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Health-related quality of life in home care recipients after a falls prevention intervention: a six months follow-up

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Abstract

Background: Falls in older adults are an increasingly important public health concern due to the expanding older population and contribute considerably to the global burden of disease. Home care recipients have a high incidence of falls and a low level of health-related quality of life (HRQOL). In this understudied group of older adults, exercise interventions could prevent falls, promote HRQOL and enable healthy ageing in the longer term.

Methods: The study is a single-blinded parallel-group randomised controlled trial, lasting three months with a follow-up at six months, conducted in primary care. The objective was to explore the effects of a falls prevention exercise programme post-intervention at a six months follow-up in home care recipients 67+ years with a history of falls. The Otago Exercise Programme lasting three months was performed. The primary outcome was HRQOL measured by the Short Form 36 Health Survey (SF-36). Linear mixed regression models and structural equation models were employed.

Results: At six months follow-up, the intervention group scored significantly higher on SF-36's physical component summary (PCS) compared to the controls; 3.0 points, 95% confidence interval (CI) = 0.4, 5.6. This effect was mediated by an increased probability of maintaining exercise in the post-intervention period; odds ratio = 2.3 (CI = 1.1, 5.1). Exercising was associated with a 7.1-point increase in PCS (CI = 3.2, 10.9).

Conclusion: A falls prevention exercise programme can improve physical HRQOL in home care recipients post-intervention. The exercise programme also led to longer term changes in exercise behaviour mediating this effect.

Key words: falls prevention, health-related quality of life, exercise, activity, home care

Introduction

Falls in older adults are an increasingly important public health concern due to the severe consequences and the rise in number of older adults, contributing considerably to the global burden of disease.[1] Globally, approximately 30% of home-dwelling older adults above 65 years and 50% above 80 years experience at least one fall yearly.[2] Falls are one of the main causes of longstanding pain, functional impairment and disability in the population of older adults, which can reduce health-related quality of life (HRQOL).[3, 4] Developing and maintaining functional abilities enabling well-being in older adults, defining healthy ageing, has received increased attention in international public health policy.[1]

Falls and injuries from falls are often a starting point for older adults consuming substantial health services like home care.[5, 6] Home care refers to care given by professional health workers at home, covering a range of activities from short-term rehabilitation to long-term assistance with daily activities, which are important to enable older adults to remain at home.[6] In Norway, about 12% of the population 67 to 79 years, 50% of 80 to 90 years and 90% of those 90 years and older receive home care.[7] Characteristics of home care recipients are high incidence of falls, low level of falls self-efficacy, poor physical function, medical instability and low level of HRQOL.[8, 9] Effective interventions for older adults in primary care are emphasised in public health policy.[10] Nevertheless, there is limited research including frailer older adults like home care recipients.[11] By targeting frailer older adults who have experienced falls, HRQOL could be improved, institutionalisation could be postponed or prevented, and economic costs could be reduced in the long term. [6, 12]

Previous research has demonstrated that exercise is effective preventing falls. [2, 13] The Otago Exercise Programme (OEP) is one approach of delivery of falls prevention that has shown to reduce the number of falls and injuries from falls, improve strength and balance and maintain falls self-efficacy in home-dwelling older adults.[14] Falls prevention exercise interventions may affect HRQOL positively through different mechanisms, for instance, by reducing falls injuries, and including this

outcome is of importance.[15] Measuring HRQOL specifically is vital since functional improvements might not necessarily have a direct positive effect on perceived HRQOL.[16] A recent study on the same sample showed that a falls prevention exercise programme based on OEP can improve short-term HRQOL.[17] The effect on HRQOL in the longer term is still unclear.[15, 18]

The health and social needs of the ageing population are typically complex and persisting, and health services should focus on maintenance of functional ability and physical activity, promoting quality of life in older adults and enabling them to remain at home.[10] Improving quality of life through exercise is likely to enhance the chance of continued participation in activity and increased future physical function.[19] Unfortunately, there is limited research on how exercise programmes can improve HRQOL.[20] Exploring mediators can help understand why and how an intervention works. Previous research has shown that exercise can be positive for physical performance in older adults in the long run, but the impact on other outcomes is unclear.[21, 22] We conducted a follow-up study three months after the intervention ended, to explore the prolonged effect of a falls prevention exercise programme as a strategy to promote HRQOL in home care recipients. We also explored the relative importance of maintaining exercise to improve HRQOL in the longer term.

