

An initial proof of concept for Xbox Kinect

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Purpose Seniors make up a larger than expected percentage of drivers involved in accidents based on crash statistics. However, driving is one of the independent living capabilities desired by seniors¹⁻³. The main objective of this study is to provide an experimental proof concept on the hypothetical causality between playing physically-engaging video games on a regular basis and improving driving performance among older people. Recently, a new phenomenon of motion controlled video game consoles entered the market that not only improves the cognition of players, but also their physical states by requiring interactivity by the use of gestures involving the entire body. This study employed Xbox Kinect technology whereby players do not need any wired or wireless attachments while physically engaged in gaming. This provides a more realistic game scenario and allows for easier adoption.

Method A systematic literature review was conducted. A hypothetical causality was developed between playing these games and the driving performance of elderly people that needed to be tested. To do so, a small-scale self-observatory experiment was conducted in which the Xbox Kinect video games were played. The results of the observations were recorded.

Results & Discussion The literature review resulted in a set of physical, visual and cognitive declines associated with the driving skills of seniors. Xbox Video games were introduced that engage players in similar physical, visual and cognitive activities including endurance, postural sway, reaction time, eyesight, eye movement, attention and concentration, difficulties with orientation and semantic fluency. However, manual dexterity, visual-spatial perception and binocular vision could not be addressed by these games. It was observed that Xbox Kinect (by incorporating Kinect sensor facilities) combines physical, visual and cognitive engagement of players, in this case, seniors. Therefore, it has several useful features that can be beneficial and should be considered as an alternative method that can be used to improve the driving skills of seniors. Some of these advantages are: (i) An increasing level of difficulty provides the opportunity for players (who may not be as fit or mentality active) to gradually improve their abilities instead of being disheartened while attempting a difficult task for the first time when they interact with the game. (ii) Real-time score reports and feedback were provided as a report at the completion of the game describing how well a player had done. This may encourage improvement in players and could also be monitored by practitioners to see how seniors were progressing. (iii) Motivational: at the conclusion of completing certain games, motivational quotes are provided encouraging players to improve on their scores or to train daily (iv) Training entire body: Kinect requires players to move the entire body, unlike traditional gamepad/ joystick games, which improves coordination. (v) Ability to carry weights: This can drastically increase muscle weight and strength required for driving. The above observations suggest that Xbox Kinect video games have a viable potential in being able to transfer the effects of improving physical, visual and cognitive abilities to driving performance. However, two issues came up during the self-observatory experiment: (a) Nausea: the issue was raised whether the constant flash of images from the console may cause medical issues such as nausea and seizures. (b) Risk of Injury: While combining physical engagement and playing Xbox Kinect games provides opportunities, it also exposes seniors to a greater likelihood of injury.

References

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