PREDICTION OF RETURN TO PRODUCTIVITY THREE MONTHS FOLLOWING HOSPITALISATION FOR TRAUMA

By

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List of Abbreviations

AAMI: Advancement of Automotive Medicine

ABS: Australian Bureau of Statistics

ACRM: American Congress of Rehabilitation Medicine

AIS: Abbreviated Injury Scale

ANOVA: Analysis of Variance

BADS: Behavioural Assessment of the Dysexecutive Syndrome

CAVLT: California Auditory Verbal Learning Test

CDC: Centre for Disease Control

COWAT: Controlled Oral Word Association Test

CI: Confidence Interval

CT: Computerised Tomography

DFA: Discriminate Function Analysis

DSM-IV: Diagnostic and Statistical Manual of Mental Disorders, fourth edition

ED: Emergency Department

FLoPS: Frontal Lobe Personality Survey

fMRI: Functional Magnetic Resonance Imaging

FT: Full Time

F/U: Follow up

GCS: Glasgow Coma Scale

HI: Head Injury

ICD 10: International Classification of Diseases, tenth revision

IQ: Intelligence Quotient
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ISS</td>
<td>Injury Severity Scale</td>
</tr>
<tr>
<td>LOC</td>
<td>Loss of Consciousness</td>
</tr>
<tr>
<td>MHI</td>
<td>Mild Head Injury</td>
</tr>
<tr>
<td>MMPI-2</td>
<td>Minnesota Multiphasic Personality Inventory, second edition</td>
</tr>
<tr>
<td>mTBI</td>
<td>Mild Traumatic Brain Injury</td>
</tr>
<tr>
<td>MVA</td>
<td>Motor Vehicle Accident</td>
</tr>
<tr>
<td>NBRS</td>
<td>Neurobehavioural Rating Scale</td>
</tr>
<tr>
<td>NINDS</td>
<td>National Institute of Neurological Disorders and Stroke</td>
</tr>
<tr>
<td>NS</td>
<td>Non Significant</td>
</tr>
<tr>
<td>OR</td>
<td>Odds Ratio</td>
</tr>
<tr>
<td>PASAT</td>
<td>Paced Auditory Serial Attention Test</td>
</tr>
<tr>
<td>PCS</td>
<td>Post Concussion Syndrome</td>
</tr>
<tr>
<td>PTA</td>
<td>Post Traumatic Amnesia</td>
</tr>
<tr>
<td>PTSD</td>
<td>Post Traumatic Stress Disorder</td>
</tr>
<tr>
<td>Q-Q plot</td>
<td>Quantile-quantile plot</td>
</tr>
<tr>
<td>ROC curve</td>
<td>Receiver Operating Characteristic Curve</td>
</tr>
<tr>
<td>RTW</td>
<td>Return to Work</td>
</tr>
<tr>
<td>SD</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>SES</td>
<td>Socioeconomic Status</td>
</tr>
<tr>
<td>TAFE</td>
<td>Technical and Further Education</td>
</tr>
<tr>
<td>TBI</td>
<td>Traumatic Brain Injury</td>
</tr>
<tr>
<td>TC</td>
<td>Trauma Control</td>
</tr>
<tr>
<td>US</td>
<td>United States</td>
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WCST: Wisconsin Card Sorting Test
WHO: World Health Organization
WMS-R: Wechsler Memory Scale Revised
WTAR: Wechsler Test of Adult Reading
Abstract

Objective: The aim of the current study was to identify variables that could accurately predict return to full productivity three months post mild traumatic brain injury (mTBI). Return to productivity was defined as a full return to pre-injury employment, home duties and/or study.

Participants and Methods: Participants comprised 56 mTBI patients and 57 trauma controls (TC). Assessments were conducted at a mean of 5 days (SD 2.8) and again at 102 days (SD 14.2) post-injury. Logistic regression analyses were conducted to determine whether pre-injury, injury-related, post-injury and neuropsychological variables (including verbal learning, attention and information processing) were predictive of return to productivity.

Results: At three months post-injury, both groups reported a significant reduction in paid employment hours relative to pre-injury, with the TC group reducing their hours significantly more than the mTBI group (p = .026). Hours spent performing home duties were significantly reduced for both groups, with the TC group again reducing their hours significantly more than the mTBI group (p = .011). Neither group reported a significant reduction in the number of hours devoted to study post-injury. Multivariable analysis revealed that participants who reported higher levels of subjective pain were less likely to have returned to their pre-injury productivity by three months post-injury (OR: .75, 95% CI: .58-.98, p = .034). MTBI patients with a shorter length of hospital stay were more likely to report full productivity (OR: .57, 95% CI: .58-.98, p = .012), whereas for TC there was no significant relationship between length of hospital stay and productivity (OR: 1.69, 95% CI: 1.07-2.68, p = .607). With each unit increase in verbal learning, individuals with mTBI were 1.10 times more likely to report full productivity (95% CI: 1.02-1.19)
whereas for TC there was no significant relationship between verbal learning and return to productivity (OR: 1.01, 95% CI: .98-1.04). Participants involved in litigation or who were seeking compensation were significantly less likely to have returned to their pre-injury productivity levels by three months post-injury (OR: .14, 95% CI: .047-.435, p = .001).

**Conclusion:** Post-injury pain may preclude both mTBI and trauma patients from returning to full productivity. Within an mTBI sample length of hospital stay and verbal learning (as measured prior to discharge) may help predict return to early productivity. Involvement in litigation or compensation-seeking has a strong, negative relationship with return to pre-injury productivity level at three months post-injury.