

Virtual Reality, Music Therapy and Neglect: A Narrative Review

Andrew Danso, Mikaela Leandertz, Dr. Esa Ala-Ruona
Department of Music, Arts and Culture Studies, Centre of Excellence in Music, Mind, Body and Brain
University of Jyväskylä, Finland

Dr. Rebekah Rousi
School of Marketing and Communication, Communication Studies
University of Vaasa, Finland

Introduction

Neglect is often experienced after suffering from a stroke. **Virtual Reality (VR) combined with music therapy interventions** may offer a promising intervention for use during neglect rehabilitation.

Aims

This review...

- Identifies interventions and assessments in VR as well as music therapy research.
- Examines both interventions effects on neglect populations.
- Provides an understanding if such interventions are applicable for treating neglect.
- Summarizes evidence of existing interventions and assessments used for neglect populations in VR and music therapy research.

Methodology

To construct this narrative review, non-systematic searches of the PubMed and PsycINFO databases were conducted to retrieve relevant articles. The data search included terms for **stroke, neglect, rehabilitation, music therapy, and rehabilitation.**

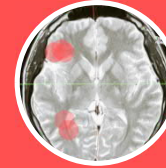
Conclusions



The literature points to preliminary evidence that VR and music therapy interventions contributed positively to cognitive, motor, and neuropsychological outcomes in neglect rehabilitation.



However, the clinical findings are ambiguous. Larger trials with similar assessments are needed to arrive upon generalizations.



Novel evidence is found, reporting on the stimulation of neurological regions as a result of task-based activity and saccadic eye movements to the left.

Using VR and music-based interventions adjuntly for neglect rehabilitation is theoretically promising, and development of a clinical framework to practically use these interventions with neglect patients may be considered.

Results

Figure 1. Summary of the nine studies study interventions, designs and outcomes reported.

Study Intervention	Study Design	Study Outcomes
Musical Neglect Training	Pre- Post- Design	Significant improvement in visuomotor neglect. No change in egocentric perceptual neglect.
RehAttB	Between Group Design	Increased sporadic inter hemispheric functional connectivity within the Dorsal Attention Network. Enhanced top-down control during attentional cueing.
Inmersive VR Programme	Case Study	Improvements in neuropsychological tests in far space neglect. No significant difference in daily living outcomes.
Mind-Motion Pro™	Between Group Design	A median improvement rate of 6.4% in motor function and 15.4% at one-month follow-up. A significant improvement in shoulder active range of motion observed at follow-up. High levels of patient adherence and motivation.
Bts-Ninava System	Case Study	Improvements in motor and cognitive function.
Hollow Box, Computer Monitor and DataGlove	Between Group Design, Within Subjects Design	Improvements in task related performance.
Virtual Reality Games	Quasi-Experimental Design: Non-equivalent Control Group Design	Improvements in upper limb movement mobility, sensory function, activities of daily living and general quality of life. No significant group effect on all outcome measures reported.
Jintrionx System	Two-arm Pilot Randomized Clinical Trial, Pre-Post-Follow-up Design	Improvements in activities of daily living.

Novel Findings

Neurological activity in the prefrontal cortex, bilateral middle and superior temporal gyrus was associated with **increased focus of attention during VR rehabilitation.**

Saccadic eye movement to the left became more integrated with the left superior parietal cortex during VR rehabilitation.

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