

**IMPLEMENTATION OF GROUP BASED EXERCISES BY PEER INSTRUCTORS:
A FEASIBILITY STUDY IN THE ELDERLY POPULATION**

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ABSTRACT

Implementation of group based exercises by peer instructors: a feasibility study in the elderly population

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Background and purpose of the study

By the year 2035, the number of persons ≥ 75 years of age will have doubled in Finland. There is convincing evidence for the importance of regular, moderate intensity physical activity for public health gain. Exercise programs need to be developed that can reach the elderly effectively, make optimal use of available resources and are cost effective, thus augmenting state services. The purpose of this study is to evaluate the process and feasibility of a program where peer instructors were educated to implement group based exercises in local pensioner's societies in Finland.

Research methods and data

48 peer instructors (>75 years of age) from 20 societies were trained to establish and lead exercise groups of eligible participants from among their society members. They administered tests of functional ability, obtained information on current physical activity through questionnaires and maintained a diary of exercise session contents. Feedback was collected from both participants and peer instructors. Data analysis included evaluation of recruitment, implementation, achievements as perceived by participants and feasibility of conducting group-based exercise sessions using peer instructors. Program feasibility included the components of reach, safety, drop-outs, participant satisfaction and expenditure. Data was recorded and analyzed using SPSS for Windows 16.0 and Microsoft Office software.

Results

Peer instructors recruited a total of 268 participants from a population base of 1318 eligible society members. The mean age of participants was 77.7 (SD 4.8) years. Exercise sessions were held 1-2 times a week with average participation of 10.9 persons per session. 48.5% of the total exercise time was spent on strengthening and/or balance training. 79.3% of the recruited participants were aged ≥ 75 years. 45.5% of the participants experienced difficulty or were not able to walk a distance of two kilometres and 27.4% experienced difficulty or could not climb a flight of stairs even with assistance. Approximately € 180 was spent per person per year. 73.7% of the participants attended the exercise sessions regularly ($>80\%$ sessions), while 12.2% dropped out. Program safety and participant satisfaction were high.

Conclusions

Group exercise sessions can be successfully implemented by peer instructors in the elderly population; thus facilitating healthy and independent living amongst the elderly. The program is a feasible method for the promotion of physical activity among the elderly.

Keywords: Aged, group exercise, peer instructors, feasibility

TIIVISTELMA

Vertaisohjaajien toteuttamien ryhmäharjoitusten käyttöön otto: tutkimus toteutusmahdollisuuksista iäkkäässä väestössä

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Tutkimuksen tausta ja tarkoitus

Vuoteen 2035 mennessä ≥ 75 vuotiaiden henkilöiden määrä tulee kaksinkertaistumaan Suomessa. On olemassa vaikuttavaa näyttöä säännöllisen, kohtuullisella teholla toteutetun fyysisen aktiivisuuden tärkeydestä väestön terveyden lisääntymiseen. On kehitettävä sellaisia harjoitusohjelmia jotka tavoittavat kohderyhmän tehokkaasti, käyttävät hyväksi olemassa olevia voimavaroja optimaalisesti ja ovat kustannustehokkaita, tukien kunnan antamia palveluita. Tämän tutkimuksen tarkoituksena on arvioida ohjelman toteuttavuutta ja prosessia, jossa vertaisohjaajat koulutettiin toteuttamaan ryhmämuotoista harjoittelua, paikallisissa eläkeläisyhdistyksissä Suomessa.

Tutkimusmenetelmät ja aineisto

48 vertaisohjaajaa (> 75 vuotiaista) 20:stä yhdistyksestä koulutettiin perustamaan ja johtamaan harjoitteluryhmiä, joihin he valitsivat sopivat osallistujat yhdistystensä jäsenistä. Vertaisohjaajat tekivät toimintakykytestejä, selvittivät kyselykaavakkeiden avulla osallistujien tämän hetkistä fyysistä aktiivisuutta sekä pitivät päiväkirjaa kunkin harjoituskerran sisällöstä. Palautetta kerättiin osallistujilta ja vertaisohjaajilta. Aineiston analysointi sisälsi arvioinnin ryhmän kokoamisesta, käytännön toteutuksesta ja osallistujien omasta kokemuksesta. Samalla arvioitiin ryhmäharjoittelun totuttavuutta käytettäessä vertaisohjaajia. Aineisto tallennettiin ja analysoitiin SPSS for Windows 16.0 ja Microsoft Office:n ohjelmia käyttäen.

Tulokset

Vertaisohjaajat valitsivat 268 osallistujaa, joiden keskiikä oli 77.7 (SD 4.8) vuotta. Harjoitukset pidettiin 1-2 kertaa viikossa ja keskimäärin 10.9 osallistujaa oli harjoituskerralla. 48.5 % harjoitusajasta käytettiin voima- ja/tai tasapainoharjoituksiin. 79.3% valituista osallistujista oli ≥ 75 vuotiaita. 45.5% kokivat vaikeaksi tai eivät kyenneet kävelemään kahden kilometrin matkaa. 27.7% kokivat vaikeaksi tai eivät kyenneet nousemaan portaita edes avustettuna. Vuosikustannukset olivat keskimäärin 180 € henkilöä kohden. 73.7% osallistujista osallistui harjoituksiin säännöllisesti ($> 80\%$ harjoituskerroista) ja 12.2 % keskeytti. Ohjelman turvallisuus ja osallistujien tyytyväisyys arvioitiin korkeiksi.

Johtopäätökset

Vertaisohjaajat voivat menestyksellisesti huolehtia iäkkään väestön ryhmämuotoisten harjoittelijaksojen käytännön toteutuksesta. Täten tuetaan iäkkäiden terveyttä ja itsenäistä elämää. Ohjelma on toteutettavissa oleva menetelmä edistämään iäkkään väestön fyysistä aktiivisuutta.

Asiasanat: Iäkkäät, ryhmäharjoittelua, vertaisohjaaja, toteutettavuus

CONTENTS

1. INTRODUCTION	1
2. BACKGROUND	3
3. PROGRAM OVERVIEW: ELINVOIMAA – 75+	11
4. PURPOSE AND DESIGN OF THE STUDY	13
5. METHODS	14
5.1 Subjects and recruitment	14
5.2 Procedures	14
5.2.1 Peer instructor training	14
5.2.2 Implementation of exercise groups by peer instructors	16
5.2.3 Interval camps for peer instructors and participants	16
5.3 Data Collection	17
5.3.1 Background data	17
5.3.2 Tests of functional ability	17
5.3.3 Physical activity questionnaire	19
5.3.4 Peer instructor diary on exercise session content	19
5.3.5 Feedback forms	19
5.4 Statistical analysis	19
6. RESULTS	20
6.1 Program participation	20
6.1.1 Recruitment of participants	20
6.1.2 Characteristics of recruited participants	21
6.2 Program implementation	23
6.2.1 Program implementation by peer instructors	23
6.2.2 Administration of tests and data collection	25
6.2.3 Program feasibility	26
6.3 Program outcome	32
7. DISCUSSION	35
8. CONCLUSIONS	41
9. REFERENCES	42

APPENDICES

- Appendix 1: Physical activity questionnaire**
- Appendix 2: Feedback form from peer instructors**
- Appendix 3: Feedback form from participants**
- Appendix 4: Health status questionnaire**

1. INTRODUCTION

Over the next few decades, the Finnish nation will be ageing fast. According to the National Institute for Health and Welfare (STAKES), by the year 2035, the number of persons aged 75 years and more will have doubled. As the population's age structure changes, the whole of society has to adjust to the needs of a growing number of older people (MSAH 2008).

It is in the interest of the public that the elderly population enjoys good health and independence in activities of daily living, for the longest possible duration. There is convincing evidence for the importance of regular, moderate intensity physical activity for public health gain. Reductions in risk arising from regular physical activity in older age are at least as strong as those found in middle age for all-cause mortality, cardiovascular disease, and type-2 diabetes (Fox et al. 2007). In older people regular physical activity is also important for the preservation of muscle strength and power, maintenance of mobility and independent living, and prevention of falls and fractures (Fiatarone Singh 2002, Keysor 2003).

Older people must be provided with ample opportunities to exercise and appropriate guidance or assistance when required. Free or low-priced opportunities for regular exercise are particularly valuable in strengthening muscles and improving balance. Hobbies, recreation, rehabilitation and access to peer support are of enormous value both to older people and helps to ensure them a successful old age themselves and to the families caring for them (MSAH 2008).

To prepare western nations for the increasing demands of aging populations, varieties of exercise programs need to be developed that can reach target populations effectively, make optimal use of available resources and are cost effective. There is a need for developing safe and feasible exercise methods that can be implemented by the participants themselves, thereby minimizing the need for professional assistance and/or supervision. Such programs encourage older adults to be self-reliant and provide easy access to methods of improving/maintaining their physical fitness, thus augmenting the health and social services provided by the state.

The present study is part of the project titled **Elinvoimaa 75+**, which aims to increase physical activity among the members of local Pensioner's societies in Finland. It attempts to provide elderly persons with opportunities to participate in peer instructed group exercise sessions targeted to improve lower extremity strength and balance. The purpose of this study is to systematically evaluate the process and feasibility of a program in which peer instructors were educated to implement group based exercises for society members aged 75 years and above. More specifically, feasibility includes the evaluation of program reach, safety, participant satisfaction, drop-outs and expenditure.

2. BACKGROUND

Population of Finland: population structure by age and predictions for the future

At the end of 2006, the number of people aged 65 and over amounted to 868 717 in Finland, including 403 692 people aged 75 and over and 93 744 people aged 85 and over. Persons aged 65 and over accounted for 16.5 per cent, and those aged 75 and over for 7.7 per cent of the population (STAKES OSF 2008).

It is estimated that the overall number of older people, or those aged over 65, will increase until the mid-2030s, after which the number should decrease. Population projections for the year 2035 are presented in table 1. The number of persons over 65 in 2035 is estimated at approximately 1 450 000 (27 per cent of the population), the number of persons over 75 at approximately 800 000 (15 per cent of the population) and the number of persons over 85 at nearly 250 000 (5 per cent of the population). This change signifies that the number of persons over 65 will grow in 30 years by over 600 000 (72 per cent). Correspondingly, the number of persons over 75 will more than double, i.e. their number will be 400 000 more than currently. However, proportionally, the over 85 age group will see the largest growth, since it is estimated that by 2035 they will number over two and a half times as many as now (150 000 or more)(STAKES OSF 2007).

Table 1. Population at year-end by age, 1995-2035.

Age	Projection				Change		
	1995	2005	2015	2035	2005-2015 %	2005-2025 %	2005-2035 %
65-74	432 277	448 198	647 925	651 443	44.6	52.3	45.3
75-84	233 122	304 378	332 129	554 069	9.1	67.8	82.0
85-89	49 860	60 492	84 872	177 435	40.3	65.4	193.3
90+	17 158	28 097	36 834	67 462	31.1	64.6	140.1
65+	732 417	841 165	1 101 760	1 450 409	31.0	59.2	72.4
75+	300 140	392 967	453 835	798 966	15.5	67.2	103.3
85+	67 018	88 589	121 706	244 897	37.4	65.1	176.4

Source: Population structure. OSF. Statistics Finland

The growth of the older population can be partly explained by the fact that people are living longer than before. The average life expectancy in 2005 was 75.5 years for men and 82.3

years for women. By 2035, the life expectancy will rise to 81.3 years for men and 85.8 years for women (STAKES OSF 2007).

At the end of 2006, 90.1% of persons over 75 were living at home. The calculation excludes all those in long-term hospital care, old people's residential homes and housing with 24-hour assistance. The national targets to be reached by 2012 are that, of all people over 75, 91% to 92% live at home independently or using appropriate health and welfare services granted by assessing their overall needs (MSAH 2008).

Municipalities and cooperation districts will carry the responsibility for providing services for older people and be responsible for the quality of the services they themselves provide or purchase from other providers. Because operating environments vary, solutions that take local circumstances into account are needed (MSAH 2008). The need to expand preventive action to maintain functional capacity is common to all municipalities. Preventive activities and services must be increased, diversified and changed so as to support older people's health and welfare.

Aging, health and exercise

Old age is associated with some amount of disability, as part of the natural aging process. In older adults, three common factors influencing the disablement process are (1) the physiologic aging process, (2) the accumulation of chronic diseases, and (3) levels of physical activity (Bean et al. 2006).

