



Assessment of the robotic devices for overground gait training in post stroke patients. A systematic review and meta-analysis

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Background and aims

Robotic-assisted gait training (RAGT) facilitates the exact repetition of stepping cycles that enable walking while automatizing the gait process. Overground RAGT (o-RAGT) is provided by wearable powered exoskeletons that allow a person to walk overground supposedly enabling the user to experience increased proprioceptive input when compared with the stationary treadmill training. The aim of this meta-analysis is to investigate the effects of o-RAGT, compared with conventional gait training, on gait parameters of poststroke patients.

Methods

Our search was conducted in the Pubmed, Cochrane, ScienceDirect, Scopus and PEDro electronic databases for English journal articles about human RCTs of the last two decades, investigating o-RAGT effects on gait parameters of poststroke patients compared with conventional gait training.

Results

Seven studies were considered eligible for data extraction and meta-analysis according to our criteria. Quantitative synthesis for the post intervention mean difference gait velocity (m/sec) showed statistically significant increase by 0.09 m/sec (n=4 studies; 95% CI 0,02-0,17; p=0,687) compared to the control group, while quantitative synthesis for stride length (m), cycle duration (sec), cadence (step/min), and step length (m) did not show statistically significant differences.

Conclusions

O-RAGT effects on gait parameters of poststroke patients are superior to those with conventional training on postintervention gait velocity while the results were non-significant on other gait parameters. The majority of studies provided less objective data like TUG, 10MWT, 6MWT. However, studies on o-RAGT using gait analysis methods could provide more accurate information about the effects on gait parameters of post stroke patients.

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