Clinical Trial Protocol
Iranian Registry of Clinical Trials

09 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

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

Street address
Eftimie Murgu

City
Timisoara

Province
Timis

Postal code
300041

Phone
+40 765 525 688

Email
crisan@umft.ro

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

Position
Lecturer

Latest degree
Ph.D.

Other areas of specialty/work
Physiotherapy

Street address
Eftimie Murgu
City
Timisoara
Province
Timis
Postal code
300041
Phone
+40 765 525 688
Email
crisan@umft.ro

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
City
Timisoara
Province
Timis
Postal code
300041
Phone
+40 765 525 688
Email
crisan@umft.ro

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