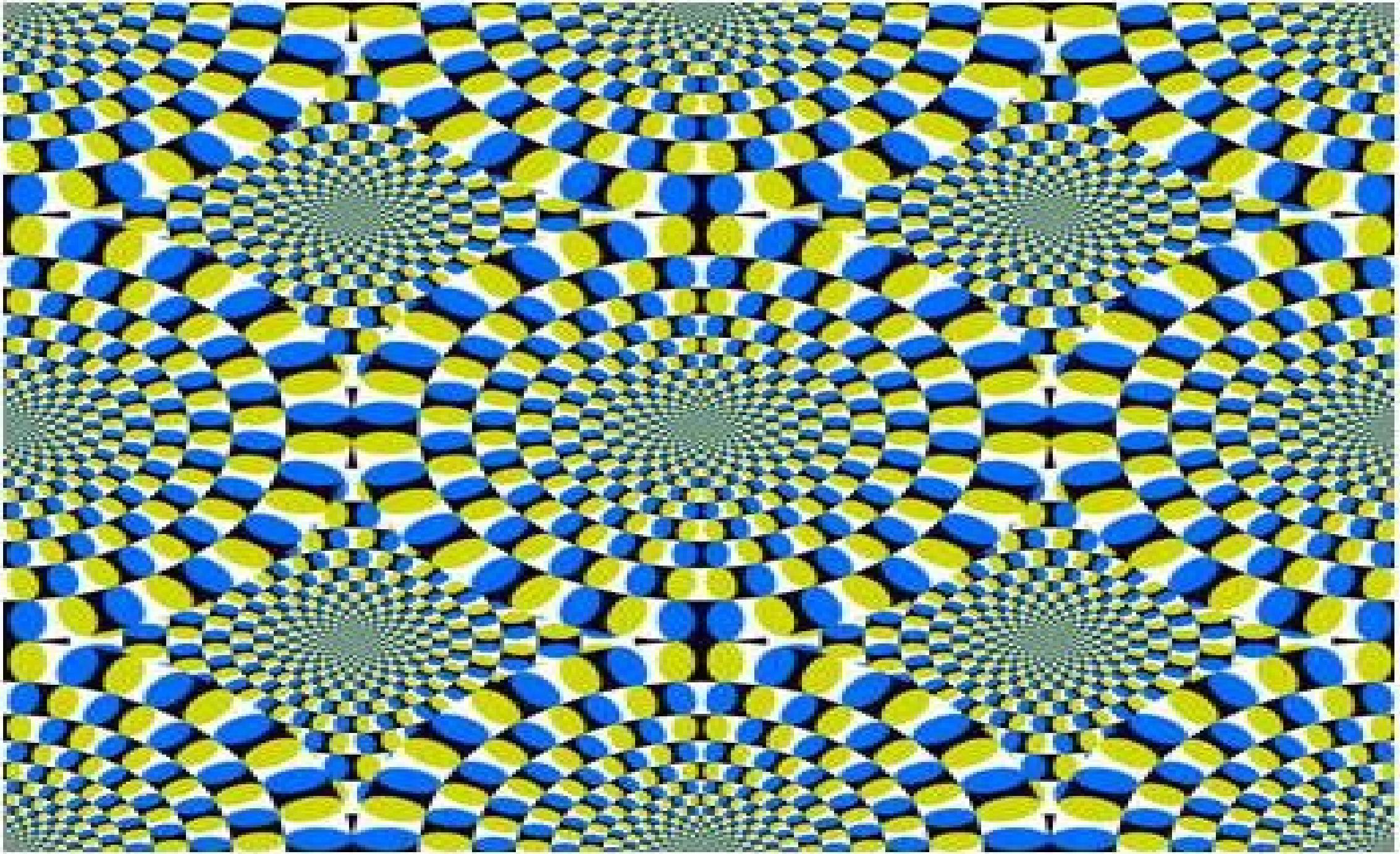
CHRONIC PAIN

OLIVER LUCAS

ADVANCED PRACTICE PHYSIO

FIRST CONTACT PHYSIO

PRESENTED OCTOBER 2025

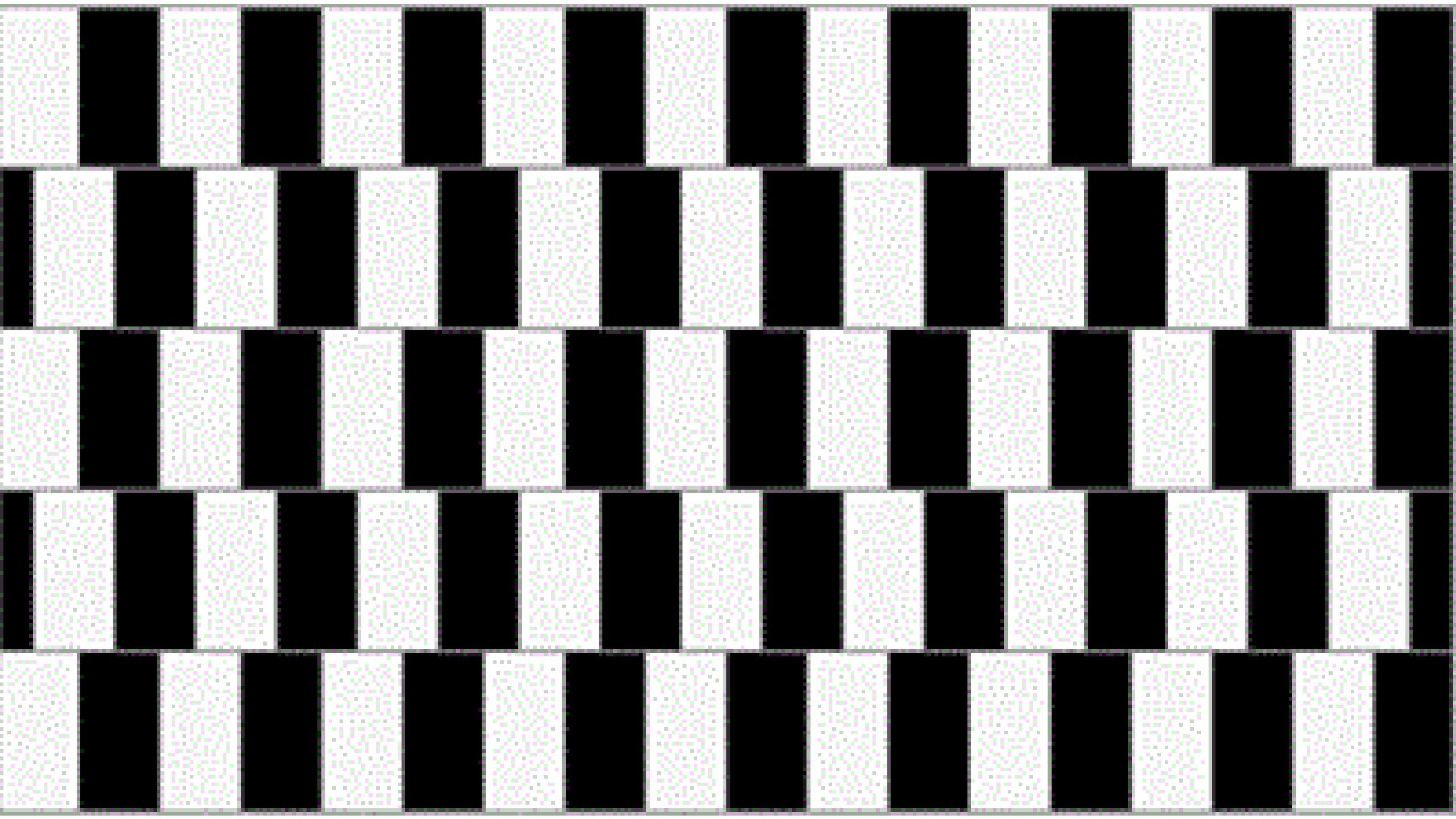


WHAT TO EXPECT FROM THE SESSION.

- My background
- Fact and figures
- What is pain?
- History of pain
- Mechanisms of pain
- Acute pain
- Healing vs Recovery
- Chronic pain
- Central sentisation
- Neuroplasticity
- Pulling it all together

BACKGROUND

- Sports therapy
- Physiotherapy rotations (core rotations and inpatient mental health rotation community)
- **M**usculo**SK**eletal physiotherapy (MSK)
- Team lead (management)
- Advanced practice in hip and knee
- First Contact Practitioner working in 4 different GP practices
- Various sports teams exposure along the way.



FACT AND FIGURES.

