

Use of Virtual Reality in Rehabilitation

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ABSTRACT

Recovery of severe impairment as a result of acquired brain injury from conditions such as stroke and trauma can be limited. However, with neuroplasticity and re-learning of lost skills, the impairment can be overcome or reduced. The use of technology in rehabilitation has become synonymous in most advanced rehabilitation facilities. The outcome of chronic impairment is dependent on the rehabilitation approaches and new ways to address conventional strategies using technology. Technology in rehabilitation is an exciting avenue for research. The use of 3-Dimensional Virtual Reality (3-D VR) in gaming has escalated in the past few years. However, the therapeutic use of 3-D VR in rehabilitation medicine is still lagging, although small studies have shown some potential on its use. We, at Faculty of Medicine UiTM embarked on a study to create a platform for 3-D VR application, (MRVR: Medical Rehabilitation Virtual Reality) with known neuroplastic strategies for individuals with acquired brain injury during rehabilitation. Outcome measures used will be that of standard and validated parameters before and after the application of MRVR. Specific aspects of rehabilitation parameters were addressed during the programme development. A low cost commercial 3-D VR system was chosen (HTC VIVE™) to be used for the MRVR and our team developed a number of therapeutic programmes. Individuals with brain injury undergo a sequence of immersive first person experience with the MRVR programme in a safe virtual environment. The MRVR also promote recovery through other theories of rehabilitation such as, enriched environment, imagery, increased engagement and participation, accessibility and gamification. We hypothesize that individuals that uses MRVR will have improved outcome parameters post intervention. These findings will assist in changing the standards for neurorehabilitation, by improving functional outcome, productivity, quality of life and overall longevity of individuals with disability. This study is funded by UiTM Research Grant: 600-IRMI/DANA 5/3 BESTARI (057/2017)

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