Methods

Study design

This study was a single-blinded, parallel-group, randomised controlled trial with two arms. Group allocation was on a 1:1 ratio. The study was a follow-up based on measurements three months after either completing a falls prevention intervention or receiving usual care lasting three months. In this follow-up period, only usual care was provided. At intervention end, participants in both groups were encouraged to exercise until follow-up at six months. If requested, the participants received information on activities in their municipality. A study protocol provides more details on the design of the trial.[11] Further information on the study results at intervention end are available elsewhere.[17]

Reporting follows the CONSORT 2010 Statement.[23] The study was approved by the Regional Committee for Medical Research Ethics in South Norway (Ref. 2014/2051) and is registered in Clinical Trials (NCT02374307, first registration, 02/16/2015).

Setting and participants

The study was conducted in primary health care in six municipalities in Norway. Local clinical physiotherapists performed the intervention in the participants' homes. Participants were recruited from lists of people receiving professional home care. All participants provided written informed consent before baseline testing. Recruitment started in February 2016 and the last follow-up was conducted in September 2017. A flow diagram is provided as supplementary material.

Inclusion criteria were: 67+ years (retirement age), receiving home care, having experienced at least one fall during the last twelve months, able to walk with or without a walking aid and understand Norwegian. Exclusion criteria were: medical contraindications to exercise, life expectancy below one year (physician assessment), a score below 23 on the Mini-Mental State Examination (MMSE) indicating cognitive impairment[24], and currently participating in other falls prevention programmes or trials.

Intervention

The intervention group completed a falls prevention exercise programme based on the OEP [14] This is a programme focusing on individually adjusted strengthening and balance exercises and information on falls risks, exercise safety and activities in daily life. The twelve-week intervention consisted of five home-visits and seven motivational telephone calls. In addition, participants were encouraged to perform exercises on their own at least three times weekly and walk at least two times weekly. More details on the content are described in the OEP manual. [14]

Outcome measures

Trained assessors, who were blinded to group allocation, performed measurements in the participants' homes. Measurements were carried out at baseline, at intervention end at three

months and at six months follow-up. Background information like sex, age, falls history, living alone, education, medical history, walking aid use and type of home care was collected at baseline.

Primary outcome measure

Health-related quality of life (HRQOL) was the primary outcome, measured by the Short Form 36 Health Survey (SF-36).[25] The two summary scores of SF-36, the physical component summary (PCS) and the mental component summary (MCS) are based on eight subscales: physical functioning (PF), role limitations due to physical problems (RP) and due to emotional problems (RE), bodily pain (BP), general health perception (GH), vitality (VT), social functioning (SF) and mental health (MH). The scores range from 0-100 (worst-best) in each scale.

Secondary outcome measures

Balance was measured by the Bergs Balance Scale (BBS), which is a 14-item scale assessing static and dynamic balance.[26] Usual walking speed was measured by timing usual walking with or without walking aid for four meters (4MWT).[27] Leg muscle strength was measured by the 30-seconds sit-to-stand test (STS), where the number of rises from a chair in 30 seconds is reported.[28] Falls self-efficacy was measured by the Falls Efficacy Scale – International (FES-I).[29] This scale derives from a self-report questionnaire, assessing concerns about falling in 16 different daily activities.

At six months follow-up, all participants were asked about their level of exercise since their assessment at intervention end. Possible answers were: performing individual exercises, group exercises, both individual and group exercises or none. The participants were also asked about the number of falls since intervention end.

Sample size

The sample size was estimated based on the primary outcome, HRQOL (SF-36). We needed a sample of 150 participants to detect a difference of five points with a standard deviation of ten points on

the SF-36 summary scales PCS and MCS. Power was set to β=0.8 and the level significance to α=0.05. Included in the sample size, was an anticipated drop-out of 15-20% based on experiences from a study on a similar population.[30]

Randomisation

For randomisation, we applied a computer-generated permuted block scheme. Each block contained six subjects of the same municipality and sex. Research assistants who performed baseline testing enrolled the participants. The scheme allocated participants according to the sequence of enrolment. A double key number concealed the randomisation sequence. MB administered the scheme.