Aerobic exercise training studies in the elderly demonstrate that healthy older adults adapt physiologically to moderate- to high-intensity training similarly to younger adults (Kohrt et al. 1991). Controlled trials also strongly suggest that, if engaged in training of sufficiently high intensity, older men and women can attain strength gains at least similar to those of their younger counterparts (Frontera et al. 1988, Fiatarone et al. 1990). According to the American college of sports medicine (ACSM) and the American heart association (AHA), regular physical activity, including aerobic activity and muscle-strengthening activity, is essential for healthy aging (Nelson et al. 2007). Training at moderate intensity levels, defined as approximately 60% of heart rate reserve or maximal exercise capacity, seems sufficient to

achieve most health benefits (Frontera et al. 1988, Fiatarone et al.1990). The benefits of regular physical activity in older adults are extensive. As noted in the adult recommendation (Haskell et al. 2007), regular physical activity reduces risk of cardiovascular disease, thromboembolic stroke, hypertension, type 2 diabetes mellitus, osteoporosis, obesity, colon cancer, breast cancer, anxiety, and depression. Of particular importance to older adults, there is substantial evidence that physical activity reduces risk of falls and injuries from falls (AGS Panel on Falls Prevention 2001), prevents or mitigates functional limitations (Keysor 2003, Nelson et al. 2004, LIFE study 2006), and is effective therapy for many chronic diseases. Clinical practice guidelines identify a substantial therapeutic role for physical activity in coronary heart disease (Kesaniemi et al. 2001, Thompson et al. 2003), hypertension (ACSM 2004), peripheral vascular disease (Mcdermot et al. 2006), type 2 diabetes (Sigal et al. 2004), obesity (Geliebter et al. 1997), osteoporosis (Going et al. 2003), osteoarthritis (AGS 2001), claudication (Stewart et al. 2002), and chronic obstructive pulmonary disease (Pauwels et al. 2001). A role for physical activity is also identified in the management of depression and anxiety disorders (Brosse et al. 2002), dementia (Doody et al. 2001), congestive heart failure (Remme et al. 2001), stroke (Gordon et al. 2004), and back pain (Hagen et al. 2002). There is some evidence that physical activity prevents or delays cognitive impairment (Abbot et al. 2004, Larson et al. 2006) and disability (Tseng et al. 1995, Keysor 2003).

ACSM/AHA Recommendations (physical activity and public health in older adults)
(Nelson et al. 2007)

The recommendations by ACSM/AHA is in accordance with the 2008 Physical Activity Guidelines for Americans (U.S. Department of Health and Human Services) and applies to all adults aged 65+ years, and to adults aged 50–64 with clinically significant chronic conditions or functional limitations that affect movement ability, fitness, or physical activity.

Aerobic activity. To promote and maintain health, older adults need moderate-intensity aerobic physical activity for a minimum of 30 min on five days each week or vigorous intensity aerobic activity for a minimum of 20 min on three days each week. Also, combinations of moderate- and vigorous-intensity activity can be performed to meet this recommendation. This recommended amount of aerobic activity is in addition to routine activities of daily living of light-intensity (e.g., self care, cooking, casual walking or shopping)

or moderate-intensity activities lasting less than 10 min in duration (e.g., walking around home or office, walking from the parking lot).

Muscle-strengthening activity. To promote and maintain health and physical independence, older adults will benefit from performing activities that maintain or increase muscular strength and endurance for a minimum of two days each week. Muscle strengthening activities include a progressive-weight training program, weight bearing callisthenics, and similar resistance exercises that use the major muscle groups.

Benefits of greater amounts of activity. Participation in aerobic and muscle-strengthening activities above minimum recommended amounts provides additional health benefits, and results in higher levels of physical fitness.

Flexibility activity. To maintain the flexibility necessary for regular physical activity and daily life, older adults should perform activities that maintain or increase flexibility on at least two days each week for at least 10 min each day.

Balance exercise. To reduce risk of injury from falls, community-dwelling older adults with substantial risk of falls (e.g., with frequent falls or mobility problems) should perform exercises that maintain or improve balance.

Integration of preventive and therapeutic recommendations. Older adults with one or more medical conditions for which physical activity is therapeutic should perform physical activity in the manner that effectively and safely treats the condition(s). So as to prevent other conditions from developing, older adults should also perform physical activity in the manner recommended for prevention as described herein.

For older adults who are not active at recommended levels, plans should include a gradual (or stepwise) approach to increase physical activity over time using multiple bouts of physical activity (≥ 10 min) as opposed to continuous bouts when appropriate. Older adults should also be encouraged to self-monitor their physical activity on a regular basis and to re-evaluate plans as their abilities improve or as their health status changes (Nelson et al. 2007).

The ideal exercise program for older adults

The ideal exercise program should be tailored to the older adult, using a combination of aerobic, resistance, stretching, and balance training. An effective program will target large muscle groups of the upper and lower body such as the legs, arms shoulders, calves, and back.

As with younger adults, the elderly should train aerobically three to five days a week, 50 to 60 minutes/session. Strength training, on two to three nonconsecutive days per week, should include two to three sets of 8 to 12 repetitions for each muscle group, with short rests between sets. An exercise program for the elderly should be progressive, although the rate of progression may need to be more gradual than with younger individuals (Bean et al. 2006).

Rather than focusing on traditional exercise measures such as intensity, workload, or percent of maximal heart rate, programs for the elderly should target ease of mobility, maintenance of flexibility, and strength. It is these outcomes that maximize individuals' function and social integration. Creative, varied programs leading to sustained continuous involvement in exercise may be far more important than the specifics of the exercise regimen (Bean et al. 2006). It is important to remember that exercise is a form of social activity for persons of all ages; especially so for the elderly who have more time. Therefore, exercise sessions should emphasize fun, enjoyment, social contact, and regular participation more than fitness, performance, or health, even though these important benefits might and should result (Skinner 2005).

Although both young and old individuals have a positive attitude towards exercise, the elderly feel less confident and have more fear of hurting themselves. Also, physically inactive older persons usually have no intention of becoming active. Despite positive attitudes toward physical activity, most elderly people consider it a low priority for leisure time. Although it need not be so, beginning an exercise program often represents a major change. The first step usually involves transforming an older persons' belief system. For those who do begin to exercise, adherence is usually poor on the first try. The most successful programs include some combination of ongoing supervision and efforts to monitor and promote compliance (Bean et al. 2006).

Various modalities of exercise have been demonstrated to improve physical function and quality of life in older adults. The limited data available suggests that multi-modal exercise has a small effect on physical, functional and quality of life outcomes and multi-modal exercise may be seen as an effective treatment for preventing falls in older cohorts (Baker et al. 2007). Exercise interventions shown to be effective in this age group have involved different exercise regimes, ranging from simple home exercise programs to intense, highly

supervised hospital (centre) based programs. Group- based classes using low-cost equipment and requiring fewer professional staff may be more practical and cost effective as compared to individualized supervision. They may promote the application of a variety of techniques and multi-modal exercises, including cardiovascular, strengthening, flexibility and balance training. In addition, group-based exercise classes may provide opportunities for creating important social and recreational networks amongst people of this age group.

Current literature supports the effectiveness of group based programs in older adults (Brown et al. 2000, Worm et al. 2001). Findings indicate that persons with some degree of frailty are capable of some improvements in strength, balance, and flexibility even with a low-intensity exercise program. These changes in strength, flexibility, and balance are associated with a significant improvement in functional capability (Brown et al. 2000, Chin A Paw et al. 2001). Other studies indicate that strength, balance and mobility/flexibility are preserved, if not improved as a result of exercise (Cress et al. 1999, Nowalk et al. 2001; Barnett et al.2003, Lord et al.2003). The amount of change/improvement in outcome measures depends largely upon the exercise modalities prescribed, their frequency and intensity (Karinkanta et al.2007; Schumway-Cook et al.2007).

Evaluating new models of implementing exercise programs

New models of exercise need to developed, such that are feasible, cost-effective and appealing to the elderly population. Public health practitioners, policy makers, funders and potential recipients all need to have access to the findings of high quality systematic reviews to enable them to make informed decisions about whether or not to implement, or participate in a specific intervention. However, for high quality reviews to be successfully completed we need a concurrent improvement in the reporting of public health studies, so that detailed information related to the intervention, context and study population is included (Jackson et al. 2005). This involves the concept of **program process evaluation** which entails, on the one hand, a description of the performance of the entity being evaluated and, on the other, some standards or criteria for judging that performance.

Rossi et al. (2004) propose that program process evaluation generally involves assessments of program performance in the domains of service utilization and program organization.

Assessing service utilization consists of examining the extent to which the intended target population receives the intended services. Assessing program organization requires comparing the plan for what the program should be doing with what is actually done, especially with regard to providing services. According to Paasio (2003), planning alone is not enough for welfare services to be successful as intended. These plans must be correctly implemented as well. He summarizes the evaluation of program implementation as illustrated in Figure 1.

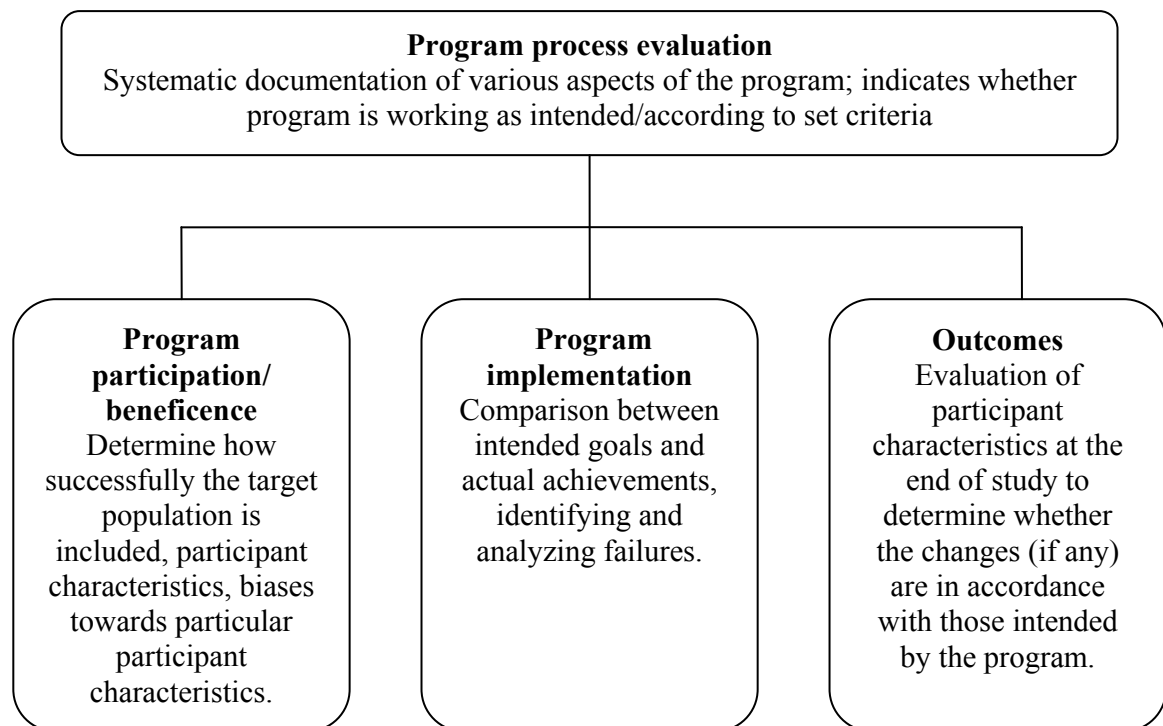


Figure 1. Program implementation evaluation. Adapted from Paasio (2003).

Feasibility

In an intervention/program evaluation, feasibility involves the question of whether the intervention can be replicated in a given setting. This includes costs as well as non-monetary resources such as expertise, training required for intervention staff, interest, and cultural considerations (Jackson et al. 2005). Some consider feasibility a synonym for applicability, which questions how the intervention could be implemented in a setting regardless of the outcome (Wang et al. 2006). However, the feasibility of the approaches used in health promotion seems unclear. Most commonly, feasibility represents the acceptability and

usability of the approaches and is elicited from health care providers by questionnaires or interviews (Aittasalo 2008). Some approaches include patient participation, views and compliance (Pinto et al. 1998, Jimmy and Martin 2005, Aittasalo 2008).

The components that may be considered suitable for evaluating the feasibility of implementing exercise models are: 1) reach 2) safety 3) participant satisfaction 4) drop-outs and 5) costs. *Reach* refers to success with which the targeted population is recruited. *Safety* is included since the participants are vulnerable to adverse events. *Participant satisfaction* is essential because without participants being satisfied with the approach or experiencing benefits from it, the program is less likely to sustain itself (Aittasalo 2008). *Drop-outs* provide a measure of adherence, which in turn affects the sustainability of the approach. The *costs* involved affect the acceptability and usability of the approach, and are compared with the possible expenses resulting from an inactive lifestyle.

