

REHABILITATION OF A PEDIATRIC PATIENT WITH A BRAIN INJURY



13 Year Old Admitted to the ICU with a Severe Brain Injury

By Emily Deet PT, DPT
Physical Therapist
Cincinnati Children's Hospital Medical Center

When an individual suffers a brain injury, it affects all aspects of life. When an adolescent suffers a brain injury, that means their home, school, and leisure activities are all affected and impacted. Depending on the severity of the brain injury, a patient may be able to resume activities as performed prior to the accident, often with modifications or various types of supervision.

With the case of our patient, a 13 year old male, who suffered a severe brain injury, his recovery process was focused on performing and understanding his ability to perform age appropriate gross motor skills.

The patient suffered his injury while riding his bike outside. While not helmeted, and unwitnessed, it was reported that his bike flipped, causing him to hit his head on the ground. Upon arrival of the EMT, the patient had a Glasgow Coma Score of 3 and was intubated on the scene. Upon evaluation at the hospital, he was noted to have intraparenchymal hemorrhages, a shear injury, small subdural hematoma, alveolar ridge fractures, dental trauma, multiple abrasions to face and knees, and eyelid/brow lacerations.

He was taken to Cincinnati Children's Hospital Medical Center and admitted to the pediatric intensive care unit, where he was stabilized and then transferred to the neuro-trauma, acute floor. Once medically stable and deemed appropriate by the medical team, the patient was transferred to the inpatient rehab unit.

Inpatient Rehabilitation using the ZeroG Gait and Balance System

When admitted to the inpatient rehab unit, it is expected that the patient will participate in intensive physical, occupational, and speech therapy, for a total of at least three hours a day.

The goal of the intensive schedule focused on making sure he was as independent as possible with performance of his gross, fine, and cognitive skills, while also assuring he was safe in his performance.

The patient was on the rehab unit for approximately four weeks. He progressed from requiring moderate assist for skills such as transfers, ambulation, and steps, to supervision at the end of his stay. As he progressed in his rehab, we needed a way to allow the patient to practice high level skills, in a setting that was safe. The biggest limiting factor with this, is that having an adult next to him all the time made it extremely difficult to simulate his planned, home setting and did not give the patient the freedom to practice higher level skills. Thanks to the body-weight support system of the ZeroG, the patient was given an environment to allow for appropriate progression of his mobility skills.



ZeroG Gait and Balance System at Cincinnati Children's Inpatient Therapy Gym

Sport Specific Exercises with ZeroG

The patient used ZeroG with 10 pounds of body-weight support over eight sessions. He had an average of 5.3 falls prevented each session. ZeroG allowed him to be aggressive with his movements without holding back due to the fear of falling.

As a teenager, prior to his accident, the patient was involved in football and was a very active kid. As he progressed through his rehab, he reported a desire to continue to participate in these activities. With a brain injury, he also started to demonstrate more issues and concerns with impulsivity, making it necessary for the patient to have additional support with higher level skills.



Pediatric patient practicing sport specific exercises while using ZeroG

Through the use of the body-weight support system of the ZeroG, the patient was able to progress his mobility from slow, unstable and short distance walking with moderate assist, to fast walking and jogging in a controlled environment.

He was given the opportunity to engage in sport specific exercises including jogging, tossing a football, and kicking a soccer ball without having a therapist limiting his participation or running the risk of falling and causing more injury. Through the use of these treatment techniques, the therapist was able to utilize his interests, to engage an adolescent eager to return home and to his friends. The ZeroG offered a safe environment to practice these skills, knowing he would be able to catch any losses of balance, but also have a safe support system if his body was unable to adapt.

Thanks to the use of the body-weight support system, the patient could practice skills that could be unsafe or limited with assistance from therapist. The ability to practice these skills prior to discharge, let the medical team and family know what and how to limit his activity once home, to limit any additional injuries with higher level tasks. At discharge, the patient was given a plan to continue progressing his skills with supervision from his family and the guidance of the medical team.

Emily Deet PT, DPT is a physical therapist in the inpatient therapy department at Cincinnati Children's Hospital Medical Center in Cincinnati, Ohio. She has been using the ZeroG Gait and Balance System with children of all diagnoses since 2016.

For more information on Cincinnati Children's, ranked third in the nation for the seventh consecutive year in the U.S. News and World Report 2017-18 list of Best Children's Hospitals, visit: www.cincinnatichildrens.org

For more information about the ZeroG Gait and Balance System and other advanced rehabilitation technologies, visit: www.aretchllc.com