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Electromechanical-Assisted Training for Walking After Stroke

A Major Update of the Evidence

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Electromechanical-assisted gait training uses specialist machines to assist walking practice and might help to improve walking after stroke.

Objectives

This update of our Cochrane review examined the effects of electromechanical and robot-assisted gait training devices for improving walking after stroke and also assessed the acceptability and safety of this type of therapy.

Methods

We searched the cochrane stroke group trials register (last searched, August 2016), the cochrane central register of controlled trials (Cochrane Library 2016; Issue 8), MEDLINE in Ovid (1950 to August 2016), Embase (1980 to August 2016), CINAHL (Cumulative Index to Nursing and Allied Health Literature; 1982 to August 2016), AMED (Allied and Complementary Medicine Database; 1985 to August 2016), web of science (1899 to August 2016), SPORTDiscus (1949 to September 2012), physiotherapy evidence database (August 2016), COMPENDEX (1972 to November 2012), and Inspec (1969 to August 2016). We handsearched relevant conference proceedings, searched trials and research registers, checked reference lists, and contacted authors in an effort to identify further published, unpublished, and ongoing trials.

Two review authors independently selected trials for inclusion, assessed methodologic quality, and extracted the data.

The primary outcome was the proportion of participants walking independently at follow-up; secondary outcomes were walking speed and walking capacity. We included only randomized controlled trials comparing electromechanical and robot-assisted gait training for recovery of walking function with other rehabilitation interventions or no treatment.

Main Results

In this review update, we included 36 trials involving 1472 participants. Electromechanical-assisted gait training in combination with physiotherapy increased the odds of participants becoming independent in walking (odds ratio, 1.94; 95% confidence interval, 1.39–2.71; $P<0.001$; Figure) but did not significantly increase walking velocity (mean difference, 0.04 m/s; 95% confidence interval, 0.00–0.09; $P=0.08$) or walking capacity (mean difference, 5.84 m walked in 6 minutes; 95% confidence interval, −16.73 to 28.40; $P=0.61$).

Our subgroup analysis suggests that people in the acute and subacute phase may benefit, and people who are nonambulatory may benefit from this type of training. We found differences between the types of devices regarding walking velocity and capacity.

Conclusions

Patients who receive electromechanical-assisted gait training in combination with physiotherapy after stroke are more likely to achieve independent walking than people who receive gait training without these devices.

Implications for Clinical Practice and Future Research

Our findings indicate that people in the subacute phase after stroke who are not ambulatory seem to benefit the most from this type of intervention. Further research should address what frequency or duration of walking training might be the most effective and how long the benefit can last.

Disclosures

None.

Acknowledgment

This article is based on a Cochrane review published in the Cochrane Library 2017, issue 5 (see www.thecochranelibrary.com for information). Cochrane reviews are regularly updated as new evidence emerges and in response to feedback, and the Cochrane Library should be consulted for the most recent version of the review.[1]

Reference

1. Mehrholz J, Thomas S, Werner C, Kugler J, Pohl M, Elsner B. Electromechanical-assisted training for walking after stroke. *Cochrane Database Syst Rev*. 2017;CD006185. doi:10.1002/14651858.CD006185.

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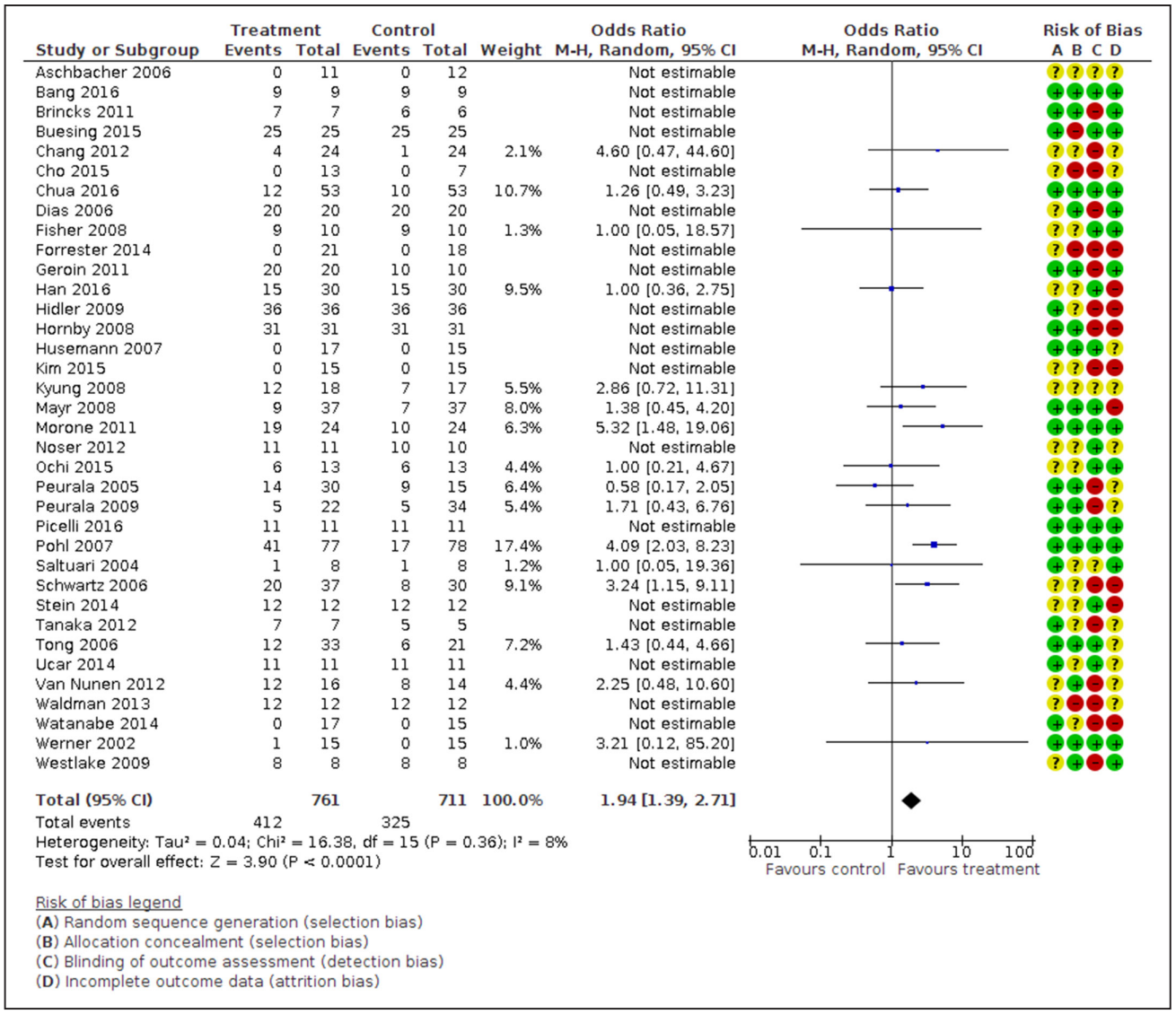

Figure. Forest plot of independent walking at the end of intervention phase. CI indicates confidence interval.

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