AUGMENTED REALITY-BASED COMBINED PHYSICAL EXERCISE AND LANGUAGE INTERVENTIONS FOR ENHANCING EXECUTIVE FUNCTIONS AND LANGUAGE SKILLS IN THAI EFL UNIVERSITY STUDENTS: A PILOT STUDY

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This study aims to investigate the effectiveness of the AR-based combined physical exercise and language interventions for enhancing Thai EFL students' executive functions (EFs) and language skills. Fifteen EFL university students were enrolled in this one group pretest-posttest experimental study. The participants' EFs (i.e., shifting, working memory, and inhibition) and language skills were evaluated by PEBL computerized tasks and the English test respectively. The AR-based intervention was developed by Unity3D and connected to Kinect to detect participants' physical movements. Twelve 45 minutes AR-based intervention sessions were held three times a week and lasted for a month. T-tests were employed to compare (1) cognitive factor (EF scores and reaction time (RT)), and (2) linguistic factor (English test score) before and after the intervention. The AR-based intervention significantly improved the EFs. The magnitudes of enhancement were observed for shifting, working memory, and inhibition as indexed by the percentage of correct responses and RT, $p < .01$. EFL students gained more correct responses with less RT. The AR intervention significantly improved their language skills, $p < .01$. The integrated cognitive motor functions and linguistic embedded in the AR-based intervention is thus effective in enhancing EFs and English language skills in EFL students.