

# Electromechanical-Assisted Gait Training With Physiotherapy May Improve Walking After Stroke

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Many patients after stroke have difficulties with walking, and improving walking is one of the main goals of rehabilitation. Electromechanical and robotic-assisted gait training devices are used in rehabilitation and might help to restore walking after stroke.

### Objectives

This systematic review examined the effectiveness of automated electromechanical and robotic-assisted gait training devices for improving walking after stroke.

### Methods

We searched the Cochrane Stroke Group Trials Register (last searched September 2006), the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library, Issue 3, 2006), MEDLINE (1966 to September 2006), EMBASE (1980 to September 2006), CINAHL (1982 to October 2006), AMED (1985 to October 2006), SPORTDiscus (1949 to August 2006), the Physiotherapy Evidence Database (PEDro, searched September 2006) and the engineering databases COMPENDEX (1972 to October 2006), and INSPEC (1969 to October 2006). We manually searched 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and research registers, checked reference lists, and contacted authors in an effort to identify further published, unpublished, and ongoing trials.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 trial quality and extracted the data. The primary outcome was the proportion of patients walking independently (without assistance or help of a person) at follow-up. To minimize bias we included only randomized controlled trials.

### Results

We included 8 randomized controlled trials with 414 participants. Electromechanical-assisted gait training in

combination with physiotherapy increased the odds of becoming independent in walking (Figure; OR, 3.06; 95% CI, 1.85 to 5.06;  $P < 0.001$ ) and increased walking capacity (mean difference = 34 meters walked in 6 minutes; 95% CI, 8 to 60;  $P = 0.010$ ), but did not increase walking velocity significantly (mean difference = 0.08 meters per second; 95% CI, -0.01 to 0.17;  $P = 0.08$ ). We used the primary outcome of recovery of independent walking at the end of intervention phase for all included patients (OR, 3.06) to calculate a number needed to treat of 4 (95% CI, 3 to 5).

### Conclusions

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

### Implications for Clinical Practice and Future Research

This review provides evidence that the use of electromechanical-assisted gait training devices in combination with physiotherapy increases the chance of regaining independent walking ability for patients after stroke. The results could be interpreted as preventing 1 patient remaining dependent in walking after stroke for every 4 (95% CI, 3 to 5) treated. This apparent benefit for patients is, however, not supported by all secondary variables.

Further research should include estimates of the costs (or savings) attributable to electromechanical gait training, should compare different devices, and should address specific

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Review: Electromechanical-assisted training for walking after stroke (Approved, copy-edited rev)  
 Comparison: 01 Electromechanical and robotic assisted gait training plus physiotherapy versus physiotherapy (or usual care)  
 Outcome: 01 Independent walking at the end of intervention phase, all electromechanical devices used

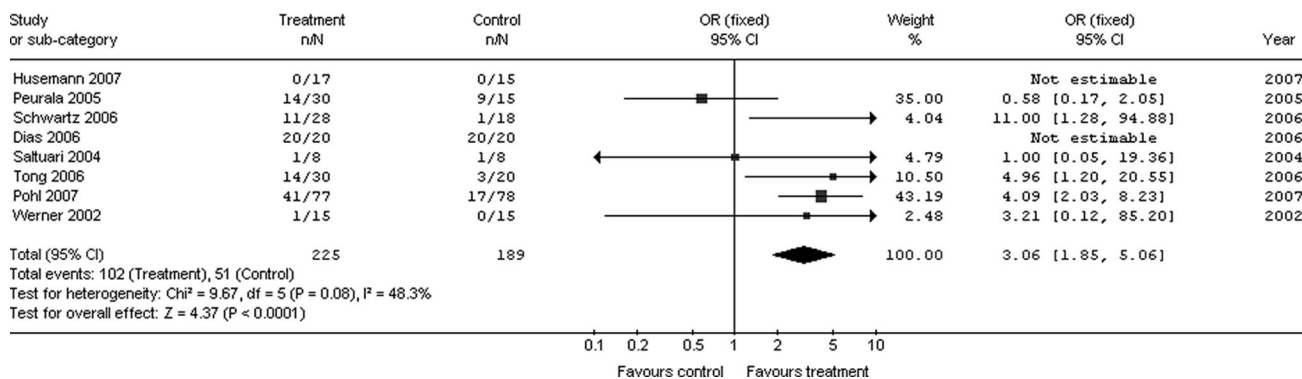


Figure. Outcome independent walking at the end of intervention phase.

questions, for example, how long the benefit lasts. Full details and all graphical plots are available in the version of this review published in the Cochrane Library.<sup>1</sup>

**Disclosures**

None.

**Reference**

1. Mehrholz J, Werner C, Kugler J, Pohl M. Electromechanical-assisted training for walking after stroke. *Cochrane Database Syst Rev.* 2007;4: CD006185. DOI: 10.1002/14651858.CD006185.

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