A Walking Program Can Reduce Fatigue for People with Traumatic Brain Injury

A traumatic brain injury (TBI) is lasting brain damage after a head trauma, such as from an accident. A TBI can cause symptoms that last for many years after the injury. Research has shown that fatigue is one of the most common long-term problems people may experience after a TBI. Fatigue may cause a person to feel too tired to keep up with work, family, or leisure activities. In past studies, regular exercise such as walking has been linked to lower levels of fatigue in people with many different types of disabilities, but this has not been well studied in people with TBI. In a recent NIDILRR-funded study, researchers looked at a three-month coached walking program for people with TBI. The researchers wanted to find out if the program would help people with TBI increase their daily walking and whether that would lead to lower levels of fatigue.

Researchers at the Northern California Traumatic Brain Injury Model System of Care enrolled 123 adults with TBI over the age of 18 in this study. The participants lived in northern California and had been living with a TBI for six months or longer, for eight years on average. All of the participants could walk independently, some with and some without assistive devices such as canes or walkers.

All of the participants went through two programs: the experimental walking program and a comparison program about nutrition. Half of the participants started with the walking program and then completed the nutrition program, and the other half completed the nutrition program first followed by the walking program. Each program lasted 12 weeks.

For the experimental walking program, the participants were given pedometers and asked to keep track of the number of steps they took in a span of one week before the program started. Using that number as a baseline, each participant was asked to set a goal to increase their weekly steps by 5% each week for the next 8 weeks, and then to maintain the number of steps from the 8th week through the last 4 weeks of the program. A coach checked in with the participants by phone or email at regular intervals (3 times per week at the beginning, tapering to once a week at the end) to offer encouragement and troubleshoot any problems. In addition, the participants were encouraged to log their steps on a program website and to engage in friendly online competition with other participants. The nutrition program was a comparison where the participants set goals for improving their nutrition and checked in with a coach (with the same frequency as the walking program) to discuss their progress.

Using data from the pedometers, the researchers kept track of how much the participants increased their weekly steps during the walking program. Then, to find out if the walking and nutrition programs affected fatigue, all of the participants met with an
assessor and answered questions about fatigue four times: at the very beginning of the study, after their first 12-week program, after their second 12-week program, and after a final 12 weeks of no coaching. The fatigue questions covered how often the participants felt fatigued, how intense the fatigue was, and how much it impacted daily activities and mood.

Most participants reported at least some fatigue at the beginning of the study. When the researchers looked at the impact of the two programs, they found that:

- The walking program was effective in helping the participants increase their everyday walking. On average, the participants took 30% more steps during the last week of the program than at the beginning of the program, as tracked by the pedometer.
- The participants’ average fatigue levels decreased between the beginning and end of the walking program. After the three months of no coaching, their fatigue was still lower than at the beginning of the study.
- The nutrition program had little effect on fatigue, and it did not matter whether the walking program was done before or after the nutrition program.

The authors noted that walking is a simple, safe, and low-cost physical activity that requires no special equipment or training. Even individuals who are many years post-injury can improve their walking performance and reduce fatigue, as shown by the participants in this study. Individualized coaching can help people with TBI to set walking goals and stick with them. The coaching can be delivered over the phone or by email, as was done in this study, making it easy for people to access if they live far away from a clinic or have limited transportation. Regular walking may be an effective method for managing fatigue, helping people with TBI to increase their energy, improve their moods, and participate more actively in life. Researchers may want to investigate other ways to build routine exercise habits in people with TBI, and explore approaches such as using the Web or social media for sustaining their efforts.

To Learn More
Fatigue is very common for people who have experienced a TBI. Learn more about fatigue and brain injury from the Model Systems Knowledge Translation Center (MSKTC): http://www.msktc.org/tbi/factsheets/Fatigue-And-Traumatic-Brain-Injury

The Rehabilitation Research and Training Center on Promoting Healthy Aging for Individuals with Physical Disabilities produces an excellent factsheet series which includes: How to Stay Physically Active http://agerrtc.washington.edu/info/factsheets/exercise

Brainline.org shares information and resources on the importance of exercise for your brain http://www.brainline.org/content/2008/08/exercise-and-your-brain.html
American College of Sports Medicine offers a detailed guide to Starting a Walking Program [https://www.acsm.org/docs/brochures/starting-a-walking-program.pdf](https://www.acsm.org/docs/brochures/starting-a-walking-program.pdf)

To learn more about how walking can impact other factors such as depression and stress following TBI, see this study from the same project in the March 2015 issue of the journal Brain Injury: [http://www.tandfonline.com/doi/full/10.3109/02699052.2014.974670](http://www.tandfonline.com/doi/full/10.3109/02699052.2014.974670)

**To Learn More About this Study**

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