Can a tailored exercise and home hazard reduction program reduce the rate of falls in community dwelling older people with cognitive impairment or dementia?

A Randomised Controlled Trial

Statistical Analysis Plan*

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* This statistical analysis plan describes the efficacy analyses. The plans for economic analyses and a process evaluation will be presented separately.

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Administrative Information

The protocol for this study is registered with the Australian New Zealand Clinical Trials Registry ACTRN12614000603617.

The protocol paper is published[1]: Jacqueline CT Close, Jacqueline Wesson, Catherine Sherrington, Keith D Hill, Sue Kurrle, Stephen R Lord, Henry Brodaty, Kirsten Howard, Laura N Gitlin, Sandra D O'Rourke and Lindy Clemson. Can a tailored exercise and home hazard reduction program reduce the rate of falls in community dwelling older people with cognitive impairment: protocol paper for thei-FOCIS randomised controlled trial. BMC Geriatrics 2014 14:89.

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The signatories confirm that:

(a) they believe the procedures for analysing effectiveness and safety data from the iFOCIS trial described in this document are appropriate,

(b) their intention is to analyse the effectiveness and safety data from the iFOCIS trial using the procedures described in this document, and

(c) if, subsequently, the effectiveness and safety analyses are conducted in a way that differs importantly from the procedures described in this document, those differences will be made explicit in reports of those analyses.

Introduction

Cognitive impairment (CI), including dementia, has and will continue to have an enormous impact on society. In 2010, dementia was the third leading cause of death in Australia, the second leading cause of burden of disease and the leading cause of disability. Similarly, falls and fall related injury in older people continue to challenge health and social care systems on a worldwide basis. The rate of falls in community dwelling older people with dementia is twice that of a cognitively intact population with almost two thirds of people with dementia falling annually. Older people with dementia have a four-fold increased risk of hip fracture and a three-fold increased risk of 6-month mortality following a fracture when compared to older people without dementia. They are also more likely to enter residential aged care as a result of a fall related injury.

This randomised controlled trial will determine whether a tailored exercise and home hazard reduction program can reduce the rate of falls in community dwelling older people with cognitive impairment. We will also determine whether the intervention has beneficial effects faller status, injurious falls and on a range of physical and psychological outcome measures including quality of life of the participants and their carers. A health economic analysis examining the cost and potential benefits of the program will also be undertaken.

The primary outcome measure is rate of falls over the 12 month follow-up period using monthly falls calendars.

Study Outline

This is a two-arm parallel randomized controlled trial with a 1:1 allocation ratio.

A total of 310 individuals aged 65 years or older living in the community with cognitive impairment were recruited to participate in the trial. Each participant had an identifiable carer with a minimum of 3.5 hours of face to face contact each week.

Participants underwent an assessment at baseline with reassessments at 6 and 12 months. Those allocated to the intervention group participated in an exercise and home hazard reduction program tailored to their cognitive and physical abilities. Assessors were blind to group allocation.

Participants were randomised after completion of the baseline assessment. Randomisation was stratified by hospital recruitment site using computer generated random numbers with variable block sizes of 6–8. The randomisation was performed centrally using an independent web-based program by an investigator not involved in assessment or intervention. Figure 1 outlines the flow of study participants.

