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# Effects of Interactive Video Games (Nintendo Wii™) on Older Adults with Cognitive Impairment

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## Overview

The population being served includes the clients at Triple R adult day program in Sacramento, CA. These clients are older adults and all present with a form of memory loss. Currently, health management, specifically physical activity, and social participation are affected in the program as there are limitations to exercise routines that are appropriate for the clients as well as lack of engagement from all clients. We believe that all of the residents are affected by this issue at the facility and would benefit from the use of technology to enhance these areas of needs in the specific occupations. Within the current exercise program, exercises are performed as a group and there is a lack of variability and autonomy that is given to the clients to choose which exercises they want to engage in. Additionally, the current exercises that are provided to the clients do not target areas of deficits that research has shown to be prominent within individuals experiencing memory loss. In return we have observed decreasing social participation and engagement. The mission of our group is to incorporate a technology that will allow for increased flexibility within the clients to choose desired exercises while also having exercise target areas of specific needs (Antonio et al., 2023).

## Technological Solution & Rationale

### Solution:

*Combine therapeutic activities with interactive components through the use of the Nintendo Wii™ to enhance social engagement and provide appropriate levels of physical and mental stimulation for clients with cognitive impairment.*

### Appropriateness of Solution:

- Allows for customization of intensity levels & durations based on client’s functioning level
- Accessible from home for clients with limited access to transportation, or clients who benefit from the familiarity of their home environment
- Diverse range of games available to target various areas of occupational performance
- Handheld wireless controller allows for accurate tracking of movements

## Cost

- **Cost of Wii and exercise games:** A Wii console, two game controllers, and two Wii sports games would cost approximately \$179.00
- **Low cost:** For a refurbished Wii console, one controller, and one Wii sport game, the low cost option would be approximately \$129.00.
- **High cost:** A high cost option for this technology would cost approximately \$300.00. This would include a Wii console, bundle package of Wii sports exercise games, and four game controllers. This option would be beneficial if there was a desire for more than two clients to participate in the exercises and would also aid in increased social engagement.
- The options of cost are appropriate for the community group as it is an interactive and engaging experience that incorporates a gamifying approach that provides a sense of achievement and progression, making exercise more enjoyable than traditional workout routines. Purchasing the technology offers accessible and low-impact exercises making for a cost-effective tool.

## Problem Statement

Dementia patients often lack physical and cognitive ability to initiate engagement in an activity, which can lead to boredom, isolation, and other behavioral symptoms like wandering. Research indicates that such inactivity has adverse effects on various health outcomes, particularly in terms of maintaining cognitive function. This lack of physical activity may contribute to an accelerated or heightened progression of cognitive impairments.

The decline in engagement in physical, cognitive, and social activity seen in people with memory loss can also greatly alter a person’s quality of life making it essential to implement interventions that lessen this decline. Additionally, the excessive time spent sitting in a chair or wheelchair seen with this population increases their risk of chronic health problems, weight gain, inflammation, and reduced blood flow in the brain. Therefore, behavioral interventions should be used to provide a means of positive engagement in exercise and cognitive activities for people with any stage of memory loss. Implementing these interventions with the use of assistive technology can be very effective in supporting independence in activities of daily living (ADLs) (Lancioni, 2018).



## Impact

### Occupational and Social Impact:

- Integrates cognitive abilities such as visual-spatial skills, hand-eye coordination, and reaction times
- Improves muscle strength, and endurance necessary to reduce fall risks and improve functional mobility for ADLs
- Requires participants to respond to visual feedback

### Community Implications:

- Console can be a major expense for the facility and could be an issue with funding
- The perceived benefits as well as the multiple uses of the console would be well worth the cost to purchase the console.
- Once purchased the product would be relatively easy to use with the assistance of the staff for guidance and verbal cues for the participants.



## Outcomes and Implementation

### Implementation

- OT can educate staff on implementation of the Wii
- OT can create a visual handout on instructions and benefits in the event OT cannot be there for education
- OT also can implement and educate on adaptations of the remote for clients who struggle with grasping fine motor control

### Outcomes

- Due to its ability to facilitate participation, cognition and movement, the wii can help enhance the lives of the older population
- Studies saw benefits occurring as early as 5 months after the implementation of the exercise program
- Short term outcomes that are expected include socialization among clients, decreased anxiety and depression levels, as well as instant feedback on performance levels

(Tobiasson et al, 2015).

## References

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