THE EFFECT OF HIKING AND THE OTAGO PROGRAM ON IMPROVING BALANCE PARAMETERS IN ELDERLY RESIDENTS IN ALBANIAN NURSING HOMES. (RESEARCH METHODOLOGY)

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Abstract. *With increasing age, neuromuscular deficits can result in impaired physical performance and increased risk of falls in those over 65 years of age. The main intrinsic risk factors for falls are age-related gradual decline in balance and strength/power performance, as well as other known factors. With the decline in fertility and the increase in the percentage of people over 65 years of age, additional studies are needed to develop exercise programs specifically tailored for the elderly, programs that can be easily implemented in clinical practice in home or nursing home settings. The objectives of this study are to evaluate the causes and factors that cause falls at this age and to prove the effects of a preventive exercise program based on two main pillars: the OTAGO exercise program and walking. Knowledge of the relationship between balance, strength, and power is important for identifying individuals at risk because deficits in these neuromuscular components are associated with an increased risk of injury and falls. In addition, this knowledge is of great importance for the development of special exercise programs adapted to the physical condition of individuals of this age group. Improvements in balance, strength and power are directly related to health and quality of life.*

Keywords**:** falls prevention; nursing home support services; quality of life; older people; OTAGO exercise program.

Introduction

From the literature of the last ten years, we see serious efforts by scientific researchers in studies that argue with concrete evidence the positive impact of various physical and sports activities even on the elderly over 65. Also, an important place in these studies is occupied by subjects who are residents of nursing homes. Exercise's role in reducing falls has been the subject of a recent study. Successful interventions include Tai Chi (Wolf et al., 1997), supervised strength and endurance training (Buchner et al., 1997), and at-home exercises suggested by a specialized nurse (Robertson, 2001) or physiotherapist (Gillespie et al., 2012; Campbell et al., 1999). Furthermore, it has been demonstrated that exercise can lower the risk factors linked to falls (Lord et al., 1995; Sanders et al., 2010). A recent factorial design trial also revealed a substantial reduction in falls among those randomly assigned to exercise intervention. But not every intervention has worked (Province, 1995; Gillespie et al., 2000) and it has been hypothesized that certain studies' inefficiency may have been caused by enrolling participants who were not at a high enough risk of falling. As a matter of fact, the most likely beneficiaries of the therapies in the recent successful trials are the elderly with deficiencies in strength and balance (Buchner et al., 1997) ladies ageing over 80

(Gillespie et al., 2012; Campbell et al., 1999) and individuals ageing 70 and above who have one or more fall risk factors (Tinetti et al., 1994). Evaluating the efficacy of therapies that are long-term, sustainable, and acceptable to older adults is crucial from the standpoint of public health (Glasgow et al., 1999). These demands may be satisfied by community-based group fitness programs that are easily accessible, reasonably priced, and offered at times and frequencies that are appropriate for senior citizens. However, there is insufficient information available to assess the effectiveness of group exercise programs for older people thought to be at risk of falling. Using a standardized assessment screen, hospital physiotherapists and general practitioners (GPs) identified 163 older patients as having potential risk factors for falling. We conducted a randomized controlled trial of supervised group exercise for these people to address these concerns. The intervention with exercise Participants who were randomized to the intervention arm participated in a community-based, weekly organized exercise group run. All classes were led by a certified exercise instructor who had received training in the same course. The study had three teachers in all. These one-hour classes took place over the course of four terms in a year, totaling 37 sessions. A physiotherapist specifically addressed physical fall risk factors in the content of the class. Resistance bands and the participants' own body weight were used for both the upper and lower limbs during strength training exercises, including wall press-ups and sit-to-stands.

Fast walking, together with direction and tempo changes, addressed aerobic activity. During the ten-minute cool-down, the participants stretched gently and then practiced controlled breathing and relaxation while sitting. The group selected the music for each workout, which was performed to it. Over the course of the four terms, the exercise's complexity, pace, and band resistance were all gradually raised. There were six to eighteen exercise subjects (mean = 9) in each group. The participants were also given a home workout routine that was based on the material covered in class, along with participation diaries. In addition, the exercise groups were given advice on how to prevent falls by using sensible techniques, including placing their hands and feet appropriately in case of losing their balance.

According to Cumming et al. (2000), falls are one of the most prevalent age-related health issues affecting older people. They also frequently result in hospitalization for injuries, a loss of independence, and a lower quality of life. Exercise alone has been shown to help address the physiological deficits that are part of the complex etiology of falls and can reduce the rate of falls by about 30%. Exercises that particularly challenge balance have been shown to be especially effective in this regard (Sherrington et al., 2011; Gillespie et al., 2012).

One low-cost, low-impact exercise option is walking. In addition to improving overall health and quality of life, it plays a crucial role in the prevention and treatment of numerous diseases. Walking is a basic activity that anyone may practice since it doesn't require any specific expertise or equipment (Morris & Hardman, 1997). According to a review by Tudor-Locke et al. (2011), older individuals should walk between 7,000 and 10,000 steps per day to obtain the same health benefits as 30 minutes of moderate-to-intense physical exercise. Another suggestion is that older adults walk at a moderate effort for thirty minutes a day, or three thousand steps per day (Marshall et al., 2009). Walking helps with balancing components and psychological concerns connected to

falls (Okubo et al., 2014). The authors discovered that walking for 30 minutes at a self-determined pace, two or three times a week, reduced the incidence of falls in older adults over the course of a 16-month application period (Okubo et al., 2015).