3. PROGRAM OVERVIEW: ELINVOIMAA – 75+

Elinvoimaa – 75+ is a third sector project of the Strength in Old Age program. Voimaa Vanhuuteen; or Strength in Old Age, is a national health exercise program for older adults, which promotes the autonomy and quality of life in independently living older adults with decreased functional capacity. The program is a large cooperation project carried out by the Ministry of Social Affairs and Health, Ministry of Education, University of Jyväskylä, UKK Institute – Centre for Health Promotion Research and several other actors. The main funding resource for the program is the Finnish Slot Machine Association. Coordinated by the Age Institute in Helsinki, the program is based on academic research and the quality recommendations of guided health exercise for older adults (Karvinen et al. 2007).

The aims of the program are locally carried out into practice in 35 three-year projects. The local projects organize strength and balance exercises, including gym, calisthenics and balance groups, guided outdoors exercise, and guided home exercise. The projects aim to reach older adults with decreased physical functional capacity, provide them with exercise guidance, organize suitable exercise activities, train instructors for exercise groups, and make sure the services are accessible (Karvinen et al. 2007). The actors in public, private and third sector are encouraged to form networks, develop exercise services for older adults, and improve conditions of exercise and everyday mobility (Karvinen et al. 2007).

The chief actor in the implementation of Elinvoimaa – 75+ is The Central Association of Finnish Pensioners (EKL), working in association with the UKK-Institute. The project timeline is 3 years (2007-2009). The EKL includes over 350 pensioner's societies nationwide. 10-15 societies are chosen for participation every year. EKL trains peer instructors from the chosen local societies, who in turn establish physical activity groups for persons over 75 years of age. Exercise sessions are organized in conjunction with regular society/association meetings. During the course of the project, 40-50 peer instructors will be trained per year i.e., in all 120-150 peer instructors. The target is to gather 50-60 groups from functional pensioners associations all over Finland, each group comprising of 10-15 members. The study design is further illustrated in figure 2.

The project aims to develop an innovative program for EKL members, one that complements the welfare services offered by the state and municipalities. The important goals of the project include increasing physical activity, reducing the debilitating effects of long-term illness and promoting the autonomy and quality of life of independently living older adults with decreased functional capacity.

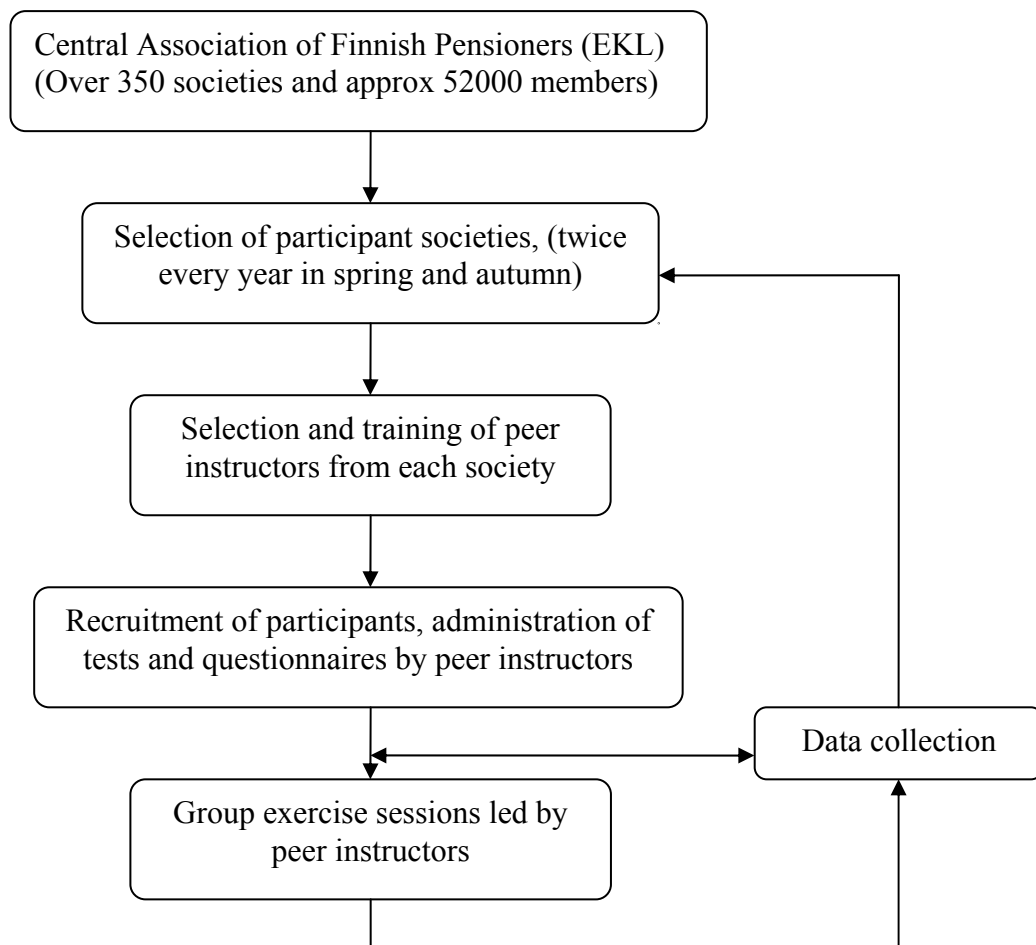


Figure 2. Program design of Elinvoimaa 75+ (2007-2009)

4. PURPOSE AND DESIGN OF THE STUDY

The study evaluates the implementation and feasibility of Elinvoimaa 75+. It examines the success of the program in reaching its target population, success with program implementation and its achievements as perceived by the participants. The feasibility of conducting group based exercise classes using peer instructors was studied as program reach, safety, participant satisfaction, drop-outs and expenditure. The model suggested by Paasio (2003) is used as a theoretical framework for guiding the evaluation of this exercise program. This model as applied to Elinvoimaa 75+ as depicted in Figure 3.

The evaluation is based on data collected from 20 societies that began functioning during autumn 2007 and spring 2008.

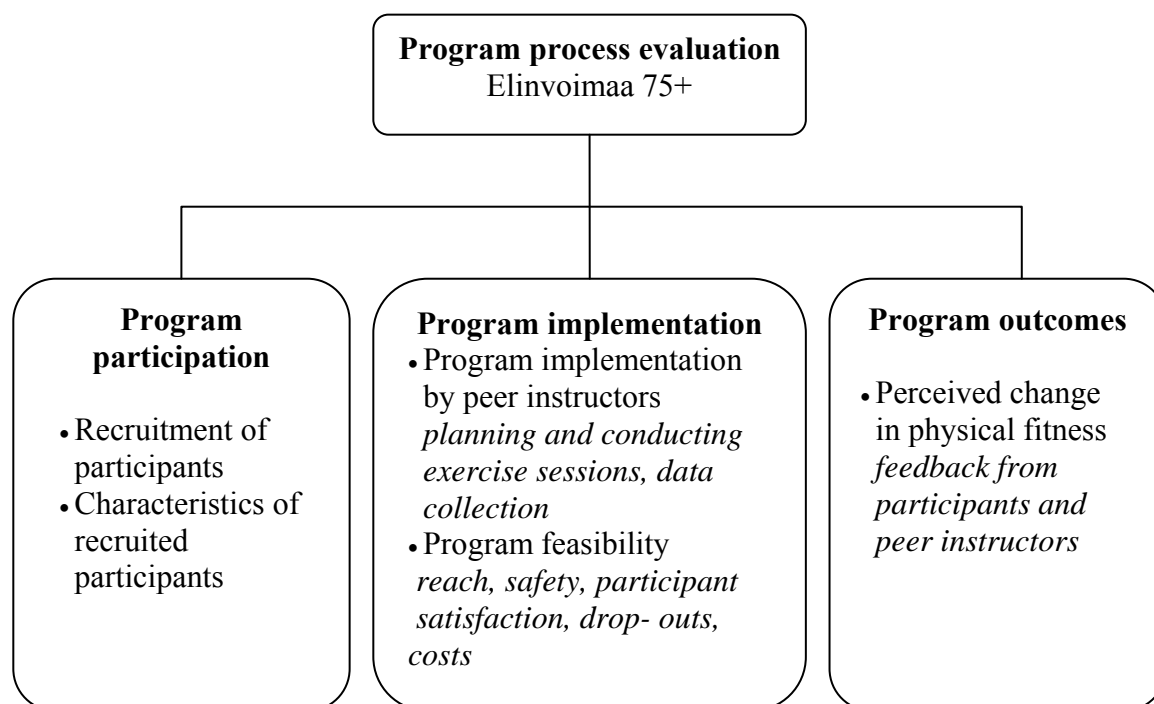


Figure 3. Program process evaluation of Elinvoimaa 75+.

5. METHODS

The following text contains a description of the program methods, considered invaluable in the evaluation of the program process. The methods include a description of the recruited subjects, training methods, program implementation by the subjects and data collection.

5.1 Subjects and recruitment

Applications for both peer instructor training and program participation were invited through the EKL newsletter. Nine societies began their participation in autumn 2007, and 11 societies began in spring 2008. In all, in the years 2007 and 2008, 48 **peer instructors** from 20 societies were trained i.e. 2-4 peer instructors were trained from each society/group. These volunteers may or may not have been health care professionals and were not required to possess prior training in the field of physical activity and health.

The target population consisted of EKL members aged 75 years and over, whose physical capacity and functional independence might be under threat. The peer instructors each selected a group of 10-15 eligible **participants** from their respective society members. Physically active persons under 75 years and enjoying good functional ability were not barred from participation. The focus however remained on reaching individuals who might most benefit from increasing their physical activity.

5.2 Procedures

5.2.1 Peer instructor training courses

The peer instructor courses were planned and administered by the UKK Institute and included instruction on group exercise, testing methods and the completion of questionnaires and test forms.

The training course consisted of two sessions of 20 hours (2 days) each, and was arranged at a location with training and lodging facilities. Training sessions were held on 08.-10.05.2007

and 30.05.-01.06.2007 for the peer instructors beginning in autumn 2007 and on 30.01.-01.02.2008 and 13.-15.02.2008 for those beginning in spring 2008.

The **first session** of the training course dealt with the concepts of functional capacity in older adults and measurement techniques. The intensive program included the following topics:

- The terms 'physical ability' and 'functional capacity'
- Effects of aging on the physical aspects of functional capacity
- Maintenance of functional ability – factors affecting functional ability
- Age appropriate recommendations for physical activity
- Characteristics of physical activities that promote functional capacity – safety, versatility, incorporation into daily living, use of appropriate equipment
- Methods to increase physical activity in daily life
- The role of lower extremity strength and balance – control mechanisms, effects of aging, factors leading to falls
- Importance of evaluating physical activity and the advantages of using tests
- Tests of physical and functional ability – walking speed, muscle strength, balance
- Health questionnaires – identifying dangers and risk factors

The **second session** dealt with the basics of conducting group activities for older adults. It included:

- Factors affecting participation in physical activities
- Structure of an ideal exercise session – phases of exercise
- Exercise modifications – role of planes, lever arm, speed, rhythm, direction, symmetry, base of support, resistance, force
- Effects of exercise
- Motivation
- Planning of group sessions – use of music, equipment, play
- Interpretation and utilization of feedback
- Safety – identifying basic symptoms of illness, handling emergencies, first aid
- Failure management
- Examples of group exercise, practical training – methods of exercise, incorporating games

During autumn 2007, 22 peer instructors were trained, all of which attended both the training sessions. In spring 2008 26 instructors were trained. One of them was unable to attend the second session owing to illness, and was replaced by another person who attended only the second session.

5.2.2 Implementation of exercise groups by peer instructors

The peer instructors led exercise groups 1-2 times weekly. The exercise groups were held during autumn 2007 and spring 2008, with a winter break between the two seasons. At the time of this study, the first set of societies that began in 2007 thus participated in two seasons, while the set that began in 2008 participated in one season. Both these sets of societies are expected to continue their activities in the future seasons (2008-2009).

The exercise sessions for participants consisted of instructed exercises promoting leg strength and balance. Sessions were held in locally available settings indoors or outdoors. The number of sessions arranged depended upon availability of appropriate space and equipment, with a minimum recommended frequency of one session weekly. The type of exercises performed depended upon participant preferences and choices. The sessions generally consisted of a combination of seated exercises, resistance band training, balance and strength training, exercises for neck and back, aerobic activity, or any other suitable form of exercise.

In addition to the group exercise sessions, participants were encouraged to exercise at home and walk regularly as an endurance-maintaining activity. Participants were also provided with a self-motivation home exercise plan.

5.2.3 Interval camps for peer instructors and participants

All participants, including peer instructors, were invited to a 3-5 day interval camp twice a year. During the camp, participants were provided with information on activities promoting functional ability and personal advice on physical activity. The camp also included practical exercise sessions, assistance with the administration of physical tests and advice on home exercise. The peer instructors were invited to an idea/ inspiration camp once during the

program. The instructors were encouraged to share their experiences of the project and seek advice if required during this camp.

5.3 Data Collection

The data included in the study was collected by the peer instructors. EKL collected feedback forms from peer instructors and participants.

