



The Fidelity of an OYO Fitness Based Program to Improve Physical Functioning in Older Adults



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Abstract

The present study investigates the fidelity of an OYO fitness based program. Partnering with Hillcrest Retirement Community in La Verne, the goal is to assess their senior fitness program. The objective of this research project is to determine if the program is taught as intended as well as measure the physical function of the participants. Eight participants were recruited between the ages of seventy four to eighty eight to participate in two weekly forty five minute long fitness sessions for a total of eight weeks. Each participant used an OYO personal gym with different resistance levels to complete a full body workout. To assess the program's fidelity, the quality of delivery of the program was tested by using an instructor feedback analysis to determine the intended purpose and time analysis to capture the level of participants engagement. The findings concluded for the time analysis data, an average of 79% of the eight week workout sessions involved the participants engaged in activity, 11% involved the participants receiving instruction, and 9% involved the participants engaging in management. The findings concluded for the instructor feedback analysis the largest prevalence of target feedback for all OYO fitness sessions was intended towards the whole class. The largest prevalence of purpose feedback for all OYO fitness sessions was intended for behavior. This pilot study will be expanded based on further research and feedback so that improvements and adjustments can be made so that the study can be implemented at future retirement locations.

Methodology

Eight participants between the ages of seventy four to eighty eight participated in an eight week long resistance training exercise program (Figure 1). The first week participants participated in a pre senior fitness test which tested their physical function abilities, measured their weight, height, and age. During the eight week pilot study, participants were given an OYO personal gym (Figure 2.) with different resistance training levels for a full body workout program. Twice a week for forty five minutes the eight participants engaged in a full body workout plan that increasingly progressed each week but that was tailored to their physical abilities (Figure 3). After the eight week exercise program, the eight participants participated in the same post senior fitness test to assess any improvements in their physical function. Researchers underwent nine hours of training over the course of three weeks to learn how to perform the senior fitness test, how to properly use the assessment tools, how to interact with participants, as well as collect and analyze video and audio data. Researchers assisted with pre, post, and on site testing over the course of the eight week experiment. Researchers analyzed the video and audio data collected over the course of eight weeks by being split into two groups. One group "Monday" analyzed all Monday OYO resistance training sessions and the "Wednesday" group analyzed all Wednesday OYO resistance training sessions. The instructor feedback analysis worksheet (Figure 4.) was used to analyze the quality of delivery and purpose of the feedback from the instructor to the participants. Researchers listed each statement and question of feedback they heard during each exercise session and indicated by checking the appropriate box if the target was an individual participant, small group, or whole class. Researchers analyzed the intended purpose of the feedback/question by checking the box if the feedback was intended for skill development, behavior, checking for understanding, motivation, or other. The time analysis worksheet (Figure 5) was used to analyze a majority (51%+) of participants' engagement every fifteen seconds during the forty five minute workout session. An (A) was assigned for activity when most participants (50%) were performing physical movement. An (I) was assigned for instruction when most participants (50%) were receiving feedback on how to perform a skill. An (M) was assigned when the participants were involved in changing activities, changing equipment, listening to rules, or preparing for upcoming exercises. The total number of intervals were multiplied by the total time to determine the percentage of all activity, instruction, and management for each exercise session.



Figure 1. Participants engaging in resistance training fitness sessions.



Figure 3. Participants engaging in resistance training fitness sessions.



Figure 2. OYO personal portable gym participants used during fitness sessions ("OYO Personal Gym", n.d.).

Background

As adults age there is a decline in their physical function as well as an increase in muscle weakness (Liu & Latham, 2009). Having older adults engage in progressive resistance programs like OYO, will allow them to increase their strength and decrease their muscle weakness (Liu & Latham, 2009). As humans age changes occur in their skeletal muscle such as the loss of muscle mass and musculoskeletal deformities (Papa et al., 2017). Research has demonstrated that resistance training can increase changes in mobility, increase gait speed, improve balance, and reduce the risk of falls in older adults (Papa et al., 2017). Due to aging this can negatively impact an adult's daily lifestyle but by engaging in a resistance program this can help to slow down the process of aging and increase their quality of life (Syed-Abdul, 2021). Engaging in a regular resistance program can help to maintain healthy blood glucose levels, cholesterol levels, and lipid levels. As well as slow down muscular changes, improve the health of bones, improve overall psychological health levels, and increase sleep levels (Syed-Abdul, 2021). The OYO is an exercise device that applies resistance to the muscles. The OYO uses strength and movement without the use of weight and can be easily portable ("OYO Personal Gym", n.d.). The OYO weighs two pounds and uses flex packs of five to ten pounds of resistance to be added onto the OYO for smooth resistance training ("OYO Personal Gym", n.d.). The OYO provides abduction and adduction resistance movements for a wide range of exercises to be completed in all areas of movement ("OYO Personal Gym", n.d.). The purpose of this pilot study is to assess a senior fitness program and determine if the program is taught as intended as well as measure the physical function of the participants. This pilot study will be used to design future studies and increase the number of participants to see if the eight week long experiment has any significant impact on physical function when participants engage in resistance training using the OYO.

