

A Randomized Controlled Trial of Movement Strategies Compared with Exercise for People with Parkinson's Disease

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Abstract: This randomized controlled clinical trial was conducted to compare the effects of movement rehabilitation strategies and exercise therapy in hospitalized patients with idiopathic Parkinson's disease. Participants were randomly assigned to a group that received movement strategy training or musculoskeletal exercises during 2 consecutive weeks of hospitalization. The primary outcome was disability as measured by the Unified Parkinson's Disease Rating Scale, UPDRS (motor and ADL components). Secondary outcomes were balance, walking speed, endurance, and quality of life. Assessments were carried out by blinded testers at baseline, after the 2 weeks of treatment and 3 months after discharge.

The movement strategy group showed improvements on several outcome measures from admission to discharge, including the UPDRS, 10 m walk, 2 minute walk, balance, and PDQ39. However, from discharge to follow up there was significant regression in performance on the 2 minute walk and PDQ39. For the exercise group, quality of life improved significantly during inpatient hospitalization and this was retained at follow-up. Inpatient rehabilitation produces short term reductions in disability and improvements in quality of life in people with Parkinson's disease. © 2008 Movement Disorder Society

Key words: Parkinson's disease; gait; exercise; rehabilitation

Parkinson's disease (PD) occurs frequently in older adults with a prevalence of around 780 per 100,000 people.¹ Because of a progressive loss of dopamine producing cells in the basal ganglia, movements become slow and reduced in amplitude.² Although PD medications such as levodopa initially provide relief of symptoms, with disease progression motor fluctuations eventually recur.^{3,4} Rehabilitation is often prescribed as an adjunct to medication to improve mobility and prevent falls.^{2,5,6}

Two major rehabilitation approaches have been advocated for PD. Movement strategy training teaches

people with PD to use their frontal cortex to move more quickly, easily, and safely using cognitive control.⁶ People are trained in how to improve mobility using focused attention,⁷ part-practice,⁷ mental rehearsal,⁸ visualization,⁷ visual cues,⁹ or auditory cues.^{10,11} In contrast, musculoskeletal exercises aim to improve strength, joint range of movement, muscle length, endurance, and aerobic capacity.^{12–14}

The benefits of movement strategy training and musculoskeletal exercises for people with PD have not previously been compared. Moreover, no trial has reported the outcomes of in-patient hospital rehabilitation for people with PD. There have been a small number of studies of home based exercises for people with PD and classes delivered in outpatient clinics, showing short term benefits.^{5,15–17} The aims of the current investigation were to assess the outcomes of an intensive burst of in-patient rehabilitation in ambulant people with mild-moderate PD and to compare the effects of movement strategy training and exercise therapy. The primary outcome measure was disability as measured by the motor and ADL sections of the UPDRS. Secondary measures included walking speed, endur-

Additional Supporting Information may be found in the online version of this article.

This trial has been registered with the Australian Clinical Trials Register, number 8221.

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