

PRESENTATION 3

Virtual Reality Simulation – The Future of Orthopaedic Training? A Systematic Review and Narrative Analysis

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Background

Virtual Reality (VR) simulation provides users with an immersive, 3D experience that can be used to allow surgical trainees to practice skills and operations in a safe yet realistic environment. The field of Trauma and Orthopaedics (T&O) is yet to include VR in core teaching, despite its advantages as a teaching aid, particularly against current simulation tools. This study aims to conduct a systematic review to investigate the efficacy of VR in T&O training, against current methods.

Methods

A systemic review of databases Medline, Embase and the Cochrane Library for randomized controlled trials focusing on VR training against conventional training in orthopaedic surgery was performed. Data synthesis was performed through narrative analysis.

Results

16 studies were identified, totalling 431 participants. 47 outcomes were measured. 8 studies completed both pre- and post-test assessment; 7 noted a statistically significant improvement for the intervention group from baseline. 6 studies achieved significance for the intervention group post-test results over control in all outcomes measured. Although significance between intervention and control was not always achieved, most studies found the intervention outperformed the control.

Key Messages

VR provides a modern and immersive teaching tool that can develop skills and give confidence to trainees. This study demonstrates the potential for VR simulation as a training aid T&O and encourages its use alongside conventional teaching methods. However, long-term analysis of the results of VR training on surgical trainees has yet to be conducted. To provide conclusive justification for its inclusion in surgical training, this study recommends that future research follows trainees using VR into the operating room, to determine that VR teaches skills that are transferable onto actual surgeries, subsequently leading to better patient outcomes.

