

Vibration helps reduces pain in chronic sufferers, researchers find

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Rubbing or massaging is often an instinctive response to pain. Now researchers have found that another kind of touch, vibration, can also help reduce certain types of pain by more than 40 percent. The researchers are encouraged by the prospect that vibration therapies could bring pill-free pain relief to chronic sufferers.

"The vibration truly represents an analgesic effect," said Dr. Roland Staud, a professor of rheumatology and clinical immunology in the University of Florida College of Medicine. "This is exciting because it is something that provides <u>pain relief</u> that is not associated with great cost."

The findings are described online and in an upcoming print edition of the *European Journal of Pain*.

Naturally occurring mechanisms help to blunt the severity of pain signals sent to the brain, but effectiveness of those systems varies from person to person, and in some people they fail altogether. Previous studies have shown that individuals with pain disorders of unknown cause — including fibromyalgia, migraine and irritable bowel syndrome — are less efficient at inhibiting pain.

To study chronic pain, one therapy that researchers use, ironically, is to subject individuals to pain of a different kind. The treatment is somewhat effective, but has its downside.

"It is, of course, very unappealing for patients," Staud said.



The UF researchers decided to see how well a less painful kind of therapy might work.

First, they applied pain-inducing heat to the forearms of participants, some of whom had fibromyalgia, some of whom had head and neck pain and some who were pain free.

The researchers then used a special motor to deliver a high-frequency vibration to the skin and deep tissues of the arm to see whether that would relieve the pain caused by the heat. It did.

All three groups of patients experienced 40 percent reduction in pain when the vibration was applied.

"This is the first time a nonpainful stimulus has been found to have such an effect in fibromyalgia patients," Staud said.

The results differ from previous findings showing that chronic pain sufferers have defective pain relief mechanisms that defy therapy.

So what led to pain relief in the study participants?

Was it because the vibration provided a distraction from the pain?

Or was it truly a change in the pain signals being transmitted to the central nervous system?

It turns out that about half of the participants were, in fact, distracted by the vibration — but that didn't matter. People who weren't distracted had the same level of pain relief as those who were distracted, the researchers found.

To see whether the location of vibration affected pain relief, the



researchers applied heat pain and vibration to the same arm in one set of experiments, and applied heat to one arm and vibration to the other in another set of tests.

Pain relief was greater when the vibration was applied to the same arm subjected to heat, compared with when the heat and vibration were applied to different arms.

"Dr. Staud and his colleagues have conducted a novel and innovative study that strives to drill down on the potential mechanisms that differ or do not differ between healthy people and chronic pain patients," said Claudia Campbell, an assistant professor of psychiatry and behavioral sciences in the Johns Hopkins School of Medicine.

Results from various types of animal studies, including brain studies, suggest that vibration might interfere with transmission of pain signals from various parts of the body to the central nervous system.

The current study indicates that even in people who experience <u>chronic</u> <u>pain</u>, some mechanisms for decreasing <u>pain</u> intensity are still in working order, but don't spring into action when needed.

"They have this capacity," Staud said. "What we don't understand is why they have problems using it."

Provided by University of Florida

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