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Effects of a map-based personalized intervention to promote walking in older adults

Submission date
19/11/2024

Recruitment status
No longer recruiting

Registration date
22/11/2024

Overall study status
Ongoing

Last Edited
03/07/2025

Condition category
Other

[X] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

Plain English summary of protocol

Background and study aims
There is growing evidence that even low-intensity physical activity (e.g., walking at a “normal” pace) produces substantial health benefits. Walking is “universally accessible”, even for mobility-limited and chronically ill older people. To date, little consideration has been given to the environment and individual preferences of older people when promoting walking. A personalized approach based on geographic information systems (GIS) could help address the problem of low long-term adherence to walking programs. MOBITEC-Routes aims to investigate the effects of individualized, map-based walking promotion for mobility-limited and chronically ill older adults on walking (average steps/day) and further health-related parameters after 15 weeks of intervention (primary aim) and another 8 months of follow-up.

Who can participate?
Inactive, mobility-limited, community-dwelling older adults aged 65+ years old

What does the study involve?
Assessment of outcome parameters will take place at baseline, after a 15-week intervention period and after another 8 months of follow-up. The experimental intervention will offer personalized promotion of habitual walking, delivered by an exercise professional in face-to-face and telephone sessions. Opportunities to increase leisure and utilitarian walking will be identified by using interactive digital maps and a map-based activity plan will be set up. Behaviour change strategies (according to the HAPA model) will be employed. The control intervention will include general information on determinants of health (including sedentary behaviour, physical activity, sleep and nutrition) provided by an exercise professional. The primary outcome is walking (average steps per day) measured by accelerometry. Secondary outcomes include time spent lying, sitting, standing and stepping (accelerometry); physical function (battery of functional tests); real-life mobility (GPS and self-report); health-related quality of life (self-report); fall-related self-efficacy (self-report); active aging (self-report); and constructs of the Health Action Process Approach (HAPA) model (self-report). Statistical comparisons between the experimental and control groups will be undertaken.

What are the possible benefits and risks of participating?
The intervention focuses on the promotion of walking at the participant's comfortable, habitual

walking speed (equivalent to “low-intensity” physical activity); i.e., the cardiovascular or musculoskeletal risk does not exceed the risk of usual everyday life. The benefits of the intervention are expected to outweigh the potential risks.

Where is the study run from?
The Department of Sport, Exercise and Medicine, University of Basel, Switzerland

When is the study starting and how long is it expected to run for?
December 2023 to September 2027

Who is funding the study?
Velux Stiftung, Switzerland

Who is the main contact?
Dr Timo Hinrichs (Principal Investigator), timo.hinrichs@unibas.ch

Contact information

Type(s)
Public, Scientific, Principal investigator

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Additional identifiers

Protocol serial number
1782

Study information

Scientific Title
Increasing habitual walking by promoting purposeful activities in the neighbourhood: effects of a personalized, GIS-based intervention for mobility-limited and chronically ill older adults

Acronym
MOBITEC-Routes

Study objectives
MOBITEC-Routes aims to assess the effects of an individualized, map-based habitual walking programme for mobility-limited and chronically ill older adults on walking (average steps/day) after 15 weeks of intervention (primary objective) and after another 8 months of follow-up. The main hypothesis is that the experimental intervention (individualized, map-based promotion of walking at habitual, comfortable speed) is more effective for increasing walking (average steps /day) than the control intervention (general health information).

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 19/11/2024, Ethics Committee of Northwestern and Central Switzerland (EKNZ) (Tellplatz 11, Basel, 4053, Switzerland; +41 61 268 13 50; eknz@bs.ch), ref: 2024-02094

Primary study design
Interventional

Study design
Prospective two-arm single-centre randomized controlled trial

Study type(s)
Prevention

Health condition(s) or problem(s) studied
The study targets the walking behavior of inactive, mobility-limited, community-dwelling older adults aged 65+.

Interventions
The study is designed as a prospective, two-arm randomized controlled trial (single-centre). Balanced permuted block randomization with variable block sizes will be used to allocate participants to groups (ratio 1:1). Assessment of outcome parameters will take place at baseline, after a 15-week intervention period and after another 8 months of follow-up.

The experimental intervention includes a 15-week personalized counseling program aimed at promoting walking at a normal, comfortable speed. The program is delivered by an exercise professional through in-person and phone sessions. Using digital geographical maps, the sessions jointly explore opportunities to increase both leisure and utilitarian walking and create individualized route plans and walking schedules. Additionally, behavior change strategies are employed.