Dancing is a sophisticated sensorimotor rhythmic activity that integrates diverse physical, cognitive, and social elements, making it capable of improving a wide range of physical and cognitive fall risk factors. For many people, dancing is a more fun social workout than many basic, repetitive strength and balance routines that are often performed alone. Dance may be a helpful fall prevention strategy, according to research on the extraordinary balancing skills of young professional dancers (Judge, 2003). Since then, numerous research papers involving senior citizens and dance have been published (Keogh et al., 2009), offering proof of dance's beneficial effects on gait and balance—two of the main risk factors for falls among the elderly (Ganz et al., 2007). A cross-sectional study has shown that older people who dance have better gait and balance qualities than age-matched controls (Verghese, 2006; Jian-Guo et al., 2008).

The OTAGO fitness programme is a personalized, planned, progressive exercise regimen that may be done at home, according to Campbell et al. (1997). OEP has been evaluated in numerous studies conducted in a variety of countries and circumstances (Benavent-Caballer et al., 2016). In a previous study on the Otago fitness programme, men and women over 70 were randomly assigned to experimental and control groups. The OTAGO exercises improved muscle strength, improved balance, and reduced the chance of falling. The OTAGO Exercise Programme (OEP) is one of the most popular exercise regimens for preventing falls in older individuals.

Methods

The investigation will be predicated on initial laboratory tests that will ascertain the levels of static and dynamic balance in the experimental and control groups. People +65 years who live and receive care in Tirana's state and private nursing homes, who can independently carry out basic daily needs, have fallen at least once in the past 12 months, and have successfully finished the international standardized questionnaire (EQ-5D-3L) which will be included in the study.

The premise of the intervention is that:

a. The experimental group will be treated with an OTAGO program three times a week for 12 weeks, and once a week they will walk with different volumes, intensities, and rests, along with dancing elements.

b. The control group will continue to follow its own daily routine and plans regardless of how the two experimental groups perform.

During weeks 1-4, the elderly will walk with experimental group 1 at a moderate pace, at a pace of 70 steps per minute, for 3000 steps or 45 minutes each day, three times a week.

- In weeks 5-8, the elderly will walk with experimental group 1 three times a week at a moderate pace of 85 steps per minute, which equates to 4500 steps per day or 50 minutes per day.

- During weeks 9–12, the elderly will walk with experimental group 1, increasing the intensity to 6000 steps per day or 60 minutes per day, three times a week, at a pace of 100 steps per minute.

Participants should try to walk for 30 to 60 minutes at their usual pace three times a week. You can break up the walk into shorter segments, like three 10-minute intervals, if you notice that the elderly are getting tired. It is recommended for elderly individuals with significant health conditions to be accompanied for the entire trekking program.

Experimental group 1 will take part in 45–60 minute weekend Latin/waltz dance courses for a total of 13 sessions, or 12 weeks in a row. Dancing is more about relaxing techniques and group social therapy than it is about achieving physical goals. This will be regarded as music therapy as well.

The Sports University of Tirana's Biomechanics Laboratory will host the exams.

1. CRT: Chair Rising Test, often known as the Chair Rising Test
2. Romberg Test (arms in front, eyes open and closed)
3. Balance exercise in a semi-tandem stance (arms at the sides, eyes open and closed)

Discussions / Conclusions

To maximize performance improvements, the literature review and study design seek to ascertain the quantitative relationships between balance training modalities (i.e., training duration, frequency, and volume) and equilibrium in healthy adults 65 years of age and older, mainly among residents or guests in assisted living facilities (public or private). The balance training regimens used in this study to improve performance and balance in healthy older adults over 65 are the first of their kind, and to the best of our knowledge, it is the first of its kind to be produced at the academic level in our nation.

We anticipate that the nursing home community will welcome the 12-week training period, three weekly sessions, 36 training sessions total, each lasting 30 to 60 minutes, and a weekly total of 90 to 120 minutes of OTAGO exercise program (without walking time) combined with 12 dance sessions (one every weekend). This will increase their confidence that everything in this study is for improving their quality of life, which will ultimately result in a 30 to 40% improvement in their balance, thereby reducing the number of falls. For this relatively fragile age group, falls are one of the most delicate topics, and peers, families, and legislators frequently ignore them.

Our research will provide fresh scientific data and recommendations on load-dosing relationships to improve the efficacy of practitioners' and therapists' procedures for enhancing balance. It will also highlight the necessity for research that combines meticulously designed programs with balanced training. The expected significant improvement in balance of 30–40% would be a significant achievement for Albanian physical activity in the health domain. In turn, this would enhance the quality of life for the elderly population and drastically reduce the costs of the national health system, which has largely come to consider falls and the effects they cause to be an emergency in the previous ten years.

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