5.3.1 Background data

The peer instructors assisted in collecting and reporting data such as:

- Information on the number of society members aged above 75 years,
- The number of physical activity professionals and health care personnel among members,
- The society meeting schedules and premises in use,
- Locally available gymnasiums, physical activity services and/or other resources, and possible expenditure involved in their usage.

This information served as the population base from which the participants were drawn and exercise sessions were planned according to available resources.

5.3.2 Tests of functional ability

The tests of functional ability were based on the Short Physical Performance Battery assessing lower extremity function (Guralnik et al. 1994). These tests were administered in the beginning, and again at the conclusion of the season (4-6 months from the beginning of exercise sessions). The components and items in the test battery are given in Table 2, along with a short description of the methods. The purpose of these tests was to identify persons at risk of deterioration in functional capacity and mobility. Special efforts were made to recruit participants showing a deficit in walking speed, balance or lower-limb strength in the program. These tests also served as a tool for the peer instructors to monitor their respective group members.

Table 2. Description of the tests of physical performance, assessing lower extremity function

TANDEM, SEMI-TANDEM, AND SIDE-BY-SIDE STANDS

Purpose: To test static balance

Method: Each participant begins with the semi-tandem stand, in which the heel of one foot is placed to the side of the first toe of the other foot, with the participant choosing which foot to place forward.

Those unable to hold the semi-tandem position for 10 seconds are evaluated with the feet in the side-by-side position.

Those able to maintain the semi-tandem position for 10 seconds are further evaluated with the feet in full tandem position, with the heel of one foot directly in front of the toes of the other foot.

Outcome: The timing is stopped when participants move their feet or grasp the interviewer for support, or when 10 seconds have elapsed.



6.1-m (20-FT) WALK

Purpose: To assess ability to walk a short distance (in terms of walking speed).

Method: Participants walk the course twice 1) at “usual” pace; 2) as fast as possible, starting from a stationary position.

Outcome: Performance time (s) of second attempt (as fast as possible) measured by a stopwatch.



CHAIR STAND

Purpose: To assess the ability to rise from a chair as an indicator of lower extremity strength.

Method: Participants are asked to fold their arms across their chest and to stand up from a straight-backed chair one time. If successful, participants are asked to stand up and sit down five times as quickly as possible.

Outcome: Performance time (s) from the initial sitting position to the final standing position at the end of the fifth stand.



Source: UKK Institute, Tampere.

5.3.3 Physical activity questionnaire

The questionnaire was administered in the beginning of the program, before the exercise sessions began. The questionnaire (Appendix 1) collected information on the participants' current level of physical fitness. Possible difficulties experienced during physical activity were also recorded.

5.3.4 Peer instructor diary on exercise session content

The peer instructors maintained a diary in which the contents of each exercise session were recorded in detail. This included information about the type and category of the exercises performed, and the number of participants attending each session.

5.3.5 Feedback forms

Feedback forms were completed at the end of the season (4-6 months from the start of the program). These included:

- Participant feedback on group exercise implementation (including participation experience, perceived change in physical fitness) (Appendix 3).
- Peer instructors' self-evaluation on program success (Appendix 2).

5.4 Statistical analysis

Data was recorded and analyzed using SPSS for Windows and Microsoft Office software. Program feasibility included an analysis of program reach, safety, drop-outs, participant satisfaction and expenditure/costs. Descriptive statistics and cross tabulations were used to assess recruitments, participant characteristics and exercise participation. Feedback obtained from participants and peer instructors about the exercise program was summarized using bar charts. Paired t tests were run to compare differences in functional ability tests (balance, walking speed and lower extremity strength) before and after the exercise program. Because of a small sample size and the lack of a control group for comparison, the measures were exploratory and not the primary outcomes.

6. RESULTS

Results are presented according to the framework illustrated in Figure 3.

6.1 Program participation

Evaluation of program participation includes participant recruitment and collection of baseline data by the peer instructors.

6.1.1 Recruitment of participants

Peer instructors were responsible for recruiting participants for the program. They initially collected information on the target population from their respective societies. This served as a target population from which the participants were drawn (Table 3).

Table 3. Population base from which participants were drawn, according to participating societies.

Name of society	Peer instructors (n)	Members (n)	Members ≥ 75 years (n, %)
Seinäjoen Eläkkeensaajat Ry	3	386	115 (30)
Roihuvuoren Eläkkeensaajat Ry	3	102	62 (61)
Pasilan Eläkkeensaajat Ry	2	95	41 (43)
Keski-Espoo Eläkkeensaajat Ry	3	95	53 (54)
Kuopion Liikealan Eläkkeensaajat Ry	2	110	25 (23)
Jyväskylän Eläkkeensaajat Ry	2	368	210 (57)
Puumalan Eläkkeensaajat Ry	2	98	41 (42)
Pitäjänmäen Eläkkeensaajat Ry	3	96	47 (49)
Ryttylän Eläkkeensaajat Ry	2	106	45 (42)
Kaukalahden Eläkkeensaajat Ry	3	70	42 (60)
Keravan Eläkkeensaajat Ry	2	227	116 (51)
Hyvinkään Eläkkeensaajat Ry	4	134	76 (57)
Meri-Porin Eläkkeensaajat Ry	2	225	31 (14)
Viialan Eläkkeensaajat Ry	2	95	57 (60)
Nivalan Eläkkeensaajat Ry	2	76	40 (53)
Kuusamon Eläkkeensaajat Ry	3	110	25 (23)
Pieksämäen seudun Eläkkeensaajat Ry	2	346	140 (40)
Rovaniemen seudun Eläkkeensaajat Ry	2	110	46 (42)
Kemin Eläkkeensaajat Ry	2	137	61 (44)
Saastamala	2	161	45 (28)
Total 20 societies	48	3147	1318 (42)

The target population consisted of 1318 EKL members who were ≥ 75 years of age.

6.1.2 Characteristics of recruited participants

Data was collected from 268 participants in all. The mean age of the participants was 77.7 (SD 4.8) years. The characteristics of the participants according to age and gender are presented in Table 4.

Table 4. Baseline characteristics of the recruited participants (N=268).

Characteristics	Number	Percentage*
Age		
Under 75 years	55	20.8
75-80 years	142	53.6
Over 80 years	68	25.6
Gender		
Males	66	24.6
Female	202	75.4
Ability to walk a distance of 2 kilometres		
Able, with no difficulty	104	54.5
Able, with minimal difficulty	56	29.3
Able, with considerable difficulty	19	9.9
Unable without assistance	4	2.1
Unable even with assistance	8	4.2
Ability to climb a flight of stairs		
Able, with no difficulty	143	72.6
Able, with minimal difficulty	41	20.8
Able, with considerable difficulty	9	4.6
Unable without assistance	3	1.5
Unable even with assistance	1	0.5

* Percentages are quoted according to available data.

Approximately 45.5% of the participants experienced difficulty or were not able to walk a distance of two kilometres. 27.4% of the participants experienced difficulty or could not climb a flight of stairs even with assistance. 16.4% of the participants reported difficulty with both these tasks. Those who experienced difficulty while walking or were unable to walk a distance of 2 kilometres reported changes in functional ability that affected their walking. The findings are illustrated in Table 5.

Table 5. Changes in functional ability reported by those experiencing difficulty while walking or unable to walk a distance of 2 kilometres (N=87).

Change in functional ability experienced during 2 km walk	% (N=87)
Feel tired	46.0
Forced to walk slowly	58.5
Forced to rest in between	44.1
Use walking aids	27.1
Forced to reduce the frequency of walking distances of this length	35.8
Forced to give up walking distances of this length	15.3
Other changes	11.1

The participants walked outside of their homes on an average of 4.6 (SD 1.9) times a week, and 8.8 (SD 7.7) kilometres per week as part of their daily activities. Amount of outdoor activity- related walking according to gender is illustrated in Table 6.

Table 6. Amount of weekly walking activity out-of-doors.

Gender	Average walking out-of-doors (number of times/week)	Average walking out-of-doors (number of kilometres/week)
Males		
Mean (SD)	4.2 (1.9)	11.3 (11.0)
Min-Max	0-7	0-40
Females		
Mean (SD)	4.6 (1.8)	8.0 (6.3)
Min-Max	0-7	0-35
Total		
Mean (SD)	4.5 (1.9)	8.7 (7.7)
Min-Max	0-7	0-40

6.2 Program implementation

6.2.1 Program implementation by peer instructors

The participating societies held group exercise sessions at least once a week during each season. The number of exercise sessions and participation rate are presented in Table 7.

Table 7. Number of group exercise sessions led by peer instructors and participation rate.

Society	Average number of sessions/season (n)	Mean number of participants/session (n)
Seinäjoen Eläkkeensaajat Ry	12.5	7.7
Roihuvuoren Eläkkeensaajat Ry	12	9.2
Pasilan Eläkkeensaajat Ry	16	9.3
Keski-Espoo Eläkkeensaajat Ry	13	11.4
Kuopion Liikealan Eläkkeensaajat Ry	13.5	7.1
Jyväskylän Eläkkeensaajat Ry	15	8.4
Puumalan Eläkkeensaajat Ry	28	17
Pitäjänmäen Eläkkeensaajat Ry	15.5	12.5
Ryttylän Eläkkeensaajat Ry	27	14
Kaukalahden Eläkkeensaajat Ry	7	4.6
Keravan Eläkkeensaajat Ry	14	13.4
Hyvinkään Eläkkeensaajat Ry	25	7
Meri-Porin Eläkkeensaajat Ry	14	14.9
Viialan Eläkkeensaajat Ry	20	14.5
Nivalan Eläkkeensaajat Ry	23	7.4
Kuusamon Eläkkeensaajat Ry	11	14.8
Pieksämäen seudun Eläkkeensaajat Ry	11	14.5
Rovaniemen seudun Eläkkeensaajat Ry	12	8.3
Kemin Eläkkeensaajat Ry	11	12.1
Saastamalan Eläkkeensaajat Ry	-	-

Peer instructor diaries were examined to determine the content of the exercise sessions. The group sessions consisted of a variety of exercises differing in mode and intensity. The contents of the sessions in each season (autumn 2007 and spring 2008) are summarized in figures 4 and 5. The different exercise modalities used are expressed as a percentage of the total time spent. The exercise time spent on strengthening exercises and/or balance training in the seasons of autumn 2007 and spring 2008 was 48% and 49% respectively. The remaining time spent was divided between other types of physical activity such as walking/aerobic exercises, stretching/flexibility movements and in recreational activities such as games or dancing.

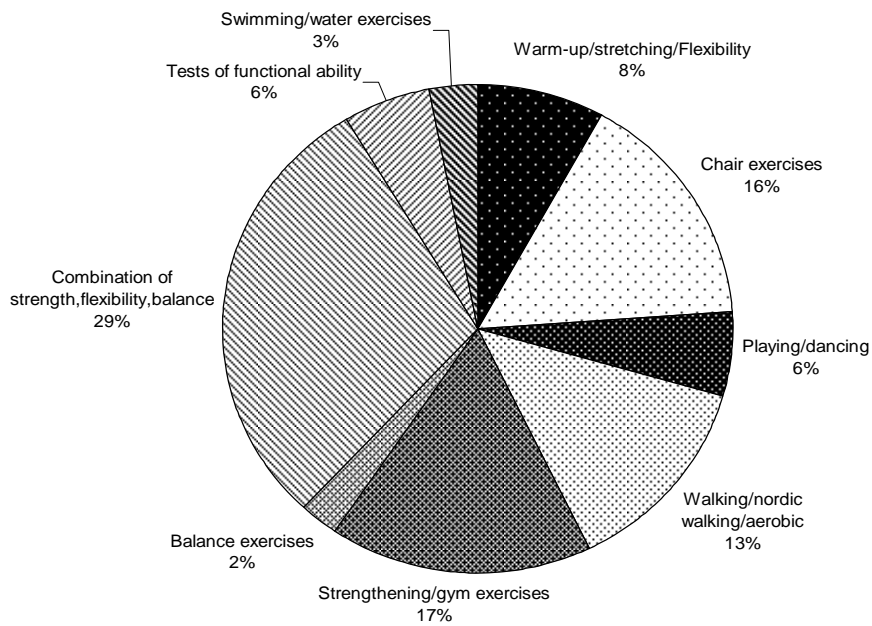


Figure 4. Summary of exercise session contents: Autumn 2007

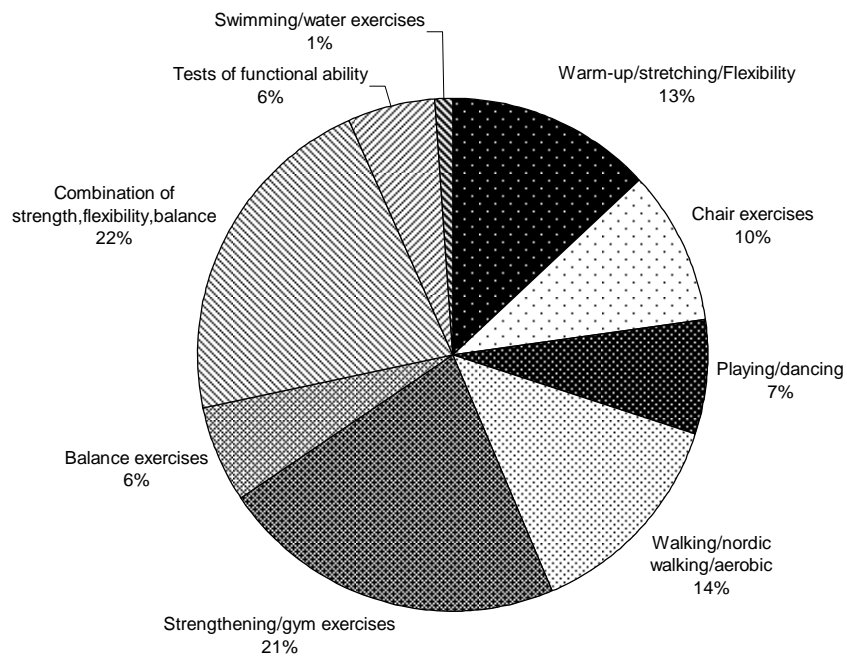


Figure 5. Summary of exercise session contents: Spring 2008

The peer instructors were asked to rate their success in planning and implementing the exercise sessions on a scale of 1 to 5, in which 1 stood for failure and 5 for very good. The success in administration of tests and questionnaires was also asked. Figure 6 shows the peer instructors' self-ratings for these dimensions.

