ISRCTN14808838 https://doi.org/10.1186/ISRCTN14808838

# Promoting physical activity in adults with high blood pressure through eHealth

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|---|---|---|
| **Submission date** | **Recruitment status** | [X] Prospectively registered |
| 02/02/2026 | No longer recruiting | [ ] Protocol |
| **Registration date** | **Overall study status** | [ ] Statistical analysis plan |
| 03/02/2026 | Completed | [ ] Results |
| **Last Edited** | **Condition category** | [ ] Individual participant data |
| 03/09/2026 | Circulatory System | [X] Record updated in last year |

**Plain English summary of protocol**

Background and study aims

Promoting physical activity is an important lifestyle intervention for preventing and managing disease. Supporting individuals with lifestyle-related conditions, such as high blood pressure, to reach the physical activity levels recommended by the World Health Organization is therefore a public health priority.

This study aims to evaluate the effects of a physical activity promotion intervention in Swedish primary healthcare for patients with high blood pressure. The intervention includes both counselling sessions with a healthcare professional and the use of an app, called ProMotion, which is designed to support physical activity.

Who can participate?

Adults aged 18–85 years and being insufficiently physically active who have recently (≤3 months) been diagnosed with high blood pressure by primary healthcare.

What does the study involve?

All participants in the study will receive a physical activity promotion intervention. The intervention is delivered in two phases (B-C). In Phase B, participants will monitor their physical activity in a diary for 4 weeks. In Phase C, participants will use an app designed for physical activity promotion in combination with counselling with a healthcare professional for 8 weeks. Before the intervention, all participants will be assigned to one of three baseline phases (either two, three or four weeks long). Physical activity will be measured by a thigh-worn accelerometer during all three phases and compared between the phases.

What are the possible benefits and risks of participating?

Participants will receive support to increase physical activity, which may contribute to lower blood pressure and improved overall health. In addition, participants will receive a detailed and individualized description of their physical activity patterns over an extended period. Together, the detailed information on physical activity patterns and the use of an app for physical activity promotion are intended to increase participants' understanding of their own behaviour change processes.

Physical activity may cause temporary muscle soreness or pain and, in rare cases, injury. Participants will have access to a trained healthcare professional to minimize these risks. The

study will collect personal and health data, which may pose a privacy risk. All data handling will follow strict ethical principles and data regulations to protect participants' integrity.

Where is the study run from?
Center for Clinical Research Dalarna, Falun, Sweden

When is the study starting and how long is it expected to run for?
Expected start of data collection: February 16, 2026.
Expected final enrolment: April 16, 2026

Who is funding the study?
Center for Clinical Research Dalarna (Sweden)
The Swedish Research Council

Who is the main contact?
Douglas Anderson Åhlfeldt
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# Contact information

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Principal investigator, Scientific, Public

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# Additional identifiers

# Study information

### Scientific Title
ProMotion - effects on physical activity by an eHealth intervention for physical activity promotion for adults with hypertension: protocol for a single case experimental design

### Study objectives
This study aims to evaluate the effects of a behaviour change intervention integrating the eHealth service ProMotion for person-centred physical activity promotion with conventional care in primary healthcare (PHC) among patients recently diagnosed with hypertension.
The study will examine how the intervention affects the primary outcome variable, physical activity, and the secondary outcome variable, blood pressure. Furthermore, it will explore patients' experience of the eHealth service ProMotion and how patients engage with and use the eHealth service.
Research questions:
1. How does the intervention affect physical activity in terms of type of activity, duration, and intensity:
-When the patients use self-monitoring of physical activity?
-When the patients use the first version of the eHealth service ProMotion?
2. How does the intervention affect blood pressure in patients with hypertension?
3. How do patients with hypertension perceive the usability of a first version of the eHealth service ProMotion?
4. How do patients with hypertension engage with the app and the webpage of the eHealth service ProMotion?

### Ethics approval required
Ethics approval required

## Ethics approval(s)
Approved 19/01/2026, Swedish Ethical Review Authority (Box 2110, Uppsala, 750 02, Sweden; +46 10-475 08 00; registrator@etikprovning.se), ref: 2025-08644-01

