

AN EVALUATION OF VIRTUAL REALITY TECHNOLOGY AS AN OCCUPATIONAL THERAPY TREATMENT TOOL IN SPINAL CORD INJURY REHABILITATION

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The introduction of virtual reality (VR) games as an occupational therapy (OT) treatment tool is an attempt to use technology as purposeful activity that is more relevant to a modern patient population than traditional art and craft based activities. It is unclear however if VR games are suitable for clinical applications and the current project examines the usability of video-capture VR games in spinal cord injury (SCI) rehabilitation.

Participants were 10 male acute SCI patients with complete and incomplete SCI (C5 – L2), and ages ranging from 23 – 56 years (mean = 40.5 years; SD = 14.07). Time post injury was 3 – 6 months (mean = 4 months; SD = 1.25).

The first study examined console-based VR games. Participants engaged with three different VR game types: a purely physical game, a physical and cognitive game, and a purely cognitive game. Patients were interviewed about their experience using a 45 point usability questionnaire, and the attending therapists completed a similar survey. Both patients and therapists agreed that VR games increase motivation to attend therapy, and motivate patients to perform past their perceived limits of movement and endurance. The VR games used did not overexert patients and did not cause any extra pain or discomfort. Results suggest that patients with limited experience of computer technology, and over a wide range of ages and social backgrounds, could use the VR games successfully and independently.

The second study looked at an equivalent PC-based VR game to determine if there are advantages in using this platform. Participants engaged in a purely physical VR game and were interviewed using a questionnaire as before. The attending therapists completed a similar feedback form. Results showed the PC based VR game was equivalent to the console game in functionality and ease of use, but had the advantage of being more portable and easier to set up and operate.

These findings support the idea that VR games are an appropriate and useful compliment to conventional OT. In addition, patients found that having their image and real-time movements displayed onscreen was useful feedback to correct posture and direct upper limb movements.