



Positive effects of assisted walking-movement with the motorised device Innowalk in patients with neuromuscular disorders

AN INTERNATIONAL CASE STUDY META-ANALYSIS

Improvements were recorded for:

- WALKING OR WEIGHT-BEARING TRANSFER
- CONTROL / STRENGTH OF THE TRUNK OR HEAD
- JOINT MOBILITY
- SLEEP
- MUSCLE STRENGTH
- VITAL FUNCTIONS
- BOWEL FUNCTION
- ATTENTION / ORIENTATION
- PROM

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Introduction

People with physical disabilities suffer from consequences due to lack of physical activity. We evaluated a motorised assistive device for dynamic standing, Innowalk, in addition to standard state-of-the-art therapy to improve clinical outcome in a meta-analysis of available studies.

Patients and Methods

Raw data were pooled including all studies identified in three European countries.

In this meta-analysis, patients' characteristics; duration, intensity, location of usage; general clinical outcomes and improvement of passive range of motion (PROM) assessed with standardised questionnaires and physical examinations were analysed in 31 patients from 9 case studies.

Results

94% of patients (aged 10 [2 – 58] years; 58% male; 67% non-ambulatory, 86% CP) used the Innowalk in a home-based or day-care setting. Improvements were recorded for:

Walking or weight-bearing transfer	(n=13)
Control / strength of the trunk or head	(n=6)
Joint mobility	(n=14)
Sleep	(n=4 out of 6)
Muscle strength	(n=17)
Vital functions	(n=16)
Bowel function	(n=10)
Attention / orientation	(n=2)
PROM	for the hip (flexion, abduction and adduction), significantly ($p < 0.001$ for multiple comparisons) increased after 1 month ($p < 0.05$ flexion, adduction) and further after 5 months ($p < 0.05$ each) in contrast ($p < 0.05$ each) to a control group with state-of-the-art therapy. For the knee and dorsal extension of the ankle ($p < 0.05$, each)

Conclusion

This is the first report of this novel device showing benefits for patients with severe physical disabilities. Small sample sizes and varying study designs of the included studies claim a prospective randomised-controlled trial to prove the concept and mechanism of action of this device.

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