- Between one-third and one-half of the UK population (just under 28 million adults) are affected by chronic pain.
- The UK prevalence ranged from:
  - 35.0–51.3% for chronic pain.
  - 10.4–14.3% for moderate to severely disabling pain.
- The prevalence in people aged:
  - 18–25 years was 14.3%, although the prevalence in those aged 18–39 years may be as high as 30%.
  - Over 75 years was 62%.
- The prevalence of different types of pain was:
  - 14.2% for chronic widespread pain.
  - 8.2% for chronic neuropathic pain.
  - 5.4% for fibromyalgia.
- More common in women than in men.
- Across Europe, approximately 18% of the population are currently affected by moderate to severe chronic pain [SIGN, 2019].

https://cks.nice.org.uk/topics/chronic-pain/background-information/prevalence/

NICE.org October 2025.

- Chronic pain is a common reason for seeking healthcare — up to 50% of GP consultations are related to pain [Kang, 2023].
- The prevalence of chronic primary pain is unknown, but is estimated to be between 1 and 6% in England [NICE, 2022].
- Among the three most common types of pain are [BMJ Best Practice, 2024]:
- Back pain.
- Headache.
- Joint pain — arthritis (osteoarthritis and rheumatoid arthritis) is one of the most common chronic pain disorders, diagnosed in 8–16% of the population in Europe and the US.

https://cks.nice.org.uk/topics/chronic-pain/background-information/prevalence/

NICE.org October 2025.

Mirrored in https://assets.publishing.service.gov.uk/media/5fc8c6b78fa8f547585ed7f3/Chronic_Pain_Report.pdf

.gov publication from 2017.

- Almost half of people with chronic pain have a diagnosis of depression and two-thirds of people are unable to work outside the home.

- Attempts to treat chronic pain are costly to the healthcare system. In 2016, £537 million was spent on prescribing analgesics
- An additional 50% cost incurred from the prescription of other drug classes such as antidepressants and antiepileptic drugs.
- The economic impact including to absenteeism, poor productivity and people with pain leaving the work force cost £5 billion and £10.7 billion for back pain alone.
- Painful conditions such as arthritis and back pain account for one-third of all claims for disability benefits in the UK.

NICE guideline: Chronic pain: final scope (January 2018)

WHAT IS PAIN

- Define pain
- Define chronic pain

WHAT IS PAIN

- Definition of pain

In July 2020, The International Association for the Study of Pain (IASP) revised the definition of Pain as follows:

"An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage,"

- Definition of Chronic pain

"**pain experienced on most days or every day in the previous three months that causes restriction in at least one activity**"

Kang (2023) 'Chronic pain: definitions and diagnosis', *BMJ.*

HISTORY OF PAIN

- **Intensity Theory (Plato 428-347 BC)** “an 'emotion' that occurs when the stimulus is intense and lasting” - in the 19th century lead to understanding around the dorsal horn and pain threshold innovation.
- **Cartesian Dualistic Theory:** introduced in 1644 by the French philosopher Renee Descartes (1596-1650). This theory has the name in current literature as the Cartesian dualism theory of pain. The dualism theory of pain hypothesized that pain was a mutually exclusive phenomenon. Pain could be a result of physical injury or psychological injury. It was also related to the soul and could be attornment for sins
- **Specificity Theory:** initially presented by Charles Bell (1774–1842) This theory is similar to Descartes' dualistic approach to pain in the way that it delineates different types of sensations to different pathways. In addition to the identification of specific pathways for different sensory inputs, Bell also postulated that the brain was not the homogenous object that Descartes believed it was, but instead a complex structure with various components -this lead to further research in the 1800’s showing 4 different types of sensation, Heat, cold, touch and pain.

Trachsel LA, Munakomi S, Cascella M. Pain Theory. In: StatPearls. StatPearls Publishing, Treasure Island (FL); 2025.