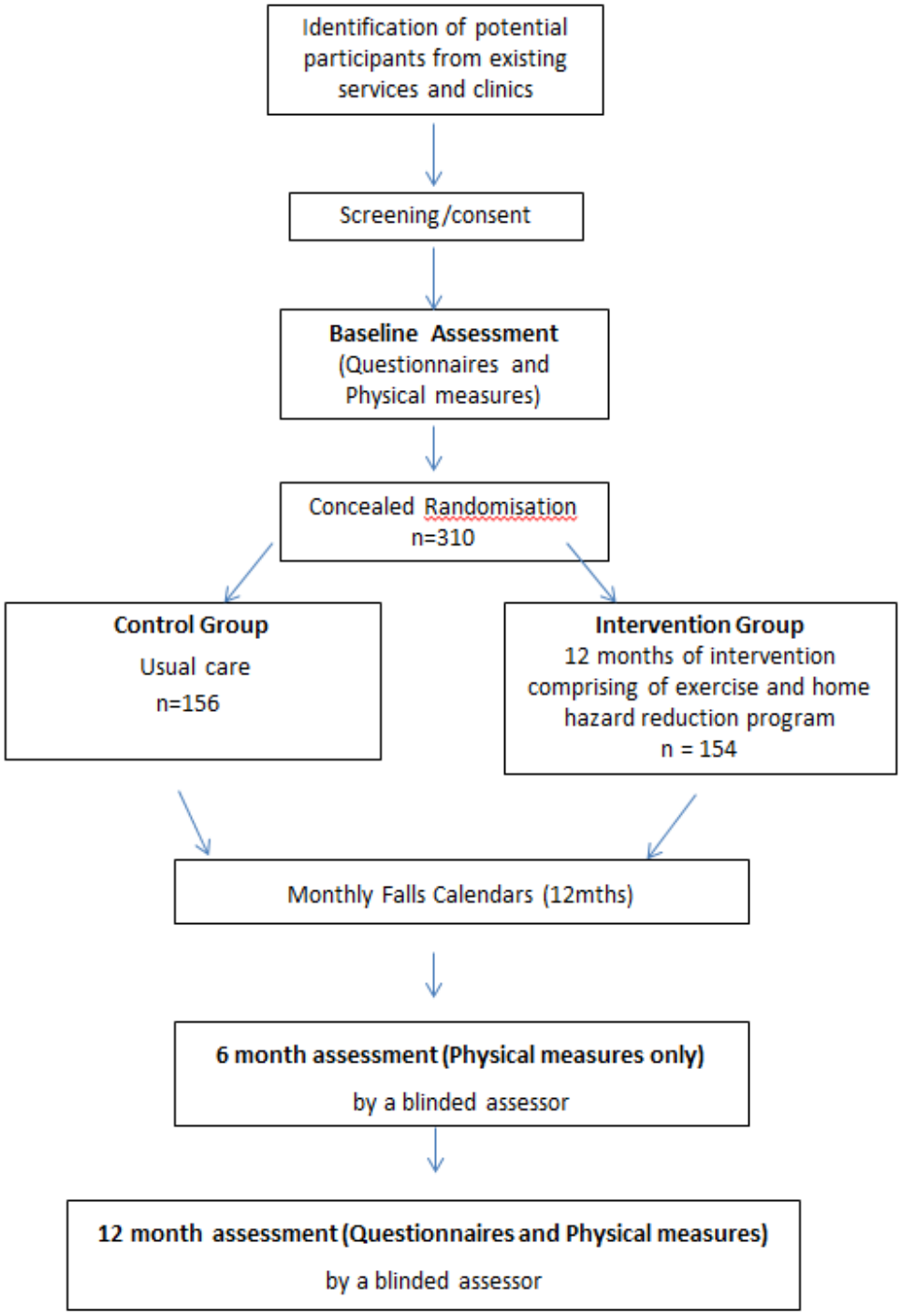

Table 1 lists the measurements undertaken at each time point and whether they are a primary or secondary outcome measure.

Table 1. List of measures collected at baseline (BA), 6 month (6A), and 12 month assessments (12A) for all study participants. (O=outcome measure)

Information collected for all participants	BA	6A	12A	O
Socio-demographics				
Age, gender, marital status, education, occupation, place and type of residence and number of co-habitants	Y	N	N	N
General health and function				
Disease history, medication use, assistive walking device and detailed information on previous falls and fractures.	Y	N	N	N
The Incidental and Planned Exercise Questionnaire (IPEQ) will provide estimates of the frequency and duration of planned and casual day-to-day activities	Y	N	Y	S
Disability Assessment for Dementia to assess everyday functioning	Y	N	Y	S
Quality of life				
The EQ5D-5L is a widely used utility-based quality of life instrument for estimating QALYs for economic evaluations	Y	Y	Y	S
Neuropsychological				
Fear of falling will be assessed using Icon-FES. The scale has excellent reliability, validity for people with CI, and responsiveness-to-change	Y	N	Y	S
The 15-item Geriatric Depression Scale will assess symptoms of depression	Y	N	Y	S
The 9-item Goldberg Anxiety Scale will assess symptoms of generalised anxiety	Y	N	Y	S
Frontal Assessment Battery	Y	N	Y	S
Addenbrooke's Cognitive Examination (ACE-III)	Y	N	Y	S
Physical Measures				
The Physiological Profile Assessment (measures visual contrast sensitivity, proprioception, quadriceps strength,	Y	Y	Y	S

