Feasibility of home-based exercise with tablet and sensor: pilot study

No registrations found.

Ethical review	Positive opinion
Status	Pending
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON22191

Source
NTR

Health condition

Frailty

Sponsors and support

Primary sponsor: University Medical Center Groningen
RijksUniversiteit Groningen
Source(s) of monetary or material Support: ZonMW

Intervention

Outcome measures

Primary outcome

Feasibility (Adherence)

Secondary outcome

Daily activity (sensor data as well as self-reported)

Effectiveness on physical parameters(sensor data)

Study description

Background summary

Rationale: The number of older people in our society is rising. In general, older adults are more prone to chronic disease and compromised physical functioning, which can lower their daily functioning and quality of life. Physical activity is promising in health promotion. Home-based physical activity programs can potentially be helpful in retaining daily functioning in older adults, reducing fall risk and improving daily activity and quality of life. However, daily physical activity and adherence in home-based exercise programs is generally low. This compromises effectivity of home-based exercise programs in older adults.

Current developments in technology can assist in providing and optimizing home-based physical activity programs. Sensor technology combined with computer technology creates possibilities to remotely monitor and influence daily physical activity behavior in real life. A recent development in objective ambulant activity monitoring is a necklace-worn motion sensor (the Mobility Monitor). This sensor can be used to measure daily physical activity by detecting and monitoring postures and walking. This information can be used in interventions aimed at enhancing daily activity and functioning in older adults. The sensor has been used and tested in previous studies approved by the Medical Ethical Committee of the UMCG (METc 2010.111; METc 201.022; METc 2011.054). The next step is to determine the feasibility of a home-based exercise program including exercise instructions by means of an I-Pad and monitoring by means of the sensor for older adults.

Objectives: The aim of this pilot study is to demonstrate the feasibility of an individualized home-based physical activity program including exercise instructions by means of an I-Pad and monitoring by means of a necklace-worn motion sensor (Mobility Monitor) for older adults. An additional aim is to get a first impression on effectiveness of the program.

Primary research question is:

1. Is it feasible to perform a home-based exercise program including exercise instructions by means of an I-Pad and monitoring by means of a necklace-worn motion sensor (Mobility Monitor)?

Secondary research question is:

2. Does participation in a home-based exercise program (including the application of the Mobility Monitor and an I-pad) improve the daily amount of physical activity, measured both objective and self-reported?

In addition to answering these primary and secondary research questions, we aim to collect user opinions on the home-based exercise program, exercise instructions, monitoring by means of the necklace-worn motion sensor (Mobility Monitor), and use of a tablet solution (I-Pad). It is expected that collecting user opinions will be helpful in re-designing and improving the exercise program (including technology) for later interventions.

Study design: Prospective cohort study.

Study population: Forty-eight transitionally frail, independently living older adults (70-85 years).

Intervention: A home-based physical activity intervention including exercise instructions by means of an I-pad and monitoring by means of a necklace-worn motion sensor (Mobility Monitor). By means of the I-Pad and Mobility Monitor information will be gathered with respect to adherence to the program and physical activity behavior. Exercise routines will be provided by means of an I-pad showing videos of the exercises. Feedback on completion of the exercises as well as on daily activity will be provided by means of automatic text- and visual feedback on the I-pad. Participants will be exercising at home for 6 months (3 months intervention and 3 months follow-up), 5 times a week. The exercise program will be an individually tailored program based on the Otago Kitchen Table exercise program. This program is extensively tested and generally accepted in literature. Progression through the levels in the exercise program will be individual and in consultation with a coach through weekly telephone contact.
Measurement appointments will be at pre-, post- and follow-up (0, 3 and 6 months).

Main study parameters/endpoints:

Feasibility

Nature and extent of the burden and risks associated with participation, benefit and group relatedness: The intervention consists of a home-based physical activity intervention of 3 months with 3 months follow-up. The exercise program is based on the Otago Kitchen Table exercise program. This program is promoted as one of the most tested (4 randomized controlled trials and 1 controlled multi-center trial) fall prevention programs by the Centers for Disease Control and Prevention (Centers for Disease Control and Prevention (http://www.cdc.gov/HomeandRecreationalSafety/Falls/compendium/1.2_otago.html). The program is used worldwide. The program is an individually tailored program of muscle strengthening and balance-retraining exercises of increasing intensity, Overall, the fall rate was reduced by 35 percent among program participants compared with those who did not take part.
Subjects are asked to perform 5 exercise sessions each week. It is possible to progress in intensity during the program. Progression is initiated by the subject. Safety is ensured by personal tailoring of the exercise intensity, exercises that are based on functional every-day movements and weekly telephone contact with the coach. At baseline, after 3 months and after 6 months several questionnaires are completed. During the 6-month intervention, subjects wear the Mobility Monitor during daytime. Wearing the sensor causes no additional risks.

Study objective

Use of exercise instructions by means of a tablet and monitoring by means of a necklace-worn motion sensor is beneficial for adherence in home-based exercise programs for older adults.

Study design

Feasibility will be assessed at 3 and 6 months into the intervention.

Daily activity and physical parameters will be assessed at 0, 3 and 6 months into the intervention.

Intervention

A home-based physical activity intervention including exercise instructions by means of a tablet and monitoring by means of a necklace-worn motion sensor (Mobility Monitor). By means of the tablet and Mobility Monitor information will be gathered with respect to adherence to the program and physical activity behavior. Exercise routines will be provided by means of a tablet showing videos of the exercises. Feedback on completion of the exercises as well as on daily activity will be provided by means of automatic text- and visual feedback on the tablet. Participants will be exercising at home for 6 months (3 months intervention and 3 months follow-up), 5 times a week. The exercise program will be an individually tailored program based on the Otago Kitchen Table exercise program. This program is extensively tested and generally accepted in literature. Progression through the

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Contacts

Public
Universitair Medisch Centrum Groningen
Bewegingswetenschappen
A. Deusinglaan 1

Hilde Geraedts
Groningen 9713 AV
The Netherlands
050-363 8846
Scientific
Universitair Medisch Centrum Groningen
Bewegingswetenschappen
A. Deusinglaan 1

Hilde Geraedts
Groningen 9713 AV
The Netherlands
050-363 8846

Eligibility criteria

Inclusion criteria

• 70 – 85 years old

• Transitionally frail (Groningen Frailty Indicator 4-5)

• Community-dwelling or living in assisted housing; self-sufficient

• Be able to walk at least 10m unsupported or while using a walking aid, such as a cane or walker

Exclusion criteria

• Participation in other interventions addressing daily activity enhancement or strength- and balance amelioration

• Total hip or knee replacement surgery in the previous 6 months

• Visual problems to a degree that makes it impossible for the subject to accurately read the questionnaires or walk around safely in their own home

• Having had a stroke within the last 6 months

• Parkinson’s disease stage 4 or 5

• Other neurologic diseases that can impair daily functioning (f.i. dementia)

Study design

Design

Study type:	Interventional
Intervention model:	Other

Control: N/A , unknown

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-03-2014
Enrollment:	50
Type:	Anticipated

IPD sharing statement

Plan to share IPD: Undecided

Ethics review

Positive opinion

Date:	14-11-2013
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
NTR-new	NL4049
NTR-old	NTR4265
Other	ZonMW : 40-00812-98-09014
ISRCTN	ISRCTN wordt niet meer aangevraagd.

Study results

Summary results
N/A