Rehabilitation Science Dissertation Defense

UAB SCHOOL OF HEALTH PROFESSIONS
The University of Alabama at Birmingham

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Rehabilitation Science
Final Dissertation Defense

EFFECTS OF DIFFERENT TYPES OF AUGMENTED FEEDBACK ON SPATIOTEMPORAL GAIT PERFORMANCE AND INTRINSIC MOTIVATION WITH INDIVIDUALS POST STROKE

After a stroke, an individual can be left with physical and psychological deficits, including decreased walking speed, reduced step length, and reduced intrinsic motivation. These deficits affect their performance during rehabilitation sessions, limit daily activities such as walking and stepping, and restrict participation in social roles that involve mobility. Current clinical practice guidelines recommend providing augmented feedback using virtual reality (VR) to enhance walking outcomes after six months of stroke onset. This dissertation shows two novel VR applications designed, especially for individuals' post-stroke, to induce their fast-walking speed and maximum step length performance, and intrinsic motivation. Three performance conditions were designed as 1. Augmented feedback alone. 2. simple VR interface. 3. VR-exergames. Thus, we intended to test the immediate effects of these different types of augmented feedback on fast walking speed performance, maximum step length performance, and intrinsic motivation in post-stroke. Study 1 showed a theoretical framework (i.e., Enhanced OPTIMAL Theory) that combines two theories to comprehensively identify constructs and mechanisms associated with motivation and motor performance as well as relevant VR and VR-exergames features. The Enhanced OPTIMAL Theory depicts four pathways that directly or indirectly impact motor performance with several constructs that can be manipulated to enhance motivation and performance after stroke. Study 2 showed that individuals could walk slightly faster with all types of augmented feedback after stroke than their fast-walking speed without feedback, while VR-exergame offered a greater advantage and immediate effect on intrinsic motivation and enjoyment. Study 3 showed that individuals after stroke could slightly increase their maximum step length with all types of feedback than they could without feedback. The augmented feedback condition revealed an immediate significant effect on inducing paretic maximum step length performance and revealed a slightly higher motivation than VR-game and simple VR interface. In summary, this dissertation demonstrated the immediate effects of augmented feedback delivered with and without VR and exergames on motivation and performance and the refinement of theoretical frameworks that may guide the design and implementation of augmented feedback during recovery after stroke.

EVENT DETAILS

Free to UAB students, faculty and clinicians.

DATE/TIME

Friday,
March 25, 2022
1pm-2pm

LOCATION

SHPB 226 and https://us02web.zoom.us/j/83034126810?pwd=ME1KMWU1ZHFweGJyQWJzUHU0Nkh1Zz09

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