simple reaction time, and postural sway while standing on a foam rubber mat with eyes open).	Y	Y	Y	S
Short Physical Performance Battery	Y	Y	Y	S
The Maximal Balance Range test (assesses the ability to lean as far forward and backwards as possible)	Y	Y	Y	S
The Coordinated Stability test (assesses the body position in a steady and coordinated manner when near the limits of their base of support).				
Carer interview and questionnaires				
Carer burden will be assessed with the Zarit Burden of Care Index	Y	N	Y	S
The EQ5D-5L for estimating QALYs for economic evaluations	Y	Y	Y	S
The Montreal Cognitive Assessment (MoCA) will be administered to consenting carers over 65 years	Y	N	N	N
Caregiver skill enhancement will be measured using the Task Management Strategy Index	Y	N	Y	S
Carer engagement assessed by the treating therapist using 5 point Likert scale	N	N	Y	S
Falls and Health Service Use				
Fall rate				P
Proportion of fallers and multiple fallers				S
Fall-related injuries				S
Planned and unplanned use of health services				S

Note: Y=YES, N=NO, BA=Baseline assessment, 6A= 6 month assessment 12RA=12 month reassessment, O=Outcome measure, S=Secondary, P=Primary

The study was approved by the South Eastern Sydney, Human Research Ethics Committee – HREC/14/POWH/132.

Statistical Principles

- The primary analyses will be conducted using intention-to-treat (ITT) analysis[2]

- Data will be coded to maintain group allocation blinding for primary outcome analyses
- All tests are two-sided and the nominal level of α will be 5%
- All statistical analyses will be unadjusted for baseline scores except where indicated
- Pre-specified subgroup analyses will be carried out irrespective of whether there is a significant treatment effect on the primary outcome
- Where data are missing, we will report the number of observations; we will not impute missing values for the primary outcome
- P-values will not be adjusted for multiplicity. However, the outcomes are clearly categorised by degree of importance (primary and secondary)
- P-values will be rounded to three decimal places. P-values less than 0.001 will be reported as <0.001
- Subgroup analyses are exploratory and the results should be treated with caution due to multiplicity and absence of pre-specified power calculations
- Secondary analysis will use complier average causal effect (CACE) analysis[3].

We will adhere to the four point strategy for ITT with incomplete observations proposed by White et al[2]. The analysis will be conducted by a statistician from NeuRA using SPSS and Stata. Efficacy analyses of the primary outcome will be independently replicated by one of the investigators (Professor Stephen Lord). Any discrepancies between the two analyses will be resolved by consensus.

Trial Population

A complete list of all eligibility criteria is available on page 2 and 3 of the study protocol. The flow of participants through the study will be reported in a CONSORT flow diagram. Reasons for exclusion will be provided.

The study sample will be described in detail using data obtained prior to randomisation. Table 1 shows the variables that will be used to describe the sample.

Outcomes

<u>Primary Outcome</u>

The primary outcome is rate of falls in the control and intervention group over the 1 year follow up period measured using prospective monthly falls calendars, carer assistance and follow-up telephone calls (for missing calendars) for 12 months.

Secondary Outcomes

Secondary outcome measures are number of fallers (single and multiple), fall-related injury, quality of life, physical activity levels, ability to complete activities of daily living, cognitive function, physical function, carer impact, adherence to the interventions, and planned and unplanned health care utilisation.

The endpoints are a between-group difference in the following measures:

Number of fallers

- Number/proportion of fallers (single and multiple) in the control and intervention group over the 1 year follow-up period measured using prospective monthly falls calendars, carer assistance and follow-up telephone calls (for missing calendars) for 12 months.

