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The Efficacy of High-intensity Locomotor Training in Incomplete Spinal Cord Injuries: A Systematic Review

Abstract

Background: After an incomplete spinal cord injury (iSCI), regaining the ability to walk is a frequent goal of rehabilitation [1-3]. A common intervention implemented is locomotor training which promotes recovery through the principles of activity-dependent automaticity and repetition [5]. Low to moderate-intensity locomotor training has been supported to improve rehabilitation outcomes in individuals with chronic spinal cord injuries. There is limited research on high-intensity gait training (HIGT), and that research lacks standardization of parameters [13].

Purpose: To systematically review evidence related to high-intensity locomotor training, physiological changes, and quality of life (QOL) in people with iSCI. A secondary purpose was to examine the commonality between HIGT parameters.

Methods: A systematic search was carried out in PubMed, GoogleScholar, and EBSCOhost. Articles in this systematic review consisted of pilot studies, case studies, brief reports, randomized control trials, retrospective analyses, clinical practice guidelines, and systematic reviews. The studies examined the effects of high-intensity gait training on gait measurements, physiological measures, and/or quality of life reports in adults with incomplete spinal cord injuries. Articles were ranked using the Centre for Evidence-Based Medicine (CEBM) rating system.

Results: Eighteen articles meet the criteria for inclusion in this systematic review. The quality of the selected studies ranged from Level 2 to Level 4 on the CEMB rating system.

Conclusions: HIGT has been found to improve the quality of gait [8, 14, 17-18, 21, 24], physiological measures [3, 7-8, 14, 19], and quality of life [11-12, 21]. The most common parameters for HIGT were 5 days a week, in one-hour sessions, and over a 12 week period.

Discussion: High-intensity gait training (HIGT) evidence consists of varying parameters of frequency, intensity, and time expressing a lack of consistency for sufficient support. Further research is warranted to standardize the parameters for high-intensity locomotor training.