Results

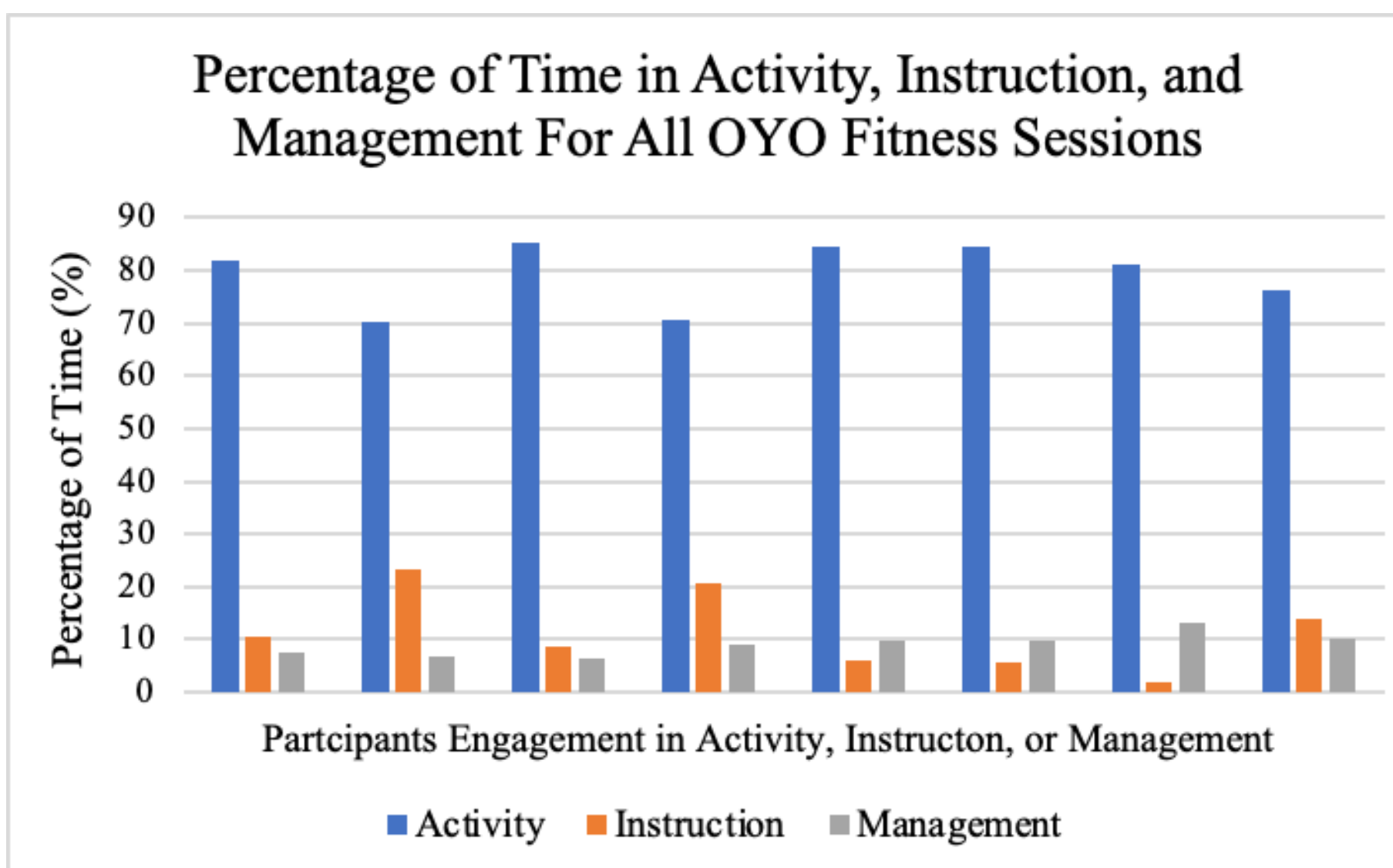


Figure 6. Amount of time in percent participants engaged in activity, instruction, and management for the duration of the eight-week fitness session.

