

IRB Background

Many studies have been conducted that examine facilitators and barriers to sustained exercise and physical activity in older adults; however, few examine the Otago program specifically. The Otago Exercise Program is a strength and balance exercise program which has been shown to be effective in reducing falls and injuries associated with falls in high risk older adults and has been recommended by the Centers for Disease Control as an effective program to prevent falls.^{1,2} The proposed project will examine participation, adherence, and associated facilitators and barriers for individuals who participated in one of two Otago programs delivered in continuing care retirement community (CCRC) settings. One utilized the full Otago program which includes progressive strength and balance exercises performed at home in addition to a walking program. The second program was an Otago-based group exercise class that was led and supervised by facility staff members.

Very few studies that address exercise facilitators and barriers in older adults include individuals residing in CCRCs. In reviewing prior literature available regarding facilitators and barriers for regular exercise in older adults, there are some similarities that emerge from prior qualitative studies depending on the setting and patient population. McInnes and Askie performed a systematic review of 24 studies, both qualitative and quantitative, that examined the experience of older adults who had participated in falls prevention programs.³ These studies included participants who were community-dwelling older adults, patients in rehabilitation wards, and individuals residing in nursing home facilities.³ Some of the participants in these studies preferred strategies for falls prevention that did not require a behavior change; however, the effectiveness of these types of strategies is unclear.³ The social value of these programs was reported as a facilitator for participation.³ Additionally, the authors highlighted the need to confirm with participants what elements of their lifestyle and usual activities they would be willing to change in order to prevent falls, so that participants can be matched to programs that are likely to be beneficial to them.³ Results of qualitative studies revealed that programs that included a peer role model, were home-based, low intensity, supervised via telephone, occurred with moderate frequency, and were perceived as beneficial, fun, and relevant were likely to have greater participation.³ Barriers reported in these studies included illness, embarrassment, low self-efficacy, unawareness or denial of personal risk of falling, and fear of falling.³

A systematic review conducted by Finnegan et al. examined qualitative and mixed method studies analyzing the experience of community-dwelling individuals, 65 years of age or older, pertaining to their participation in an exercise-based falls prevention program, and their ongoing exercise behaviors.⁴ The 14 studies included in the review revealed that the participants' exercise habits were often reflective of their prior exercise behavior.⁴ The desire to maintain good health or the presence of ill health were cited as reasons for continued or curtailed exercises respectively.⁴ Limited time was also frequently given as a reason for not exercising. Support from family and friends was reported as a motivator when individuals were able to continue exercising with someone following the conclusion of their program; however, in some cases family members were reported to be a barrier when their concerns about the safety of the exercise led to activity restrictions.⁴ If participants had met their goal and/or felt that their typical level of activity was sufficient exercise, they often stopped exercising. The social aspect of the

program also operated as a motivator for many, while cost of ongoing exercise programs functioned as a barrier.⁴

Sandlund et al examined uptake and adherence for exercise-based falls prevention programs for community-dwelling older adults in Sweden.⁵ They reported that gender did not appear to play a significant role, but it was important to have exercises that were individually tailored to participants.⁵ They report that motivators for initiating exercise included treating an injury or medical condition, preserving health, information, and the encouragement of family or a medical provider.⁵ Having a knowledgeable and likeable instructor was also a motivator.⁵ Barriers reported to inhibit exercise included lack of self-discipline, societal expectations, barriers from the environment, poor health, and the feeling of being fragile or vulnerable.⁵ Many participants confirmed that using personal tricks to increase adherence to regular exercise and to make the activity more enjoyable (e.g. listen to music, exercise outside) worked to help motivate them to continue to exercise.⁵

In reviewing the prior literature on this topic, three studies utilized the Otago exercise program or a derivative of the program with their participants. Meyer et al. examined the experience of participants and physiotherapists with a home exercise program for individuals with mild balance dysfunction.⁶ The intervention was based on the Otago program and the VHI Balance and Vestibular kit. Participants lived independently or at a retirement village. Again, individualization of the intervention and understanding each individual's unique circumstances were found to enhance adoption of the exercise program.⁶ The social benefit of exercising was also reported once again as a motivator. Participants reported that their exercises made them more functionally independent and able to participate in life events functioning as a motivator to continue exercising. Boring or tedious activities discouraged exercising. The ability to exercise on their own schedule in their own homes was a motivator for some.⁶

The Otago program was also used in the study by Arkkukangas et al.⁷ They examined facilitators and barriers to completing a home-based exercise program with support for behavioral change.⁷ Facilitators for regular exercise included having personal goals that could be achieved through exercise, easy access to exercise, a routine that involved regular exercise, and an environment that is supportive of exercising.⁷ Support from the physical therapist and the use of an exercise diary also encouraged exercise adherence. However, some participants reported a negative feeling towards the exercise diary when life events kept them from exercising.⁷ Individuals also reported that physical gains such as balance and strength improvements that they noticed after performing their exercises acted as a motivator.⁷ The lack of soreness or negative side-effects from the exercises encouraged continued participation in the program.⁷ Some individuals reported that feeling weak or frail contributed to them limiting their daily activities, but for some this also supported the need to continue exercising with increased caution and awareness of their surroundings to minimize the risk of falling.⁷

In addition to the previous two studies, Maula et al. studied the experience of community-dwelling individuals who participated in two balance and strength exercise programs, one of which used the Otago home-based exercises.⁸ Facilitators identified in this study included enjoyment, physical benefits, and increased physical autonomy.⁸ Motivation and self-efficacy with the activities, encouragement from a partner, and converting their exercises into a habit also

helped motivate individuals to continue to exercise.⁸ Personal illness and being too busy were identified as barriers to exercise.⁸ However, the illness of a friend or family member could be perceived as motivational in order to preserve the participant's own health. Depression, negative attitudes toward physical activity, memory impairments, and transportation, cost, or weather impediments could all act as barriers limiting physical activity maintenance.⁸

No studies that examine the experience of individuals living in CCRCs who participate in Otago exercises have been identified. CCRCs are a growing industry offering residential opportunities for the expanding older adult population along the continuum of health care needs. There are approximately 2,000 CCRCs nationwide providing services to 700,000 residents, up from 700 CCRCs in 1986.^{9,10} Given that a growing percentage of the older adult population is residing in CCRCs, it is important to know more about how individuals living in these facilities, who may be more limited physically or cognitively, respond to exercise-based interventions and what tools can be used to improve their ongoing participation in exercise-based falls prevention programs, like the Otago program. Examining both a home-based and group-based program utilizing the Otago exercises will provide a better understanding of how exercise setting and social interactions impact the experience of an exercise intervention and adherence over time. Additional research is needed to better understand and promote adherence and participation in programs that prevent falls in individuals living in continuing care retirement communities.

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