

# Transcranial LED-based light therapy improves cognitive function in traumatic brain injury patients

Mar 18 2011

At-home, daily application of light therapy via light-emitting diodes (LEDs) placed on the forehead and scalp led to improvements in cognitive function and post-traumatic stress disorder in patients with a traumatic brain injury (TBI), according to a groundbreaking study published in *Photomedicine and Laser Surgery*, a peer-reviewed journal published by Mary Ann Liebert, Inc. The article is available free online at [www.liebertpub.com/pho](http://www.liebertpub.com/pho)

Margaret Naeser, PhD, LAc, VA Boston Healthcare System, Boston University School of Medicine, and colleagues from Massachusetts General Hospital, and Harvard-MIT Division of Health Sciences and Technology, in Boston, and MedX Health Inc. (Mississauga, ON, Canada), report on the use of transcranial LED-based light therapy to treat two patients with longstanding traumatic brain injury (TBI). Each patient applied LEDs nightly and demonstrated substantial improvement in cognitive function, including improved memory, inhibition, and ability to sustain attention and focus. One patient was able to discontinue medical disability and return to full-time work. These cognitive gains decreased if the patients stopped treatment for a few weeks and returned when treatment was restarted. Both patients are continuing LED treatments in the home. The findings are presented in "Improved Cognitive Function After Transcranial, Light-Emitting Diode Treatments in Chronic, Traumatic Brain Injury: Two Case Reports."

Low-level light therapy using lasers or externally placed LEDs to deliver red and near-infrared (NIR) light energy has been shown in cell-based studies to improve cellular metabolism and to produce beneficial physiological effects. In acute stroke in humans, for example, transcranial NIR light therapy applied less than 24 hours post-stroke was associated with improved outcomes.

"The results of this study will provide a basis for future therapeutic use of phototherapy to improve recovery after injury and facilitate management of other CNS disorders. The development of novel therapies to restore function after neurologic injury, stroke, or disease is an increasingly important goal in

medical research as a result of an increase in non-fatal traumatic wounds and the increasing prevalence of dementias and other degenerative disorders in our aging population," says Raymond J. Lanza fame, MD, MBA, Editor-in-Chief of the Journal.

---

**Source:**

Mary Ann Liebert, Inc./Genetic Engineering News

---