HISTORY CONTINUED

- **Pattern Theory**: John Paul Nafe (1888-1970) presented this theory in 1929. The ideas contained in the pattern theory were directly opposite to the ideas suggested in the Specificity theory in regards to sensation. Nafe indicated that there are no separate receptors for each of the four sensory modalities. Instead, he suggested that each sensation relays a specific pattern or sequence of signals to the brain
- **Gate Control Theory:** In 1965, Patrick David Wall (1925–2001) and Ronald Melzack announced the first theory that viewed pain through a mind-body perspective. - one of three areas on the signals journey acted to modulate the singal like a gate
- **Neuromatrix Model:** The theory Ronald Melzack proposed is known as the neuromatrix model of pain. This philosophy suggests that it is the central nervous system that is responsible for eliciting painful sensations rather than the periphery.
- **Biopsychosocial Model:** first introduced in 1954 this specific theory of pain hypothesizes that pain is the result of complex interactions between biological, psychological, and sociological factors, and any theory which fails to include all of these three constructs of pain, fails to provide an accurate explanation for why an individual is experiencing pain. - 1977 to todays model

Trachsel LA, Munakomi S, Cascella M. Pain Theory. In: StatPearls. StatPearls Publishing, Treasure Island (FL); 2025.

MECHANISMS OF PAIN

ACUTE PAIN / MOST COMMON PUBLIC UNDERSTANDING

Noceoceptive pain – free nerve endings stimulated.

- Noxious stimuli, heat cold, force, chemical, trauma surgery,
- Can be neuropathic in nature (related to nerves)
- Leads to inflammation and local cell response

Armstrong SA, Herr MJ. Physiology, Nociception. [Updated 2023 May 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025

STAGES OF HEALING

- **Hemostasis Phase (**Bleed / injury)
- Inflammation phase (chemical soup)
- Proliferation stage (New structures)
- **Maturation Phase (**Remodelling stag).
- Diffient tissues = different speeds.

HEMOSTASIS PHASE (BLEED / INJURY)

Bleeding phase – damage to blood vessels and capillaries that leads to leaking of blood into near by tissues

Clotting agents start to form a barrier almost immediately

Stimulates chemical mediator for inflammatory phase to start.

This takes a minuet to days depending on severity and health of the person.

https://www.physio-pedia.com/Wound_Healing

INFLAMMATION PHASE (CHEMICAL SOUP)

Starts after the clotting and can take 48 hours up to weeks

Chemical soup

Removal of damaged tissues

Stimulation of matrix for new material.

Body has increased immune response with increased locality of white blood cells.

https://www.physio-pedia.com/Wound_Healing

PROLIFERATION STAGE (NEW STRUCTURES)

Can take up to several weeks to months

This is the laying down of new tissues

Building of complex tissues.

https://www.physio-pedia.com/Wound_Healing

MATURATION PHASE (REMODELLING STAGE).

Can take weeks to up to 6 months or years.

Finalising the complex collagen fibres and restoring of normal cellular activity.