Fall-related injury

- Number of falls requiring medical attention over the 12 month follow up period
- Number of falls requiring hospital presentation and/or hospital admission over the 12 month follow up period
- Number of fall-related fractures over the 12 month follow-up period
- Number of days spent in hospital for a fall-related presentation

Quality of life

- European Quality of Life-5 dimensions (EQ-5D-5L), at 6, and 12 months for participants
- European Quality of Life-5 dimensions (EQ-5D-5L), at 6, and 12 months for carers

Physical activity levels

- The Incidental and Planned Exercise Questionnaire (IPEQ) assesses the level of physical activity relating to both basic and more demanding activities at baseline and 12 months. Results are reported by calculating hours of activity per week and include total, planned, incidental and walking activity

Activities of daily living

- Measured using the Disability Assessment for Dementia to assess everyday functioning at baseline and at 12 months

Neuropsychological function

- Fear of falls measured using Icon-FES
- Depressive symptoms measured using the 15-item Geriatric Depression Scale at baseline and at 12 months
- The 9-item Goldberg Anxiety Scale assessed symptoms of generalised anxiety at baseline and at 12 months
- Executive function assessed using the Frontal Assessment Battery at baseline and at 12 months
- Global cognition estimated using the Addenbrooke's Cognitive Examination (ACE-III) at baseline and at 12 months

Physical function

- Physiological Profile Assessment (PPA) summary score and individual components at baseline, 6 and 12 months. The individual components comprise: visual contrast sensitivity, hand reaction time, lower limb proprioception, knee extension strength and postural sway on foam
- Short Physical Performance Battery (SPPB) assessed at baseline, 6 and 12 months using; a) the 12-point scale and each of individual SPPB tasks, b) the continuous summary performance score (CSPS)
- Maximal balance range test at 6 and 12 months, measures the maximum distance participants can lean backward and forward
- Coordinated stability test score at 6 and 12 months, measures ability to adjust body position in a controlled manner when near the limit of the base of support

Carer impact

- The impact of caring for a person with dementia assessed with the Zarit Burden of Care Index at baseline and at 12 months.
- Care-giver skill enhancement measured using the Task Management Strategy Index (TMSI) at baseline and at 12 months.

Non fall related health service utilisation

- Number of non-fall related health care contacts over the 12 month period using data collected from the falls calendars
- Number of non-fall related hospital presentations and days spent in hospital over the 12 month period using data collected from the falls calendars

Adherence (intervention group only)

- Exercise intervention: The treating physiotherapist estimated (% adherence) adherence to the prescribed exercises during each visit of the 12-month intervention. Adherence will be reported as an average (%) during the 12-month intervention and by quarter of the intervention period.
- Occupational therapy: Adherence to the occupational therapy recommendations will be reported based on number of recommendations and completion of recommendations – not at all, partial or complete.

Physical function (intervention group only)

- The treating physiotherapist evaluated goal attainment in the intervention group using a four-level scale: deterioration from baseline ability, maintained baseline ability, goal met, goal exceeded

Carer Engagement (intervention group only)

- The treating PT and OT rated carer engagement on a 5-point Likert scale.

Analyses of Primary Outcome

The number of falls per person-year will be analysed using negative binomial regression in SPSS to estimate the difference in fall rates between the two groups (primary outcome). The incidence rate ratio and its 95% CI will be reported. This provides a more powerful analysis than a simple comparison of the proportion of fallers in the follow-up period, as it takes into account all falls during the trial, and also the distribution of falls. The primary analysis will be unadjusted. Additional adjusted analyses will be conducted if major imbalances between the groups at baseline are present. The model output will be examined to confirm that

negative binomial regression is more appropriate than Poisson regression. If not, Poisson regression will be used. Days of follow-up will be included as an exposure term in these models, i.e. the logarithm of the days of follow-up will be added as an offset. If outliers are present in the data or the model assumptions are grossly violated after treatment is included in the model, some sensitivity analyses will be conducted.

Analyses of Secondary Outcomes

The number and proportion of fallers in the two groups will be presented and faller status during follow up will be examined using modified Poisson regression models for binary outcomes. Faller status will be compared using a) 0 falls versus 1+ falls and b) 0-1 falls versus 2+ falls (multiple faller). Relative risks and their 95% CIs will be reported.