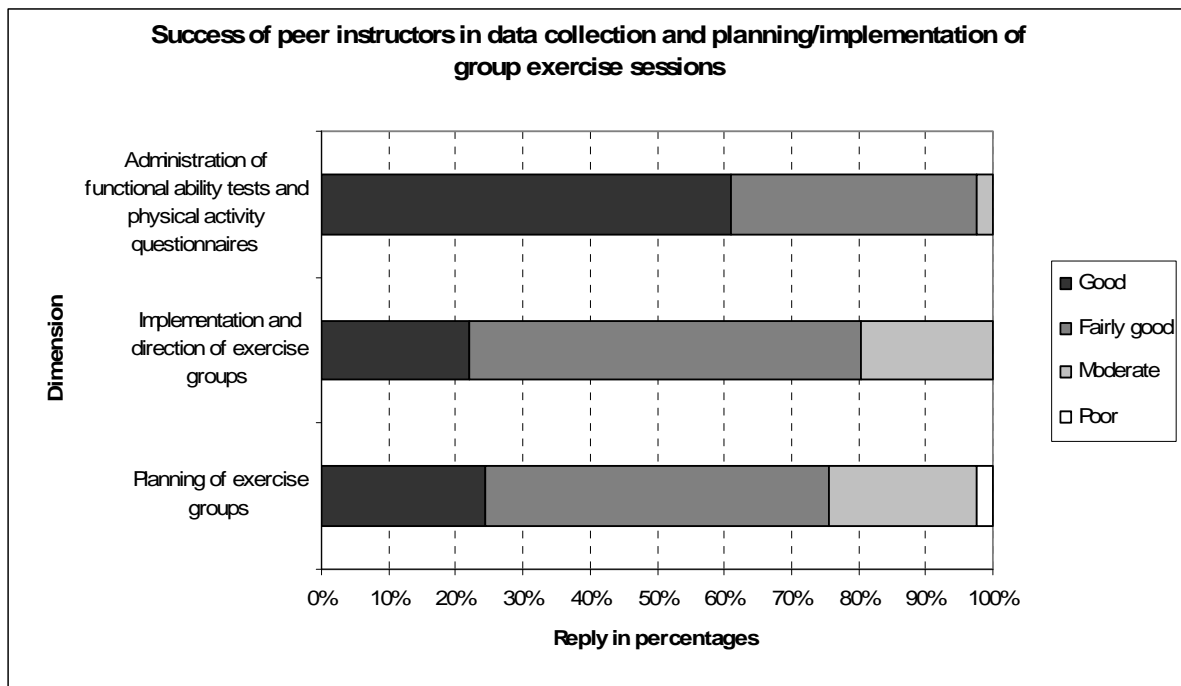


Figure 6. Feedback from peer instructors on success in data collection and implementation of exercise sessions.

6.2.2 Administration of tests and data collection

Information about the population base from which the participants were drawn, and baseline characteristics of the participants were collected by the peer instructors as previously shown in Tables 3 and 4. Data was collected from a total of 268 participants. Table 8 shows the percentage of test measurements successfully performed and questionnaires administered. The missing data was reportedly due to participant absence during tests, drop outs and inadequate supervision during completion of questionnaires.

Table 8. Success in data collection by peer instructors.

Data	Percentage of recorded cases according to age		
	< 75 years (N=55)	75-80 years (N=142)	>80 years (N=68)
Tests of functional ability*			
Test 1			
Tandem standing	90.9	95.0	94.1
6.1 m walk	90.9	95.7	92.6
Chair stand	90.9	95.7	91.1
Test 2			
Tandem standing	61.8	59.1	66.1
6.1 m walk	61.8	58.4	66.1
Chair stand	61.8	58.4	66.1
Physical activity questionnaire*	67.3	78.9	79.5
Feedback questionnaire	56.3	79.5	73.5

* 3 cases showed no record of age but were tested for functional ability and answered the physical activity questionnaire.

6.2.3 Program feasibility

Program reach

The program was targeted towards persons over 75 years age, who displayed symptoms of diminishing functional capacity. Of all the participants actually recruited, 79.3% were aged 75 years and above. Table 9 shows the percentage of participants with diminished functional capacity according to age.

Table 9. Characteristics of diminished functional capacity in participants, according to age.

Characteristics	% of persons within age group			
	<75 years (N=35)	75-80 years (N=106)	> 80 years (N=50)	Total (N=191)
Ability to walk a distance of approx. 2 kms				
Able, with no difficulty	68.6	56.6	40.0	54.5
Able, with minimal difficulty	22.9	32.1	28.0	29.3
Able, with considerable difficulty	2.9	7.5	20.0	9.9
Unable without assistance	2.9	0.9	4.0	2.1
Unable even with assistance	2.9	2.8	8.0	4.2
Ability to climb a flight of stairs				
Able, with no difficulty	71.4	81.5	55.6	72.6
Able, with minimal difficulty	17.1	13.9	37.0	20.8
Able, with considerable difficulty	8.6	3.7	3.7	4.6
Unable without assistance	0.0	0.9	3.7	1.5
Unable even with assistance	2.9	0.0	0.0	0.5

The peer instructors were asked for feedback on whether they agreed that Elinvoimaa 75+ had succeeded well in reaching the target population and recruiting the intended participants. Their opinions are illustrated in figure 7.

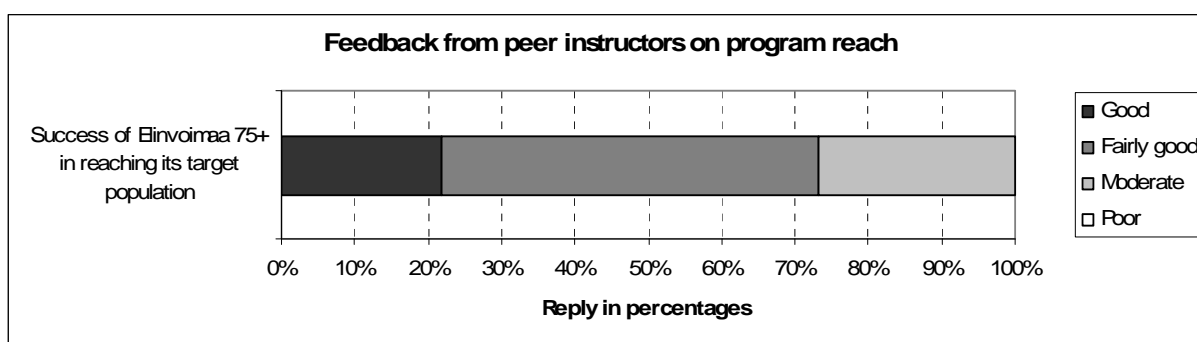


Figure 7. Feedback on peer instructors on the success of Elinvoimaa 75+ in reaching the target population.

Program safety

The peer instructors administered a health status questionnaire for each participant before beginning (Appendix 4). This questionnaire helped to determine possible risk factors for exercise and need for monitoring.

One of the aspects of program safety is defined by the occurrence of any acute illness during the exercise sessions and /or during the activity season. One case was reported during an interval camp, in which a male participant experienced symptoms of heart failure and had to be rushed to hospital. The incident occurred during leisure time, and not during exercise. The concerned participant was provided adequate support and transportation to immediate medical care, and has recovered since. He has discontinued participation in the exercise sessions due to cardiac intolerance to exercise. One of the peer instructors suffered a stroke, after which he was unable to function as peer instructor.

Other minor physical changes experienced by the participants were monitored by the peer instructors throughout the sessions. At the end of each season, feedback was obtained from all participants concerning the appearance of any unpleasant symptoms of physical stress or exhaustion following the beginning of the exercise sessions, as illustrated in figure 8.

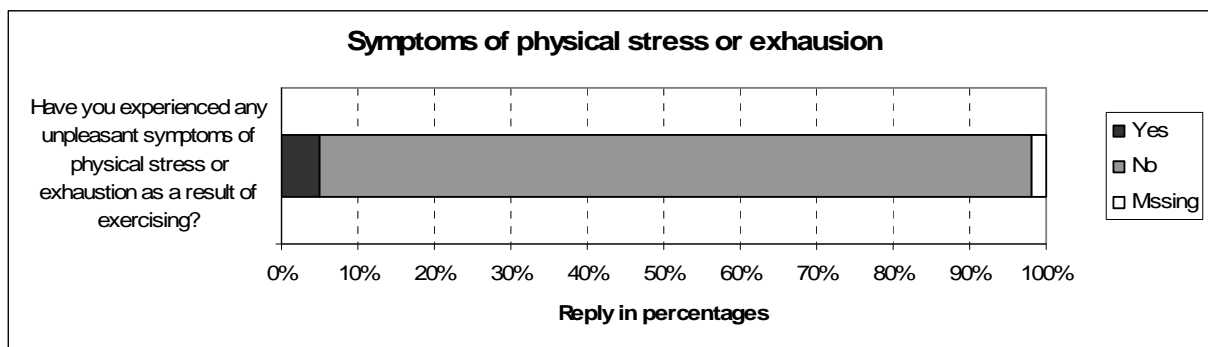


Figure 8. Feedback from participants on the appearance of unwanted symptoms of physical stress or exhaustion.

Participant satisfaction

Participant satisfaction with exercise sessions led by peer instructors was verified through feedback questionnaires. Figure 9 shows the participant response to some of the questions about the exercise sessions.

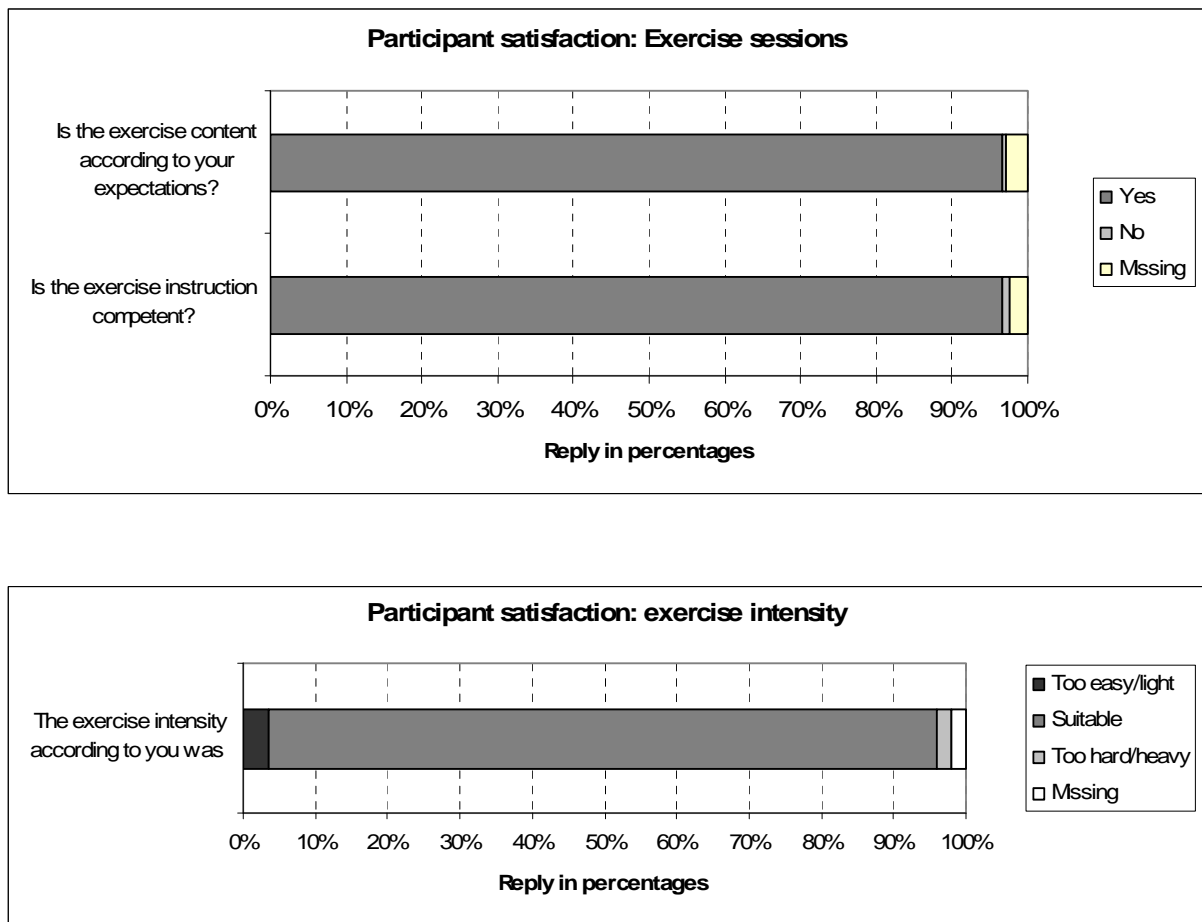


Figure 9. Feedback from participants on the suitability of exercise sessions.

