THE EFFECT OF ROBOT-ASSISTED LOCOMOTOR TRAINING ON WALKING SPEED.

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ABSTRACT

This study was to quantify the effects of Lokomat training on ambulation capacity of patients with incomplete spinal cord injury (SCI), and to examine the potential assistance of anti-spasticity medication on training. Twenty-nine SCI subjects with spastic hypertonia at their ankle participated in a 12-session Lokomat training regimen, with half receiving Lokomat only (LOKO) and half receiving Lokomat combined with tizanidine (LOKO+TIZ). Walking capacity was evaluated in terms of the 10-meter walking (10MW) speed—a major clinical evaluation of SCI rehabilitation—four times (at the baseline, 1-, 2- and 4-weeks after training). Growth Mixture Model (GMM) was used to classify the walking speed into recovery patterns. Two latent classes were found for each treatment group, corresponding to low speed and high speed. Walking speed increased with training for high-walking-capacity subjects in the LOKO group, and for both high- and low-capacity subjects in the LOKO+TIZ group. Improvement magnitude between pre- and post-test varied among latent classes. Within each class, the baseline measure had a significant effect on walking speed improvement. This study shows that the Lokomat training improves walking speed for patients with SCI, and anti-spasticity medication, such as tizanidine, can improve the efficacy of Lokomat training, particularly for patients with low walking capacity.