The main analyses for continuous outcomes will be conducted using generalized linear models and will compare the groups on 6 and/or 12-month assessment scores or change in scores over time adjusted for baseline scores, as appropriate. EQ-5D for both participant and carer and physical measures analyses will be conducted separately for each reassessment time-point (6 and 12-months) and will also be analysed using longitudinal methods. Planned and unplanned use of health services were measured using monthly exercise diaries during the 12 months follow-up and will be analysed using longitudinal methods.

Ordinal outcomes will be analysed for between group differences using ordinal regression. To maintain a sufficient cell size some categories may need to be collated.

The analyses will be adjusted only for baseline scores. Further adjusted analyses will be conducted if major imbalances between the groups at baseline are present.

If outliers are present in the data or the model assumptions are grossly violated after treatment is included in the model, some sensitivity analyses will be conducted.

The complier average causal effects will be estimated using instrumental variable regression.

A priori subgroup analysis

Subgroup analyses will be conducted on the primary and selected secondary outcomes for the following groups:

- Baseline physical function (above and below median PPA score)
- Baseline cognitive function (above and below median ACE-III score)
- Previous faller status (0 versus 1+ falls and 0-1 versus 2+ falls) in previous year
- Physical activity (above and below IPEQ median score)

For the primary outcome, fall rate (IRR), sub-group analyses will be undertaken using an interaction term in a negative binomial regression model to determine whether the effect of treatment significantly differs across subgroup categories. The incidence rate ratios for treatment effect within each of the subgroups will be reported, as well as the *p*-value for the interaction term.

For the primary outcome the number of declared subgroup analyses will be specified in all publications.

For the secondary continuous variables, sub-group analyses will be undertaken using interaction terms in linear regression models to determine whether the effect of treatment differs significantly across subgroup categories. The coefficients, confidence intervals and *p*-value for each of the subgroups and interaction terms will be reported.

For the secondary dichotomous outcomes the sub-group analyses will be undertaken using interaction terms in modified Poisson regression models. Relative risks and their 95% CIs for treatment effect within each of the subgroups will be reported as well as the p-value for the interaction test.

For the secondary count outcomes the main analysis for each subgroup will be an interaction test in a Poisson or negative binomial regression model to determine whether the effect of treatment differs significantly across categories for that particular subgroup. The incidence rate ratios for treatment effect within each of the subgroups will be reported, as well as the *p*-value for the interaction test.

Further adjusted analyses will be conducted if major imbalances between the groups at baseline are present.

Exploratory/posteriori analysis

Further exploratory analyses may be undertaken to explore a) differential effects by the subgroups outlined for the secondary outcomes and b) the impact of physical activity on falls (i.e. the effect of exposure) and c) the impact of carer engagement on falls. Further exploration based on propensity to exercise may also be conducted. .

Missing data and outliers

We will not impute missing values for the primary outcome. For individuals unable to carry out the physical tests due to physical impairments, the missing data are systematic, not random and these data will be imputed using the following procedures; a value of the mean± 3SD will be imputed. If subtracting 3SD from the mean results in a negative value, 0.1 will be allocated. A similar approach will be applied to individuals unable to undertake cognitive tests due to cognitive impairment. The mean and SD will be calculated from the scores of all participants who could complete the test. For cases where data are missing, we will use estimated marginal means single imputation as long as the values are missing at random and for no more than 10% of the cases. To calculate the PPA score, the log10 of scores is required, in some cases the proprioception score could equal zero, if this is the case a score of 0.16 will be given, this is in line with the existing PPA software.

Adverse events and safety endpoints

For the purpose of the trial, a serious adverse event was defined as an unwanted and usually harmful outcome (e.g., fall injury, seizure, cardiac event, unplanned hospitalisation and death). A minor adverse event was defined as musculoskeletal soreness that interferes with activities of daily living for more than 48 hours or requires medical attention. All serious and minor adverse events including deaths will be reported. Adverse events occurring during the delivery of the intervention will also be reported (intervention group only).