## Primary study design
Interventional

## Allocation
Non-randomized controlled trial

## Masking
Open (masking not used)

## Control
Historical

## Assignment
Single

## Purpose
Health services research, Treatment

## Study type(s)

## Health condition(s) or problem(s) studied
Physical activity promotion in patients with hypertension

## Interventions
This study uses a single case experimental design with multiple baselines. All study participants received a physical activity promotion intervention, including the eHealth service ProMotion specifically designed to facilitate behaviour change. The study includes three phases: a baseline phase A and two intervention phases B and C. The multiple-baseline approach allows for experimental control at the individual level by systematically staggered introduction of intervention phases. The participants are randomly assigned to one of three baseline lengths (two, three or four weeks). During phase A, participants receive only the instruction to continue living their lives as usual. Physical activity is measured using a thigh-worn accelerometer throughout the study. Blood pressure is measured at the beginning of each phase (A–C) and again at the end of the intervention period.
During intervention phase B, participants are instructed to self-monitor their physical activity for four weeks as a stand-alone behaviour change technique. Physical activity is recorded in a diary, including the type of activity (e.g., cycling, gardening, walking), duration (minutes), and perceived level of exertion (the Borg Rating of Perceived Exertion Scale).
Intervention phase C lasts for eight weeks and includes the introduction and use of the Promotion eHealth service specifically designed to promote physical activity. It incorporates multiple behaviour change techniques, such as goal setting and action planning, self-monitoring of behaviour and outcomes, feedback, and social support. In addition, participants receive traditional physical activity promotion through counselling with a designated healthcare professional, delivered using motivational interviewing principles. All participants attend an introductory meeting with their healthcare professional at the start of phase C and are offered follow-up meetings by convenience during the intervention phase C.

### Intervention Type
Behavioural

### Primary outcome(s)
1. Physical activity measured using a thigh worn accelerometer at daily across all study phases (14-16 weeks)

### Key secondary outcome(s)
1. Blood pressure measured using automated upper-arm blood pressure monitor at the begining of all phases and at the end of phase C

2. Perceived usability of the eHealth service measured using questionnaire at post intervention

3. Engagement with the app and website of the eHealth service measured using individual interviews at post intervention

4. Exercise self-efficacy measured using the Swedish exercise self-efficacy scale at pre and post intervention

### Completion date
18/08/2026

## Eligibility

### Key inclusion criteria
Current key inclusion criteria as of 13/02/2026:

1. Persons aged 18-95 years with a diagnosis of the ICD-10 diagnosis I10.9 Hypertension (≥140 /90 mmHg)
2. Cared for at one of the participating primary health care centers
3. Has access to a smartphone or tablet
4. Reports spending less than 150 minutes on leisure time PA, i.e sports or exercise, on moderate intensity during an ordinary week

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Previous key inclusion criteria:

1. Persons aged 18-85 years with a recent diagnosis (≤3 months) of the ICD-10 diagnosis I10.9 Hypertension (≥140/90 mmHg)
2. Cared for at one of the participating primary health care centers
3. Has access to a smartphone or tablet
4. Reports spending less than 150 minutes on leisure time PA, i.e sports or exercise, on moderate intensity during an ordinary week

### Healthy volunteers allowed
No

### Age group
Mixed

### Lower age limit
18 Years

### Upper age limit
85 Years

### Sex
All

### Total final enrolment
7

### Key exclusion criteria
1. Hypertension ≥180/110 mmHg
2. Short life expectancy (<6 months) due to serious illness
3. Predicted inability to comply with study protocol due to cognitive impairment, such as dementia
4. Insufficient ability to understand written Swedish

### Date of first enrolment
27/02/2026

### Date of final enrolment
09/04/2026

## Locations

### Countries of recruitment
Sweden

### Study participating centre
**Fjällhälsan**
Råndalsvägen 13
Hede
Sweden
846 31

### Study participating centre
**Sveg Hälsocentral**
Herrögatan 31
Sveg
Sweden
842 32

## Sponsor information

**Organisation**
Center for Clinical Research Dalarna

**ROR**
https://ror.org/03qp8ma69

# Funder(s)

**Funder type**

**Funder Name**
Vetenskapsrådet

**Alternative Name(s)**
Swedish Research Council, VR

**Funding Body Type**
Government organisation

**Funding Body Subtype**
National government

**Location**
Sweden

**Funder Name**
Centrum fÖr Klinisk Forskning Dalarna

**Alternative Name(s)**
Center for Clinical Research Dalarna, CKF

**Funding Body Type**
Government organisation

**Funding Body Subtype**
Local government

**Location**
Sweden

# Results and Publications

## Individual participant data (IPD) sharing plan

The datasets generated and analysed during the current study will be available upon reasonable request from Ass. Prof. Dr Catharina Gustavsson, email address: catharina.gustavsson@regiondalarna.se
Pseudonymised datasets can be requested by researchers who can show adequate ethical approval for the purposes of replicating the analyses, confirming or refuting the study findings, or inclusion in systematic reviews and meta-analyses.

Types of data that can be shared include:
• Accelerometer derived physical activity data (Microsoft Excel format)
• Blood pressure measurements (Microsoft Excel format)
• Self administered questionnaire data on perceived usability and exercise self efficacy (Microsoft Excel format)
All shared datasets will be pseudonymised in accordance with ethical and legal requirements, including GDPR. Research data will be stored securely for a minimum of ten years in compliance with Swedish legislation.

## IPD sharing plan summary

Available on request