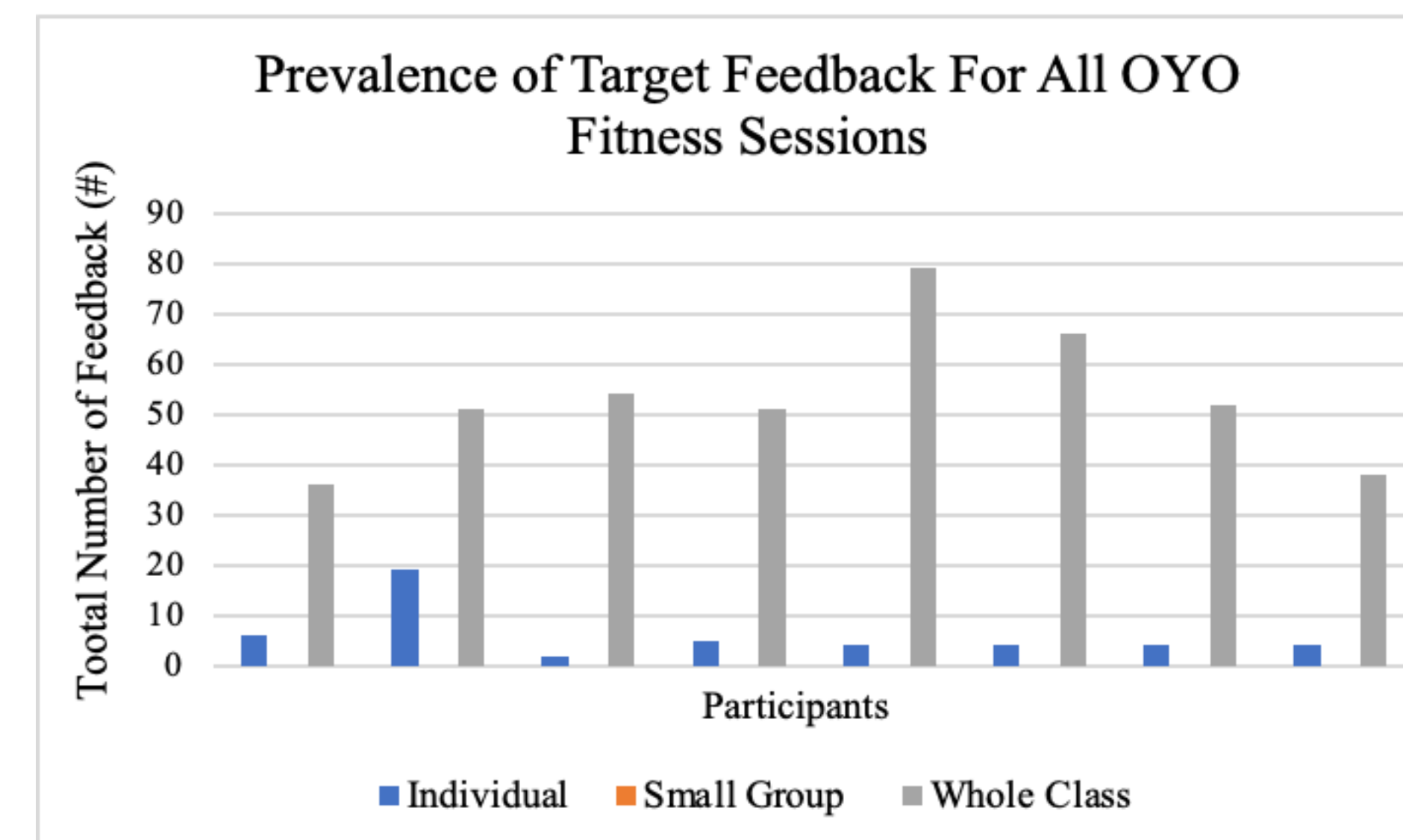


Figure 7. Prevalence of feedback targeted towards individual participants, small groups, and the whole class for the duration of the eight-week fitness session.

