

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

10 Jun 2026

### The effect of deep breathing exercises and incentive spirometry on artery blood gases after coronary artery bypass surgery in open heart surgery critical care unit at Isfahan, 2012

#### Protocol summary

##### Summary

Objective: effect of deep breathing exercises and incentive spirometry on artery blood gases after coronary artery bypass surgery in open heart surgery critical care unit at Isfahan, Iran in 2012. Study Design: randomized clinical trial. Study population: patients admitted to open heart surgery intensive care unit hospital selective at Isfahan. Inclusion criteria: willingness to participate in the study; non emergency open heart surgery; not having mental and neuro-muscular disorders; not having any sever pulmonary disease(COPD); not having renal dysfunction; mechanical ventilation for less than 24 hours after admission to the open heart ICU and the ability in using of the incentive spirometry machine. Exclusion criteria: patients with hemodynamic instability (dangerous dysrhythmia, cardiogenic shock, sever hypotension) after surgery; having neurological and mental disorders after operation; the need for re-intubation or re-operation and willingness to quit the study. Intervention: first group used incentive spirometry, twice; group did deep breathing exercises and the control group did usual exercise (unplanned exercises). Time of intervention: interventions were performed for third day postoperative. Blood artery gases parameter (Sao<sub>2</sub>, Pao<sub>2</sub>, Paco<sub>2</sub>) were measured pre operative, after extubation, second and third days postoperative. The patient has arterial line after surgery until third postoperative for hemodynamic monitoring.

#### General information

##### Acronym

IS, DBE, CABG

##### IRCT registration information

IRCT registration number: **IRCT2013050913280N1**  
Registration date: **2013-05-19, 1392/02/29**

Registration timing: **retrospective**

Last update:

Update count: **0**

##### Registration date

2013-05-19, 1392/02/29

##### Registrant information

###### Name

Hiva Mohammadi Bollbanabad

###### Name of organization / entity

Isfahan University of Medical Sciences

###### Country

Iran (Islamic Republic of)

###### Phone

+98 87 2576 2431

###### Email address

h\_mohamadi@nm.mui.ac.ir

##### Recruitment status

**Recruitment complete**

##### Funding source

Vice chancellor for research, Isfahan University of Medical Sciences

##### Expected recruitment start date

2012-12-15, 1391/09/25

##### Expected recruitment end date

2013-02-18, 1391/11/30

##### Actual recruitment start date

empty

##### Actual recruitment end date

empty

##### Trial completion date

empty

##### Scientific title

The effect of deep breathing exercises and incentive spirometry on artery blood gases after coronary artery

bypass surgery in open heart surgery critical care unit at Isfahan, 2012

2012-12-12, 1391/09/22

**Ethics committee reference number**  
391339

## Public title

The effect of breathing exercises on pulmonary function improvement after coronary artery bypass surgery

## Purpose

Supportive

## Inclusion/Exclusion criteria

Inclusion criteria: willingness to participate in the study; non emergency open heart surgery; not having mental and neuro-muscular disorders; not having any severe pulmonary disease(COPD); not having renal dysfunction; mechanical ventilation for less than 24 hours after admission to the open heart ICU and the ability in using of the incentive spirometry machine. Exclusion criteria: patients with hemodynamic instability (dangerous dysrhythmia, cardiogenic shock, severe hypotension) after surgery; having neurological and mental disorders after operation; the need for re-intubation or re-operation and willingness to quit the study.

## Age

From **40 years** old to **90 years** old

## Gender

Both

## Phase

2

## Groups that have been masked

*No information*

## Sample size

Target sample size: **75**

## Randomization (investigator's opinion)

Randomized

## Randomization description

## Blinding (investigator's opinion)

Not blinded

## Blinding description

## Placebo

Not used

## Assignment

Parallel

## Other design features

## Secondary Ids

empty

## Ethics committees

### 1

#### Ethics committee

##### Name of ethics committee

Isfahan university of medical sciences

##### Street address

Faculty of Nursing and Midwifery, Isfahan University of Medical Sciences, Azadi Square, Hezar-Jerib, Isfahan

##### City

Isfahan

##### Postal code

461-81746

## Approval date

## Health conditions studied

### 1

#### Description of health condition studied

Coronary artery bypass surgery

#### ICD-10 code

#### ICD-10 code description

## Primary outcomes

### 1

#### Description

Blood artery gases parameter

#### Timepoint

Preoperative, post extubation, second and third days postoperative

#### Method of measurement

Blood artery gases measurement machine

## Secondary outcomes

empty

## Intervention groups

### 1

#### Description

First group used incentive spirometry 10 per 2 hours.

