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Optimal Interventions to Address Drop Foot and Increase Gait Speed in Stroke Populations

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INTRODUCTION

Stroke is known as cerebral vascular accident (CVA). There are two main types—hemorrhagic and ischemic. The mechanism is an interruption of blood flow to the brain and it can result in many different neuromuscular impairments. CVA can result in drop foot.[1-3]

PURPOSE

The purpose of this study was to review the various interventions that will benefit patients with drop foot following a single stroke.

METHODS

A comprehensive systematic search was conducted with PubMed and ProQuest databases.

Inclusion Criteria: Consisted of conventional physical therapy for stroke patients, patients with drop foot, had their 1st stroke and treatment within the 1st year. PEDro score of 6 or more. Outcome measures (OMs) related to gait speed.

Exclusion Criteria: pre-existing neuro conditions / health problems likely to influence their response to treatment.

INTERVENTIONS

#1 - Kinesio Taping [1 intervention]
#2 - Ankle-foot orthosis (AFO) and Drop foot stimulator (DFO) [2-12 wk]
#3 - Functional Electrical Stimulation (FES) [4 wk]
#4 - Treadmill Training with Thera Band [4 weeks]
#5 - MT + Neuromuscular Electrical Stimulation (NMES) [4 wk]

RESULTS

Study	Results	P-value & PEDro
Kinesio Taping[4]	• Improvements in 10MWT, TUG, stride lengths, stance phases, swing phases & foot rotation	• p<0.05 • 7/10
AFO +DFO[5]	• No statistical difference between groups for gait speed in 10m walking speed and fig-8 test • Differences in therapeutic vs orthotic effect	• p>0.05 • 6/10
Treadmill Training with Theraband[7]	• Improvements in EG vs CG for Fugl Meyer Assessment - Lower Extremity (FMA-LE), Timed Up & Go (TUG), 10 Meter Walk Test (10MWT)	• p<0.05 • 7/10
FES[6]	• Improvements in Berg Balance Scale (BBS), FMA-LE, Barthel Index (BI) • Improvements in gait speed (m/s) in EG vs CG	• p<0.05 • 7/10
MT+ NMES[8]	• Improvements in 10MWT, Brunnstrom stage test and Dorsiflexion Passive ROM • Lower spasticity of MT + NMES group vs CG	• p<0.05 • p<0.001 • 8/10

Figure 1[5]

Figure 2[15]

DISCUSSION

- All 5 interventions are effective in improving gait speed and OMs, such as BBS, 10MWT, TUG, and FMA-LE.
- The OMs used can be correlated towards fall risk.[9-14]
- There is limited research focusing on these comparative interventions for gait improvement in early stroke.
- Results are also dependent on compliance and patient preference, not just clinical results.

CONCLUSION

All of these treatments yielded significant improvements. Recommendations should be made on a case basis. NMES combined with mirror therapy was the best intervention for improving gait speed.

REFERENCES

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