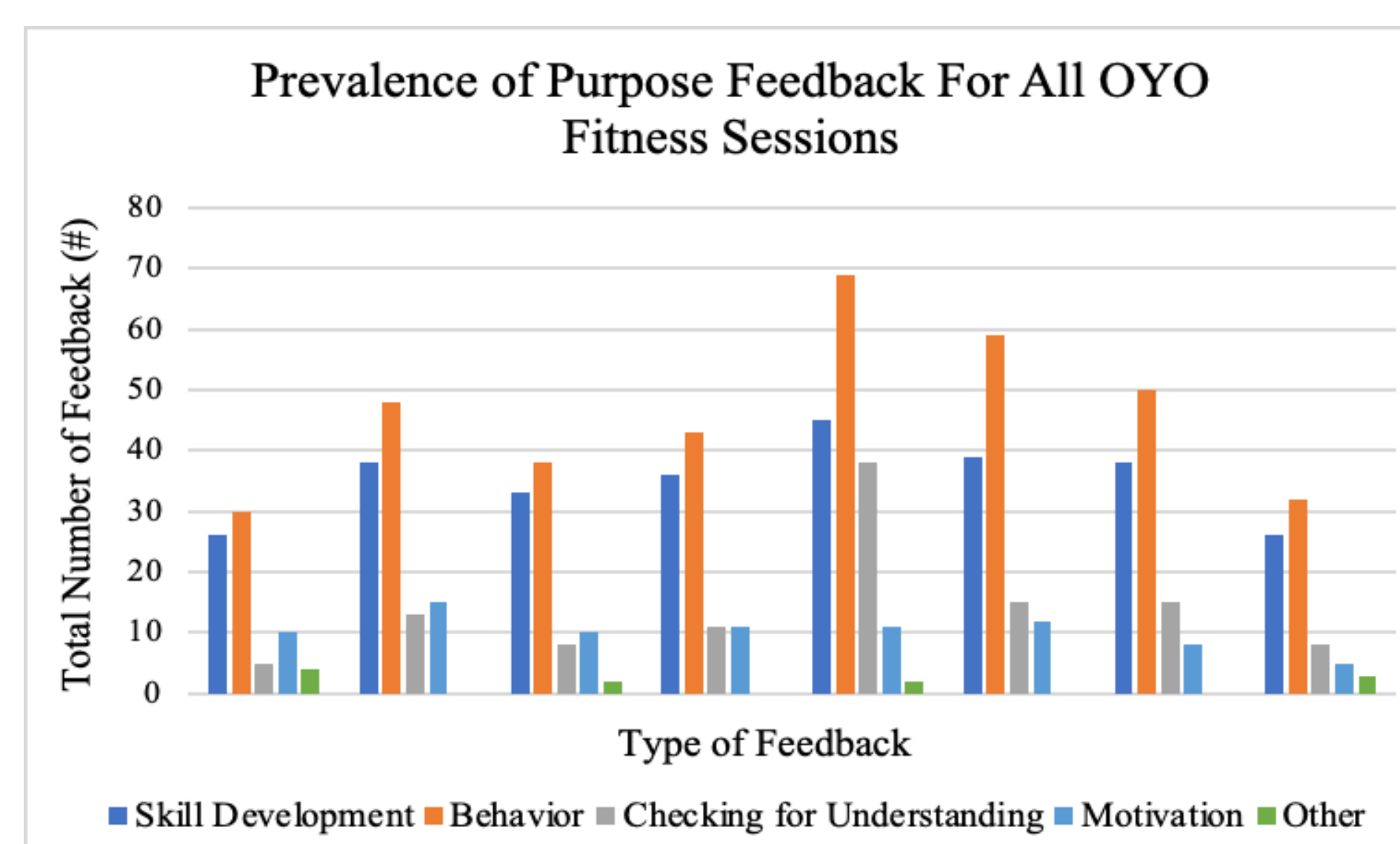


Figure 8. Prevalence of the purpose of feedback regarding skill development, behavior, checking for understanding, motivation, and other for the duration of the eight-week fitness session.