#### Category

Prevention

### 2

#### Description

Intervention in second group consist of deep breathing exercises that are performed 10 per 2 hours.

#### Category

Prevention

### 3

#### Description

Control group only did usual exercises(unplanned exercises).

#### Category

Prevention

## Recruitment centers

### 1

#### Recruitment center

##### Name of recruitment center

Chamran hospital - Sina hospital

##### Full name of responsible person

Hiva mohammadi bollbanabad  
**Street address**  
bozorgmehr avenue-Isfahan  
**City**  
Isfahan

**2**

#### **Recruitment center**

**Name of recruitment center**  
Sina hospital  
**Full name of responsible person**  
Hiva mohammadi bollbanabad  
**Street address**  
shams abadi avenue- Isfahan  
**City**  
Isfahan

#### **Sponsors / Funding sources**

**1**

##### **Sponsor**

**Name of organization / entity**  
Isfahan University of Medical Sciences  
**Full name of responsible person**  
Dr Peiman Adibi  
**Street address**  
Isfahan University of Medical Sciences, Azadi Square,  
Hezar-Jerib street, Isfahan.  
**City**  
Isfahan

##### **Grant name**

##### **Grant code / Reference number**

##### **Is the source of funding the same sponsor organization/entity?**

Yes

##### **Title of funding source**

Isfahan University of Medical Sciences

##### **Proportion provided by this source**

100

##### **Public or private sector**

*empty*

##### **Domestic or foreign origin**

*empty*

##### **Category of foreign source of funding**

*empty*

##### **Country of origin**

##### **Type of organization providing the funding**

*empty*

#### **Person responsible for general inquiries**

##### **Contact**

**Name of organization / entity**  
Isfahan University of Medical Sciences  
**Full name of responsible person**  
Hiva Mohammadi Bollbanabad  
**Position**  
MSc student in critical care nursing  
**Other areas of specialty/work**  
**Street address**

Faculty of Nursing and Midwifery, Isfahan University  
of Medical Sciences, Azadi Square, Hezar-Jerib street,  
Isfahan

##### **City**

Isfahan

##### **Postal code**

73461-81746

##### **Phone**

+98 31 1792 2941

##### **Fax**

+98 73 4618 1746

##### **Email**

h\_mohamadi@mui.ac.ir; hiva.nursing@gmail.com

##### **Web page address**

#### **Person responsible for scientific inquiries**

##### **Contact**

##### **Name of organization / entity**

Isfahan University of Medical Sciences

##### **Full name of responsible person**

Ahmadreza Yazdannik

##### **Position**

PHD

##### **Other areas of specialty/work**

##### **Street address**

Faculty of Nursing and Midwifery, Isfahan University  
of Medical Sciences, Azadi Square, Hezar-Jerib street,  
Isfahan

##### **City**

Isfahan

##### **Postal code**

73461-81746

##### **Phone**

+98 31 1792 2941

##### **Fax**

##### **Email**

Yazdannik@nm.mui.ac.ir

##### **Web page address**

#### **Person responsible for updating data**

##### **Contact**

##### **Name of organization / entity**

Isfahan University of Medical Sciences

##### **Full name of responsible person**

Hiva Mohammadi Bollbanabad

##### **Position**

MSc student in critical care nursing

##### **Other areas of specialty/work**

##### **Street address**

Faculty of Nursing and Midwifery, Isfahan University  
of Medical Sciences, Azadi Square, Hezar-Jerib

##### **City**

Isfahan

##### **Postal code**

73461-81746

##### **Phone**

+98 31 1792 2941

##### **Fax**

+98 31 1668 5145

**Email**

h\_mohamadi@mui.ac.ir; hiva.nursing@gmail.com

**Web page address****Sharing plan****Deidentified Individual Participant Data Set (IPD)**

*empty*

**Study Protocol**

*empty*

**Statistical Analysis Plan**

*empty*

**Informed Consent Form**

*empty*

**Clinical Study Report**

*empty*

**Analytic Code**

*empty*

**Data Dictionary**

*empty*