IJCIH
Converging Healthcare & Technology

INTERNATIONAL JOURNAL OF CONVERGENCE IN HEALTHCARE

Published by
IJCIH & Pratyaksh Medicare LLP
www.ijcih.com

From Paralysis to Progress: The role of Robotic Gait Training in Restoring Ambulation in Spinal Cord Injury Patients: A Review

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Abstract

Introduction: Spinal cord injury (SCI) is a critical clinical condition that disrupts brain body communication affecting sensory and motor pathways. This glitch in nerve communication leads to complications like muscle paralysis, mobility issues, bladder & bowel disorders and impaired activities of daily living (ADL). Rehabilitation for improving walking ability remains a goal for physical therapist and owing to this the use of robot assisted ambulation has become more common along with conventional physical therapy. Robotic assisted ambulation refers to use of advanced robotic technology combined with the principle of physiotherapy to provide gait training and rehabilitation treatment in person with impaired mobility. The objective of this review is to establish the role of robotic gait therapy in restoring early ambulation in SCI patient and hence favouring improvement in quality of life and functional independence.

Methodology: To construct a detailed review on this topic, an extensive search on various databases was carried out including Ovid, Google Scholar, Medline, PubMed, Research Gate and available textbooks. Studies done in last 15 years were included in the review.

Result & Conclusion: With this review we can conclude that robot assisted gait therapy combined with conventional physiotherapy has been found to improve mobility in incomplete spinal cord injury patients. Robotics has been proven to be an excellent tool to establish neuromuscular re-education to patients with SCI.

Keywords: *Spinal cord injury, robotic physiotherapy, neuro-rehabilitation, functional rehabilitation, robotic gait training.*