PAIN MYTH #3

"If scans are normal, nothing is wrong."

THE MYTH

If imaging shows no structural abnormality, there is no physical basis for the pain. A normal scan means nothing is wrong.

WHAT SCIENCE SHOWS

Pain can be entirely real and clinically significant even when a scan looks normal. Imaging shows structure, not how the nervous system processes pain.

WHY DOES THIS MATTER?

Pain is produced by the nervous system

Pain is a dynamic experience generated by the nervous system, shaped by past pain, stress, sleep, and emotional factors, not only tissue signals. **This does not mean the pain is imagined - it means its origins are not always the kind of thing a scan is built to see.**

Scans show structure, not pain

Imaging is excellent at showing anatomy - fractures, tumours, infection, major tissue damage. **What it cannot do is measure how sensitive the nervous system is or how the brain is interpreting signals.** A normal result rules out certain causes; it does not rule out pain.

Scan findings and pain often do not match

Many people with no pain at all show disc changes or other "abnormalities" on MRI, while many people with severe pain have entirely normal scans. **This mismatch is one of the most consistent findings in pain research.**

Nociplastic pain is one reason a scan can be normal

In some people the nervous system becomes more sensitive over time, and pain can arise mainly from this altered processing rather than ongoing tissue damage. **A normal scan does not by itself explain the cause - that still needs clinical assessment.**

Being told "nothing is wrong" can itself cause harm

When someone in pain is told their scans are normal and therefore nothing is wrong, it can be deeply distressing and invalidating, leading people to feel dismissed or to doubt themselves. **Acknowledging that pain is real, even without a scan finding, is an important part of good clinical care.**

HOW WE CAME TO UNDERSTAND THIS

The gap between scans and pain became clear through imaging research itself. As MRI came into wider use, studies of people with no symptoms repeatedly found disc degeneration, bulges, and other changes that would once have been assumed to explain pain. The same mismatch turned up across neck, knee, and shoulder problems. **Far from showing that pain is not real, this work showed that structure alone is a poor guide to who is in pain.**

Alongside this, research on how the nervous system processes pain led to a newer idea: that altered processing can itself produce significant pain without identifiable tissue damage or disease of the nervous system. This is the basis of nociplastic pain, formally defined only relatively recently and still being refined. **It has pushed assessment beyond imaging alone, towards clinical evaluation of pain sensitivity, contributing factors, and the impact pain has on a person's life.**

Brinjikji et al. (2015). Systematic literature review of imaging features of spinal degeneration in asymptomatic populations. American Journal of Neuroradiology. | Kosek et al. (2021). Chronic nociplastic pain affecting the musculoskeletal system: clinical criteria and grading system. Pain.

WHAT EXPERTS SAY

> *Nociplastic pain is caused by nerve cells amplifying pain signaling. This cannot be detected on anatomical scans.*

Prof. Eva Kosek
Karolinska Institutet, Sweden

THE KEY TAKEAWAY

A normal scan does not mean your pain is not real. It also does not mean scans are useless: imaging is important, and sometimes essential, when a structural problem is suspected. It simply has limits. Pain is a complex experience shaped by the nervous system, including the brain, and many aspects of a person's life, not only by what shows up on imaging. If you are living with pain and have been told your scans are clear, this does not mean nothing can be done. Speak to a healthcare professional who can carry out a full clinical assessment and discuss the range of options available to support you.