How does exercise affect nerve pain?

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Exercise helps to alleviate pain related to nerve damage (neuropathic pain) by reducing levels of certain inflammation-promoting factors, suggests an experimental study in the June issue of *Anesthesia & Analgesia*, official journal of the International Anesthesia Research Society (IARS).

The results support exercise as a potentially useful nondrug treatment for neuropathic pain, and suggest that it may work by reducing inflammation-promoting substances called cytokines. The lead author was Yu-Wen Chen, PhD, of China Medical University, Taichung, Taiwan.

Exercise Reduces Nerve Pain and Cytokine Expression in Rats

Neuropathic pain is a common and difficult-to-treat type of pain caused by nerve damage, seen in patients with trauma, diabetes, and other conditions. Phantom limb pain after amputation is an example of neuropathic pain.

Dr Chen and colleagues examined the effects of exercise on neuropathic pain induced by sciatic nerve injury in rats. After nerve injury, some animals performed progressive exercise-either swimming or treadmill running-over a few weeks. The researchers assessed the effects of exercise on neuropathic pain severity by monitoring observable pain behaviors.

The results suggested significant reductions in neuropathic pain in rats assigned to swimming or treadmill running. Exercise reduced abnormal responses to temperature and pressure-both characteristic of neuropathic pain.

Exercise also led to reduced expression of inflammation-promoting cytokines in sciatic nerve tissue-specifically, tumor necrosis factor-alpha and interleukin-1-beta. That was consistent with previous studies suggesting that inflammation and pro-inflammatory cytokines play a role in the development of neuropathic pain in response to nerve injury.

Exercise also led to increased expression of a protein, called heat shock protein-27, which may have contributed to the reductions in cytokine expression.

Neuropathic pain causes burning pain and numbness that is not controlled by conventional pain medications. Antidepressant and antiepileptic drugs may be helpful, but have significant side effects. Exercise is commonly recommended for patients with various types of chronic pain, but there are conflicting data as to whether it is helpful in neuropathic pain.

The new results support the benefits of exercise in reducing neuropathic pain, though not eliminating it completely. In the experiments, exercise reduced abnormal pain responses by 30 to 50 percent.

The study also adds new evidence that inflammation contributes to the development of neuropathic pain, including the possible roles of pro-inflammatory cytokines. The results provide support for exercise as a helpful, nondrug therapy for neuropathic pain-potentially reducing the need for medications and resulting side effects.

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