ABSTRACT

BACKGROUND: Strength changes in lower limb muscles following robot assisted gait training (RAGT) in subjects with incomplete spinal cord injury (ISCI) has not been quantified using objective outcome measures.

OBJECTIVE: To record changes in the force generating capacity of lower limb muscles (recorded as peak voluntary isometric torque at the knee and hip), before, during and after RAGT in both acute and subacute/chronic ISCI subjects using a repeated measures study design.

METHODS: Eighteen subjects with ISCI participated in this study (Age range: 26-63 years mean age = 49.3 ± 11 years). Each subject participated in the study for a total period of eight weeks, including 6 weeks of RAGT using the Lokomat system (Hocoma AG, Switzerland). Peak torques were recorded in hip flexors, extensors, knee flexors and extensors using torque sensors that are incorporated within the Lokomat.

RESULTS: All the tested lower limb muscle groups showed statistically significant (p < 0.001) increases in peak torques in the acute subjects. Comparison between the change in peak torque generated by a muscle and its motor score over time showed a non-linear relationship.

CONCLUSIONS: The peak torque recorded during isometric contractions provided an objective outcome measure to record changes in muscle strength following RAGT.