Abstract

A prototype virtual reality application has been developed as a diagnostic tool to aid visualisation of gait analysis and improve accessibility for health professionals who lack the technical experience to operate motion capture systems. The proposed system will take motion capture data stored in the Coordinated 3 Dimensional (C3D) file format and present the data as a visualisation in a three dimensional (3D) virtual environment. This article is presenting the design and development considerations, the evaluation results based on usability traits of this system and the user acceptance of the technology as a viable diagnostic tool. A virtual reality application was developed for the purposes of visualising motion captured data for gait analysis in a virtual environment. Twenty users with relevant experience in the field of gait analysis participated in user trials to gauge user reaction and acceptance of the proposed system. An adapted version of the Technology Acceptance Model (TAM) framework was used to analyse results. All trials were conducted in an in-house virtual reality and simulation laboratory. The intention of health professionals to use the system was explored based on the TAM, with added constructs that concern virtual environments: Technical aspect (TA), Orientation (Orient.), Physical and emotional (PhE), and Availability of hardware in-house (AHWH). Based on the TAM and extended factors the findings suggest that the system was perceived as useful and health professionals' intentions to use the GADV/VE system were strongly affected by technical aspects and availability of hardware in-house and moderately affected by orientation and physical and emotional side effects. Results from the output of the TAM framework show that the virtual reality application for gait analysis would be a valuable tool in the diagnostic stage of gait analysis and was positively received by health professionals in the relevant field.