References

1. Close JCT, J Wesson J, Sherrington C, Hill KD, Kurrle S, Lord SR, Brodaty HB, Howard K, Gitlin LN, O'Rourke SD & Clemson L. Can a tailored exercise and home hazard reduction program reduce the rate of falls in community dwelling older people with cognitive impairment: protocol paper for the i-FOCIS randomised controlled trial. BMC Geriatrics 2014 14:89.
2. White IR, Horton NJ, Carpenter J, & Pocock SJ. Strategy for intention to treat analysis in randomised trials with missing outcome data. BMJ 2011 342, d40. doi:10.1136/bmj.d40
3. Fairhall N, Sherrington C, Cameron ID,Kurrle SE, Lord SR, Lockwood K, Herbert RD. A multifactorial intervention for frail older people is more than twice as effective among those who are compliant: complier average causal effect analysis of a randomised trial. Journal of Physiotherapy 2016 63: 40–44

Table Shells

Table 1. Baseline characteristics of participants and their carers

	Control (n=XXX)	Intervention (n=XXX)	Total (n=XXX)
Participant demographic characteristics			
Age (years)[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Male : female[b]	XXX (XX.X%) : YYY (YY.Y%)	XXX (XX.X%) : YYY (YY.Y%)	XXX (XX.X%) : YYY (YY.Y%)
Education years[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Lives alone[b]	XX (YY.Y%)	XX (YY.Y%)	XX (YY.Y%)
Mobility[b]			
Indoor walking aid use	XX (YY.Y%)	XX (YY.Y%)	XX (YY.Y%)
Outdoor walking aid use	XX (YY.Y%)	XX (YY.Y%)	XX (YY.Y%)
Falls in the previous 12-months[b]	XX (YY.Y%)	XX (YY.Y%)	XX (YY.Y%)
Fractures due to falls in the past 12-months[b]	XX (YY.Y%)	XX (YY.Y%)	XX (YY.Y%)
Medical conditions and medication use			
Total No Meds[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Use of Central Nervous System (CNS) medications[b]	XX (YY.Y%)	XX (YY.Y%)	XX (YY.Y%)
Number of Comorbidities[c]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Arthritis[b]	XX (YY.Y%)	XX (YY.Y%)	XX (YY.Y%)
Dementia[b]	XX (YY.Y%)	XX (YY.Y%)	XX (YY.Y%)
Diabetes[b]	XX (YY.Y%)	XX (YY.Y%)	XX (YY.Y%)
Stroke[b]	XX (YY.Y%)	XX (YY.Y%)	XX (YY.Y%)
Hypertension[b]	XX (YY.Y%)	XX (YY.Y%)	XX (YY.Y%)
Quality of life, Activities of Daily Living			
ADL, physical activity			
Quality of life EQ5D[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Disability Assessment for Dementia DAD	XX.X	XX.X	XX.X

(score % out of 40)[a]	(XX.X –XX.X)	(XX.X –XX.X)	(XX.X –XX.X)
Basic activities of daily living BADL[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Instrumental activities of daily living IADL[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Incidental and Planned Exercise Questionnaire IPEQ[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Fear of falls measured using Icon-FES[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Neuropsychological function			
Mini-ACE M-ACE[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Addenbrooke's Cognitive Examination ACE III total[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Frontal Assessment Battery FAB (out of 18)[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
15-item Geriatric Depression Scale[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
9-item Goldberg Anxiety Scale[c]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Physical function			
Physiological Profile Assessment PPA Falls risk Score[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Short Physical Performance Battery SPPB (0-12)[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Continuous Summary Performance Score CSPS[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Maximal balance range (mm)[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Coordinated stability[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Demographic characteristics of the carers			
Age of carer (years)[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Sex of carer	XXX (XX.X%) :	XXX (XX.X%) :	XXX (XX.X%) :

Male : female[b]	YYY (YY.Y%)	YYY (YY.Y%)	YYY (YY.Y%)
	XXX (XX.X%) : YYY (YY.Y%)	XXX (XX.X%) : YYY (YY.Y%)	XXX (XX.X%) : YYY (YY.Y%)
Carer Quality of life EQ5D[a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Carer burden Zarit (out of 88)[1a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Task management strategy Index TMSI[1a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)
Montreal Cog Assessment (out of 30)[1a]	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)	XX.X (XX.X –XX.X)

[a]Mean (95% CI), [b]Counts (column percentages), [c]Medians (first and third quartiles).

