

ORAL PRESENTATION OP27

Effects of Robotic-Assisted Walk-Stairs Interval Training on Strength and Balance in A Patient with Subacute Stroke: A Case Study

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ABSTRACT

Background: Stair manoeuvre could promote balance and lower limb strength (LLS) post-stroke, despite the different responses between individuals. However, safety issues remain a big challenge. Robotic-assisted stairs training may offer a safe and feasible alternative to achieve this outcome. **Objective:** This case study aims to describe the clinical outcomes following robotic-assisted walk-stairs interval training (RAW-SIT) in a 41-year-old male participant with subacute haemorrhagic stroke presented with reduced LLS and balance. **Methods:** The participant underwent RAW-SIT using an end-effector robotic device three times per week for six weeks. Each session lasted 55 minutes, combining ground-level walking, stairs ascending and stairs descending. A 30-second chair raise (30sCRT) and five times chair raise tests (5xCRT) were conducted to measure lower limb strength, while the Berg Balance Scale (BBS) and Dynamic Gait Index (DGI) were conducted to assess balance at week 0 (W0), week 3 (W3) and week 6 (W6) of the intervention. **Results:** 30sCRT showed 45.0% improvement at W3 and plateaued at W6, while 5xCRT showed 66.5% improvement at W3 but showed a slight drop (8.5%) at W6. The BBS scores improved by 13 and 18 points at W3 and W6 (minimum detectable change). MDC=6.3). DGI scores improved by 13 and 18 points at W3 and W6. (MDC=2). No adverse events were reported during the training period. **Conclusion:** This case study suggests that RAW-SIT may improve LLS and balance in individuals with subacute stroke. Larger clinical studies are warranted to confirm these findings and identify patients most likely to benefit from this intervention.

Keywords: Stroke; functional outcome; lower limb strength; balance; case study; robotic-assisted rehabilitation

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