

Researchers identify which patients are at risk for continued pain after orthopedic surgery

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When it comes to determining which patients will have long-lasting pain after orthopedic shoulder surgery, cognitive coping style and genetic predisposition to pain sensitivity may actually be bigger factors than the size or intensity of the operation, a new University of Florida Health study finds.

The findings could help researchers develop better ways to help patients manage [pain](#).

"It is hard to know who is going to continue to have pain after [surgery](#), which is compounded by the fact that a lot of people are having surgery to relieve pain in the first place," said lead investigator Steven George, an associate professor and director of the Doctor of Physical Therapy program and Brooks Rehabilitation research collaboration at the UF College of Public Health and Health Professions, part of UF Health. "Some of the factors that you would think might predict the outcome, such as the size or intensity of the surgery, aren't as strong as people would have wanted them to be. It has led to researchers looking into individual factors that help determine response to surgery."

Among a group of patients who underwent shoulder surgery, those who had both a high [pain sensitivity](#) variant in a specific gene as well as worrying thoughts about pain on a questionnaire were twice as likely to still have pain one year after the surgery, the researchers found. The

findings appeared in a recent issue of the journal *Pain*.

Shoulder pain is the fifth most frequently reported type of musculoskeletal pain, affecting 9 percent of adults in the United States.

The article by the UF team, which also included a psychologist, statistician, geneticist, exercise scientist and surgeons, describes two studies supported by funding from the National Institute of Arthritis and Musculoskeletal and Skin Diseases of the National Institutes of Health. The first study was designed to help researchers home in on the genetic and psychological factors that may be the best predictors of [pain intensity](#) and duration. Nearly 200 healthy participants developed a minor shoulder injury through targeted exercises and had their pain levels measured daily until pain resolved.

In the second study, researchers tested 150 patients undergoing [shoulder surgery](#). Participants responded to two questionnaires that assessed their attitudes and beliefs about pain. One measured fear of various painful situations, ranging from a paper cut to slamming a hand in a car door, and a second assessed what is known as pain catastrophizing, which is characterized by beliefs that pain will worsen or nothing can be done to stop it. Participants also were tested for genes linked to pain sensitivity and inflammation. One week prior to surgery and three, six and 12 months following surgery, researchers assessed participants' pain using a measure of pain intensity that asks respondents to rate their pain on a scale of 0 to 10, where 0 is no pain and 10 is the worst pain imaginable.

Researchers found that patients who had both a high pain sensitivity variant of the COMT gene and high levels of pain catastrophizing had a more than 40 percent risk of continued pain one year after surgery, compared with less than 20 percent among patients without those factors.

Determining a patient's risk for problems with pain could help surgeons and patients make informed decisions about treatment, George said.

"Our goal is not necessarily to prevent someone from having surgery, it's to provide information that may help them decide whether they need to look into alternative pain management approaches," he said.

The ability to tailor pain treatments is a long-term goal of the research and is the topic of a study George is planning to start this year. In it, researchers will evaluate whether a medication that targets COMT, in combination with behavioral strategies to address pain beliefs, results in better pain management for high-risk participants with the minor shoulder injury.

Future research should also examine whether the pain risk factors in this study can be applied to [patients](#) undergoing other types of musculoskeletal surgeries, George said.

"There is nothing in our results that suggests the factors we identified are specific to the shoulder," he said. "We think there's a high potential these findings could translate to other areas of the body too."

Provided by University of Florida

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