Study looks at getting stroke patients back on their feet

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Home-based physical therapy to improve the strength and balance of stroke survivors works about as well to get them walking again as treadmill training done in a physical therapy lab, according to the results of a study presented today by a Duke researcher at the American Stroke Association's International Stroke Conference.

"We have been working for years in rehabilitation to develop the most effective interventions for walking recovery," said Pamela Woods Duncan, Ph.D., PT, professor in the Doctor of Physical Therapy Division at Duke University and principal investigator of the trial. "Until now, there has not been a major, phase III trial to systematically evaluate different interventions."

The NIH-funded study, Locomotor Experience Applied Post-Stroke (LEAPS), was completed over five years at multiple sites to compare a specialized locomotor training program, which includes body-weight supported treadmill training with multiple physical therapists, to an in-home progressive strength and balance program with a single therapist.

"The results of this study show that the more expensive "high tech" therapy was not superior to home strength and balance training," said Walter Koroshetz, M.D., deputy director of NIH's National Institute of Neurological Disorders and Stroke.

"This is important, because the home-based intervention is more accessible, more feasible and it was also associated with fewer risks in

our study," Duncan said.

More than four million stroke survivors have difficulty walking, which often contributes to subsequent falls, bone fractures and an overall decline in health.

Locomotor training relies in part on body-weight supported treadmill training, in which patients are suspended over a treadmill in a harness and walk with help of multiple physical therapists, working their way up to walking without assistance on ground.

"There has been an emerging use of locomotor-style training in clinical practice, with some preliminary data in small trials that suggests that this is an effective intervention," Duncan said.

The LEAPS trial included 408 stroke survivors from six inpatient rehabilitation facilities in Florida and California. Each group received either the locomotor training (at two months or six months post-stroke) or home exercise for 1.5 hours, three times a week for 12 weeks. The locomotor group focused on progressive body-weight supported treadmill training followed by translation of skills to over-ground walking. Two to three physical therapists worked with each patient.

The home exercise program consisted of structured and progressive strength and balance exercises completed in the patient's home with the assistance of one physical therapist. The patients were also encouraged to walk daily.

Each patient's improvement in walking was evaluated one year after their stroke and 52 percent of patients in all the groups made significant improvement.

Duncan and her team found the body-weight supported treadmill

training was not superior to the home-based intervention. All groups did equally well, achieving similar gains in walking speed, motor recovery, balance, social participation and quality of life.

A secondary analysis at six months demonstrated that both of the interventions are more effective than the physical therapy patients routinely receive two months post-stroke. "At six months, the improvement from either one of these interventions is twice what you see when patients get usual care," Duncan said.

The trial showed, that when the locomotor training was used early, patients were at a higher risk for multiple and injurious falls.

"This suggests that as we move forward in clinical practice with programs to improve mobility, we also have to partner with more aggressive falls prevention strategies," Duncan said. "These programs need to improve balance and mobility, but also include risk assessment and management for falls prevention. For example we should assess the patient's environment, their vision and their medications."

Provided by Duke University Medical Center