https://www.physio-pedia.com/Wound_Healing

NEUROPATHIC PAIN

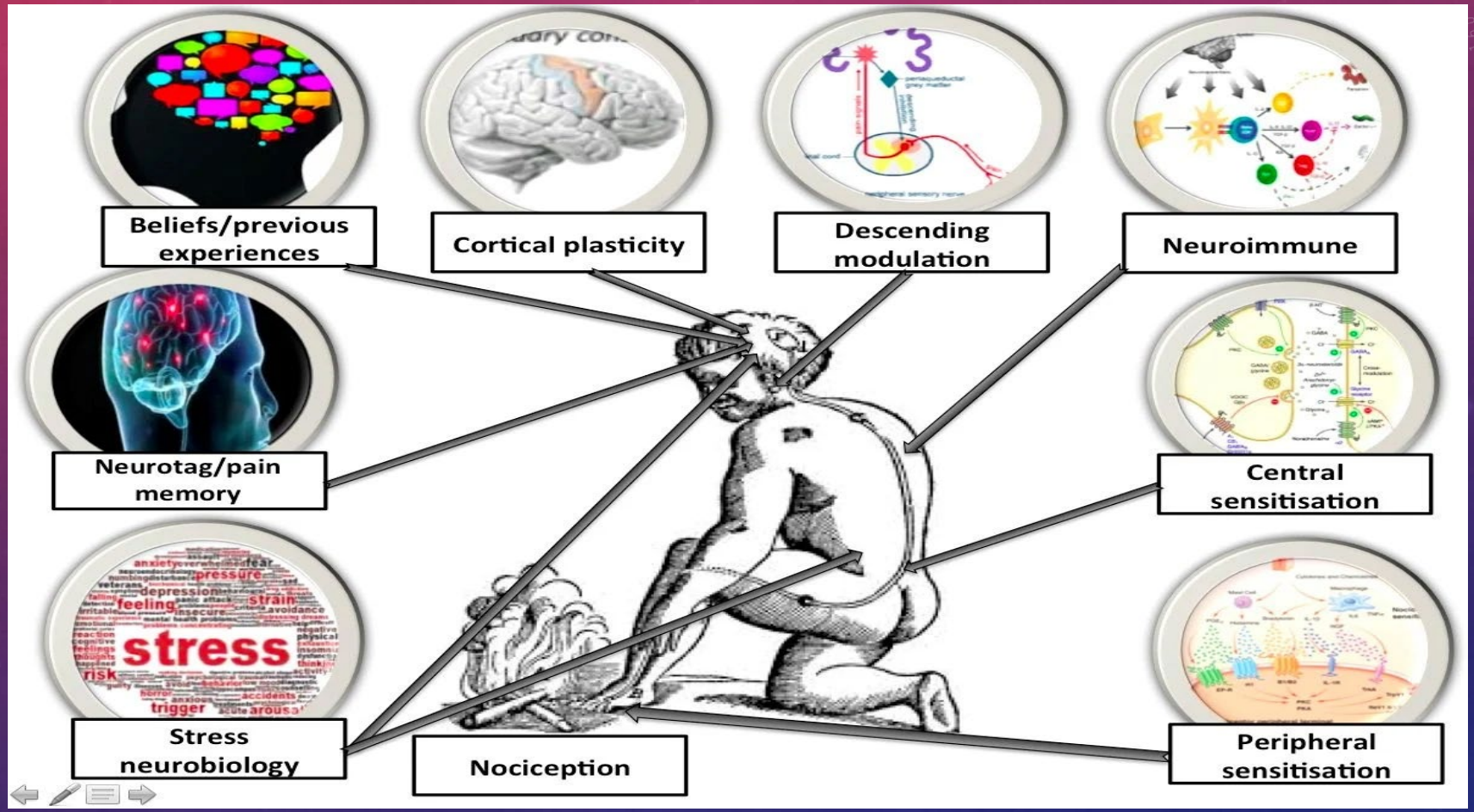
Acute trauma to nerve from tumours neuropathic disease or trauma.

RECOVERY

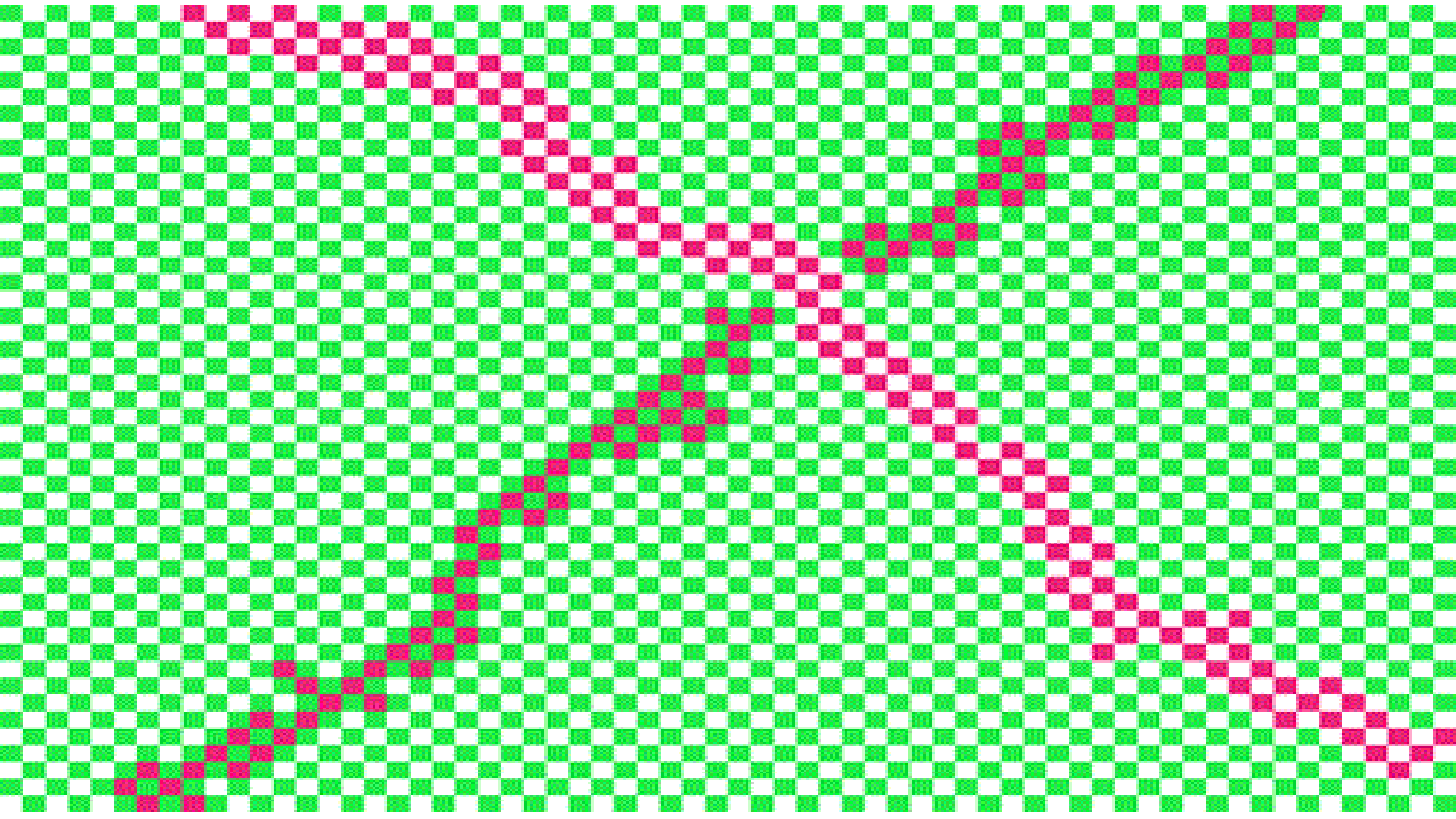
Return to normal function……. The ultimate goal?

