

# Wheelchair Seating and Positioning Considerations For the Brain Injury Population

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## Fact Sheet

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### Background

Physical therapists across settings are involved in wheelchair prescription for individuals with traumatic brain injury. Due to the variability with this population, it is difficult to provide specific recommendations that would apply to all individuals with this diagnosis. However, it is suggested that physical therapists that are frequently prescribing wheelchairs first have a solid foundation of wheelchair principles. This fact sheet will detail further on special considerations for the brain injury population that a clinician should consider during the prescription and use of a wheelchair.

### Special Considerations for the Brain Injury Population

- **Cognition**  
Individuals with brain injury may present with various cognitive deficits such as impaired judgment, attention, decision making, processing speed, problem solving, and memory, which should be considered during the prescription process especially when evaluating for power mobility. Extra time for training may also be necessary for carryover.
- **Behavior**  
Individuals with brain injury may present with various behavioral issues such as decreased frustration tolerance, agitation, disinhibition, restlessness, and poor impulse control. Possible options for individuals with behavior disturbances may be use of high strength ultra lightweight wheelchairs for durability and rigorous assessment of safety with power mobility.
- **Spasticity**  
Individuals with brain injury may present with hypotonicity or more commonly hypertonicity that may warrant special considerations with seating and positioning to manage tone and promote alignment. Spasticity may also impact an individual's ability to control their limbs to efficiently propel a wheelchair so spasticity management in conjunction with the medical team is key.
- **Caregiver Assistance**  
Individuals with brain injury very often need caregiver assistance ranging from dependent assistance of a manual tilt-in-space wheelchair, maintenance of the wheelchair, or navigation of the community. Caregivers should be present for the wheelchair trial and prescription process to provide feedback and ensure their needs are being met.
- **Time Since Injury**  
Individuals with brain injury may progress at a rapid rate in the acute phase of their recovery. If an individual is expected to make further progress, formal evaluation can be delayed until the outpatient setting. Ensure the patient is aware of this recommendation before discharge from inpatient rehabilitation.
- **Complexity of Individual**  
If an individual seems highly complex, it is recommended a therapist consult with a therapist with ATP certification or a multidisciplinary clinic for further evaluation.

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## Research Updates

There is a significant paucity of research focusing on wheelchair users especially those with traumatic brain injuries. Small studies have focused on the role of technology in assessing readiness for wheelchair propulsion through virtual reality (Spaeth et al, 2008) and to enhance the driving experience with a proposed CWA (collaborative wheelchair assistant) (Zeng et al, 2009). Other studies have focused on the optimal seating & positioning (Regier, 2014) and joystick use (Mahajan, 2011) with additional studies needed to make the strength of the recommendations more robust. Clinical guidelines for this population were also developed by the Australian Government although spinal cord injury was also an included diagnosis and thus the recommendations were not solely specific to brain injury survivors (Lukersmith, 2013).

## Additional Resources for Clinicians

1. Wheelchair Course Series on ANPT Synapse Center ([Welcome to Academy of Neurologic Physical Therapy Online Learning \(anptsynapsecenter.com\)](http://www.anptsynapsecenter.com))
2. Assistive Technology/Seated & Wheeled Mobility SIG Website ([Assistive Technology/Seating & Wheeled Mobility SIG \(neuropt.org\)](http://neuropt.org))
3. Dalhousie University Wheelchair Skills Program Website (<https://wheelchairskillsprogram.ca/>)
4. Manufacturer Websites (Permobil, Quantum, Ki Mobility, Motion Composites)

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May 2022