



The Assessment of Quality of Delivery and Participant Responsiveness in an Equipment-Based Resistance Program for Older Adults

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Abstract

Physical inactivity in older adults can lead to health degeneration and dependence on others to complete daily activities.

To address this issue, the OYO program was established. It includes a specialized handheld device called the OYO, for older adults who may not have access to a full gym. The OYO research study is a three-phase study. Phase 1 was a review of the literature. Phase 2 was a pilot test of the measurement tools and the study procedures. We are now in Phase 3 of the research, implementing the 8-week exercise program in local community centers and senior living facilities. This will help establish the fidelity of the program in the areas of adherence, exposure/dose, participant responsiveness, program differentiation, and quality of delivery. I assessed the quality of delivery of the program as well as participant responsiveness.

To assess the quality of delivery, I analyzed how the instructor moved through the room during individual training sessions. This helped to determine if the instructor was engaging in quality pedagogy. Overall, the instructor was consistent with his movements around the room, occasionally paying more attention to those who needed help. I also observed participant responsiveness through a System for Observing Fitness Instruction Time (SOFIT). The results indicate that participants were engaged in moderate-to-vigorous activity (MVPA) for an average of 61.15% of the session time throughout the program. This number indicates that improvements could be made to keep participants more engaged throughout the exercise session. This would also help improve the fidelity of the OYO program.

Background

Current societal trends show that as humans age, we become more sedentary as it relates to our physical movement. Additionally, more and more adults are not reaching the recommended amount of physical activity (MMWR Data Highlights, n.d.). Resistance training supports healthy aging as it can improve flexibility, walking efficacy, body composition, and physical function. Resistance training provides unique benefits to the musculoskeletal system and the physical, psychological, social, and emotional health of older adults (Jorge Marcus-Pardo, 2023). Traditional senior fitness programs can be costly and inconvenient due to the use of multiple pieces of equipment. In this study, our research team tested and will report on the fidelity of an invented piece of exercise equipment: the OYO gym (Clocksin et al, 2017) (Lewis, Z. H., Harrison, R. N., Clocksin, B. D., Auslander, A. T., & Killick, L. 2023). This hand-held, versatile resistance device was created by Ryan Harrison from Hillcrest Retirement Community. The OYO gym and program was established for older adults who may not have access to a full gym (for a variety of reasons). The study was designed to test the equipment as well as the prescribed exercise program.

The OYO research study is a three-phase study. Phase 1 was a systematic review of the internal and external validity of resistance-based exercise programs, specifically for older adults. This was completed in 2022. Phase 2 was a pilot test of the measurement tools and the study procedures and was also completed in 2022. We are now in Phase 3 of the research. We are currently implementing the 8-week exercise program in local community centers and senior living facilities using the OYO double flex device. This will help establish the fidelity of the program. The first assessment of the program took place at Azusa Senior Center in Azusa, California.

To assess the fidelity of the OYO gym, we looked at the five Pillars of Fidelity: Adherence, Exposure/Dose, Participant Responsiveness, Program Differentiation, and Quality of Delivery. These will also help establish the validity of the program and exercise. The Pillars of Fidelity were assessed through various means. Students, such as myself, observed the training sessions that the older adults participated in and recorded what we saw and how this pertains to the overall study. After delivering an initial senior fitness test, I assessed the quality of delivery of the program as well as participant responsiveness. A senior fitness test was also conducted after the program was over to determine if the participants had made any improvements to their initial fitness results.

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Methodology

In order to help establish the fidelity of the OYO program, a senior fitness test was administered to get a baseline of how active and capable the participants were before they started the exercise program. This was followed by the 8-week exercise program. Once completed, the participants were tested again for any improvements made to their initial fitness results.

The Senior Fitness Test (SFT) established for the participants was created in 2013 by Dr. Roberta Rikli and Dr. Jessie Jones of California State University, Fullerton (Rikli, 2013). It has proven to be a reliable assessment for the fitness of older adults. This test consists of seven activities: a chair stand, arm curl, chair sit-and-reach, back scratch, 8-foot up-and-go, grip strength, and a 6-minute walk test. The results of these tests together would give a good indication of what the participant is capable of and what they cannot do independently.

After obtaining a baseline of the participants' strengths and capabilities, they would be trained over the next 8 weeks on the OYO device and program. During this time, I assessed two of the five Pillars of Fidelity: quality of delivery and participant responsiveness.

To assess quality of delivery, I tracked the instructor's movement throughout six of his training sessions with the participants. One aspect of quality pedagogy is interacting with all participants to meet their needs and ensure proper form, so this was a focus of observation (Blatchford, 2011). Additionally, I assessed participant responsiveness through a System for Observing Fitness Instruction Time (SOFIT). To do this, I watched every exercise session in 10-second increments. I then looked for at least six seconds of MVPA (over half of the 10-second increment). If the participant was able to achieve MVPA for six seconds or more, that increment counted toward their overall time spent in MVPA.

