

A Conceptual Framework for Integrating Exoskeleton Technologies in Healthcare

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Abstract

Exoskeleton technologies are machines that can be worn on part or the whole body of a human being to enhance mobility. Exoskeletons are revolutionizing healthcare. Despite their affordances, the adoption of exoskeletons in healthcare is low and there is limited literature with conceptual frameworks for integrating exoskeletons in healthcare. This paper presents a conceptual framework for integrating exoskeletons technology in healthcare. A systematic literature review (SLR), guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) model informed this research. Twenty-one peer reviewed articles drawn from databases such as SpringerLink, PubMed, IEEE Xplore and ScienceDirect. The findings show that the integration of exoskeleton technology in healthcare, provide innovative solutions for patients with mobility constraints. By providing consistent, repetitive, and task-specific training, exoskeletons enhance neuroplasticity and functional recovery, improving patient outcomes in rehabilitation. Furthermore, exoskeleton technology has various applications in healthcare, which include rehabilitation and elderly care, simplifies patient handling, aides' mobility and provides surgical support. The findings of the study identified the reasons for the low uptake of exoskeleton technology which involve high costs of the exoskeleton technology, technical complexities, and safety concerns. These findings inform the health care policies makers, management, health care workers and patients with mobility constraints on how to integrate exoskeletons to improve the health care management.

Keywords

Exoskeleton Technologies, Healthcare, Machine, Assistive Devices, Robotics