Statistical procedures

We conducted the statistical analyses in STATA/SE14.1. Comparisons between the intervention group and the control group in differences in changes of scores from baseline to six months follow-up were made using linear mixed models. We performed intention-to-treat (ITT) analyses including all randomised participants. Missing values were handled using multiple imputation techniques.[31] When more than 20% of the participants reached the highest or lowest possible score ceiling- and floor-effects were considered.

Differences in exercise level between groups are described by percentages and an odds ratio (OR). Two-sample t-tests were used to explore differences in characteristics of those continuing exercise and those discontinuing exercise. We fitted regression models and structural equation models to explore the mediating factors of the intervention on the effect on PCS. The structural equation model included a direct path and an indirect path through a mediator from the intervention to PCS.

Results

Participants

Table 1 shows the baseline characteristics of the 155 participants (77 intervention, 78 control group). Mean age was 82.7 years and 79.3% were females. They were all appointed different home care services and the majority received practical assistance or safety alarm service. Mean number of falls were 2.7 in the last twelve months and approximately 80.6% had minor or major injuries due to falls. More details on the characteristics of the sample are presented elsewhere.[8, 17]

Intervention effect

The ITT analysis, summarised in table 2, was based on 3x155 observations. The cumulative missing was 9.8%, including all analysed variables and observation points. Linear mixed models on scores from SF-36 at six months show that PCS was significantly higher in the intervention group compared to the control group, by 3 points (CI = 0.4, 5.6). The subscale MH was substantially lower in the intervention group compared to the control group by -6.8 points (CI = -11.9, -1.7). There were significantly less participants in the intervention group experiencing falls since the previous assessment compared to the controls; OR = 0.4 (CI = 0.2, 0.9). No other harms or unintended effects were reported in the follow-up period.

Considering within group changes, both groups improved significantly in some subscales from baseline to six months follow-up. On RP, the intervention group increased their score by 17.5 points (CI = 9.8, 25.1) and the control group by 13.6 points (CI = 6.3, 20.9). On SF, the intervention group improved by 15.6 points (CI = 9.9, 22.2) and the control group by 9.8 points (CI = 2.9, 16.8). On secondary outcomes, both groups improved significantly on BBS by 4.9 points (CI = 3.1, 6.9) in the intervention group and 3.5 (CI = 1.7, 5.3) in the control group. Both groups also achieved a better result on STS, by 1.2 raises (CI = 0.4, 2.0) in the intervention group and 1.1 (CI = 0.3, 1.9) in the control group.

A potential ceiling effect occurred on SF and RE at six months follow-up and these results must therefore be interpreted with caution.

Exercise in the follow-up period

In the intervention group, 80.3% exercised post-intervention, compared to 63.6% in the control group. In the intervention group, most did individual exercise (64.8%), while few exercised in a group (4.2%) and some did both (11.3%). In the control group, most participants also reported individual exercise (39.7%), but more exercised in groups (17.5%) and some did both (6.4%). The odds ratio of continuing with exercise in the intervention group post-intervention was OR = 2.3 (CI = 1.1, 5.1).

The differences in mean scores of SF-36, BBS, STS, 4MWT and FES-I, between those continuing activity and those discontinuing activity, are presented in table 3. Those who performed exercise post-intervention, irrespective of group allocation, had significantly higher scores on PCS by 7.1 points (CI = 3.2, 10.9), PF by 17.4 points (CI = 7.6, 27.2), RP by 11.7 points (CI = 0.6, 22.8), BP by 12.1 points (CI = 0.7, 23.5) and GH by 9.6 points (CI = 0.4, 18.8). On the physical measures, the participants who stayed active had significantly higher scores on BBS by 5.1 points (CI = 0.5, 9.7) and STS by 2.9 raises (CI = 1.0, 4.7) at six months follow-up.

Mediating factors of the intervention

The structural equation model, illustrated in figure 1, shows how exercise post-intervention was mediating the effect of the falls prevention exercise intervention on PCS at six months follow-up. Estimating the direct and indirect effect on PCS, gave the same OR as in the logit-model (2.3, CI = 1.1, 5.1). Exercising post-intervention was a mediating factor, increasing PCS with 7 points (CI = 3.1, 10.8) on average. The direct effect of the intervention on PCS vanished when exercising post-intervention was accounted for (β = 0.6, CI = -2.8, 4.1).

