

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

10 Jun 2026

### The effects of chest physiotherapy on respiratory capacity and the rate of respiratory gas exchange during walking on the treadmill in patients with COVID-19 after the recovery stage

#### Protocol summary

##### Study aim

Evaluation of the effect of respiratory physiotherapy on pulmonary function including respiratory capacity, the tidal volume, residual volume, number of breaths, and its frequency while walking on a treadmill, O<sub>2</sub>-CO<sub>2</sub> gas concentration in inhalation and exhalation, parameters related to spirometry In patients with COVID-19 in its recovery period.

##### Design

A clinical trial with a control group, with parallel groups, double-blind, randomized, phase 2 on 44 patients. The random table of numbers is used for randomization.

##### Settings and conduct

In the next stage, after assigning patients to intervention and control groups, patients in the intervention group are asked to go to the physiotherapy clinic for 10 days a week for 10 sessions and under the supervision of a physiotherapist with at least 10 years experience in respiratory physiotherapy, interventions To receive. The control group receives its routine treatments prescribed by the relevant physician.

##### Participants/Inclusion and exclusion criteria

Patients aged 35-55 years old who have a history of hospitalization due to COVID-19 virus. A minimum of 1 month and a maximum of 2 months have elapsed since discharge from the hospital and a positive PCR test or diagnosis of lung involvement based on CT scan of the lung at the time of hospitalization.

##### Intervention groups

Chest physiotherapy intervention: 1- Segmental breathing exercises for lung lobes in lying and sitting position 2- Proper posture (postural drainage) 3- Deep breathing and diaphragmatic exercises 4- Incentive spirometer 5- Controlled movement and movement and breathing exercises while riding a stationary bike In the control group, after the study phase, 10 sessions of physiotherapy will be performed as mentioned.

#### Main outcome variables

Tidal volume, Residual volume, FEV<sub>1</sub>, FEV time,

#### General information

##### Reason for update

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20160808029264N9**

Registration date: **2020-08-15, 1399/05/25**

Registration timing: **prospective**

Last update: **2020-08-15, 1399/05/25**

Update count: **0**

##### Registration date

2020-08-15, 1399/05/25

##### Registrant information

##### Name

Rasool Bagheri

##### Name of organization / entity

##### Country

Iran (Islamic Republic of)

##### Phone

+98 23 3344 1022

##### Email address

rasool.bagheri@ymail.com

##### Recruitment status

**Recruitment complete**

##### Funding source

##### Expected recruitment start date

2020-09-20, 1399/06/30

##### Expected recruitment end date

2021-06-20, 1400/03/30

##### Actual recruitment start date

empty

##### Actual recruitment end date

empty

**Trial completion date**  
empty

**Scientific title**  
The effects of chest physiotherapy on respiratory capacity and the rate of respiratory gas exchange during walking on the treadmill in patients with COVID-19 after the recovery stage

**Public title**  
Effects of chest physiotherapy in COVID-19 patients with respiratory infection

**Purpose**  
Treatment

**Inclusion/Exclusion criteria**  
**Inclusion criteria:**  
People with a history of hospitalization in the Hospital of Semnan University of Medical Sciences due to the COVID-19 virus. A minimum of 1 month and a maximum of 2 months from the time of discharge from the hospital Positive PCR test or diagnosis of lung involvement based on CT scan of the lung at the time of admission No drug and smoking addiction No previous history of chronic lung disease Lack of musculoskeletal diseases such as tumor fractures and ...  
**Exclusion criteria:**  
Any aggravation of the patient's symptoms due to shortness of breath and pain in the chest and dizziness, abnormal sweating, blurred vision and nausea ... Any cases that are prohibited for performing chest physiotherapy intervention in people with this disease.

**Age**  
From **35 years** old to **55 years** old

**Gender**  
Both

**Phase**  
2-3

**Groups that have been masked**

- Investigator
- Outcome assessor

**Sample size**  
Target sample size: **44**

**Randomization (investigator's opinion)**  
Randomized

**Randomization description**  
In this study, a simple randomization method in the form of a random number table will be used. Patients with odd numbers will be assigned in the intervention group and patients with even numbers will be assigned in the control group.

