

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

10 Jun 2026

### Enhancing Symptom Management in Long-COVID 19 Patients: A Comparative Study of Pulmonary Rehabilitation and Progressive Muscle Relaxation Techniques

#### Protocol summary

##### Study aim

The objective of this study was to investigate the effects of pulmonary rehabilitation and additional progressive muscle relaxation techniques in patients with long-COVID 19 symptoms.

##### Design

We included 61 post-COVID-19 patients who came for pulmonary rehabilitation. The pulmonary rehabilitation program lasted for 21 days. In the order in which they came to admission, patients were randomly allocated into two groups: one group followed the PR program, while the other group underwent the PR program along with a PMR. The intervention group engaged in additional daily 20-minute PMR sessions.

##### Settings and conduct

The study was performed at a single pulmonary rehabilitation center in Timisoara, Romania. All the included patients received pulmonary rehabilitation. The intervention group received additional PMR.

##### Participants/Inclusion and exclusion criteria

The inclusion criteria were: previous infection with COVID-19, age over 18 years, primary symptom of dyspnea and fatigability lasting for over one month, motivation, and willingness to participate in the program. Exclusion criteria: severe heart disease, severe acute illness, other lung diseases, patient refusal, severe cognitive impairment.

##### Intervention groups

The intervention group engaged in additional daily 20-minute PMR sessions focusing on progressively tensing and then relaxing major muscle groups, starting from the hands and moving up through the body, while maintaining slow, deep breathing.

##### Main outcome variables

GAD-7 will improve, PSQI will improve

#### General information

##### Reason for update

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20231115060065N3**

Registration date: **2023-12-06, 1402/09/15**

Registration timing: **retrospective**

Last update: **2023-12-06, 1402/09/15**

Update count: **0**

##### Registration date

2023-12-06, 1402/09/15

##### Registrant information

##### Name

Alexandru Florian Crişan

##### Name of organization / entity

University of Medicine and Pharmacy Victor Babes  
Timisoara

##### Country

Romania

##### Phone

+40 765 525 688

##### Email address

crisan@umft.ro

##### Recruitment status

**Recruitment complete**

##### Funding source

##### Expected recruitment start date

2023-06-01, 1402/03/11

##### Expected recruitment end date

2023-11-01, 1402/08/10

##### Actual recruitment start date

2023-06-01, 1402/03/11

##### Actual recruitment end date

2023-06-01, 1402/03/11

**Trial completion date**

2023-11-01, 1402/08/10

**Scientific title**

Enhancing Symptom Management in Long-COVID 19 Patients: A Comparative Study of Pulmonary Rehabilitation and Progressive Muscle Relaxation Techniques

**Public title**

Progressive muscle relaxation techniques in patients with COVID-19 symptoms

**Purpose**

Treatment

**Inclusion/Exclusion criteria****Inclusion criteria:**

Previous infection with COVID-19  
Age over 18 years  
Primary symptom of dyspnea and fatigability lasting for over one month

**Exclusion criteria:**

Severe heart disease  
Severe ischemic or hemorrhagic stroke  
Severe cognitive impairment  
Medication that could potentially affect their exercise responses

**Age**

From **18 years** old

**Gender**

Both

**Phase**

N/A

**Groups that have been masked**

*No information*

**Sample size**

Target sample size: **65**

Actual sample size reached: **61**

**Randomization (investigator's opinion)**

Randomized

**Randomization description**

The patients were randomized to either an interventional group or a control group according to their moment of admission. The patients who were admitted to the study at the same time were assigned to different treatment groups. This method of randomization was used to ensure that the patients in the two groups were similar in terms of their time of admission, which could affect the outcome of the study.

**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**

Comisia de Etică a Spitalului de Boli Infectioase si Pneumoftiziologie Victor Babes Timisoara

**Street address**

Gheorghe Adam nr. 13

**City**

Timisoara

**Postal code**

300310

**Approval date**

2023-05-30, 1402/03/09

**Ethics committee reference number**

4990

**Health conditions studied****1****Description of health condition studied**

Post COVID-19 condition

**ICD-10 code**

U09.9

**ICD-10 code description**

Post COVID-19 condition, unspecified

**Primary outcomes****1****Description**

Reduced general anxiety level

**Timepoint**

before intervention and 3 weeks after intervention

**Method of measurement**

GAD-7 questionnaire

**Secondary outcomes****1****Description**

Improved sleep quality

**Timepoint**

before intervention and 3 weeks after intervention

**Method of measurement**

PSQI questionnaire

**2****Description**

Improved overall health

**Timepoint**

before intervention and 3 weeks after intervention

**Method of measurement**

GHQ-12 questionnaire

**Intervention groups**

## 1

### Description

Intervention group: pulmonary rehabilitation and additional progressive muscle relaxation techniques. The patients performed the pulmonary rehabilitation program for 21 days, twice a day. The pulmonary rehabilitation program included: gradual aerobic conditioning, strength training focusing on the major muscle groups, and breathing exercises with an emphasis on pursed lip breathing, double inhale breathing, and chest expansion exercises. The intervention group engaged in additional daily 20-minute PMR sessions focusing on progressively tensing and then relaxing major muscle groups, starting from the hands and moving up through the body, while maintaining slow, deep breathing. The program involved tensing the muscle group for 5 seconds and then releasing and relaxing for 20 seconds.

### Category

Rehabilitation

## Recruitment centers

### 1

#### Recruitment center

##### Name of recruitment center

Clinical Hospital of Infectious Diseases and Pulmonology, Victor Babes Timisoara, Romania

##### Full name of responsible person

Crisan Alexandru Florian

##### Street address

Eftimie Murgu

##### City

Timisoara

##### Postal code

300041

##### Phone

+40 765 525 688

##### Email

crisan@umft.ro

## Sponsors / Funding sources

### 1

#### Sponsor

##### Name of organization / entity

University of Medicine and Pharmacy Victor Babes Timisoara

##### Full name of responsible person

Crisan Alexandru

##### Street address

Eftimie Murgu

##### City

Timisoara

##### Postal code

300041

##### Phone

+40 765 525 688

##### Email

crisan@umft.ro

#### Grant name

#### Grant code / Reference number

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

Yes

#### Title of funding source

University of Medicine and Pharmacy Victor Babes Timisoara

#### 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

University of Medicine and Pharmacy Victor Babes Timisoara

#### Full name of responsible person

Crisan Alexandru Florian

#### Position

Lecturer

#### Latest degree

Ph.D.

#### Other areas of specialty/work

Physiotherapy

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## Person responsible for scientific inquiries

### Contact

#### Name of organization / entity

University of Medicine and Pharmacy Victor Babes Timisoara

#### Full name of responsible person

Crisan Alexandru Florian

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#### Latest degree

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**Person responsible for updating data****Contact****Name of organization / entity**University of Medicine and Pharmacy Victor Babes  
Timisoara**Full name of responsible person**

Crisan Alexandru Florian

**Position**

Lecturer

**Latest degree**

Ph.D.

**Other areas of specialty/work**

Physiotherapy

**Street address**

Eftimie Murgu

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

No - There is not a plan to make this available

**Justification/reason for indecision/not sharing IPD**

There is no further information

**Study Protocol**

No - There is not a plan to make this available

**Statistical Analysis Plan**

No - There is not a plan to make this available

**Informed Consent Form**

No - There is not a plan to make this available

**Clinical Study Report**

No - There is not a plan to make this available

**Analytic Code**

Not applicable

**Data Dictionary**

Not applicable