Discussion

This study shows that a falls prevention exercise programme had a significant effect on physical HRQOL in older home care recipients, three months post-intervention. The self-training in the follow-up period mediated the effect of the programme on physical HRQOL. Compared to the result immediately at intervention end, the effect on HRQOL declined slightly in the post-intervention period.[17]

This study contributes to previous research evaluating OEP for community-dwelling older adults by including home care recipients and having HRQOL as primary outcome. Related studies evaluating OEP have focused primarily on different physical outcomes and falls.[2, 22] This study also shows a significantly reduced incidence of falls post-intervention in participants who had performed the programme. Longer-term effects on physical HRQOL have been reported after six months, but limited to comparisons between individual exercise and group exercise.[22] Here, the control group received only usual care as would be standard in clinical practice. Moreover, a negative effect on the subscale mental health was shown in the intervention group at follow-up. A similar effect appeared at intervention end and can be explained by those who could not complete the programme due to sudden incidences who also scored lower on mental health.[17] They might have had higher expectations of positive health outcomes which were not fulfilled.

Relative improvements in HRQOL, physical function and falls self-efficacy in the intervention group were limited in this study. Although the three-point improvement in PCS in the intervention group is small, it has been acknowledged as a minimal clinical important difference.[32] Both groups improved significantly in several subdomains of SF-36, on BBS and on STS. A large percentage in the control group did also exercise in the post-intervention period which might have contributed to the smaller differences. The home-visits for assessment delivered by health professionals might have influenced exercise behaviour positively in the control group diluting the intervention effect.[33] Nevertheless, the participants were frail, medically unstable and had mobility-restrictions, and the focus should

rather be on preventing decline and maintaining function than showing large improvements.[34] Finally, exercise could have broader benefits (e.g. social function) beyond health alone, not necessarily detected by HRQOL instruments. [1]

Achieving longer-term effects on HRQOL of a home-based exercise intervention can be challenging, in particular in frail older adults.[15] However, for this group, exercising at home might be the only feasible option. Providing physical activity interventions at home can address the transportation barrier and make it easier to integrate into daily life improving adherence.[1] This study demonstrated that a large number of the participants completing the OEP continued exercising. This mediated the intervention effect on physical HRQOL and is in line with previous results suggesting that staying physically active can improve physical HRQOL in the long term.[35] Hence, health promotion programmes that facilitate or encourage increased physical activity in frailer older adults are of importance.[36]

Establishing long-term exercise behaviour in frail older adults is essential for maintaining the effects of an exercise intervention and preventing or postponing decline of functional performance and quality of life.[37] Previous research has shown that the best adherers are those who have better self-rated health, physical abilities and cognitive abilities.[38] This was also confirmed here. Participants who stayed active had better physical HRQOL, strength and balance compared to non-active. On the other hand, low adherence has been shown to be primarily due to change in health status.[39] Eighteen participants in the intervention group experienced sudden health incidences in the course of the programme and could not adhere fully to the OEP, for instance performing less exercise for a period of time. Nevertheless, even though many of the participants experienced different incidences, the drop-out rate was low. The flexible structure of the programme, with limited home-visits and the additional telephone calls focusing on self-management, could explain the good adherence. Previous research has shown that low cost self-management programmes can improve health status in older adults with chronic conditions.[40]

The pragmatic design of this study has both strength and limitations. The intervention was conducted in the participants' homes by local physiotherapists as part of their daily work. This design makes it easily replicable to clinical practice. Based on age and sex, the sample was representative of the population of older home care recipients, increasing the generalisability of the results.[7] Measurement tools had been chosen both considering time and equipment. Several of the measurements were self-reported, which might have increased the likelihood of recall and response bias. The level of exercise between intervention end and follow-up could have been described in more detail to be explored further. Finally, the follow-up at six months might be too short to show sustained differences in HRQOL in the longer term.

In conclusion, a falls prevention exercise programme can improve physical HRQOL in the longer term. The intervention increased the probability of maintaining exercise after the intervention ended and reduced the probability of experiencing falls. Exercise carried out post-intervention mediated the effect of the falls prevention programme on physical HRQOL. Staying active was associated with better physical HRQOL, balance, and leg strength at six months follow-up. Clinical practice should emphasise self-management exercise programmes for home care recipients to prevent falls and promote their HRQOL in the long term. Interventions to maintain frail older adults' functional ability and well-being are important to enable healthy ageing at home, which is an essential aim of public health policy around Europe.

