

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

Submission date 19/11/2024	Recruitment status Recruiting	<input checked="" type="checkbox"/> Prospectively registered <input checked="" type="checkbox"/> Protocol
Registration date 22/11/2024	Overall study status Ongoing	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
Last Edited 03/07/2025	Condition category Other	<input type="checkbox"/> Individual participant data <input checked="" type="checkbox"/> 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

Study website

<https://mobility.dsbg.unibas.ch/projects/mobitec-routes/>

Contact information

Type(s)

Public, Scientific, Principal Investigator

Contact name

Dr Timo Hinrichs

ORCID ID

<https://orcid.org/0000-0001-6200-307X>

Contact details

Department of Sport, Exercise and Health (DSBG)

University of Basel

Basel

Switzerland

4052

+41 61 207 47 43

timo.hinrichs@unibas.ch

Additional identifiers

EudraCT/CTIS number

Nil known

IRAS number

ClinicalTrials.gov number

Nil known

Secondary identifying numbers

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

Study design

Prospective two-arm single-centre randomized controlled trial

Primary study design

Interventional

Secondary study design

Randomised controlled trial

Study setting(s)

Community, Internet/virtual, Telephone

Study type(s)

Prevention

Participant information sheet

Not available in web format, please use contact details to request a participant information sheet.

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 measure

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)

Secondary outcome measures

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

Overall study start date

01/12/2023

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

Age group

Senior

Lower age limit

65 Years

Sex

Both

Target number of participants

130

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

Grosse Allee 6

Basel

Switzerland

4052

Sponsor information

Organisation

University of Basel

Sponsor details

Department of Sport, Exercise and Health (DSBG), Grosse Allee 6

Basel

Switzerland

4052

+41 61 207 47 79

sekretariat-dsbg@unibas.ch

Sponsor type

University/education

Website

<https://dsbg.unibas.ch/de/>

ROR

<https://ror.org/02s6k3f65>

Funder(s)

Funder type

Research organisation

Funder Name

Velux Stiftung

Results and Publications

Publication and dissemination plan

Planned publication in peer-reviewed journal

Intention to publish date

30/09/2028

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