

New research points to talking-therapy treatments to manage osteoarthritis pain

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Scientists have shown for the first time that the abnormalities in the way the brain experiences pain may be to blame for the chronic pain suffered by osteoarthritis patients.

The findings by Arthritis Research UK-funded researchers at The University of Manchester suggest the need for new therapies to target brain mechanisms to enable the brain to cope more effectively with chronic pain, including mindfulness-based talking therapies.

Chronic pain can affect up to 30% of the population at any one time – with most complaints relating to arthritis. Patients can become more disabled as their pain spreads to other areas and find it difficult to cope as it interrupts sleep and other normal daily routines.

Professor Anthony Jones, from The University of Manchester's Human Pain Group based at Salford Royal NHS Foundation Trust, said: "The extent of pain experienced by sufferers of arthritis has always been thought to result from the direct consequences of joint destruction. However the extent of pain is often poorly related to the amount of damage and can spread to nearby regions of the body where there is no evidence of arthritic disease. We wanted to look at what might be causing this.

"Currently it is not understood why patients with arthritis have such variability in how much pain they experience but, in spite of this, we continue to spend large sums of money using potentially damaging anti-inflammatory drugs."

Researchers thought that the spreading and intensification of pain in arthritis may be similar to that experienced by sufferers of fibromyalgia, a widespread chronic pain condition associated with psychological distress and sleep disturbance – where there is currently no consensus about the cause of the pain.

Earlier research had suggested that patients with fibromyalgia have abnormalities in the way in which the brain deals with pain so the Manchester team looked at the overlaps in how pain is processed in the brain, between osteoarthritis and fibromyalgia to help them understand why some sufferers of arthritis can experience much worse pain than others.

The study, published in the *European Journal of Neuroscience* recently, measured brain waves in response to short painful laser pulses to the skin in patients with osteoarthritic or fibromyalgic pain and those with no pain. They found that while anticipating the painful pulse a brain area called the insula cortex increased its activity and this predicted the extent and intensity of the patients' own chronic pain.

Dr Christopher Brown, Honorary Research Associate, Human Pain Research Group, The University of Manchester, said: "Increased activity in this brain area has been linked to a number of phenomena, including body perception and emotional processing, which might explain the greater pain perception in some patients.

"Interestingly, responses during pain anticipation were reduced in an area at the front of the brain called the dorsolateral prefrontal cortex.

These reduced responses corresponded to less ability to develop positive ways of coping with the pain in both groups of patients.

"We think that boosting activity either directly or indirectly in this area of the brain is likely to result in better coping and better control of pain responses in other areas of the brain."

The study suggests there are common [abnormalities](#) in the way the brain expects pain in fibromyalgia and osteoarthritis - which can be considered potential common brain mechanisms for these conditions.

Professor Wael El-Deredy, from The University of Manchester, added: "More research is needed but this suggests we should be putting more resources into a common approach to developing new therapies that target these potential brain mechanisms.

"Our previous work has shown that brain responses to pain expectation can be altered by relatively short and inexpensive mindfulness-based talking therapies in patients with different types of chronic pain. Our current findings therefore provide both a new target for development of new therapies and some optimism for simple interventions to improve the brain's control of chronic suffering endured by many patients with [chronic pain](#) conditions."

Professor Alan Silman, medical director of Arthritis Research UK, which funded the research, said: "This research provides a fascinating insight into the way the brain processes the pain of osteoarthritis, and goes some way to explaining why so many people with osteoarthritis with similar levels of joint damage experience such varying degrees of [pain](#).

"Focussing research on targeting abnormal [brain](#) mechanisms rather than more conventional approaches looking at joint damage could be a major

step forward, that could reduce people's dependency on anti-inflammatory and painkillers."

More information: "When the brain expects pain: common neural responses to pain anticipation are related to clinical pain and distress in fibromyalgia and osteoarthritis" by Christopher A. Brown, Wael El-Deredy and Anthony K. P. Jones will be published in the *European Journal of Neuroscience* in February.

Provided by University of Manchester

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