

Intensive Virtual Reality Program Improves Balance and Mobility of Youth with Cerebral Palsy

This research study, conducted by physiotherapist Marie Brien in the summer of 2009, received OCTC's first clinical research grant.

The purpose of this study was to examine the effect of an intensive, short duration, virtual reality (VR) intervention on balance and functional mobility in four males from 13 to 18 years of age with mild cerebral palsy (GMFCS level I).

GestureTek's Interactive Rehabilitation and Exercise System (IREX) was used to provide virtual games that immersed the youth's bodies into a virtual world to interact with on-screen images and objects. This therapeutic system allows for a higher degree of adjustability for level of difficulty than the popular Wii system.

The intervention consisted of five consecutive days of an intensive 90-minute virtual reality balance program using a series of virtual games such as soccer, snowboarding, car racing and sharkbaiting.

Youth were tested using four outcome measures the week before the intervention, during the week of the VR intervention, each day of the intervention, and one week and one month after the intervention. Changes in their balance, gross motor skills, walking endurance, and time taken to walk up and down stairs were all documented. Results showed significant improvements during the week of the program. These were maintained for at least one month following the VR training.

This study provides evidence that balance and functional mobility are modifiable in ambulatory adolescents with CP in GMFCS Level I and that they can improve with an intense, short-duration VR intervention. Changes in complex balance skills and endurance in walking may lead to increased physical activity levels and community participation with peers.

This study demonstrates that virtual reality is a promising rehabilitation tool. Next steps will involve presenting the results at a scientific conference and publishing an article in a peer-reviewed journal. •