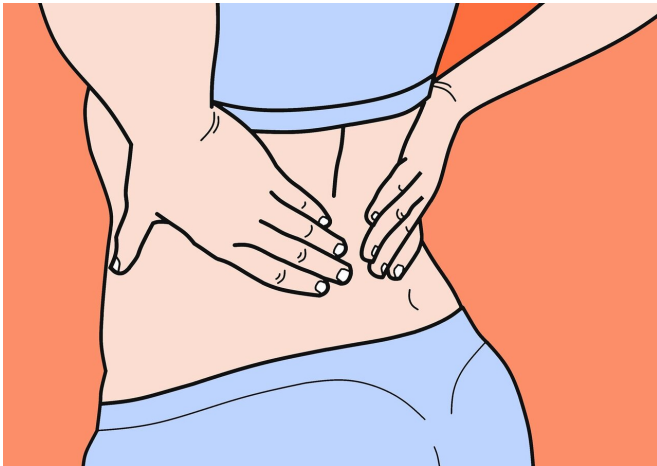


Changes to the nucleus accumbens linked to onset of chronic back pain

21 April 2020, by Bob Yirka



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A team of researchers from several institutions in the U.S. has found a link between the onset of chronic back pain and changes to the nucleus accumbens in the brain. In their paper published in *Proceedings of the National Academy of Sciences*, the group describes their study of volunteers with and without chronic back pain, and those who were classified as subacute.

Chronic [pain](#) is a serious problem for millions of people around the world. Whether due to injury, old age or other circumstances, chronic pain can play a major role in how people live their lives. Unfortunately, pain is still not very well understood—scientists do not yet know how it arises in the brain. And doctors still have very few tools for diagnosing pain. Also, treatment of pain has been a major contributor to the ongoing opioid crisis. In this new effort, the researchers believe they may have found a way to diagnose pain that strikes in the lower back. Prior research has shown that back pain can take many forms and can persist for different lengths of time for different people. For some, it lasts for a short period while a

person heals from an injury. For others, it lasts longer. And for still others, it can become chronic.

To better understand what happens in the brains of people with back pain, the researchers recruited 28 volunteers with chronic back pain, 40 with subacute back pain and 30 who did not suffer from back pain at all. Each of the volunteers underwent fMRI scans. The researchers focused on the size of the thalamus, the amygdala, the hippocampus and the nucleus accumbens. They found that the volume of the [nucleus accumbens](#) in the people with both chronic and subacute pain was smaller than in people with no back problems. They also found that the volunteers with subacute pain saw decreases in low-frequency fluctuations in their [nucleus accumbens](#) as they transitioned to chronic sufferers. This last finding suggests that measuring for such frequencies could be used as a way to diagnose impending [chronic back pain](#). It also hints at the possibility of developing similar tests for other types of [chronic pain](#).

More information: Meena M. Makary et al. Loss of nucleus accumbens low-frequency fluctuations is a signature of chronic pain, *Proceedings of the National Academy of Sciences* (2020). [DOI: 10.1073/pnas.1918682117](#)

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