The participants were questioned about the information they received during the course of the exercise sessions. This included information about the importance of exercise as well as the different ways in which physical activity could be increased (Figure 10). Participants were also asked whether exercise had influenced their ability to cope with activities of daily living (Figure 11).

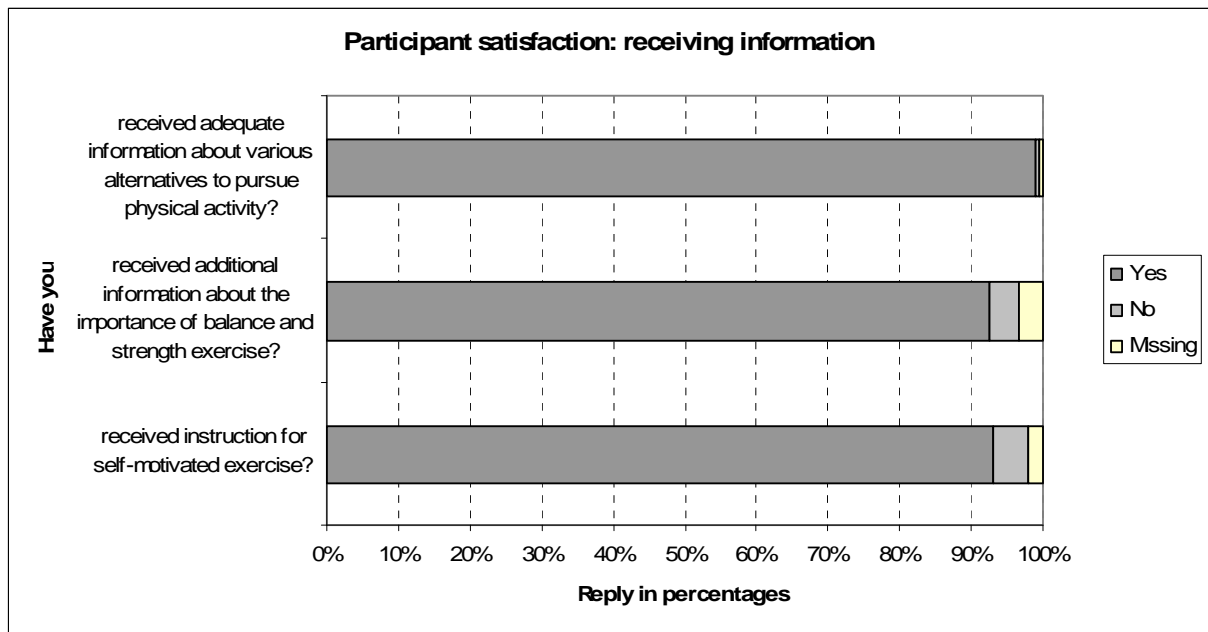


Figure 10. Feedback from participants on receiving information during the exercise sessions.

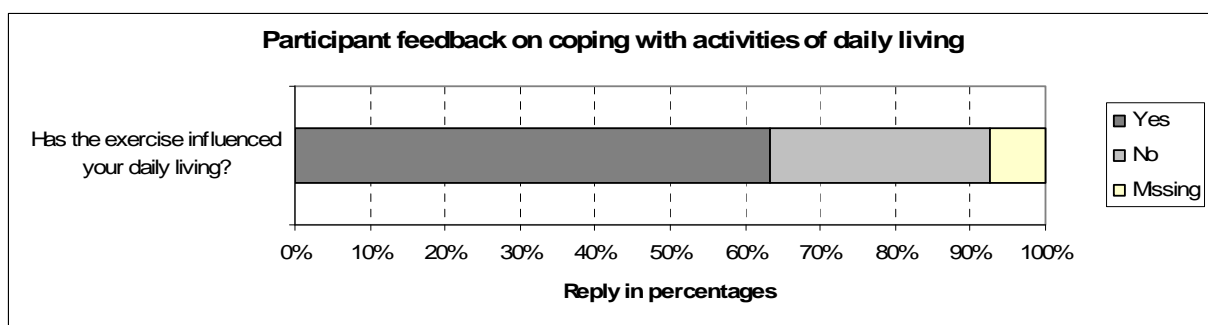


Figure 11. Feedback from participants on the effect of exercising on their ability to cope with activities of daily living.

Attendance and drop-outs

One society discontinued its participation after one season, owing to the incapacity of its two peer instructors. One of them suffered an illness while the other rejoined working life, and could not spare time for conducting the sessions.

The attendance and drop-outs for the societies is presented in Table 10. These figures include the participants who were not part of the test group and were neither administered the tests of functional ability nor the questionnaires. Participants who attended almost all the exercise sessions (>80%) were considered to have attended regularly. Attendance was moderate, and proved difficult to monitor.

Table 10. Participation in exercise sessions and drop-outs.

Society	Number of participants		
	Attended regularly	Attended irregularly	Dropped out
Seinäjoen Eläkkeensaajat Ry	8	-	0
Roihuvuoren Eläkkeensaajat Ry	7	6	2
Pasilan Eläkkeensaajat Ry	10	8	2
Keski-Espoo Eläkkeensaajat Ry	7	3	0
Kuopion Liikealan Eläkkeensaajat Ry	8	5	3
Jyväskylän Eläkkeensaajat Ry	10	5	6
Puumalan Eläkkeensaajat Ry	20	0	2
Pitäjänmäen Eläkkeensaajat Ry	13	3	0
Ryttylän Eläkkeensaajat Ry	20	15	0
Kaukalahden Eläkkeensaajat Ry	30	-	-
Kerävän Eläkkeensaajat Ry	16	-	0
Hyvinkään Eläkkeensaajat Ry	13	-	10
Meri-Porin Eläkkeensaajat Ry	17	-	-
Viialan Eläkkeensaajat Ry	14	-	9
Nivalan Eläkkeensaajat Ry	15	-	0
Kuusamon Eläkkeensaajat Ry	10	-	5
Pieksämäen Eläkkeensaajat Ry	14	-	3
Rovaniemen Eläkkeensaajat Ry	9	-	1
Kemin Eläkkeensaajat Ry	14	-	4
Saastamalan Eläkkeensaajat Ry	15	-	4
Total	270	45	51

Program expenditure

Elinvoimaa 75+ is funded primarily by The Finnish Slot Machine Association (RAY). A small part of the funding is provided by EKL. The probable sources of expenses incurred by the participants included costs of exercise space/equipment and/or transportation. A break-up of the yearly and total costs incurred, and project funding is presented in Table 11. Considering that 48 instructors were trained and approximately 270 persons attended the exercise sessions during the first year of the program, the expenses amount to approximately 180 euros per person per year.

Table 11. Yearly and total expenditure and project funding (1000 euros).

Project expenditure	Yearly	Total	Project funding	Yearly	Total
Peer instructor training	6	23	RAY	55	165
Expenditure incurred by trainers	1	5	EKL	1	2
Interval-camp organization and testing	41	118			
Expenditure incurred by board of directors	1	3			
Testing expenditure	1	4			
Compensation for project manager	2	4			
Postage, telephone and stationary	1	2			
Questionnaires	3	3			
Questionnaire summary	0	3			
Final report	0	2			
Total	56	167			

6.3 Program outcome

Perceived change in physical fitness

At the end of the seasons, the peer instructors were asked whether they perceived any changes in the physical fitness of the participants that attended the group exercise sessions led by them. As expected, the peer instructors felt inadequately equipped to answer this question for lack of adequate evidence. On the other hand, all of those who answered felt that the participants' balance, strength and motivation to exercise had increased, or remained the same (Figure 12).

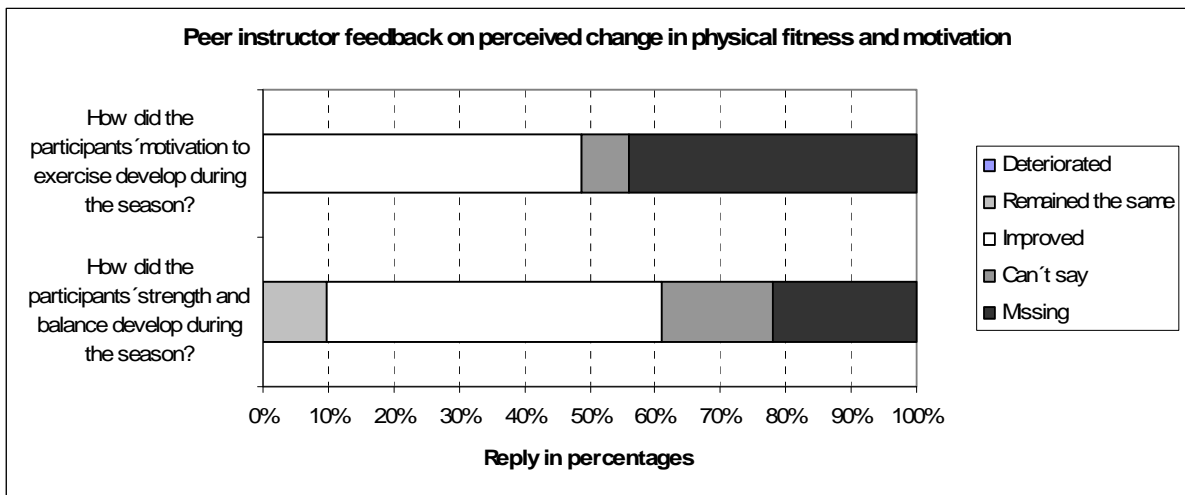


Figure 12. Feedback from peer instructors on the change in physical fitness and motivation of participants.

The participants were asked about possible changes in their physical fitness as a result of the exercise program, and whether they were motivated to exercise as a result of the information provided during the course of the program. Their replies are illustrated in figure 13.

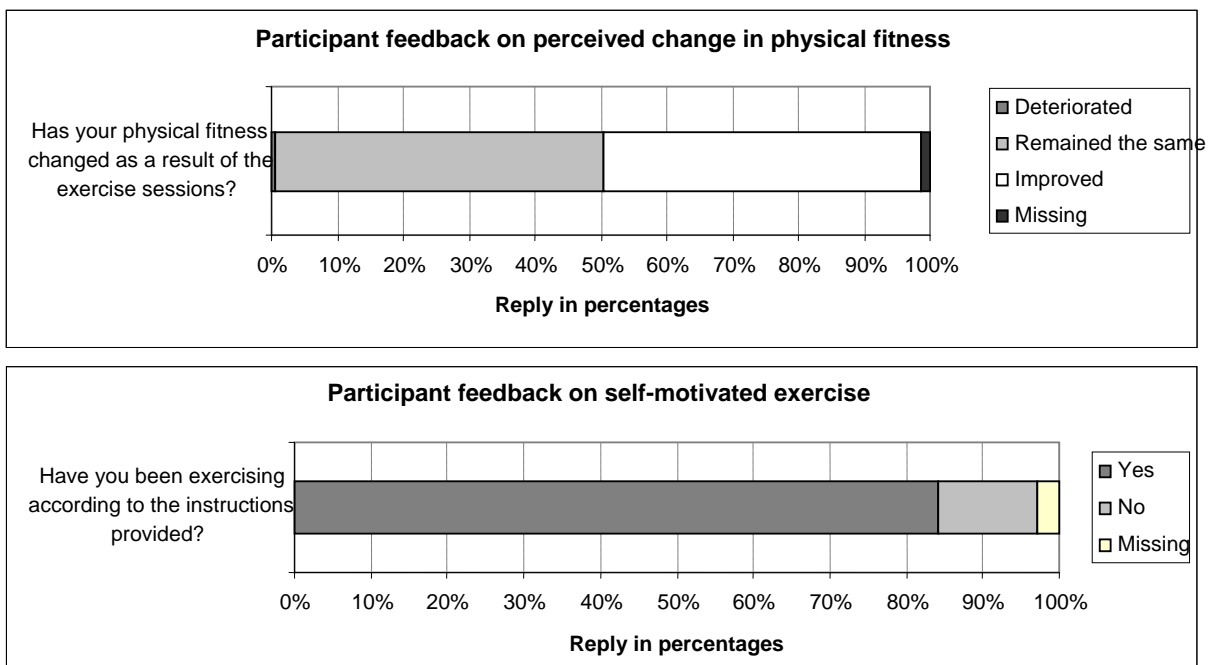


Figure 13. Feedback from participants on perceived change in physical fitness and on self-motivated exercise.

