Mild traumatic brain injury (mTBI) occurs in almost 80% of the 3 million reported cases of TBI-related emergency department visits each year in the United States. The majority of mTBI's, sometimes classified as concussions, are due to sports-related activities and typically occur repeatedly over the course of an athlete's career. mTBI symptoms are generally classified as either somatic or neuropsychiatric in nature and include impairments in prefrontal cortex mediated functions, including attention, memory, processing speed, reaction times, problem solving, and cognitive flexibility. To date, there remains a major gap in our understanding of the behavioral manifestations, underlying neurobiology, and treatment of mTBI. An even greater gap exists in our understanding of the consequences of repeated mTBI incidents. The goal of the present study was to examine the effects of repetitive mTBI within a rodent assay of cognitive flexibility. Rats were exposed to a series of three closed head injuries (controlled cortical impact model) within a week prior to performing an automated strategy shifting task, which required rats to learn and shift strategies according to changing task demands. Rats initially acquired a visual cue strategy in which a light illuminated above one of two possible levers (left or right) indicated the correct response for reward. Twenty-four hours after initial acquisition, rats again performed the task using the visual cue strategy followed by a series of strategy shifting and reversal learning challenges.

**Conclusions**

These results indicate that performance and task efficiency in an operant test of cognitive flexibility are impaired after repetitive mTBI. As such, this model presents a useful approach for further investigating the behavioral deficits and potential treatment strategies for patients who have experienced multiple mTBI insults.

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