

## MRT- CRITICAL FACTORS FOR SAFE DRIVING AFTER AN ACQUIRED BRAIN INJURY

**Per-Ola Rike**

*Sunnaas Rehabilitation Hospital, Norway*

**Introduction:** Driving requires the use of multiple cognitive abilities and sensorimotor functions. An acquired brain injury may cause impairments in any of these functions. Few studies have explored how higher-level mental functions such as executive functions and impulsive personality traits, interact with perceived post-injury driving self-efficacy and physical, cognitive, and affective/behavioural abilities to affect post-injury driver behaviour.

**Purpose:** To explore associations between cognitive functions, higher-level mental functions such as executive functioning, impulsive personality traits and driving self-efficacy, and driving behaviour after an acquired brain injury. The thesis further sought to elaborate whether self-report measurements would add significant to the understanding of post-injury driver behaviour supplementary to performance-based methods such as neuropsychological tests.

**Methods:** Participants included 77 persons with stroke and 32 persons with a traumatic brain injury (TBI), all of whom completed a multidisciplinary driving assessment (MDA), and a follow-up cohort of 34 persons that succeeded the MDA. Baseline measurements included neuropsychological tests and rating measures of everyday executive functions (Behaviour Rating Inventory of Executive Function – Adult Version (BRIEF-A)), impulsive personality traits (UPPS Impulsive Behaviour Scale), driving self-efficacy (Adelaide Driving Self-Efficacy Scale (ADSES)), functional abilities (Awareness Questionnaire (AQ)), pre-injury driving characteristics (Sunnaas Driving Pattern Questionnaire (SDPQ)) and aberrant driver behaviour (Driver Behaviour Questionnaire (DBQ)). Follow-up measurements included post-injury driving behaviours (SDPQ and DBQ), perceived functional abilities (AQ) and driving self-efficacy (ADSES).

**Results:** Increased ratings of executive function difficulties during the MDA were associated with lower driving self-efficacy and driver inattention and mistakes at follow-up. Better processing speed as measured by neuropsychological tests, was related to increased levels of driving violations. The participants did not display higher post-injury accident rates compared with the comparable healthy population.

**Conclusions:** Self-perceived higher-level functions are associated with post-injury driver behaviour, and should regularly be considered in the driving assessments after stroke and TBI.