What is Quality of Life?

SO WHY DO THINGS CONTINUE TO HURT?



https://www.youtube.com/watch?v=gwd-wLdIHjs



CHRONIC PAIN

- **How is this different?**

- **Primary chronic pain –** “pain that arises from altered nociception despite no clear evidence of actual or threatened tissue damage causing the activation of peripheral nociceptors or evidence for disease or lesion of the somatosensory system causing the pain”.

- Secondary Chronic pain – “In which an underlying
- condition adequately accounts for the pain or its impact” e.g. cancer.

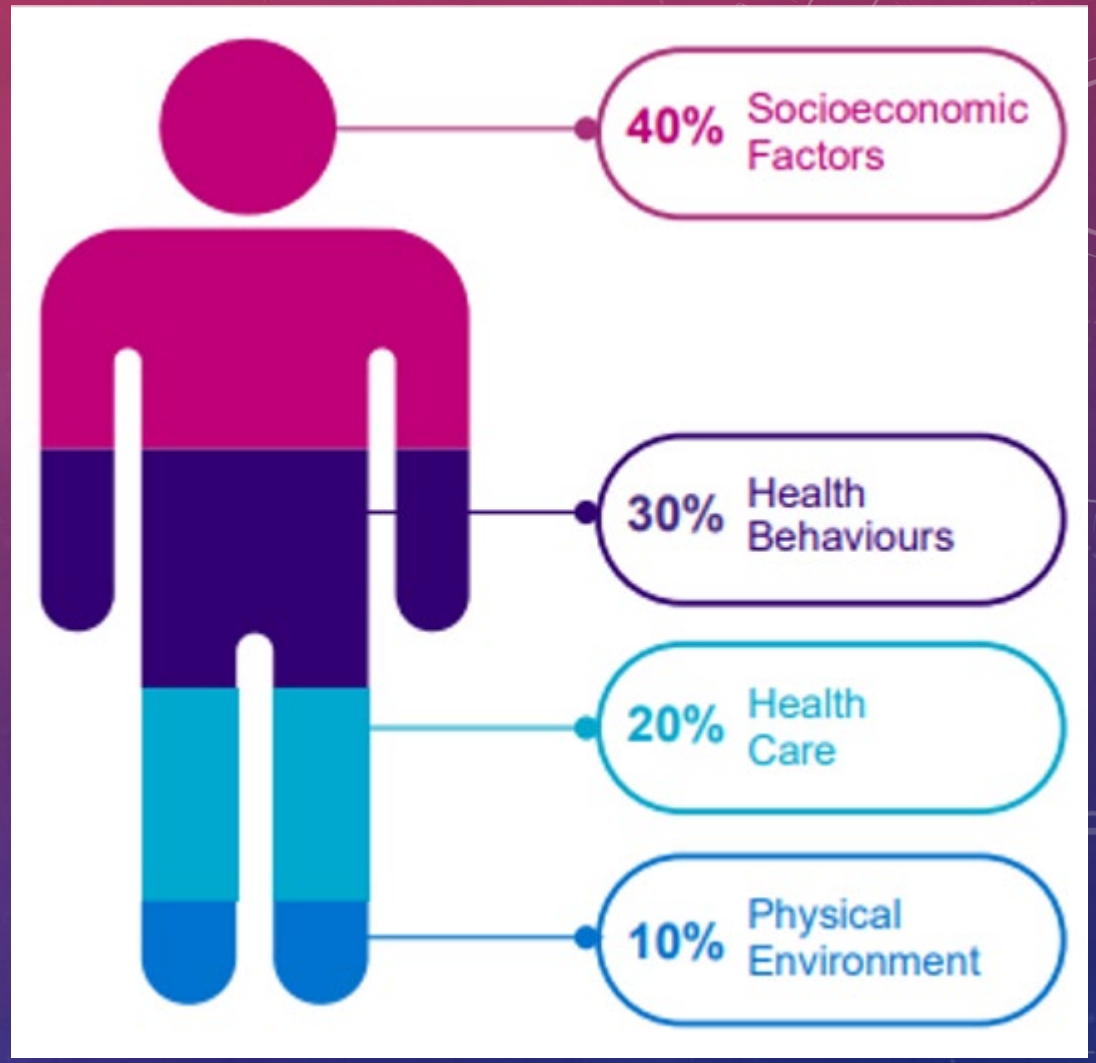
https://www.nice.org.uk/guidance/ng193
Accessed October 2025 published in the nice guidelines in 2021