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Conflict of interest

DAS is Director of Later Life Training Ltd., a UK based non-profit organisation providing training to therapists in the effective delivery of the OEP to older adults.

MB, TB, JCD and AB report no potential conflict of interest.

Key Points

- Falls in older adults are an increasingly important public health concern due to demographic changes with a rising number of older adults and the severe consequences of falls.
- A falls prevention exercise intervention based on the Otago Exercise Programme can improve physical HRQOL post-intervention in older home care recipients.
- Performing the exercise programme led to prolonged positive changes in exercise behaviour and reduced the risk of falls.
- Sustained exercise performed post-intervention mediated the positive effect on physical HRQOL at six months follow-up.
- The results from this study can advise clinicians and public health policy when developing and implementing effective interventions for frailer older adults promoting and maintaining their functional ability and well-being, and further enabling healthy ageing at home.

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Table 1. Baseline characteristics.

	Total (N=155)	Intervention (N=77)	Control (N=78)
Characteristics			
Age, mean (SD)	82.7 (6.7)	83.1 (6.7)	82.2 (6.7)
Sex, males, %	20.7	20.8	20.5
Living alone, %	84.5	83.1	85.9
Higher education (>12 years), %	36.1	32.5	39.7
No. of medications weekly, mean (SD)	5.3 (3.4)	5.1 (3.7)	5.4 (3.2)
Primary health care services			
Practical assistance, %	69.7	64.9	74.4
Nursing, %	30.3	26.0	34.6
Safety alarm service, %	75.5	79.2	71.8
Falls the last 12 months			
No., mean (SD)	2.7 (3.7)	2.5 (3.3)	2.9 (4.0)
Injuries from falls:			
No injuries %	19.5	22.1	16.9
Minor injuries %	45.5	45.5	45.5
Serious injuries, hospitalization %	35.1	32.5	37.7
SF-36 summary scores, mean (SD)			
Physical components	38.3 (9.0)	38.2 (9.0)	38.4 (9.1)
Mental components	49.4 (10.3)	50.4 (9.9)	48.4 (10.6)
SF-36 subscores, mean (SD)			
Physical function	44.6 (23.1)	44.6 (21.9)	44.7 (24.4)
Role physical	51.7 (29.7)	53.2 (30.1)	50.2 (29.4)
Body pain	53.8 (32.2)	53.8 (28.9)	53.8 (35.2)
General health	57.6 (23.3)	58.8 (22.7)	56.5 (23.9)
Vitality	38.3 (21.5)	39.0 (21.7)	37.5 (21.3)
Social function	66.9 (31.2)	67.7 (29.1)	66.0 (33.2)
Role emotional	75.8 (28.5)	78.0 (27.7)	73.6 (29.3)
Mental health	72.1 (17.4)	74.0 (16.8)	70.1 (17.8)
Physical measures			
Berg Balance Scale, mean (SD)	39.1 (11.3)	39.1 (11.1)	39.1 (11.6)
Sit to stand, mean (SD)	5.1 (4.1)	5.5 (3.8)	4.7 (4.4)
4-meter walk test m/sec, mean (SD)	0.6 (0.2)	0.6 (0.2)	0.6 (0.2)
Falls Efficacy Scale, mean (SD)	30.7 (9.8)	30.2 (10.1)	31.1 (9.6)

Descriptive statistics of the sample at baseline. SD, Standard deviation; N, number of individuals; SF-36, 36-Item Short Form Survey.

Table 2. Intention to treat analysis.