Figure 1

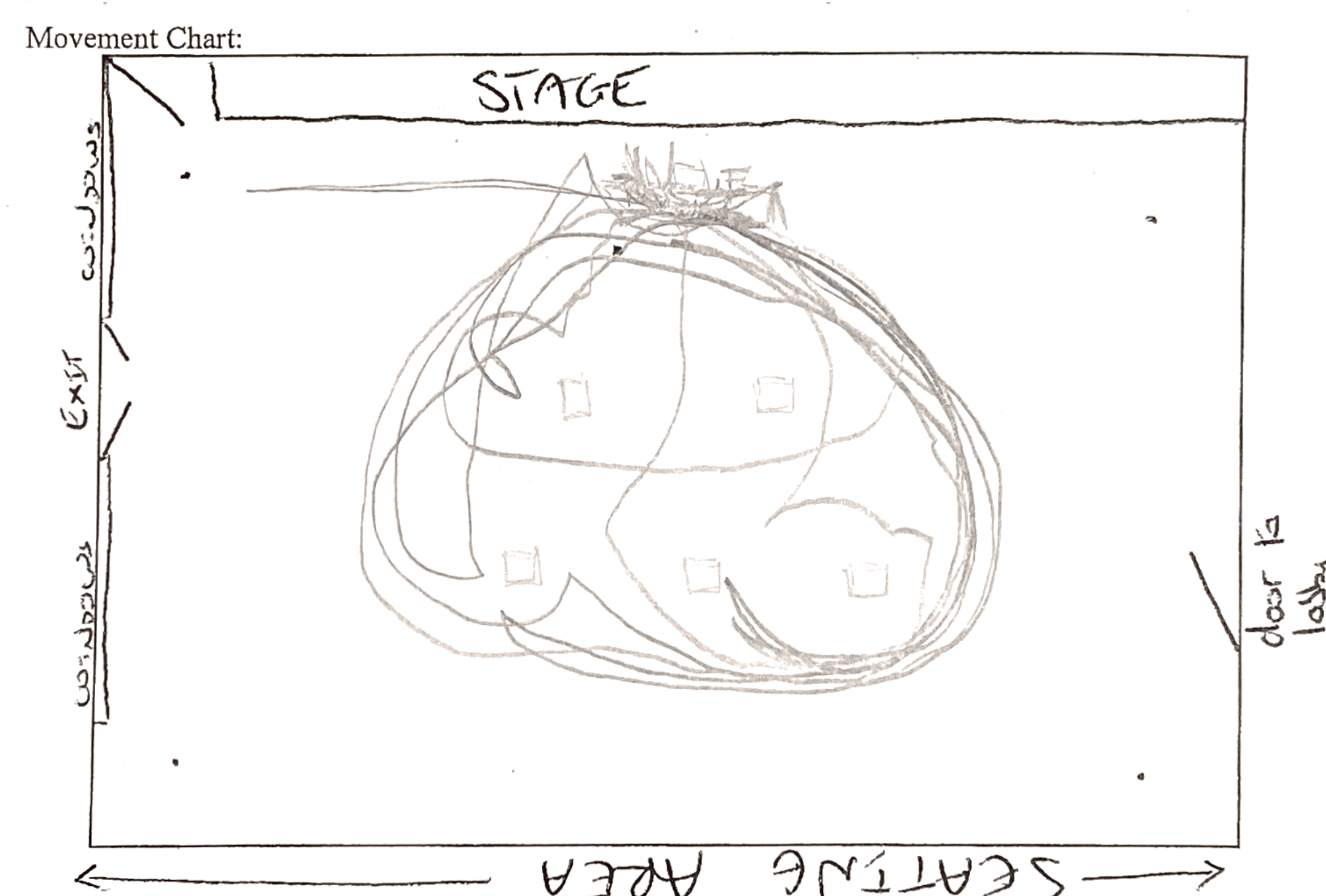


Figure 1 is a representation of a path that the instructor took around the room on any given day. He spends more time with certain individuals depending on their needs.

Results

When being assessed for quality of delivery, the instructor was able to make multiple laps around the room to help individuals during most sessions. He was observant and made sure everyone who needed any form of individual assistance got some. Figure 1 is an example of his path around the room during an exercise session. He stops where his attention is needed and stays at the front to demonstrate and help when needed. He engaged in quality pedagogy to the best of his ability, which may contribute to the overall fidelity of the OYO program.

Participant responsiveness varied on any given day due to the structure of the class and the motivation of the participant. Table 1 is a table of the percentage of time a participant spent in MVPA during one session. For this group of participants, MVPA means anything with the OYO device (as it provides resistance), walking with a purpose, bending, stretching to reach, catching, throwing, or balancing. The overall average amount of time spent in MVPA during the six exercise sessions was about 61.15 %.

Table 1

Session Number	1	2	3	4	5	6
% of Time Spent in MVPA	60.82	62.60	61.00	53.00	67.00	62.50

Discussion

Based on my observations, the instructor of the 8-week program engaged in quality pedagogy and delivered the program as the manual intended. This contributes to the fidelity of the OYO program, should future instructors do the same. Additionally, participant responsiveness has room for improvement. To ensure the fidelity of the OYO program, participant responsiveness could be increased to meet the site needs and the needs of the individuals.

Conclusion

Many variables are at play when looking at the fidelity of the OYO program, and while most of them should stay the same, some must be altered to meet the needs of the individuals. Additional research should address what variables can be changed to get the same if not better results at individual sites participating in the OYO program. The fidelity of the OYO program cannot be definitively confirmed at this time, as there must be more trials run at different sites to ensure the validity of the results observed in Azusa Senior Center. The OYO has the potential to be a real option for those with limited space and resources, however more research should also be done on how to improve participant responsiveness. This may mean that the OYO manual may be changed to reflect what the participants are more likely to do and enjoy, or alterations to the protocol of the instructor to better reflect what will keep participants engaged.

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