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## Yoga Helps Reverse Effects of Pain on the Brain

By Nikki Kean (/author/10551/kean)

*Studies Show Link Between Yoga Practice and Increase in Gray Matter*

*Presentation by M. Catherine Bushnell, PhD*



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depression into account." The impact of gray matter loss depends on where it occurs in the brain. Decreased gray matter can lead to memory impairment, emotional problems and decreased cognitive functioning.

Dr. Bushnell said there is compelling evidence from studies conducted at NIH/NCCIH and other sites that mind-body techniques, such as yoga and meditation, can counteract the brain anatomy effects of chronic pain. "Practicing yoga has the opposite effect on the brain as does chronic pain," she said.

Studies show yoga practitioners have more gray matter than controls in multiple brain regions, including those involved in pain modulation. "Some gray matter increases in yogis correspond to duration of yoga practice, which suggests there is a causative link between yoga and gray matter increases," Dr. Bushnell noted.

Pain causes a number of changes in the brain. But there may be non-invasive ways to help stall or even reverse some of this damage. Yoga, for instance, can be an important tool for preventing or even reversing the effects of chronic pain on the brain, according to M. Catherine Bushnell, PhD, scientific director, Division of Intramural Research, National Center for Complementary and Integrative Health, National Institutes of Health (NIH).<sup>1</sup>

MRI studies in rats and humans have shown alterations in gray matter volume and white matter integrity in the brain caused by the effects of chronic pain.

"Imaging studies in multiple types of chronic pain patients show their brains differ from healthy control subjects," Dr. Bushnell said. "Studies of people with depression show they also have reduced gray matter, and this could contribute to the gray matter changes in pain patients who are depressed. Our research shows that gray matter loss is directly related to the pain when we take

Assessing the impact of brain anatomy on pain reduction, Dr. Bushnell said gray matter changes in the insula or internal structures of the cerebral cortex are most significant for pain tolerance. "Insula gray matter size correlates with pain tolerance, and increases in insula gray matter can result from ongoing yoga practice," she said.

"Brain anatomy changes may contribute to mood disorders and other affective and cognitive comorbidities of chronic pain. The encouraging news for people with chronic pain is mind-body practices seem to exert a protective effect on brain gray matter that counteracts the neuroanatomical effects of chronic pain," Dr. Bushnell added.

#### Reference

1. Bushnell MC. Effect of Environment on the Long-term Consequences of Chronic Pain. Plenary paper presented at: Annual Meeting of the American Pain Society; May 13-16, 2015; Palm Springs, CA.



#### Vertical Health Websites



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Acute Pain

Post-surgical Pain

Sports and Overuse Injury

Trauma

Cancer PainHeadache

Cluster Headache

Migraine

Post-trauma Headache

Tension Headache

Neuropathic Pain

Carpal Tunnel Syndrome

CRPS/RSD/Causalgia

Diabetic Neuropathy

Multiple Sclerosis

Phantom Limb Syndrome

Postherpetic Neuralgia

Trigeminal Neuralgia

Oral and Maxillofacial Pain

TMJ

Tooth Pain

Rheumatologic and Myofascial Pain

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Lupus and Other Autoimmune Disorders  
Lyme and Other Infectious Diseases  
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