

Development and validation of tele-health system for stroke rehabilitation

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ABSTRACT

Tele-rehabilitation refers to the use of information and communication technologies to provide rehabilitation services to people in their homes or other environments. The objective of this paper is to present the development, validation and usability testing of a low-cost, markerless full body tracking virtual reality system designed to provide remote rehabilitation of the upper extremity in patients who have had a stroke. The Methods and Results sections present the progress of our work on system development, system validations and a feasibility/usability study. We conclude with a brief summary of the initial stages of an intervention study and a discussion of our findings in the context of the next steps. The validation study demonstrated considerable accuracy for some outcomes (i.e., shoulder “pitch” angle, elbow flexion, trunk forward and side-to-side deviation). In addition positive responses were received from the clients who participated in the feasibility study. We are currently at the process of improving the accuracy of the system as well as conducting a randomized clinical trial to assess the effectiveness of the system to improve upper extremity function post-stroke.

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Full papers will be released on-line in the ICDVRAT archive on March 15.