

How chronic knee osteoarthritis pain affects cognitive function

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New research suggests that chronic knee pain caused by osteoarthritis does not cause cognitive impairment in isolation, indicating that other

factors like age, pain medication and socio-economic factors are likely to play a part.

People with [chronic pain](#) often report impaired cognitive function, including problems with attention, memory, and behavioral flexibility, functions that have been linked to the hippocampus and prefrontal cortex regions within the brain. For example, they may find it difficult to concentrate on a conversation, to learn a new route, or to change routes to work when their usual route is blocked due to road works.

Researchers from the University of Nottingham's School of Life Sciences, School of Psychology, and Pain Centre Versus Arthritis used an experimental model of [osteoarthritis](#)-like [knee pain](#) to investigate whether such pain alone, without other factors that may often be present in patients with knee osteoarthritis, causes such [cognitive impairment](#). In the experimental model, they found no evidence for osteoarthritis-like knee pain to cause impairments in memory and behavioral flexibility. This suggests that chronic pain caused by knee osteoarthritis may impact cognitive functions less than other chronic pain conditions, which have been shown to cause marked cognitive impairments in experimental models. The findings have been published in *The Journal of Pain*.

Tobias Bast, one of the researchers involved in the study, explains: "Cognitive function is very important for [daily activities](#), and people with knee pain often complain about impairments in cognitive functions. Understanding how pain affects cognitive function and what factors influence this is really important and may help with improving cognitive function and quality of life for people with knee osteoarthritis. Our new findings contribute, alongside studies in people with knee osteoarthritis, to direct attention to potentially modifiable factors, such as [pain medication](#) and lack of social engagement, without which knee pain doesn't seem to impair cognition."

The new findings in the experimental model complement another recent study from Nottingham that showed people with knee osteoarthritis do show pain-related cognitive impairment. Importantly, in people, pain was found to interact with other factors in impairing cognitive function. The study suggested that social deprivation, interacting with chronic pain to impair cognitive ability, including memory and concentration, can make day-to-day activities, such as going shopping or doing housework, challenging for people with painful osteoarthritis. Low educational attainment, partly through its negative impact on cognitive function and increased anxiety, may also make people with osteoarthritis more vulnerable to difficulties with performing daily activities.

Dr. Bast adds: "The experimental model allows us to study the impact of chronic knee pain separately from other factors, which is impossible in people. Interestingly, in contrast to the experimental model, people with knee osteoarthritis do show pain-related cognitive impairment. However, our findings in the experimental model, where we can study the impact of chronic knee pain separately from other factors, suggest that chronic knee pain alone is not sufficient to cause cognitive impairment. This suggests that, in people, knee pain may impair cognitive functions by interacting with other factors that can characterize individuals with [knee osteoarthritis](#), including advanced age, socio-[economic factors](#) and pain medication. Some of these factors, including age and pain medication, can be studied in the [experimental model](#), offering us the opportunity to test directly how these factors interact with chronic pain to cause cognitive impairment."

More information: Sara Gonçalves et al, No Evidence for Cognitive Impairment in an Experimental Rat Model of Knee Osteoarthritis and Associated Chronic Pain, *The Journal of Pain* (2023). [DOI: 10.1016/j.jpain.2023.04.002](#)

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