Virtual Reality or Gaming Applications for Rehabilitation of Patients with Burns: Clinical Effectiveness and Guidelines
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Acknowledgments:

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About CADTH: CADTH is an independent, not-for-profit organization responsible for providing Canada’s health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.
Research Questions

1. What is the clinical effectiveness of virtual reality or gaming applications for upper extremity rehabilitation in patients with burns?

2. What are the evidence-based guidelines regarding the use of virtual reality or gaming-based interventions for upper extremity rehabilitation in patients with burns?

Key Findings

Two systematic reviews, five randomized controlled trials, and three non-randomized studies were identified regarding virtual reality or video-game based treatment for upper extremity rehabilitation in patients with burns. Additionally, one evidence-based guideline was identified.

Methods

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD), Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2007 and July 25, 2017. Internet links were provided where available.

Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria

<table>
<thead>
<tr>
<th>Population</th>
<th>Patients with burns in acute care or rehabilitation settings</th>
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<tr>
<td>Intervention</td>
<td>Virtual reality or video game-based treatment approaches (e.g., virtual reality headset systems, motion capture systems, SnowWorld, Ditto, Nintendo Wii) for upper extremity rehabilitation or range of motion exercises; alone or in combination with standard of care</td>
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<tr>
<td>Comparator</td>
<td>No treatment; Standard of care for rehabilitation (e.g., passive or active range of motion exercises, functional tasks)</td>
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| Outcomes | Q1: Clinical benefits and harms (e.g., upper extremity range of motion and functioning)  
Q2: Evidence-based guidelines, including recommendations regarding treatment protocols and infection control considerations |
| Study Designs | Health technology assessments, systematic reviews, meta-analyses, randomized-controlled trials, non-randomized studies, evidence-based guidelines |
Results

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and evidence-based guidelines.

Three systematic reviews, five randomized controlled trials, and three non-randomized studies were identified regarding virtual reality or video-game based treatment for upper extremity rehabilitation in patients with burns. Additionally, one evidence-based guideline was identified. No relevant health technology assessments were identified.

Additional references of potential interest are provided in the appendix.

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses


Randomized Controlled Trials

Adults


Children and Youth


Non-Randomized Studies

Adults


Mixed Age Population


Guidelines and Recommendations

Appendix — Further Information

Previous CADTH Reports


Economic Evaluations


Review Articles


Additional References