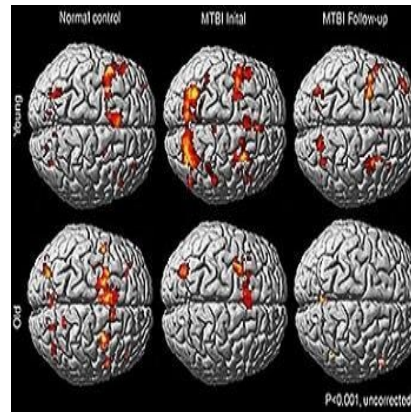




## Older Patients Recover More Slowly from Concussion



A new study published in the journal *Radiology* indicates that older people may have a more difficult time recovering from mild traumatic brain injury (MTBI) or concussion. The finding could help to inform the development of separate management strategies for different age groups following concussion.

"Old age has been recognised as an independent predictor of worse outcome from concussion, but most previous studies were performed on younger adults," says the study's lead author, David Yen-Ting Chen, MD, from the Department of Radiology at Shuang-Ho Hospital, Taipei Medical University, in New Taipei City, Taiwan.

Difficulty in working memory is frequently reported in patients after concussion. However, neuropsychological tests, computed tomography (CT) and conventional magnetic resonance imaging (MRI) generally fail to reveal abnormal findings in these patients. For this study, Dr. Chen and colleagues used functional MRI (fMRI) to evaluate the effect of age on working memory performance and functional activation in the brain after MTBI.

The researchers performed fMRI exams on 13 young adults (21-30 years old) and 13 older adults (51-68 years old) with MTBI and 26 age- and gender-matched controls. The first fMRI scan was performed within one month post-injury. A follow-up scan was conducted six weeks after the first exam. The researchers then analysed post-concussion symptoms, neuropsychological test results and working memory activity in both groups.

The analysis revealed that while performing working memory tasks, the young patients with concussion had initial activation that was greater than normal, known as hyperactivation, compared to young controls in the right precuneus and right inferior parietal gyrus of the brain. In contrast, the older patients had hypoactivation (less than normal) compared to older controls in the right precuneus and right inferior frontal gyrus.

In comparing the patients in initial and follow-up study, the young patients had significantly reduced post-concussion symptom score at follow-up than at the time of the initial exam, but no significant change of the post-concussion symptom score was observed in the older patients, who also showed persistent hypoactivation.

"Taken together, these findings provide evidence for differential neural plasticity across different ages, with potential prognostic and therapeutic implications," co-author Ying-Chi Tseng, MD, from Shuang-Ho Hospital, explains. "The results suggest that MTBI might cause a more profound and lasting effect in older patients."

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