Paired t tests were run to compare differences in functional ability tests before (Test 1) and after (Test 2) the exercise program for a 95% confidence interval. The results are depicted in Figure 14. Although the participants improved their performance for the tandem standing and the chair stand tests; these improvements were not statistically significant.

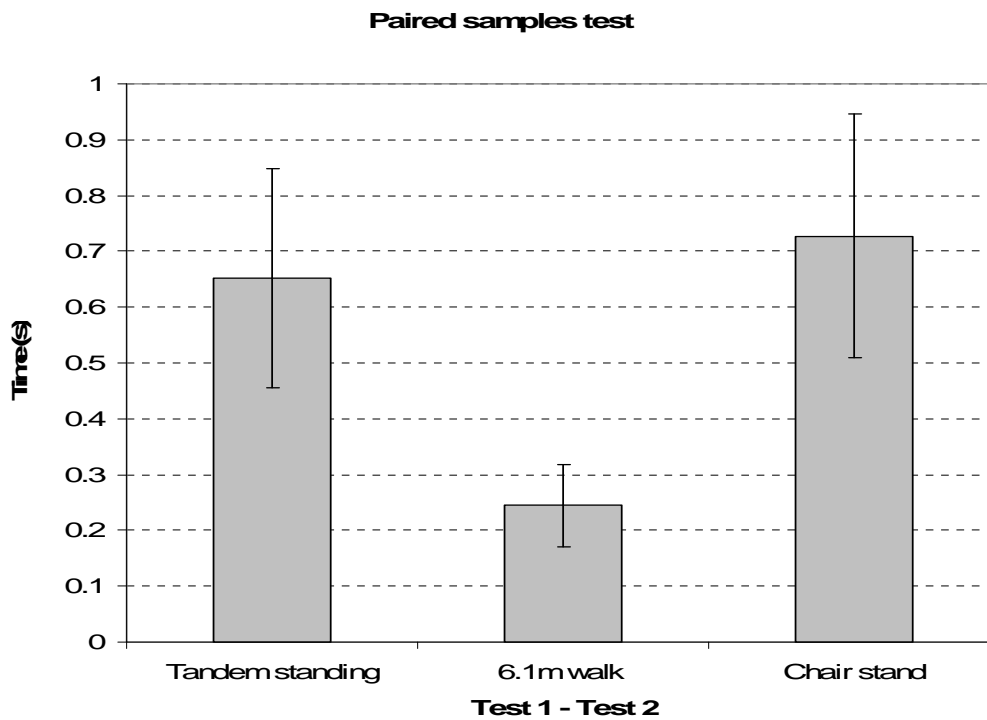


Figure 14. Paired t test comparing the differences in functional ability tests before (Test 1) and after (Test 2) the exercise program.

7. DISCUSSION

The project Elinvoimaa 75+ trained peer instructors to recruit participants and conduct exercise sessions in a feasible manner. Persons above 75 years of age and belonging to pensioner's societies in Finland were encouraged to adopt an active lifestyle and provided with opportunities to exercise under the guidance of peer instructors. The project attempts to tap potentially useful resources from the elderly population, including qualities such as shared life experiences, an understanding of the aging process and its effects, peer motivation and camaraderie. The opportunity to exercise in the presence of others who are of similar background, have retired from working life and are of similar status concerning health and life situations probably lowers the threshold towards adopting an active lifestyle and improves compliance. Evaluation of predictors of feasibility such as reach, safety, participant satisfaction, adherence and expenditure shows Elinvoimaa 75+ to be a sustainable and highly economical model for exercise implementation.

Developing suitable models for increasing physical activity among the elderly is the need of the hour for many societies of the western world. Finnish national recommendations for promotion of physical activity in the elderly are based on international recommendations. Instructors in Finland are usually trained health/rehabilitation professionals, with a large number of courses on physical activity for the aged available in the country (Hirvensalo and Lounassalo 2008). In Finland, the Age Institute in Helsinki has developed various models for increasing physical activity among the elderly by developing linkages between organisations involved with elderly care and social welfare. Service models include provision of exercise partners/friends to promote outdoor physical activity; especially in winter months, conducting walking tours and dancing sessions, use of mobile gymnasiums (bus equipped with gym equipment), and creating opportunities for shopping outdoors safely. According to the study by Hirvensalo and Lounassalo (2008), experts from the Age Institute, UKK-Institute, Ministry of social affairs and health, Ministry of education, cities of Jyväskylä, Joensuu and Turku, Pensioner's associations, KELA (the social insurance institution of Finland) and the LIKES- and GeroCentre research institutes together accounted for a total of 31 different ongoing programs for promoting physical activity for the elderly in Finland.

Although there have been studies evaluating the feasibility and acceptability of group exercise programs for the elderly, a group exercise model in which untrained members from the target population are employed as group leader/instructors has never been previously studied. Lazowski et al. (1999) reported the benefits of an exercise program delivered by non-exercise specialists and volunteers. However, this study was conducted on residents of long-term care institutions, not on the community-dwelling elderly population. Group exercise models reported so far (Rubenstein et al. 2000, Chin A Paw et al. 2001, Barnett et al. 2003, Ballard et al. 2004, Karinkanta et al. 2007) have essentially employed trained instructors to lead the groups and supervise exercise routines. Moreover, screening for diminished functional capacity and the identification of potential candidates for inclusion in exercise groups has been carried out by trained professionals (McMurdo and Burnett 1992, Barnett et al. 2003, Schumway-Cook et al. 2007). Peer instructors recruited participants and conducted exercise sessions for the participants of Elinvoimaa 75+. The data used for this study was also collected by the peer instructors themselves.

In the absence of trained professionals, the safety of participants is thought to be utmost importance for the program to succeed. The peer instructors of Elinvoimaa 75+ were trained in basic first aid, with instructions for action in case of emergencies. They were equipped with practical knowledge of group dynamics and fitness measurement techniques. All the participants were administered a health status screening questionnaire at the outset of the exercise sessions. This enabled the peer instructors to identify risks and potential dangers for each individual participant. Continuous professional support was provided through regular trainings and opportunities for all the instructors as well as participants to discuss individual goals with concerned professionals. Instructors were also given the possibility to request additional information and/or advice whenever required. This model ensures safety, increases self-reliance within exercise groups, and greatly reduces the need for professional supervision.

There is conflicting evidence over the effectiveness of group exercise versus unsupervised home exercise and the superiority of one over the other. King et al. (1991) and Donat and Özcan (2007) found that unsupervised home exercise and supervised group exercise without the use of any special equipment both led to improved balance, functional mobility, and flexibility. Others have reported that supervised group exercise of moderate to low-intensity is effective at improving balance (King et al. 1991, Shimada et al. 2003, Ballard et al. 2004,

Schumway-Cook et al. 2007), functional mobility (King et al. 1991, Schumway-Cook et al. 2007), flexibility (King et al. 1991, Brown et al. 2000), strength (King et al. 1991, Brown et al. 2000, Rubenstein et al. 2000, Ballard et al. 2004, Karinkanta et al. 2007), endurance (Rubenstein et al. 2000), gait (Rubenstein et al. 2000, Shimada et al. 2003) and proprioception, and can prevent/reduce falls (Rubenstein et al. 2000, Lord et al. 2003, Karinkanta et al. 2007, Schumway-Cook et al. 2007) and maintain physical functioning in frail older people (Cress et al. 1999, Brown et al. 2000, Rubenstein et al. 2000, Lord et al. 2003, Karinkanta et al. 2007). Worm et al. (2001), Day et al. (2002), Barnett et al. (2003), and Sjösten et al. (2007) combined a group exercise program with ancillary home exercises in their respective studies. Some studies have suggested that subjects may adapt better to home exercise sessions than to supervised sessions (King et al. 1991, Donat and Özcan 2007). The reason for this may be that the unsupervised home exercise group has the chance to exercise on the days of their own choosing. In general, improvement in functional ability and parameters of physical fitness depend largely on the type of exercises administered, whether at home or in a group exercise setting. Schumway-Cook et al. (2007) found that it was feasible to implement a community-based falls prevention program using existing resources such as senior centers, parks and recreation programs, and assisted and independent living facilities that have the capacity to offer group exercise programs to seniors. In addition to the group sessions, Elinvoimaa 75+ encouraged participants to exercise at home and walk regularly as an endurance-maintaining activity. Participants were also provided with a self-motivation home exercise plan.

Difficulties in recruitment, maintenance of study subjects and low adherence are common problems in intervention studies among the aged (Carter et al. 1991, Nowalk 2001). Sjösten et al. (2007) found that especially short-term interventions (Rubenstein et al. 2000, Morgan et al. 2004) lasting approximately 6 months or less, have been successful in regards to adherence, while in longer interventions adherence tends to decline (Nowalk et al. 2001, Barnett et al. 2003). However, direct comparison between results is difficult due to differences in definitions and measures of adherence and due to inaccurate reporting of the results. Barnett et al. (2003) achieved moderate adherence through a program that involved health practitioners in the process of participant assessment and recruitment. Elinvoimaa 75+ trained peer instructors to identify and recruit suitable candidates for inclusion in the program. This form of recruitment probably increased the reach of the program and improved adherence.

Inevitably, subjects who volunteer for such a study are already health conscious and may leave less potential for improvement (Wilhelmsen et al. 1976, according to McMurdo and Burnett 1992). Recruitment is thus likely to be biased in favour of such persons. If exercise is to be widely adopted among the elderly then it must not require expensive specialised equipment or an unreasonable expectation of what an average pensioner should have to do to attain benefit (McMurdo and Burnett 1992). Persons with lower levels of income and education as well as smokers consistently participate less frequently in health promotion programs. Also, different health promotion programs appear to attract different groups of older adults (Carter et al. 1991). Sjösten et al. (2007) found that infrequent feelings of loneliness, low self-perceived probability of falling at home and good physical functional abilities were significant predictors of active physical exercise group adherence. They suggested that motivational and concrete actions to minimize the barriers of participation (e.g. organizing groups near living facilities/housing or offering transportation) should be targeted at those with the poorest physical, cognitive and psychosocial functional abilities. Appropriate activities should be carefully planned before the program implementation to best suit the specific needs of aged individuals. In addition, good reachability and continuous motivation (e.g. by phone calls, home visits, booster sessions) might increase participation (Sjösten et al. 2007). Participation for Elinvoimaa 75 + may have been enhanced because a range of exercise alternatives were offered, and the groups could collectively decide the mode of exercise. Exercise alternatives included walking/Nordic walking programs, strength training in gyms, water exercise and forms of recreation such as dancing and sports/games. Exercise sessions were held in conjunction with regular society meetings, and took place in a social setting among people acquainted with one another.

Most of the economic evaluation studies with exercise interventions have focused on cost-effectiveness of prevention for falls and fall-related injuries (Robertson et al. 2001, Campbell et al. 2005). Timonen (2007) reported the costs of a group-based training program as 37.3 € for each participant per session. This figure included the cost of transportation and meals provided to the participants. With a budget of approximately 56 000 euros per year, Elinvoimaa 75+ trained 48 peer instructors during its first year. During the same time period, 268 participants attended group exercise classes and received advice and information about self motivated exercise. Costs per person amount to approximately 180 euros in a year (excluding transportation, meals or overhead costs such as venue rent). The program was

implemented using existing services and facilities in the community and is likely to be sustainable and transferable to other settings, as shown by previous studies (Barnett et al. 2003, Schumway-Cook et al. 2007). Since the Elinvoimaa 75+ exercise sessions are expected to continue in future, recurring costs for sustenance of the activities further reduce in subsequent years. Cost of exercise facilities and equipment itself were not funded by the project, and these are possible expenses that could be incurred by the participating groups. In many cases, the groups were able to find appropriate venues free of cost.

