

# Effects of a cardiac rehabilitation program based on continuous high-intensity Nordic Walking training

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<b>Registration date</b> 04/07/2022	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 29/06/2022	<b>Condition category</b> Circulatory System	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

## Plain English summary of protocol

### Background and study aims

Cardiac patients (with heart and blood vessel diseases) could benefit from rehabilitation based on physical exercise. However, after a normal program, 12 weeks, there is a need to continue exercising but not in the hospital setting because distance, number of patients, etc. An alternative is explored to increase adherence to exercise in the community. Nordic walking is a feasible exercise intervention that should be tested in cardiac patients for a long-time training. Cardiac rehabilitation (CR) phase III has been little investigated for training methods and administration. Our objective was to study the effects of a CR phase III program based on Nordic Walking (NW) after acute coronary syndrome (ACS).

### Who can participate?

Any stable cardiac patient that previously followed a cardiac rehabilitation program.

### What does the study involve?

A 12-months community high-intensity Nordic WalkingNW training combined with educational strategy through instant messaging.

### What are the possible benefits and risks of participating?

Our hypothesis is that Nordic walking improves physical capacity and physical activity levels. The risks are minimal and not greater than those that a person is exposed to by walking or exercising regularly.

### Where is the study run from?

Universidad Ramon Llull, Spain

### When is the study starting and how long is it expected to run for?

January 2018 to December 2021

### Who is funding the study?

Investigator initiated and funded

Who is the main contact?  
Dr Jordi Vilaró, jordivc@blanquerna.url.edu

## Contact information

### Type(s)

Public

### Contact name

Dr Jordi Vilaró

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## Additional identifiers

### Clinical Trials Information System (CTIS)

Nil known

### ClinicalTrials.gov (NCT)

Nil known

### Protocol serial number

GIR001

## Study information

### Scientific Title

Effects of a phase III cardiac rehabilitation program based on continuous high-intensity Nordic Walking training: A randomised controlled trial

### Study objectives

Interdisciplinary training that combines high-intensity Nordic Walking endurance training supervised and directed in the community with follow-up educational strategies by sending short text messages is effective in a group of patients with ACS who had completed a three-month inpatient phase II cardiac rehabilitation program.

### Ethics approval required

Old ethics approval format

### Ethics approval(s)

Approved 27/02/2018, Clinical Research Ethics Committee of the Hospital Universitari Dr. Josep Trueta de Girona (Avinguda de França, S/N, 17007 Girona, Spain; +34 972940200; no email provided), ref: none provided

## **Study design**

Interventional randomized controlled trial

## **Primary study design**

Interventional

## **Study type(s)**

Treatment

## **Health condition(s) or problem(s) studied**

Patients with stable ischemic heart disease and preserved systolic function

## **Interventions**

The phase III CRP began within a maximum period of 5 days after the end of the phase II and lasted 12 months.

Intervention group:

- a) 104 supervised sessions of 75 minutes of NW endurance training supervised and directed in the community, with a frequency of 2 days/week
- b) educational strategy to control cardiovascular risk factors through 3 weekly SMS messages and 2-hour monthly group therapy.

Control group:

- a) individual proposal of home autonomous physical training of 4 weekly sessions of 60 minutes of aerobic training
- b) educational strategy through hospital group therapies identical to that for the EG
- c) final cardiological evaluation included an IET.

## **Intervention Type**

Behavioural

## **Primary outcome(s)**

All patients underwent a specific evaluation before (taking the final specific tests and measurements of the phase II CRP) and post-intervention (at 12 months) of each of the following sections:

1. Functional capacity: Incremental exercise test (IET) was performed using the Bruce protocol on an endless treadmill, stopping due to fatigue or symptoms, following the standards defined by the Spanish Society of Cardiology (SEC).
2. Heart rate and blood pressure were measured at baseline, peak condition, and the maximum load in METs.
3. On separate days, the six-minute walk test (6MWT) was performed, following the protocol established by the Spanish Society of Pulmonology and Thoracic Surgery (SEPAR). The maximum distance walked, the baseline and final heart rate, blood pressure, dyspnea and fatigue using the modified Borg Scale were registered.

## **Key secondary outcome(s)**

1. Body composition: body weight and abdominal perimeter were measured. The body composition was carried out using electrical bioimpedance analysis (Bodystat 500, England), following the standards defined by the Spanish Kinanthropometry Group (GREC).

2. Level of daily physical activity: the International Physical Activity Questionnaire (IPAQ) extended version was applied, consisting of 27 questions related to physical activity at work, home and leisure levels, quantified in minutes/day or minutes/week.

Additionally, were registered cardiological events that required hospital medical treatment and adherence to exercise, which was defined as performing 80% or more of the intervention as it was prescribed.

**Completion date**

30/12/2021

## Eligibility

**Key inclusion criteria**

Clinically stable patients with a medical diagnosis of non-ST-segment elevation acute coronary syndrome, defined as unstable angina or non-Q acute myocardial infarction, or ST-segment elevation ACS, defined as acute myocardial infarction, who completed the phase II outpatient cardiac rehabilitation program, attending at least 80% of the training sessions and all medical visits.

**Participant type(s)**

Patient

**Healthy volunteers allowed**

No

**Age group**

Adult

**Sex**

All

**Total final enrolment**

80

**Key exclusion criteria**

Patients who could not follow phase III for working reasons or declined to participate.

**Date of first enrolment**

01/10/2018

**Date of final enrolment**

30/10/2021

## Locations

**Countries of recruitment**

Spain

**Study participating centre**  
**Hospital Universitari Dr. Josep Trueta de Girona**  
Avenida de Francia s/n. 17007  
Girona  
Spain  
17007

## Sponsor information

**Organisation**  
Ramon Llull University

**ROR**  
<https://ror.org/04p9k2z50>

## Funder(s)

**Funder type**  
Other

**Funder Name**  
Investigator initiated and funded

## Results and Publications

### Individual participant data (IPD) sharing plan

The datasets generated and/or analysed during the current study will be published as a supplement to the subsequent results publication

### IPD sharing plan summary

Published as a supplement to the results publication

### Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Participant information sheet</a>			29/06/2022	No	Yes