https://pain.ucsf.edu/understanding-pain-pain-basics/types-pain
Accessed October 2025

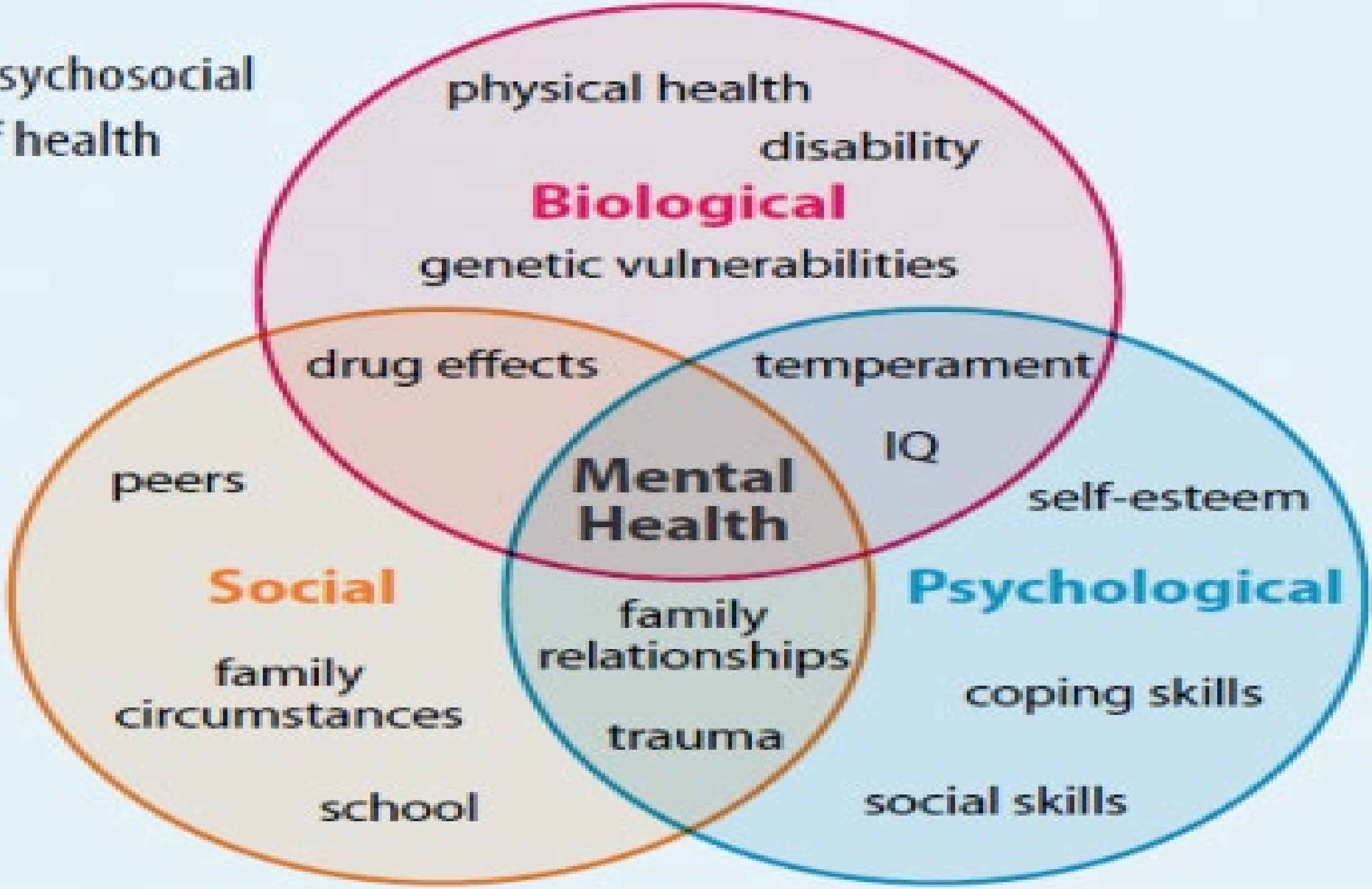
https://arthritisaustralia.com.au/managing-arthritis/arthritis-and-children/chronic-pain/volume-knob-on-amplifier-turned-to-ten/ Accessed October 2025