**Blinding (investigator's opinion)**  
Double blinded

**Blinding description**  
This study is a double-blind randomized clinical trial. In this way, patients are divided into two groups by one researcher who does not interfere in the intervention and evaluation of results, and in addition, the evaluation will be performed by another researcher who is not aware of grouping.

**Placebo**

Not used

**Assignment**  
Parallel

**Other design features**

**Secondary Ids**  
empty

**Ethics committees**

**1**

**Ethics committee**  
**Name of ethics committee**  
Ethics committee of Semnan University of Medical Sciences  
**Street address**  
Mashahir Sq., Ghods Ave., Neuromuscular Rehabilitation Research Center.  
**City**  
Semnan  
**Province**  
Semnan  
**Postal code**  
35147-99442  
**Approval date**  
2020-07-05, 1399/04/15  
**Ethics committee reference number**  
IR.SEMUMS.REC.1399.111

## Health conditions studied

**1**

**Description of health condition studied**  
Respiratory infection due to COVID-19

**ICD-10 code**  
U07.1

**ICD-10 code description**  
COVID-19, virus identified

## Primary outcomes

**1**

**Description**  
Tidal volume, residual volume and other lung volumes while resting and running on a treadmill

**Timepoint**  
Before and after the physiotherapy intervention

**Method of measurement**  
Spirometry device

## Secondary outcomes

empty

## Intervention groups

## 1

### Description

Intervention group: Chest physiotherapy intervention 5 days in a week for 10 sessions: 1- Segmental breathing exercises for lung lobes in lying and sitting position 2- Proper posture (postural drainage) 3- Deep breathing and diaphragmatic exercises 4- Incentive spirometer 5- Controlled movement and movement and breathing exercises while riding a stationary bike.

### Category

Rehabilitation

## 2

### Description

Control group: Standard treatments include medications prescribed for the disease as directed by the treating physician. In the control group, after the study phase, 10 sessions of physiotherapy will be performed as mentioned in the intervention group.

### Category

Rehabilitation

## Recruitment centers

### 1

#### Recruitment center

##### Name of recruitment center

Kowsar Hospital

##### Full name of responsible person

Dr. Mohammad Memarian

##### Street address

Basij Ave., Kosar Hospital

##### City

Semnan

##### Province

Semnan

##### Postal code

35147-99442

##### Phone

+98 23 3365 4180

##### Email

draria2014@gmail.com

## Sponsors / Funding sources

### 1

#### Sponsor

##### Name of organization / entity

Semnan University of Medical Sciences

##### Full name of responsible person

Dr Parviz Kokhaei

##### Street address

Basij Ave., Deputy of research and technology

##### City

Semnan

##### Province

Semnan

##### Postal code

35147-99442

##### Phone

+98 23 3344 1022

##### Email

p\_kokha@yahoo.com

##### Grant name

##### Grant code / Reference number

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

Yes

##### Title of funding source

Semnan University of Medical Sciences

##### Proportion provided by this source

100

##### Public or private sector

Public

##### Domestic or foreign origin

Domestic

##### Category of foreign source of funding

empty

##### Country of origin

##### Type of organization providing the funding

Academic

## Person responsible for general inquiries

#### Contact

##### Name of organization / entity

Semnan University of Medical Sciences

##### Full name of responsible person

Dr Rasool Bagheri

##### Position

Assistant Professor

##### Latest degree

Ph.D.

##### Other areas of specialty/work

Physiotherapy

##### Street address

Ghods Ave., Neuromuscular Rehabilitation Research Center

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## Person responsible for scientific inquiries

#### Contact

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**Sharing plan**

**Deidentified Individual Participant Data Set (IPD)**

Undecided - It is not yet known if there will be a plan to make this available

**Study Protocol**

Undecided - It is not yet known if there will be a plan to make this available

**Statistical Analysis Plan**

Undecided - It is not yet known if there will be a plan to make this available

**Informed Consent Form**

Undecided - It is not yet known if there will be a plan to make this available

**Clinical Study Report**

Undecided - It is not yet known if there will be a plan to make this available

**Analytic Code**

Undecided - It is not yet known if there will be a plan to make this available

**Data Dictionary**

Undecided - It is not yet known if there will be a plan to make this available