

# Traumatic brain injuries: Motor deficits can persist even after what appears to be a full recovery

January 19 2010

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Even after regaining normal walking speed, traumatic brain injury (TBI) victims have not necessarily recovered all their locomotor functions, according to a study supervised by Université Laval's Bradford McFadyen and recently published in *Archives of Physical Medicine and Rehabilitation*.

Professor McFadyen's team compared mobility in 11 people who had suffered a moderate or severe TBI to 7 subjects of comparable age and physical condition with no neurological problems. The subjects in the "TBI" group appeared to have made a recovery of walking ability and some of them had returned to their regular activities at the time of the study.

In a laboratory specially equipped for the purpose, the two groups of subjects had to walk a course on which researchers had placed various obstacles and created visual or auditory distractions. "We wanted to reproduce real-life conditions in the laboratory where people have to move around and their brains are forced to handle a number of tasks simultaneously," said Bradford McFadyen.

These tests show that in simple situations with no obstacles or sensory distractions, the subjects in the two groups displayed similar walking abilities. However, in the "TBI" group, speed decreased and response times rose in tests involving obstacles or sensory interference. Moreover,

the clearance of the subject's foot over the obstacle was shorter for the "TBI" group.

"Our results suggest that even if victims of moderate or severe TBI appear to have generally recovered their locomotor abilities, deficits can persist," concluded Professor McFadyen. "This could have consequences if the affected people work in a complex physical environment—a factory, for example—or engage in activities that are demanding in terms of locomotor skills, such as a sport," added Dr. McFadyen.

Bradford McFadyen and his colleagues are now beginning to work on developing a simple clinical locomotor test that would allow healthcare workers to better assess TBI victims' readiness to return to their regular activities.

According to the Center for Disease Control and Prevention (CDC), 1.4 million people suffer TBI's each year in the United States. The main causes of these injuries are falls (29%), road accidents (20%), and blows to the head resulting from sports and recreational activities (19%).

Provided by Université Laval

Citation: Traumatic brain injuries: Motor deficits can persist even after what appears to be a full recovery (2010, January 19) retrieved 27 April 2024 from <https://medicalxpress.com/news/2010-01-traumatic-brain-injuries-motor-deficits.html>

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