Discussion

The results shown above (Figure 6) for the time analysis data analyze the prevalence of the time percentage distribution in each individual fitness session as well as all fitness sessions across the eight week study. Participants on average spent a time percentage of 79% of the fitness session performing activity. The next largest time percentage involved the participants on average for 11% of all fitness sessions listening to instruction. On average 9% of the overall fitness workout sessions had the participants engaging in management. Figure 6 shows the activity category in blue, far exceeding the time percentage of instruction category in orange and management category in gray for each individual session and all sessions overall. This data can infer that for around 79% of the resistance training session all participants were heavily engaged in performing activity using the OYO personal gym. Around 11% of the resistance training session engaged participants in instruction which is not a big percentage. This can infer that participants did not receive as much instruction on how to properly perform the exercise, the instructors did not break down the exercises properly, or the participants were engaging in activity while the instructors were giving feedback. Around 9% of the resistance training sessions involved participants receiving management tips which is a very small percentage of time across the span of eight weeks. This data can infer a small amount of time over all eight week sessions involved participants changing equipment, taking breaks, or listening to rules and procedures. The errors that could have occurred when using the time analysis worksheet is that there were judgment errors when labeling the actions of the participants or instructors as activity, instruction, or feedback. Other errors could have occurred are errors in calculation of time percentage and errors in miscounting fifteen second segments of the online videos. The results shown above (Figure 7) for the instructor feedback data analyze the prevalence of target feedback in each individual fitness session as well as all fitness sessions across the eight week study. Figure 7 shows the total number of feedback per session and overall sessions based on the intended target of feedback from the instructor. When analyzing the data, there were zero feedback comments made to small groups in the session which is why the orange category for "Small Group" is not present on the graph. Across the span of eight fitness sessions, a total of 48 "Individual" responses of feedback were given to participants from the instructor shown in the blue category. This individual feedback allowed for the instructor one on one to communicate and correct the participants behavior and movement to allow for better understanding of how to use the OYO and gain more range of motion out of the movement. Across the span of the eight fitness sessions, a total of 427 responses of feedback were given to the "Whole Class" from the instructor shown in the gray category. The group feedback allowed for the instructor to target all participants to easily provide generalized feedback during demonstrations so that all participants could be included. The results shown from (Figure 8) shown above for the instructor feedback data analyze the prevalence of purpose feedback in each individual fitness session as well as all fitness sessions across the eight week study. Figure 8 shows the total number of feedback per session and overall sessions for the intended purpose of the feedback from the instructor. When analyzing the data, the largest prevalence of feedback at 369 comments across the span of the eight week session had an intended purpose of "Behavior" as shown in the orange category. The second largest prevalence of feedback at 281 comments across the span of the eight week session had an intended purpose of "Skill Development" as shown in the blue category. The third largest prevalence of feedback at 113 comments across the span of the eight week session had an intended purpose of "Checking for Understanding" as shown in the gray category. The fourth largest prevalence of feedback at 82 comments across the span of the eight week session had an intended purpose of "Motivation" as shown in the light blue category. The smallest prevalence of feedback at 11 comments across the span of the eight week session had an intended purpose of "Other" such as the use of safety as shown in the green category. This data shows that the instructor intended for their feedback to correct behavior and check for their understanding of how to accurately perform exercises, how to use the OYO properly, and target the effective body parts to gain the most out of the resistance program. The errors that could have happened when using the instructor feedback worksheet is that there were judgment errors when assuming the intended purpose of the feedback from the instructor.

Conclusion

This pilot study shows the importance of how instructor feedback and the quality of delivery of movement, instruction, and management can influence a participants, level of understanding and engagement during a resistance training program. This eight-week study found through the time analysis worksheet data that the majority of the OYO resistance training session and all eight-week sessions as a total focused on activity followed by instruction then management. The importance of activity during these sections is that all participants were actively moving and using the OYO to improve their physical function. This eight-week study found through the instructor feedback worksheet data that the intended target of feedback was geared towards the class as a whole with very little feedback intended towards individual participants. The intended purpose of the feedback was to correct behavior and check for understanding of the skills developed. The fidelity and validity of this pilot study was measured by using the time analysis and instructor feedback worksheets. Future research and adjustments will be made to correct errors so that this study can be expanded at further retirement communities. As this is a pilot study there are not enough participants to make the pre and post data statistically significant. This data collected from the pilot study will help determine the best way to design the assessments moving forward. This pilot study can be used to help influence older adults to actively participate in resistance training programs, obtain an OYO personal gym, and be as active as they can in their daily lives to improve physical function.

Acknowledgements

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Figure 4. Instructor feedback worksheet used to analyze online recording data during the eight-week fitness sessions.

Figure 5. Time analysis worksheet used to analyze online recording data during the eight-week fitness sessions.

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