The effectiveness of such an exercise program in terms of quantitative measures of physical fitness such as strength, balance, flexibility and functional ability remains questionable. The data collected by non-professionals was inconsistent and proved difficult to analyze for research purposes. The lack of an appropriate control group made the effectiveness difficult to interpret. That being said, this study has demonstrated improvements in the patient parameters of self-perceived physical fitness, exercise motivation and satisfaction. Self-perceived physical fitness was studied from feedback obtained from the participants. Since the participants were very well-acquainted with the peer instructors, feedback for participant satisfaction and self-perceived physical fitness may have been biased. However, feedback was obtained anonymously and voluntarily.

Future studies should compare similar exercise programs among community-dwelling older adults and incorporate a multidimensional approach, investigating environmental factors and resulting medical modifications in addition to other potential sources of variation.

Fox et al. (2007) investigated the relationship between daily physical activity (group-based and home exercise) and sedentary living and indicators of mental well-being and quality of life. They also assessed the reliability and validity of a range of psychological instruments for the assessment of the aspects of well-being and life quality. Physiological effectiveness of the exercise should be compared with an appropriate control group, and effects on functional ability and falls should be studied. Apart from the impact of physical activity on physical health and function, effects on mental health, well-being, and quality-of-life should be studied using appropriate instruments.

Studies should include a long-term follow-up period to measure the sustainability of such an exercise program. Critical to the successful implementation of this type of community-based program are the development of public–private and state–local partnerships and linkages between senior service, health care, and public health organizations (Schumway-Cook et al. 2007). Additional research is needed to understand and respond to reasons for low participation in exercise classes.

8. CONCLUSIONS

Group exercise sessions can be successfully implemented by peer instructors in the elderly population; thus facilitating healthy and independent living amongst the elderly. The implementation of exercise sessions by peer instructors restricts the need for professional services to minimal training/advisory sessions. Program implementation itself does not require special equipment or space, but is intended to be carried out in conjunction with regular society meeting areas. Physical activity performed in such a group promotes social interaction and encourages participation from all members of the group.

Program feasibility included a study of the components of program reach, safety, drop-outs, participant satisfaction and expenditure. The program is a feasible method for the promotion of physical activity among the elderly.

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ELINVOIMAA 75+

Yhdistys: _____

M ____ N ____

Testilomakkeessa oleva numero _____

Ikä: _____

LIKKUMISKYKY

1. Pystyttekö kävelemään noin 2 km matkan?

4. selviän vaikeuksitta
3. pystyn, mutta on vähän vaikeuksia
2. pystyn, mutta on paljon vaikeuksia
1. en pysty ilman toisen henkilön apua
0. en pysty autettunakaan

2. Onko 2 km:n matkan kävelyssä tapahtunut kohdallanne seuraavia muutoksia terveytenne tai kuntonne takia?

	EI	KYLLÄ
a) tunnette väsyväne	0	1
b) kävelette hitaasti	0	1
c) joudutte levähtämään välillä	0	1
d) käytätte apuvälineitä	0	1
e) olette vähentänyt tämänpituisten matkojen kävelyä	0	1
f) olette lakannut kävelemästä tämänpituisia matkoja	0	1
g) muu muutos, _____	0	1

3. Pystyttekö kävelemään noin ½ km matkan?

4. selviän vaikeuksitta
3. pystyn, mutta on vähän vaikeuksia
2. pystyn, mutta on paljon vaikeuksia
1. en pysty ilman toisen henkilön apua
0. en pysty autettunakaan

4. Onko ½ km:n matkan kävelyssä tapahtunut kohdallanne seuraavia muutoksia terveytenne tai kuntonne takia?

	EI	KYLLÄ
a) tunnette väsyväne	0	1
b) kävelette hitaasti	0	1
c) joudutte levähtämään välillä	0	1

d) käytätte apuvälineitä	0	1
e) olette vähentänyt tämänpituisten matkojen kävelyä	0	1
f) olette lakannut kävelemästä tämänpituisia matkoja	0	1

5. Kuinka paljon keskimäärin kävelette ulkona asioidessanne? (kävely johonkin tiettyyn paikkaan, esimerkiksi kauppaan tai linja-autopysäkille, ns. hyötyliikunta)

keskimäärin _____ kertaa viikossa
 _____ km viikossa

6. Pystyttekö liikkumaan asunnossanne huoneesta toiseen? (ei kysytä, jos selviää vähintään ½ km:n kävelystä vaikeuksitta → merkitse: selviää vaikeuksitta)

4. selviän vaikeuksitta
3. pystyn, mutta on vähän vaikeuksia
2. pystyn, mutta on paljon vaikeuksia
1. en pysty ilman toisen henkilön apua
0. en pysty autettunakaan

7. Onko asunnossa liikkumisessanne tapahtunut seuraavia muutoksia terveytenne tai kuntonne takia?

	EI	KYLLÄ
a) tunnette väsyväne	0	1
b) kävelette hitaasti	0	1
c) joudutte levähtämään välillä	0	1
d) tukeudutte esim. huonekaluihin	0	1
e) käytätte apuvälineitä	0	1
f) olette vähentänyt asunnossanne liikkumista	0	1
g) olette lakannut liikkumasta asunnossanne	0	1

8. Pystyttekö kulkemaan portaissa yhden kerrosvälin?

4. selviän vaikeuksitta
3. pystyn, mutta on vähän vaikeuksia
2. pystyn, mutta on paljon vaikeuksia
1. en pysty ilman toisen henkilön apua
0. en pysty autettunakaan



Elinvoimaa 75+ -ryhmien vertaisohjaajien PALAUTEKYSELY

Nimi (vapaaehtoinen):

Pvm: ____/ ____ . 200__

1. Voimaa Vanhuuteen -hankkeen kohderyhmäksi on valittu henkilöt, joiden toimintakyky ja omatoiminen, itsenäinen selviytyminen ovat uhattuina.

Mikä on oma näkemyksenne siitä, miten hyvin Elinvoimaa 75+ hanke onnistuu kohdentamaan toimintaa juuri näihin henkilöihin?

- hyvin
- melko hyvin
- kohtalaisesti
- huonosti
- ei onnistunut

omat kommenttinne _____

2. UKK-instituutin vertaisohjaajakoulutuksen anti

Miten arvioitte seuraavien toimintojen onnistumista Elinvoimaa 75+ hankkeen ryhmissä

a) Terveysseulan täyttö ja tulkinta sujui

- hyvin
- melko hyvin
- kohtalaisesti
- huonosti
- ei onnistunut

omat kommenttinne _____

b) fyysisen toimintakyvyn mittaaminen (testit) onnistui

- hyvin
- melko hyvin
- kohtalaisesti
- huonosti
- ei onnistunut

omat kommenttinne _____

c) liikuntaryhmien sisällön suunnittelu sujui

- hyvin
 melko hyvin
 kohtalaisesti
 huonosti
 ei onnistunut

omat kommenttinne _____

d) liikuntaryhmien toteutus ja ohjaus onnistuivat

- hyvin
 melko hyvin
 kohtalaisesti
 huonosti
 ei onnistunut

omat kommenttinne (*esim. ilmapiiri ryhmissä*) _____

3. Mikä on oma näkemyksenne siitä, miten osallistujien tasapaino, lihasvoima ja liikuntamotivaatio kehittyivät harjoittelun aikana?

4. Oletteko saaneet riittävästi materiaalia, tietoa, koulutusta, neuvontaa ja apua omaa ja ryhmänne toimintaa varten Eläkkeensaajien Keskusliitolta?

- kyllä
 en

Mitä toivoisit toisella tavalla tai lisää: (voit jatkaa/toimittaa erillisellä paperilla)

- materiaalia _____
- tietoa _____
- koulutusta _____
- neuvontaa _____
- muuta apua _____



Osallistujien PALAUTEKYSELY



VOIMAA VANHUUTEEN
lääkäiden voima- ja tasapainoharjoittelu

Ohjatun yksilöllikunnan arviointilomake

pvm

Olkaa ystävällinen ja vastatkaa seuraaviin kysymyksiin

Nimi (vapaaehtoinen) _____ Ikä _____

1. Mistä saitte tiedon tästä harjoittelumahdollisuudesta?

2. Ovatko harjoittelupaikka- ja tilat Teille tarkoituksenmukaisia?

kyllä _____

ei, toivoisin _____

3. Onko harjoitteluajankohta Teille sopiva?

kyllä _____

ei, toivoisin _____

4. Pidättekö kustannuksia sopivina?

kyllä _____

ei, toivoisin _____

5. Onko ohjaustoiminta mielestänne pätevää?

kyllä _____

ei, toivoisin _____

6. Vastaako harjoittelun sisältö ennako-odotuksianne?

kyllä _____

ei, toivoisin _____

7. Onko harjoittelu mielestänne?

liian kevyttä/ helppoa sopivaa liian rasittavaa/ vaativaa

8. Onko kuntonne/liikkumiskykyenne muuttunut liikuntajakson vaikutuksesta?

kohentunut pysynyt samana heikentynyt

9. Onko Teillä harjoittelun seurauksena ilmennyt epämiellyttäviä rasisoireita tai erityistä väsymystä?

ei _____

kyllä, millaisia _____

10. Onko harjoittelulla ollut vaikutusta jaksamiseenne arkielämässä?

ei _____

kyllä, millaisia _____

11. Oletteko saanut ohjeita omatoimiseen harjoitteluun?

kyllä _____

ei, toivoisin _____

12. Oletteko harjoitellut annettujen ohjeiden mukaisesti?

kyllä _____

en, miksi _____

13. Oletteko saanut lisää tietoa voima- ja tasapainoharjoittelun merkityksestä?

kyllä _____

ei, toivoisin _____

14. Oletteko saanut riittävästi tietoa eri vaihtoehtoista harrastaa liikuntaa?

kyllä _____

ei, toivoisin _____

15. Haluaisitteko osallistua ryhmässä toteutettavaan liikuntaharjoitteluun?

kyllä _____

ei, toivoisin _____

16. Onko Teillä toiveita tai muutosehdotuksia harjoittelunne suhteen?

Kiitoksia vaivannäöstänne!



Ikäinstituutti

Kalevankatu 12 A, 00100 Helsinki, p. (09) 6122 160, www.volmaavanhuuteen.fi

ELINVOIMAA – 75+ -TERVEYSSEULA

Nimi _____

Päiväys ____/____ 200__

Vastatkaa seuraaviin kysymyksiin rengastamalla joko kyllä tai ei, sekä jatkokysymyksiin tarvittaessa .

1. Onko teillä lääkärin toteamaa sydämen, verenkierto- tai hengityselimistön sairautta?..... kyllä ei

Mikä _____

2. Esiintyykö teillä rintakipuja tai hengenahdistusta
 levossa kyllä ei
 rasituksessa..... kyllä ei

3. Sairastatteko verenpainetautiä tai onko lääkäri todennut verenpaineenne olevan toistuvasti kohonnut?
 kyllä ei

4. Oletteko tupakoinut säännöllisesti viimeisen 6 kk:n aikana?..... kyllä ei

5. Pyörryttääkö teitä usein tai kärsittekö huimauksesta?
 kyllä ei

6. Onko teillä lääkärin toteama tulehduksellinen nivelsairaus? kyllä ei

7. Onko teillä selkävaivoja tai muita tuki- ja liikuntaelinten pitkäaikaisia tai usein toistuvia vaivoja?
 kyllä ei

Mitä _____

8. Onko teillä jokin muu omaan terveyteenne liittyvä syy (jota ei edellä ole mainittu), jonka takia teidän ei tulisi osallistua liikuntaan, vaikka itse haluaisittekin?..... kyllä ei

Mikä _____

9. Käytättekö tällä hetkellä lääkkeitä? kyllä ei
Jos vastasitte kyllä, kertokaa lääkkeiden käyttötarkoitus

10. Oletteko viimeisen kahden viikon aikana sairastanut jotain tartuntatautia (flunssa, kuume)? kyllä ei

Mitä _____

11. Oletko viimeksi kuluneen vuorokauden aikana nauttinut runsaasti alkoholia (enemmän kuin 2 ravintola-annosta?)

..... kyllä ei

Osallistun Elinvoimaa 75+ -hankkeen ryhmän toimintaan omalla vastuullani. Lupaudun noudattamaan harjoituksissa annettuja ohjeita ja tekemään kaiken mahdollisimman huolellisesti ja harkitusti. Yhdistys ei ole vakuuttanut osallistujia, joten sitoudun vastaamaan mahdollisista loukkaantumisista itse.

_____ 200 _____

Allekirjoitus

Nimen selvennys

