Brain Injury Rehabilitation Center Origami

Comprehensive Driver Rehabilitation Following Brain Injury

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Objectives

- Recognize the Visual, Motor, and Cognitive skills that impact a return to driving following brain injury.
- Discuss the evaluation process for determining ability to return to driving.
- Discuss treatment of skills needed for successful return to driving following brain injury.

Basic Visual Skills

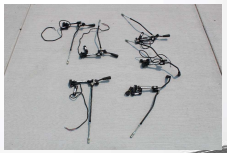
- Depth perception
- Oculomotor
- Convergence/ Divergence
- Accommodation
- Field of Vision
- Light sensitivity

Visual Perception

- Visual organization
- Sequencing
- Visual attention
- Figure ground perception
- Visual closure
- Visual information processing
- Visual memory

Motor Skills

- Fine motor skills
- Eye/ hand/ foot coordination
- Proprioception
- Range of motion
- Stereognosis



Cognitive Skills

- Information processing speed
- Memory
- Attention
- Impulsivity/ disinhibition
- Executive functions

Functional Implications

- Speed control
- Maintaining lane position
- Stopping distance
- Following distance
- Sequencing intersections and construction zones
- Scanning for and reacting to hazards
- Filtering distractions

Clinical Testing Battery

- Trails A and B
- Symbol Digit Modalities Test
- Clock Drawing
- Traffic Sign Match Up
- What Every Novice Driver Must Know- SOS

Driving Simulation

- Slider
- Reaction timer steering
- Reaction timer stoplight
- Functional object detection
- Naturalistic drive

Behind the Wheel

- Preparing the drive
- Basic skills
  - Use of accelerator and brake
  - Steering control
- On the road simplistic
  - Intersection management
  - Lane positioning
  - Speed control
  - Light traffic situations
- Advanced skills
  - Multi-lane intersections
  - Increased speed
  - Moderate to heavy traffic
  - Merging
  - Busy city environments

Treatment

- Remediation
  - Simulation
  - iPad
  - Tabletop exercise
  - Vision modalities
- Compensatory strategies
  - GEM vehicle
  - Restrictions
  - On the road training
- Vehicle adaptations

Outcomes- Recommendations and Restrictions

- Full release to driving
- Restricted driving
  - Mile radius
  - No expressway
  - No nighttime
- Cease driving
  - PACE programs
  - Medical Mobility
  - Paratransit
  - App based ride sharing

Stories From the Highway

- J and the left foot accelerator
- L and the hand controls
- C and the prism glasses
- Keeping D safe

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References

- Bédard, M., Parkkari, M., Weaver, B., Riendeau, J., & Dahlquist, M. (2010). Assessment of driving performance using a simulator protocol: Validity and reproducibility. *The American Journal of Occupational Therapy, 64*(2), 336-40. Retrieved from http://proxy.nbcot.org:2048/docview/215969852?accountid=143111
- Bielauskas, L. A. (2005). Neuropsychological assessment of geriatric driving competence. *Brain Injury : [BI], 19*(3), 221-226. Retrieved from http://proxy.nbcot.org:2048/docview/67742698?accountid=143111
- Boot, W. R., Stothart, C., & Charness, N. (2013). Improving the safety of aging road users: A mini-review. *Gerontology, 60*(1), 90-6. doi:http://dx.doi.org/10.1159/000354212
- Centers for Disease Control and Prevention. (2013). Injury prevention and control. Retrieved from
- http://www.cdc.gov/traumaticbraininjury/statistics.html
- Department of Defense (DOD): http://dvbic.dcoe.mil/dod-worldwide-numbers-tbi
- Dickerson. A & Trujillo, L. (2004). Assessment and rehabilitation of older adult drivers by occupational therapists. *The Gerontologist*, 44(1): 552
- DriveSafety. (2013). *In CDS 250*. Retrieved from http://www.drivesafety.com/products/3/17/CDS-250
- Lew, H. L., Poole, J. H., Lee, E. H., Jaffe, D. L., Huang, H-C., & Brood, E. (2005). Predictive validity of driving-simulator assessments following traumatic brain injury: a preliminary study. *Brain Injury 19*(3): 177-188.
- Michigan Public Health Institute (MPHI). Traumatic Brain Injury in Michigan 1999-2010. Presentation to Brain Injury Association of Michigan Conference, 2012.
- Milleville-Pennel, I., Pothier, J., Hoc, J-M., & Mathe, J-F. (2010). Consequences of cognitive impairments following traumatic brain injury: Pilot study on visual exploration while driving. Brain Injury, 24(4), 678-691.
- Rapport, L.J., Hanks, R.A., & Bryer, R.C. (2006). Barriers to driving and community integration after traumatic brain injury. *Journal of Head Trauma Rehabilitation, 21*(1), 34-44.
- Staplin, L., Lococo, K.H., Martell, C., & Stutts, J. (2012). Taxonomy of older driver behaviors and crash risk. *DOT HS 811 468*. Retrieved from www.nhsta.gov/staticfiles/nt/pdf/811468a.pdf