The Impact of Gait Distance and Heart Rate Attainment on Gait Speed for Persons With Stroke

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Attainment of 70-85% HR max during locomotor training is positively associated with meaningful changes in walking speed for persons with stroke. Walking distance did not demonstrate a positive association with improvements in gait speed.

INTRODUCTION:

- Attainment of 70-85% HR max has been recommended as a target training intensity for recovery of gait speed for persons with chronic stroke.
- Higher stepping dosage during inpatient rehabilitation (1200-1500 steps/day) has shown to be feasible and is positively associated with walking without physical assistance at discharge for persons with stroke.
- Limitations in both intensity and stepping dosage may be present for patients requiring significant physical assistance during inpatient rehabilitation.

METHODS:

- Cross-sectional study of 277 persons post stroke admitted to a 114-bed inpatient rehabilitation hospital from June 2020-June 2024
- Avg age= 63.7 (14.23) years, 180 male/97 female, 154 non-white/123 white, Left CVA 122/R CVA 151, median admission BERG Balance Scale Score= 2/56
- Patients received intensive locomotor training to achieve cardiovascular intensity of 70-85% HR max and stepping dosage of > 304.8 meters (1,000 feet) each session.
- 10 meter walk test (10 MWT) scores were measured at admission and discharge.
- Predictive probability was determined for attainment of meaningful changes in 10 MWT speed (> .11 m/s) based on stratified admission BERG Balance Scale (BBS) scores.

RESULTS:

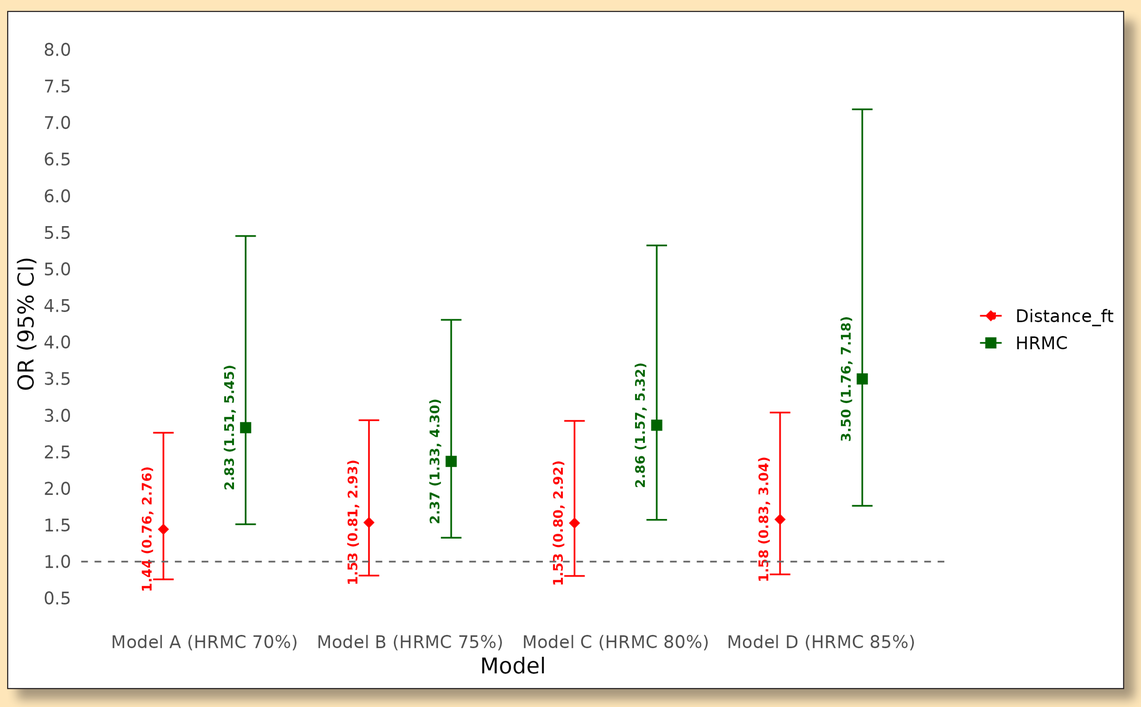


Figure 1. Odds ratio plot displaying the association of gait distance and intensity to meaningful improvements in gait speed. (HRMC= Heart Rate Maximum Calculation)

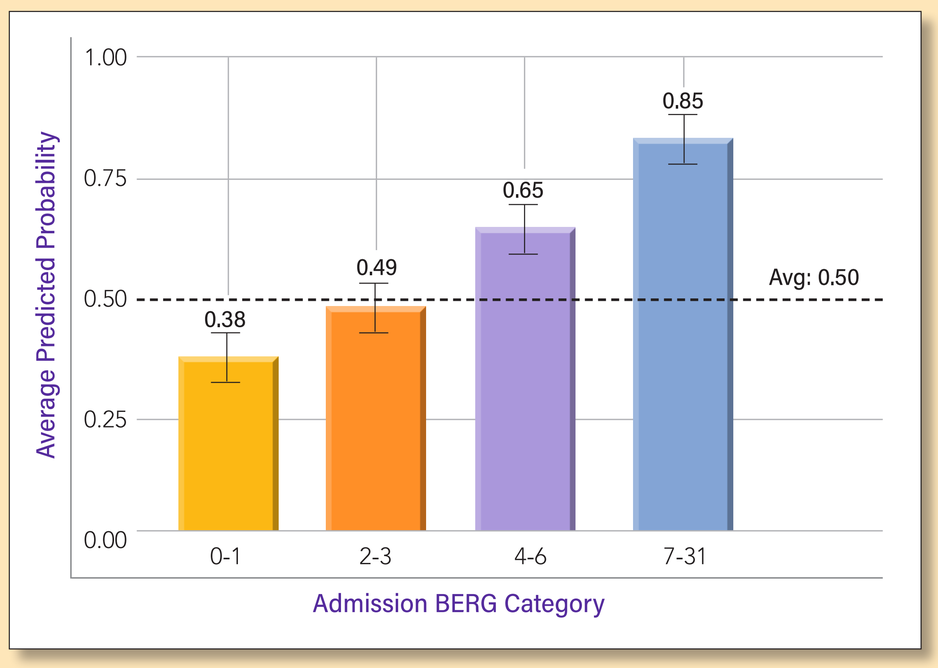


Figure 2. Predictive probability of MDC attainment for 10 MWT stratified by admission BBS scores for persons who achieved 85% HR max intensity. 4 patients with missing admission BBS values.

CONCLUSION:

- Cardiovascular training intensity may be of greater importance than walking distance for attainment of meaningful improvements in 10 MWT speed for persons with stroke during inpatient rehabilitation.
- Persons post stroke with preservation of sitting balance on admission to inpatient rehabilitation, who also achieve 85% HR max, are more likely to attain meaningful improvements in gait speed with locomotor training.
- Our median gait distance of 474.88 meters is below recommended stepping dosages for persons with stroke receiving inpatient rehabilitation and likely impacted our outcome. We suspect this is related to the impairment severity of our included population, although this was not formally measured in this analysis.

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