ABSTRACT

BACKGROUND: About 75% of persons with ASIA (American Spinal Injury Association) Impairment Scale C and D incomplete spinal cord injury (SCI) achieve walking ability.

OBJECTIVE: To compare a walking reeducation program using Lokomat with conventional overground training among individuals with incomplete SCI of both traumatic and nontraumatic etiology.

METHODS: A total of 80 participants from 3 to 6 months after onset admitted to 1 site for rehabilitation were included in a single-blind randomized clinical trial of 2 parallel groups, with blind evaluation by independent observers. Patients received 40 walking reeducation sessions of equal time using a Lokomat program with overground practice or overground mobility therapy alone. Primary measurements of outcome were walking speed and the Walking Index for Spinal Cord Injury (WISCI II). Secondary outcomes were the 6-minute walk test, locomotor section of the Functional Independence Measure, Lower Extremity Motor Score (LEMS), Ashworth Scale, and Visual Analog Scale for pain.

RESULTS: No significant differences were found at entry between treatment groups. Walking speed for Lokomat (0.4m/s [0.6-0.2]) and overground therapy (0.3m/s [0.5-0.2]) groups did not differ. The WISCI II for the Lokomat group (16 [8.5-19]) was better than for overground therapy (9 [8-16]). The 6-minute walk test and LEMS displayed significant differences in favor of Lokomat therapy but were not corrected for multiple comparisons.

CONCLUSIONS: Robotic-assisted training was equivalent to conventional walk training in patients with a variety of nonprogressive spinal cord pathologies for walking speed, but the need for orthotics and assistive devices was reduced, perhaps because of greater leg strength in the robotic group.