# The Use Of Magnetoencephalographic Brainwaves In Detecting Neurocognitive Impairments In Traumatic Brain Injury

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## Purpose
Traumatic brain injuries are very common in Malaysia which draws a great concern especially in the regards of the management for the patients who need recommence back to their daily life . The hypothesis of this study was to analyse the brain waves which are related to patient memory and attention after the traumatic brain injury (TBI). Hence, we investigated the potential of Magnetoencephalography (MEG) as a tool for early detection of brainwave disruption in these TBI patient and their correlation to neuropsychological assessments.

## Material and Methods
According to the severity level measured by GCS score regardless of the type of brain injury, the patients were distributed into two groups, a GCS of 9-12 is considered as moderate TBI and a GCS score of 13 is assigned as mild TBI. The MEG recording was done from these two groups of patients in a resting state of eye close and eye open conditions.

## Result
It showed that the power in Beta frequency band reduced and Theta/Beta ratio is increased significantly in moderately severe TBI patients compared to mild TBI patients; imply moderate TBI patients have mental processing and attention deficit than mild TBI patients. Regarding results of neuropsychological assessments, there is a tendency of lower score in moderate TBI than mild TBI but did not reach at significant level.

## Conclusion
Thus, MEG plays an important role in detecting changes after brain injury objectively which may have great implication in prediction of cognitive sequelae of TBI.