Increasing Gait Velocity in Patients Following Stroke: Single vs. Multi-intervention Approach

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Abstract

Each year about 50% of the patients that experience a stroke have persistent gait defects. One of the primary goals of most patients is to walk independently and safely. Improving the quality of gait and independence is crucial for social and occupational integration and directly affects quality of life. Gait velocity is a major determinant of a patient’s level of community and household ambulation. The purpose of this study is to determine if a multi-intervention approach versus a single-intervention approach resulted in increase gait velocity among stroke patients as an indicator of improved ability to ambulate in the community.

Methods

Eleven articles were critically analyzed by four independent researchers using the AACPDM methodology. For group studies, the conduct of an individual study was scored as Strong (score 6 or 7), Moderate (score 4 or 5), Weak (score <4) or Strong (score 7-10) based on the "hierarchy of evidence", with large randomized controlled trials being the highest level of evidence (level I). Out of the eleven articles this analysis tool qualified eight articles as strong, and three as medium.

Results

This review identified that single-focus interventions had an average initial gait speed of (0.358m/s) and increased to (0.423m/s) at the end of treatment. While multi-focused interventions had an average initial gait speed of (0.346m/s) and increased to (0.513m/s) at the end of treatment. A calculation of the total percent change showed an average of 17.2% increase in gait velocity for single-intervention approaches, while the multi-intervention approaches showed a 48.2% increase in gait velocity.

Conclusions

This systematic review indicates that a multi-intervention approach is more effective than a single-intervention approach in increasing gait velocity in stroke patients as an indicator of improved ability to ambulate in the community. Based on the outcomes, a clinician should consider using a more generalized approach instead of a specific approach for the treatment of stroke patients with gait deficits. A multi-intervention approach has been shown to be more beneficial at increasing the gait velocity of stroke patients when compared to narrow focused interventions. One of the drawbacks of this review is that it does not include long-term effects of gait velocity because not all the studies included follow up measurements to be compared. Another limitation to the finding is that the dosing of each intervention is not taken into account into the results. Future research should investigate how dosage and intensity of the intervention affects gait velocity outcomes.

Clinical Relevance

Gait velocity is a determinant of community ambulation for stroke patients. A stroke patient must reach a gait velocity of 0.42m/s in order to safely ambulate within the community safely. This systematic review found a more than two times greater increase in the gait speed of the multi-intervention group compared to the single focused intervention group. Therefore, clinicians should consider utilizing a more generalized treatment approach to improve gait velocity in stroke patients and improve their overall community ambulation ability. More research is warranted to determine the best and efficacious therapeutic interventions that affect gait velocity outcomes.

Contact Information

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