

# Evidence: Robot-Assisted Gait Training

## End-Effector vs. Exoskeleton

### End-Effector-Device versus Exoskeleton-Device on stroke patients

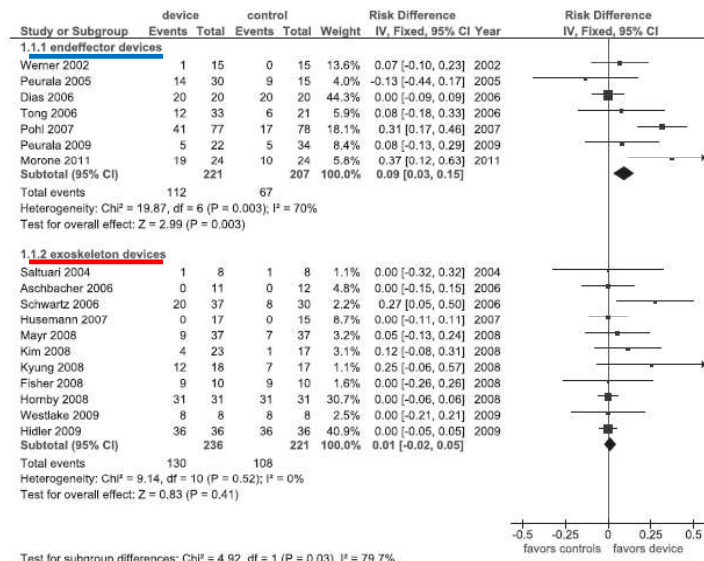
Mehrholtz et al., J Rehabil Med. 2012 Mar;44(3):193-9

**Population:**

18 studies

**Primary Outcome:**

Functional Ambulation Category (0-5; FAC) → independent walking ≥ 4 FAC



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**Population:** 18 studies  
**Primary Outcome:** Functional Ambulation Category (0-5; FAC) → independent walking  $\geq$  4 FAC



- Higher chance to regain independent walking for End-Effector Device
  - End-effector more degrees of freedom
  - Maintaining balance on an End-Effector device is more Demanding



- Intensity and frequency comparable between devices
- Drop-out rate is similar between devices

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## End-Effector vs. Exoskeleton

### Electromechanical-assisted training for walking after stroke: A Meta-Analysis

Mehrholtz et al., Cochrane Database Syst Rev. 2013 Jul 25;7 The Cochrane Library 2013, Issue 7

**Population:** 23 studies with 999 chronic and sub-acute stroke patients

**Primary Outcome:** Functional Ambulation Category (0-5; FAC) → independent walking  $\geq$  4 FAC

### End-Effector

- Increase of gait velocity after gait rehabilitation (N=374; +0.15 m/s)

### Exoskeleton

- Decrease of gait velocity after gait rehabilitation (N=316; -0.05 m/s)

## Take away message: Device comparison

### **End-Effector-Device versus Exoskeleton-Device on stroke patients**

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### **Electromechanical-assisted training for walking after stroke: A Meta-Analysis**

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- Superior treatment chances in terms of independent walking for End-Effector devices compared to Exoskeleton devices in patients with stroke
- Favorable treatment outcomes in terms of gait velocity for End-Effector devices compared to Exoskeletons