	Intervention group		**Control group**		**Differences between groups**	
	Mean 6m follow-up (SE)	Change 0m – 6m (SE)	Mean 6m follow-up (SE)	Change 0m – 6m (SE)	Change 0m – 6m (SE)	95% CI change 0m – 6m
SF-36 summary scores						
Physical components	41.3 (1.1)	3.0 (0.9)	38.4 (1.3)	0.1 (0.9)	3.0 (1.3)	0.4, 5.6
Mental components	52.0 (1.1)	1.7 (1.1)	53.1 (1.3)	4.7 (1.3)	-3.1 (1.7)	-6.4, 0.3
SF-36 subscores						
Physical function	48.6 (3.0)	4.0 (2.3)	45.2 (3.2)	0.5 (2.3)	3.6 (3.3)	-2.9, 0.0
Role physical	70.7 (3.2)	17.5 (3.9)	63.8 (3.7)	13.6 (3.7)	3.9 (5.4)	-6.8, 4.5
Bodily pain	56.9 (3.3)	3.2 (3.3)	52.4 (3.9)	-1.4 (3.2)	4.6 (4.5)	-4.3, 3.5
General health	60.6 (2.6)	1.8 (2.2)	57.3 (3.2)	0.8 (2.4)	0.9 (3.2)	-5.4, 7.3
Vitality	41.0 (2.4)	2.0 (2.4)	37.8 (3.1)	0.3 (2.3)	1.7 (3.3)	-4.7, 8.2
Social function	83.3 (2.9)	15.6 (3.4)	75.9 (3.7)	9.8 (3.5)	5.7 (5.0)	-4.0, 5.5
Role emotional	84.7 (3.1)	6.7 (3.7)	88.3 (2.7)	14.7 (3.3)	-8.0 (5.1)	-18.0, 1.9
Mental health	72.8 (2.1)	-1.2 (1.7)	75.7 (2.2)	5.5 (2.0)	-6.8 (2.6)	-11.9, -1.7
Physical measures						
Berg Balance Scale	44.0 (1.4)	4.9 (0.9)	42.6 (1.5)	3.5 (0.9)	1.4 (1.3)	-1.2, 3.9
Sit to stand	6.7 (0.6)	1.2 (0.4)	5.7 (0.6)	1.1 (0.4)	0.2 (0.6)	-1.0, 1.3
4-meter walk test	0.7 (0.0)	0.1 (0.0)	0.7 (0.0)	0.1 (0.0)	0.0 (0.0)	-0.0, 0.1
Falls Efficacy Scale	28.5 (1.1)	-1.7 (1.2)	29.8 (1.3)	-1.3 (1.2)	-0.4 (1.6)	-3.6, 2.8

Means at six months follow-up, changes from baseline to follow-up within groups and differences between groups estimated using linear mixed regression models with multiple imputation. Standard errors (SE) in parentheses, 95% confidence interval (CI).

Table 3. Effect of exercising post-intervention.

	Exercising	**Not exercising**	**Differences between groups**	
	Mean 6m follow-up (SE)	Mean 6m follow-up (SE)	Difference 6m follow-up (SE)	95% CI difference
SF-36 summary scores				
Physical components	42.4 (1.0)	35.4 (1.8)	7.1 (1.9)	3.2, 10.9
Mental components	52.4 (0.9)	52.8 (1.8)	-0.3 (1.9)	-4.0, 3.3
SF-36 subscores				
Physical function	53.7 (2.5)	36.3 (4.4)	17.4 (5.0)	7.6, 27.2
Role physical	71.1 (2.8)	59.4 (5.4)	11.7 (5.6)	0.6, 22.8
Bodily pain	58.9 (3.0)	46.8 (5.0)	12.1 (5.7)	0.7, 23.5
General health	62.4 (2.2)	52.9 (4.7)	9.6 (4.7)	0.4, 18.8
Vitality	42.8 (2.1)	35.1 (4.4)	7.7 (4.4)	-0.9, 16.3
Social function	83.6 (2.4)	73.6 (5.3)	10.0 (5.1)	-0.1, 20.1
Role emotional	85.9 (2.5)	87.3 (4.0)	-1.4 (4.7)	-10.7, 8.0
Mental health	74.9 (1.7)	73.1 (3.3)	1.8 (3.5)	-5.1, 8.7
Physical measures				
Berg Balance Scale	46.4 (1.0)	41.3 (2.8)	5.1 (2.3)	0.5, 9.7
Sit to stand	7.5 (0.5)	4.7 (0.9)	2.9 (0.9)	1.0, 4.7
4-meter walk test	0.7 (0.0)	0.7 (0.0)	0.0 (0.0)	-0.0, 0.1
Falls Efficacy Scale	28.3 (0.9)	29.8 (1.8)	-1.5 (1.9)	-5.2, 2.2

Differences in scores of SF-36 and physical measures by exercising/not exercising irrespective of group allocation. Complete case analysis. Standard errors (SE) in parentheses, 95% confidence interval (CI).

Figure 1. Structural equation model on the mediating factor of exercising post-intervention on PCS at six months follow-up. A latent error component (ε) is included on PCS. Regression coefficients (β), odds ratio (OR) and 95% confidence intervals (CI).