

# ` Quick Review of Model System Research

## Budget Impact Analysis of Robotic Exoskeleton Use for Locomotor Training Following Spinal Cord Injury in Four SCI Model Systems

### What is the study about?

### This study aims to estimate the budget impact of adding robotic exoskeleton (RT-exo) over-ground training to existing locomotor training strategies, in the rehabilitation of people with spinal cord injury (SCI). Locomotor training is a standard of care for the SCI population. It typically requires multiple personnel to facilitate stepping motions. RT-exo are prescription devices that are placed over paralyzed or weakened limbs to aid standing, walking, climbing stairs, and performing daily activities of living. RT-exos can be used at home, work, and during rehabilitation.

### What did the study find?

This study found that providing RT-exo for over-ground training was associated with lower hospital costs for the locomotor training of people with SCI. Analysis showed small savings and large degrees of uncertainty. The model presented in this article provides a framework that other economic studies can be built upon.

### Who participated in the study?

Individuals with SCI who participated in locomotor training (estimated n = 669) in 2017. Data were provided by four Spinal Cord Injury Model Systems rehabilitation hospitals.

### How was the study conducted?

This economic study used budget impact analysis, using estimates of therapy utilization and costs about people with SCI who participated in locomotor training. The budget impact analysis looked at the remaining difference in estimated healthcare costs between the two training strategies. The main outcome measures included device costs, training costs for personnel to use the device, human capital costs of locomotor training, device demand, and the number of training sessions per person with SCI.

### How can people use the results?

### Individuals with SCI and their families can use the results of this study to better understand RT-exo over-ground training, and how it may impact SCI individuals’ rehabilitation and hospital budgets. Practitioners can use the results of this study to consider how to further examine the economic efficiency of RT-exo technology, including using different estimates to increase certainty in future study findings.

### Reference

Pinto, D., Garnier, M., Barbas, J., Chang, S.H., Charlifue, S., Field-Fote, E., Furbish, C., Tefertiller, Mummidisetty, C.K., Taylor, H., Jayaraman, A., & Heinemann, A.W. (2020). Budget impact analysis of robotic exoskeleton use for locomotor training following spinal cord injury in four SCI Model Systems. *Journal of NeuroEngineering and Rehabilitations, 17*(4). DOI:10.1186/s12984-019-0639-0.

**Disclaimer**

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