The control intervention focuses on giving general information on determinants of health. Topics include, e.g., sedentary behavior, physical activity, sleep, and nutrition. In contrast to the experimental intervention, no behavior change strategies are applied.

Intervention Type
Behavioural

Primary outcome(s)
Average steps per day are measured using an accelerometry at baseline (T0), directly after the 15-week intervention period (T1) and after another 8 months of follow-up (T2)

Key secondary outcome(s)
The following secondary outcome measures will be assessed at baseline (T0), directly after the 15-week intervention period (T1) and after another 8 months of follow-up (T2):
1. Time spent lying, sitting, standing and stepping (and the respective bout lengths) measured using an accelerometry over 7 days
2. Real-life mobility measured using GPS over 7 days and by the University of Alabama at Birmingham Life Space Assessment
3. Physical function measured using the following battery of functional tests:
3.1. Standing balance measured using postural sway during 10s of semi-tandem stance on a force platform
3.2. Lower body strength measured using a timed test of 5 sit-to-stand repetitions on a force platform
3.3. Habitual and maximum walking speed measured using 10m walks using a light barrier system
3.4. Basic functional mobility and coordination measured using timed up-and-go test
4. Health-related quality of life measured by the Medical Outcomes Study 36-item Short-Form Survey
5. Active aging measured using the University of Jyvaskyla Active Aging Scale
6. Fear of falling measured using the Falls Efficacy Scale – International Version
7. Health behavior change measured using a self-report based on the constructs of the Health Action Process Approach model

Completion date
30/09/2027

Eligibility

Key inclusion criteria
1. Age 65 years and older
2. Living in own home
3. Self-reported mobility limitation, defined as at least “some difficulty” in either walking 2 km or climbing one flight of stairs
4. Ability to walk short distances outdoors (minimum 200 metres)
5. At least one chronic disease according to the “Self-Administered Comorbidity Questionnaire” (SCQ): heart disease, high blood pressure, lung disease, diabetes, ulcer or stomach disease, kidney disease, anemia or other blood diseases, cancer, depression, osteoarthritis, degenerative arthritis, back pain and/or rheumatoid arthritis
6. Medical clearance by study physician
7. Written informed consent

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Senior

Lower age limit
65 Years

Sex
All

Key exclusion criteria
1. Inability to attend or complete the proposed course of intervention
2. Having a second home location and regularly spending more than 2 days per week at the second location
3. Being a spouse or living in the same household as a study participant
4. Regularly performing exercises, sporting activities or leisure activities of at least moderate intensity for more than 2 hours per week
6. Walking outdoors for more than 3 hours per week
7. High risk for adverse events related to physical activity (based on the study physician's judgement); medical exclusion criteria include: untreated arterial hypertension or significantly elevated resting blood pressure (>180/100 mmHg) despite antihypertensive medication; higher-level chronic heart failure (New York Heart Association (NYHA) class III-IV); higher-level chronic obstructive pulmonary disease (Global Initiative for Obstructive Lung Disease (GOLD) stage IV); acute psychiatric disorder (e.g. severe depression); advanced terminal illness; having suffered a clinically relevant cardiovascular event (e.g. unstable angina pectoris, myocardial infarction, coronary angiography and/or angioplasty), a clinically relevant cerebrovascular event (e.g. stroke, recurrent TIA), or deterioration of insufficiently controlled diabetes within the previous 3 months; a HbA1c >10% (if available); or having suffered an injurious fall requiring medical treatment within the past 12 months.
8. On-going rehabilitation measures following an inpatient surgical procedure
9. Concurrent participation in another clinical trial

Date of first enrolment
02/12/2024

Date of final enrolment
30/09/2026

Locations

Countries of recruitment
Switzerland

Study participating centre
Department of Sport, Exercise and Health (DSBG), University of Basel
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4052

Sponsor information

Organisation
University of Basel

ROR
https://ror.org/02s6k3f65

Funder(s)

Funder type
Research organisation

Funder Name
Velux Stiftung

Results and Publications

Individual participant data (IPD) sharing plan
The data sets generated and/or analyzed during the current study will be available upon request from (PD Dr. Timo Hinrichs, timo.hinrichs@unibas.ch).

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Protocol article		02/07/2025	03/07/2025	Yes	No
Study website	Study website	11/11/2025	11/11/2025	No	Yes