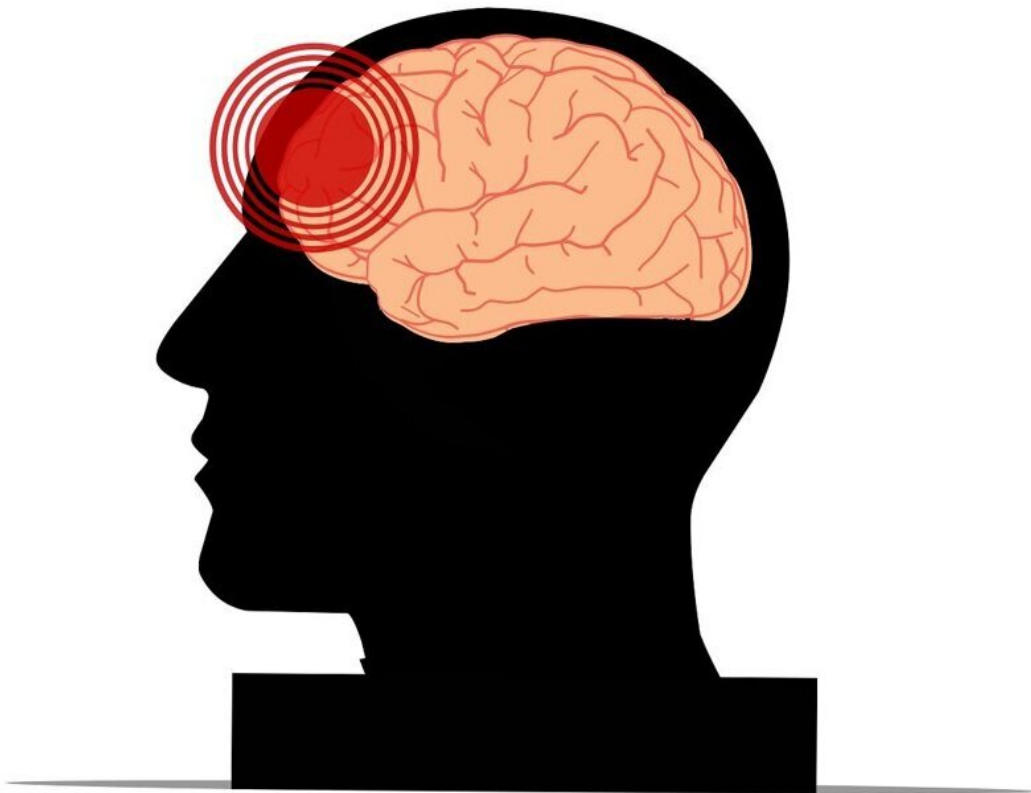


# Researchers find branched chain amino acid supplementation may aid in concussion recovery

March 18 2024, by Ben Leach

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In the first clinical trial of a targeted pharmacologic therapeutic for mild traumatic brain injury in pediatric patients, scientists from the Minds

Matter Concussion Frontier Program at Children's Hospital of Philadelphia (CHOP) have found preliminary evidence that adolescents and young adults with concussion who take a specific formulation of branched-chain amino acid (BCAA) supplements after injury experience faster symptom reduction and return to physical activity.

The findings were [published](#) by the *Journal of Neurotrauma*.

More than 2 million concussions occur in the youth and adolescent population in the United States each year. The mainstay of treatment remains symptom management with temporary modification of cognitive and [physical activity](#) and over-the-counter medication. Although active rehabilitation strategies have shown promise for improving [recovery time](#), including aerobic, vestibular, and vision interventions, these can be time and labor-intensive.

To date, no targeted pharmacologic intervention to improve clinical outcomes in concussion has been evaluated in humans.

Animal model studies of mild to moderate traumatic brain injury, which has been led by the study's senior author, Akiva S. Cohen, Ph.D., Professor of Neuroscience in the Department of Anesthesiology and Critical Care Medicine at CHOP, have shown that supplementation with a specific formulation of three BCAAs—leucine, isoleucine, and valine—improve neurocognitive function.

However, prior to this study, no human studies involving adolescents and [young adults](#) have assessed the potential benefits of this formulation of BCAAs as a specific treatment to aid in concussion recovery.

"The goal of this pilot study was to determine, among several different doses, whether our specific formulation of BCAAs could accelerate recovery—faster reduction in symptoms and return to baseline physical

activity," Cohen said. "Based on our work in animal models, we expected that our specific formulation of BCAA supplementation would result in a more rapid resolution in symptom burden and improved physical activity levels, which are key measures of recovery from a concussion."

The scientists conducted a pilot, double-blind, randomized controlled trial of participants between the ages of 12-30 years who presented with concussion to outpatient clinics, urgent care, and emergency departments across the CHOP Network between June 2014 and December 2020.

Individual participants were divided into five groups consisting of a placebo arm and different treatment arms of 15 g, 30 g, 45 g, and 54 g doses of a specific formulation of BCAAs. The participants were followed for a period of 21 days after enrollment. Participants were assessed with daily computerized neurocognitive tests, reported symptom scores, physical and cognitive activity, treatment compliance, and adverse events. A total of 38 participants had analyzable data after study completion.

The study found that there was a significant reduction in and faster resolution of the total symptom score in a dose-dependent fashion with the specific formulation of BCAA supplementation, with a significant decrease in total symptoms across the study; for every 500 g of the treatment consumed, the total symptom score, on a scale of 0-54 (with 0 representing no symptoms), dropped 4 points.

Similar significant improvements were seen in a faster return to physical activity, with an increase of 0.5 on a 0-5 scale of physical activity for each 500 g of the defined BCAA supplement consumed. The treatment was very well tolerated; no serious adverse events were reported in the study, and there were no differences in mild adverse events between the placebo and treatment groups.

"Our results demonstrate that our specific formulation of BCAA supplementation is a highly promising treatment that addresses the underlying mechanism driving concussion symptoms in order to accelerate recovery and improve outcomes," said the study's first author, Daniel Corwin, MD, MSCE, Assistant Professor of Pediatrics and Emergency Department Lead of the Minds Matter Concussion Frontier Program at CHOP.

"While a larger study is needed to confirm the formulation's efficacy before routine use of BCAA supplementation should be recommended, we are extremely encouraged by these preliminary findings, the first trial to demonstrate that a targeted pharmacologic using a specific formulation of BCAAs may be useful as a [treatment](#) for youth and young adult [concussion](#)."

**More information:** Daniel J Corwin et al, Head Injury Treatment with HEalthy and Advanced Dietary Supplements (HIT HEADS): A pilot randomized controlled trial of the tolerability, safety, and efficacy of branched chain amino acids (BCAAs) in the treatment of concussion in adolescents and young adults, *Journal of Neurotrauma* (2024). [DOI: 10.1089/neu.2023.0433](#)

Provided by Children's Hospital of Philadelphia

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