# The effect of one-week handgrip exercise on post-surgery troponin release after SAVR and/or CABG: a pilot study

No registrations found.

Ethical review	Not applicable
Status	Pending
Health condition type	-
Study type	Interventional

## **Summary**

### ID

NL-OMON27739

**Source** Nationaal Trial Register

Brief title Handgrip exercise prior to SAVR and CABG

#### **Health condition**

cardiovascular disease, valve disorders, coronary artery disease

### **Sponsors and support**

Primary sponsor: Radboudumc Nijmegen Source(s) of monetary or material Support: Radboudumc Nijmegen

### Intervention

### **Outcome measures**

#### **Primary outcome**

Cardiac troponin release after cardiac surgery

#### Secondary outcome

1 - The effect of one-week handgrip exercise on post-surgery troponin release after ... 13-05-2025

Feasibility of handgrip exercise using the System Usability Scale. Hospitalization days, cardiovascular events during the first week after surgery

## **Study description**

### **Background summary**

Annually, ~10,000 patients are scheduled in the Netherlands for surgical aortic valve replacement (SAVR) or coronary artery bypass grafting (CABG) procedures. During these procedures, the heart is exposed to ischaemia, which is followed by reperfusion. Ischaemiareperfusion represents a significant and harmful stimulus for tissues, including the myocardium and the vascular endothelium. Indeed, SAVR and CABG are associated with a release of biomarkers (e.g. troponin), reflecting cardiac damage. Studies revealed that prior exposure to repeated, short-term ischaemia (i.e. ischaemic preconditioning) may attenuate ischaemia reperfusion injury. However, the effect of ischaemic preconditioning seems attenuated with age and presence of cardiovascular risk factors. Alternatively, recent studies have found preliminary evidence that exercise is also associated with preconditioning effects as it prevents ischaemia-reperfusion injury. Moreover, exercise may be a more potent stimulus than ischaemic preconditioning, as previous work found that regular exercise improves efficacy of preconditioning in older individuals and those with heart failure. Ischaemic preconditioning is typically applied locally to the forearm, and has been linked to cardioprotection. In analogy of this model, local (forearm) exercise may also induce systemic protective effects. This is highly relevant since whole body training is a demanding type of exercise, which might be difficult to implement in patients scheduled for cardiac surgery. Local handgrip exercise, however, would be more feasible to implement in clinical settings to reduce IR-injury, as it demands a low cardiac output and thereby minimises cardiac stress. Handgrip exercise, which can be performed by most patients in a home-based environment, may be a simple, cost-effective and easy applicable strategy for patients undergoing elective SAVR and/or CABG and to effectively minimise cardiac damage. Lower cardiac damage ultimately may translate to improved post-surgery outcomes and prognosis. The aim of this study is to explore the impact of 1 week handgrip training on cardiac troponin release after cardiac surgery in patients scheduled for SAVR and/or CABG compared to a control group without handgrip training.

### **Study objective**

We hypothesize that 1 week handgrip training in patients scheduled for SAVR and/or CABG will lower cardiac troponin release after cardiac surgery compared to a control group without handgrip training.

### Study design

1 week before, 1 week after SAVR and/or CABG

#### Intervention

Handgrip exercise will consist of a 4 x 5 minutes minute handgrip exercise at 30% of maximal voluntary contraction (MVC). Each handgrip exercise bout is followed by 5 minutes of rest, resulting in a total duration of 35 minutes per handgrip exercise period. Handgrip exercise will be performed daily for a period of 7 days.

## Contacts

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## **Eligibility criteria**

## **Inclusion criteria**

Adults >18 years, mentally able/allowed to give informed consent and scheduled for elective SAVR and/or CABG procedures.

### **Exclusion criteria**

- Presence of an absolute contra-indication for the performance of handgrip exercise: Amputation of the upper limbs, Polyneuropathy

- Mental impairment leading to inability to cooperate
- Scheduled for SAVR and/or CABG due to acute hospitalization after coronary event

## Study design

## Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Single blinded (masking used)
Control:	N/A , unknown

### Recruitment

NL	
Recruitment status:	Pending
Start date (anticipated):	01-05-2020
Enrollment:	60
Туре:	Anticipated

## **IPD** sharing statement

Plan to share IPD: Undecided

## **Ethics review**

Not applicable Application type:

Not applicable

## **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** NTR-new CCMO ID NL8583 NL72877.091.20

## **Study results**