

## EFFECT OF PHYSICAL THERAPY WITH AND WITHOUT DALFAMPRIDINE ON GAIT IN PEOPLE WITH MULTIPLE SCLEROSIS

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**Introduction:** Dalfampridine extended-release (DER), a medication indicated to improve walking speed in people with multiple sclerosis (MS), can substantially improve gait in some individuals. Physical therapy (PT) has also been shown to improve walking speed in this population. No studies have directly compared the interventions or examined the combined benefit of PT with DER for people with MS.

**Objective:** To compare the effect of physical therapy with and without dalfampridine on gait speed and perceived walking ability in people with MS.

**Methods:** Six individuals with gait difficulties due to MS participated. Three participants had been prescribed DER by their neurologist, 3 were not taking DER. Gait speed (fastest safe speed, self-selected speed, self-selected dual-task gait speed) and self-perceived walking ability were assessed prior to commencing DER or PT. A second evaluation was conducted after 3 weeks of DER to assess the effect of just the medication on gait. This 3-week drug run-in was a no-treatment period for the PT only group. All participants then received one-on-one multicomponent exercise and gait training with a physical therapist 2x/week for 6 weeks. Training consisted of functional strengthening, balance, gait, and dual task training. The DER group continued taking DER for the study duration. Gait measures were reassessed after 6 weeks of PT and again at 3-week follow up.

**Results:** All 3 patients in the DER group were “non-responders” to DER based on the current clinical classification (<20% increase in fast gait speed), with an average increase of 15.8% after 3 weeks of medication without PT. The PT only participants demonstrated minimal change in gait speed during this initial 3-week no-treatment phase. After 6 weeks of PT, the DER+PT group improved by an additional 22.4%, for a total improvement of 34.7%, therefore exceeding “responder” threshold criterion when PT was added to DER. The PT group improved their fast gait speed by only 6% after PT. This pattern of results was consistent for self-selected gait speed, dual-task gait speed, and self-rated improvement in walking ability. There was some variation between subjects in each group. Individual-level data will be illustrated in our presentation.

**Conclusions:** PT appears to enhance the effects of DER on gait performance in people with MS who do not reach the responder threshold for meaningful improvement on the drug alone. Additionally, twice weekly physical therapy alone did not appear to substantially impact gait speed or participant perception of gait after 6 weeks.

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