Efficacy of robotic walk training in the early recovery period in patients after total joint replacement of the lower extremities

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Keywords: Total joint replacement; Distance robotic reconstruction

Objectives. – Study was aimed to determine the effectiveness of distance robotic reconstruction (RRH) training in patients after total joint replacement (TJR) of the lower extremities.

Methods. – In total, 162 patients with knee and 48 with hip TJR were included in the first 5 postoperative days. Then, 130 patients received RRH (study group) and 80 received only physiotherapy sessions with an instructor (control group). RRH training started on the second day after surgery and continued daily for 2–3 days. Podography, podometrics and 10-m walk tests were conducted at inclusion and at the end of the treatment.

Results. – At podography, the study group compared with the control had a decrease of asymmetry of locomotion, increased smooth rolling of the foot, normalization of depression function, physiological load increase and participation of foot support structures in the dynamics of ongoing training, decrease in pathological inner arch overload. Analysis of pressure center migration showed: preoperatively 702.89 vs 591.54 g/cm; postoperatively 1206.51 vs 978.02 g/cm, P < 0.009. Results of 10-m walk test were: 38.65 vs 63.12 sec preoperatively, 15.87 vs 16.45 s postoperatively, P < 0.05.

Conclusion. – RRH training in the early recovery period after TJR of the lower extremities is a highly effective method of walk recovery.

Walking robotic assistance: Assessment of the hip and knee range of motion among post-stroke patients

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Keywords: Gait; Stroke; Evaluation; Robotic assistance; Range of motion

Objective. – To study the ranges of motion developed during walking by post-stroke patients on an electromechanical gait trainer, the Lokohelp®.

Method. – Ten patients were equipped with electronic goniometers. Data were collected at the 2nd minute (M2), the 5th minute (M5) and the 8th minute (M8).

Results. – Hip and knee extension and flexion on the paretic and the healthy sides were collected at the 2nd minute (M2), the 5th minute (M5) and the 8th minute (M8). – Ten patients were equipped with electronic goniometers. Data were collected at the 2nd minute (M2), the 5th minute (M5) and the 8th minute (M8).

Discussion/conclusion. – These results suggest that prolonged robot-assisted training in subacute stroke is associated with continued reduction of motor impairment up to 12 weeks after treatment onset.