# Clinical Trial Protocol
# Iranian Registry of Clinical Trials

22 Nov 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 Crișan

**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

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## Sponsors / Funding sources

**1**

**Sponsor**

**Name of organization / entity**
University of Medicine and Pharmacy Victor Babes Timisoara

**Full name of responsible person**
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**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

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## Person responsible for updating data

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## 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