

## Challenges of Translation Knowledge for Pediatric Rehabilitation Technology

**Authors :** Patrice L. Weiss, Barbara Mazer, Tal Krasovsky, Naomi Gefen

**Abstract :** Knowledge translation (KT) involves the process of applying the most promising research findings to practical settings, ensuring that new technological discoveries enhance healthcare accessibility, effectiveness, and accountability. This perspective paper aims to discuss and provide examples of how the KT process can be implemented during a time of rapid advancement in rehabilitation technologies, which have the potential to greatly influence pediatric healthcare. The analysis is grounded in a comprehensive systematic review of literature, where key studies from the past 34 years were carefully interpreted by four expert researchers in scientific and clinical fields. This review revealed both theoretical and practical insights into the factors that either facilitate or impede the successful implementation of new rehabilitation technologies. By utilizing the Knowledge-to-Action cycle, which encompasses the knowledge creation funnel and the action cycle, we demonstrated its application in integrating advanced technologies into clinical practice and guiding healthcare policy adjustments. We highlighted three successful technology applications: powered mobility, head support systems, and telerehabilitation. Moreover, we investigated emerging technologies, such as brain-computer interfaces and robotic assistive devices, which face challenges related to cost, durability, and usability. Recommendations include prioritizing early and ongoing design collaborations, transitioning from research to practical implementation, and determining the optimal timing for clinical adoption of new technologies. In conclusion, this paper informs, justifies, and strengthens the knowledge translation process, ensuring it remains relevant, rigorous, and significantly contributes to pediatric rehabilitation and other clinical fields.

**Keywords :** knowledge translation, rehabilitation technology, pediatrics, barriers, facilitators, stakeholders

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