

Usability and performance of Leap Motion and Oculus Rift for upper arm virtual reality stroke rehabilitation

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ABSTRACT

Intensified rehabilitation is important for stroke survivors but difficult to achieve due to limited access to physiotherapy. We present a virtual reality rehabilitation system, Target Acquiring Exercise (TAGER), designed to supplement center-based physiotherapy by providing engaging and personalized exercises. TAGER uses natural user interface devices, the Microsoft Kinect, Leap Motion and Myo armband, to track upper arm and body motion. Linear regression was applied to 3D user motion data using four popular forms of Fitts's law and each approach evaluated. While all four forms of Fitt's Law produced similar results and could model users effectively, it may be argued that a 3D tailored form provided the best fit. However, we propose that Fitts's Law may be more suitable as the basis of a more complex model to profile user performance. Evaluated by healthy users TAGER proved effective, with important lessons learned which will inform future design.

Full papers will be published in the Conference Proceedings and will be freely available to delegates at the conference and online on September 20, 2016.