Official title: Effectiveness of a 12-week Telerehabilitation Training in People with Long COVID: A Randomized Controlled Trial

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Study Protocol with SAP

Background: Long COVID, characterized by persistent symptoms beyond the acute phase of SARS-CoV-2 infection, has been associated with impairments in cardiopulmonary function, physical activity levels, and overall quality of life. Telerehabilitation has emerged as a feasible and effective intervention for individuals with limited access to in-person rehabilitation services.

Objective(s): To investigate the effectiveness of a 12-week telerehabilitation training program, the primary outcome is cardiorespiratory fitness (CRF), with secondary outcomes including physical activity (PA) amounts, exercise self-efficacy, sleep quality, and health-related quality of life (HRQOL) in participants with long COVID.

Design: A parallel-group randomized controlled trial

Methods: A parallel-group randomized controlled trial was conducted. Eligible participants with long COVID (n = 182) were randomly assigned in a 1:1 ratio to either the experimental group (EG) or control group (CG). The EG received 12-week telerehabilitation training with weekly remote monitoring for the maintenance of exercise and support. The CG received physical activity (PA) counseling only.

Outcome measures:
primary Outcome: cardiorespiratory fitness (CRF)
secondary Outcomes: exercise self-efficacy, sleep quality, and health-related quality of life (HRQOL)

Statistical analysis plan: Statistical analyses were performed using SPSS version 16.0 software. Descriptive statistics included means with standard deviations for continuous variables and numbers with percentages (%) for categorical variables. Missing data were handled using the last-observation-carried-forward method for intent-to-treat analysis. Paired t-tests were used to compare pre- and post-tests, whereas Student's t-tests and chi-squared tests examined pre- and post-intervention differences between groups. Generalized estimating equations (GEEs) were used to analyze longitudinal data, considering within-participant correlation. All analyses were two-tailed, with $p < 0.05$ indicating statistical significance.