CHRONIC PAIN.

- Beliefs
- Emotional state
- Memory
- Central nerve changes
- Descending modulation
- Neuroplasticity.



The biopsychosocial model of health



CENTRAL SENTISATION

- Increased sensitivity to pain AND non painful stimulus or movement
- Disproportionate pain levels
- Changes to neuron thresholds
- Almost always present with chronic pain pictures
- Present in the absence of stimulus

Vardeh, D., Naranjo, J.F. (2017). Peripheral and Central Sensitization. In: Yong, R., Nguyen, M., Nelson, E., Urman, R. (eds) Pain Medicine. Springer**pp 15-17**

Hart, S. et al (2018) **The neurobiology of central sensitization.** *Journal of applied behavioral research*

Woolf, C. J. (2018). **Pain amplification—A perspective on the how, why, when, and where of central sensitization.** *Journal of applied behavioral research.*

NEUROPLASTICITY

- Ability for the brain to make and change connections
- Increases sensitivity
- Pain links with negative emotions
- Changes seen in gray matter

Jaffal SM. (2025) Neuroplasticity in chronic pain: insights into diagnosis and treatment. *Korean J Pain*.

PAIN MEDICATION ON CHRONIC PAIN.

MANAGEMENT STRATEGIES

- Exercises and movement. (helps with desensitization of neural pathways)
- Normalising movement patterns and behaviours (builds new neuroplastic connections)
- Sensory bombardment / desensitisation work. (normalising pain responses)
- CBT / psychological input (deals with depression anxiety emotional trauma and fear)
- Alternative therapies ,e.g acupuncture massage or breathing exercises (varied outcomes and complementary to the above).
- Sleep (allows for solidification of new pathways)
- Diet (optimising bodily process)
- Weight management (increased weight = increased incidents of chronic pain)
- Life style choices

https://www.iasp-pain.org/resources/topics/chronic-pain/
Accessed October 2025

https://www.nice.org.uk/guidance/ng193
Nice Guidelines from October 2025 published in 2021.

THE PAIN IS REAL

- Chronic pain is real and debilitating understanding the mechanisms of chronic pain provides autonomy
- From medical professionals: share this information in relatable ways and explore management options as part of wholistic treatment. Set expectations.
- From supporting groups / networks: encourage positive changes towards their goals and encouraging behaviour change, supporting environmental / social changes where possible.
- From the patient: willingness to change, understanding the reasons for this pain, there is no quick fix. Changing environment and lifestyle behaviour where possible.
- Empathy is key.

BUILDING BLOCKS FOR MANAGEMENT.

Questions?

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THANK YOU!