Table 2. Primary and secondary fall outcomes

			Regression model	
Fall outcomes	Control (n=XX)	Intervention (n=XX)	Coefficient (95% CI)	*p*- value
Primary outcome: rate of falls				
Incidence rate (95% CI)	XX (XX-XX)	XX (XX-XX)	XX (XX-XX)[a]	X.XXX
Secondary outcomes:				
Faller	XX (XX.X)	XX (XX.X)	XX (XX-XX) [b]	X.XXX
Multiple faller	XX (XX.X)	XX (XX.X)	XX (XX-XX) [b]	X.XXX
Fall related fracture	XX (XX.X)	XX (XX.X)	XX (XX-XX) [b]	X.XXX
Fall related hospitalisation	XX (XX.X)	XX (XX.X)	XX (XX-XX) [b]	X.XXX

[a]IRR – incidence rate ratio, [b]RR=risk ratio.

Table 3. Secondary outcomes at endpoints and between-group differences, 95% CIs and P values

Outcome variables	Baseline		6 months period				12 months period			
					Regression model[a]				Regression model[a]	
	Control (n=XX)[a]	Intervention (n=XX)[a]	Control (n=XX)[a]	Intervention (n=XX)[a]	Between-group difference (95% CI)	P value	Control (n=XX)[a]	Intervention (n=XX)[a]	Between-group difference (95% CI)	P value
Fall related injury										
Number of falls requiring medical attention	-	-	-	-	-	-	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX
Number of falls requiring hospital presentation and/or hospital admission	-	-	-	-	-	-	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX
Number of fall-related fractures	-	-	-	-	-	-	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX
Number of days spent in hospital for a fall-related presentation	-	-	-	-	-	-	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX
Quality of life										
European Quality of Life-5 dimensions (EQ-5D-5L) for participants	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX
European Quality of Life-5 dimensions (EQ-5D-5L) for carers	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX
Physical activity levels										
Incidental and Planned Exercise Questionnaire (IPEQ)	XX (XX-XX)[b]	XX (XX-XX)[b]	-	-	-	-	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX
Activities of daily living										

Measured using the Disability Assessment for Dementia to assess everyday functioning	XX (XX-XX)[b]	XX (XX-XX)[b]	-	-	-	-	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	
Neuropsychological function											
Addenbrooke's Cognitive Examination (ACE-III)	XX (XX-XX)[b]	XX (XX-XX)[b]	-	-	-	-	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	
Frontal Assessment Battery	XX (XX-XX)[b]	XX (XX-XX)[b]	-	-	-	-	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	
15-item Geriatric Depression Scale	XX (XX-XX)[b]	XX (XX-XX)[b]	-	-	-	-	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	
9-item Goldberg Anxiety Scale	XX (XX-XX)[b]	XX (XX-XX)[b]	-	-	-	-	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	
Fear of falls measured using Icon-FES	XX (XX-XX)[b]	XX (XX-XX)[b]	-	-	-	-	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	
Physical function											
Physiological Profile Assessment (PPA) summary score	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	
Short Physical Performance Battery	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	
Continuous Summary Performance Score CSPS	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	
Maximal balance range (mm)	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	
Coordinated stability	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	
Carer impact											
Zarit Burden of Care Index	-	-	-	-	-	-	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	
TMSI Task Management							XX	XX	XX (XX-XX)[c]	X.XXX	

Strategy Index							(XX-XX)[b]	(XX-XX)[b]			
Non fall related health service utilisation											
Number of non-fall related health care contacts	-	-	-	-	-	-	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	
Number of non-fall related hospital presentations and days spent in hospital	-	-	-	-	-	-	XX (XX-XX)[b]	XX (XX-XX)[b]	XX (XX-XX)[c]	X.XXX	

[a]Adjusted for baseline scores where available. [b]Mean (95% CI). [c]Generalized linear models.