



Injury Briefing

A review of the latest studies from Dr. Michael D. Berry.

Brain Can Rewrite Itself After Injury, Study Shows

New research has uncovered more about how the brain compensates after a head injury or trauma. Scientists are hopeful that the new findings may result in advancements in treating a variety of health problems.

Many brain scientists have followed the thinking that when a brain injury occurs, other areas of the brain may compensate for the damaged parts. However, until this study, it was not understood how this happens.

In a UCLA press release about the discovery, the team of scientists further discussed what they found, and what it might mean for the future of neuroscience. The group has identified the section of the brain that takes over function when the hippocampus is damaged. The hippocampus is the “learning center” of the brain, and some types of brain injury may result in a disability in this region. According to this new research, when that happens, other brain parts in the prefrontal cortex have the ability to take over the function of the hippocampus.

The researchers at UCLA labeled their findings as a “breakthrough discovery,” saying that the new knowledge could help develop novel treatments for Alzheimer’s disease, stroke, and other types of brain injury.

The study involved laboratory rats with injury to the hippocampus region of their brains. Although they needed additional training compared to uninjured rats, the lab rats with brain damage were able to learn new problem-solving tasks. While this kind of success was once believed to be a result of the brain’s hippocampus repairing itself to a degree, with studies revolving around how to stimulate this repair, this new research revealed that other regions of the brain were actually responsible.

In studying the brains of the rats, the scientists were able to identify changes that took place in the prefrontal cortex. They observed that new brain circuits were created to compensate for the brain injuries. The brains actually rewired themselves.

UCLA’s Michael Fanselow, who led the research team, explained more about the process in the news release. “The brain is heavily interconnected — you can get from any neuron in the brain to any other neuron via about six synaptic connections,” he said. “So there are many alternate pathways the brain can use, but it normally doesn’t use them unless it’s forced to. Once we understand how the brain makes these decisions, then we’re in a position to encourage pathways to take over when they need to, especially in the case of brain damage.”

This could mean major advancements in treatment for brain injury involving learning or memory issues.

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Fanselow M, Zelikowsky M, Vissel B, et al. Prefrontal microcircuit underlies contextual learning after hippocampal loss. Proceedings of the National Academy of Sciences of the United States of America. Published online before print. doi: 10.1073/pnas.1301691110.

Heather A. Brain rewires itself after damage or injury, life scientists discover. UCLA Newsroom. Press release. Online May 15, 2013.

Keeping Pain Diary Makes Whiplash Worse

Patients are often told to keep a pain diary to monitor their symptoms, but a new study suggests that may do more harm than good. The findings show that keeping a pain journal may actually hinder patients' recovery from whiplash-associated disorder.

The study from the University of Alberta included 60 patients with acute whiplash injuries. The patients were randomly assigned to either a symptom diary group or a control group. Both groups had similar scores on the Whiplash Disability Questionnaire, showing no meaningful differences in the baseline symptoms between the groups. The diary patients were asked to keep a journal rating their overall pain levels for each day. Every participant also received physiotherapy.

After three months of treatment, participants were evaluated for recovery. Although patients who used a diary did show improvements after three months, they were less likely to report being fully recovered. Overall 59% of the diary group reported recovery, compared to 86% of the control group.

Study authors Robert Ferrari and Deon Louw concluded that pain diary use is "likely not only not helpful, but harmful." They suggested that keeping a pain diary makes patients more aware of their symptoms, resulting in poorer perceptions of prognosis. Negative attitudes have been tied to chronic pain in patients with whiplash injuries and lower back pain.

"While diaries may serve a useful purpose to facilitate practitioner-patient communication about symptoms and to track the course of symptoms, the benefits have not been demonstrated," Ferrari and Louw wrote.

Ferrari R and Louw D. Effect of a pain diary use on recovery from acute whiplash injury: a cohort study. Journal of Zhejiang University-SCIENCE B (Biomedicine & Biotechnology) 2013. 14(11):1049-1053