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INFORMATION/EDUCATION PAGE

Exercise Reporting Template for Long COVID Patients: A Rehabilitation Practitioner Guide

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The term "long COVID" or variations refers to secondary conditions after infection from severe acute respiratory syndrome coronavirus 2 persisting for ≥4 weeks.[1]

- Long COVID symptoms are complex.
- Symptoms may include fatigue, shortness of breath, headache, difficulties focusing, "brain fog," heart palpitations, joint or muscle pain, and unexplained hair loss, among other symptoms.[2]
- Long COVID is associated with reduced quality of life, physical functioning, and lower endurance with physical activities.[3]
- Tailored exercise rehabilitation programs can improve these symptoms.[4]

The purpose of this Information/Education page is to provide rehabilitation practitioners with information on how to track and/or monitor exercise in patients with long COVID using a reliable and valid tool.

Why prescribe exercise for long COVID?

- Exercise is associated with improved immune system function, psychological and mental health, neural plasticity (healing of the nerves in the brain), reduced pulmonary (lung) complications, and enhanced cardiovascular (heart) outcomes.[5]
- Most patients presenting with long COVID can begin with supervised breathing and light exercise programs in the early phase of rehabilitation in the clinical setting.[6] Using the 6-20 rating of perceived exertion scale, it has been recommended that patients commence exercise as low as 6 to 8, ranging from "no exertion" to "extremely light" and then progressing by ~2 to 3 points on the scale every week as tolerated.[6]
- Although exercise promotes good health despite the health condition, sedentary patients[6] and those with existing chronic medical conditions should undergo medical examination and approval before starting an exercise routine.

How can the CERT checklist help with prescribing exercise for those with long COVID

- The Consensus on Exercise Reporting Template (CERT) is a 16-item checklist that reports on the quality of the exercise interventions in the management of acute and chronic conditions.
- The CERT is similar to the subjective, objective, assessment and planning (ie, SOAP) format developed to capture exercise rehabilitation outcomes.[7]
- It was designed by an international panel of experts with the goal to improve the reporting of exercise programs in exercise trials.[8] The checklist includes 7 key reporting sections: (1) what (materials used), (2) who (clinician/service providers), (3) how (method/delivery), (4) where (location/setting), (5) when and how much (date and dosage), (6) what and how (tailoring /customization), and (7) how well (compliance, planned and effectiveness of the exercise rehabilitation) (table 1).[9]
- For any checklist items identified as "not applicable," we recommend reporting the rationale with stated reasons.

Table 1 An example of exercise rehabilitation report using the CERT[9]

Checklist Item # (Section)	Description	Sample Therapeutic Approach
1 (What: Materials)	Detailed description of the type of exercise equipment	• Treadmills, strength equipment that controlled the plane of movement and weight-bearing exercises were used during the exercise intervention. • Pilates balls and rubber bands were also included in the program.
2 (Who: Providers)	Detailed description of the qualifications, expertise and/or training	• A physician conducted a complete medical examination. • The patient was referred to a clinical exercise physiologist (CEP) for exercise rehabilitation.
3 (How: Delivery)	Describe whether exercises are performed individually or in a group	• Exercise sessions were performed individually.
4 (How: Delivery)	Describe whether exercises are supervised or unsupervised; how they are delivered	• All exercises were supervised and delivered at a medical exercise facility using a cloud-based app to track patient progress.
5 (How: Delivery)	Detailed description of how adherence to exercise is measured and reported	• The patient used a Bluetooth heart rate monitor that provided instant feedback on a mobile app. • The physician and CEP were able to track the patient's progress and record it automatically.
6 (How: Delivery)	Detailed description of motivation strategies	• Encouragement and positive reinforcement were applied during supervised exercise sessions.
7a (How: Delivery)	Detailed description of the decision rule(s) for determining exercise progression	• Exercise progression was individualized based on self-reported complete recovery from the previous exercise session. • Any emerging long COVID symptoms were noted.
7b (How: delivery)	Detailed description of how the exercise program was progressed	Aerobic exercises • Frequency: Start 3, progressing to 5 days/week

(*continued on next page*)

Table 1 (*Continued*)

Checklist Item # (Section)	Description	Sample Therapeutic Approach
		• Intensity: Start at rating of perceived exertion (RPE) 11, progressing by an increase RPE of 2 until an RPE of 14 on a 6-20 scale is reached • Time: Started with 10 minutes, progressing by 2 minutes every week • Type: Walking Resistance exercises • Frequency: 2 days/week, progressing from 1 set of 8 reps of bodyweight exercises, progressing to 3 sets, 8-12 reps with TheraBands Flexibility exercises • Frequency: 3 days/week, performed 3 days/week and maintained throughout the exercise intervention • Time: 10-15 minutes/session • Type: Tai Chi
8 (How: Delivery)	Detailed description of each exercise to enable replication	• A cloud-based platform and mobile app were used to assign customized exercise routines. • Videos of each exercise were available on the mobile application.
9 (How: Delivery)	Detailed description of any home program component	• The patient was encouraged to replace extended time in sitting activities with some unstructured physical activity such as free movement and walking.
10 (How: Delivery)	Describe whether there are any non-exercise components	• Pursed-lip breathing technique with a physical therapist on nonexercise days to decrease dyspnea (shortness of breath).
11 (How: Delivery)	Describe the type and number of adverse events that occur during exercise	• None reported.
12 (Where: Location)	Describe the setting in which the exercises are performed	• All supervised exercise sessions took place in a medical exercise facility.
13 (When, How Much: Dosage)	Detailed description of the exercise intervention	Aerobic exercises • Frequency: 3-5 days/week

(*continued on next page*)

Table 1 (*Continued*)

Checklist Item # (Section)	Description	Sample Therapeutic Approach
		• Intensity: subjective and based on an RPE of 11 to 14 on a 6-20 scale • Time: Started with 10 minutes • Type: Walking Resistance exercises • Frequency: 2 days/week, 8-12 reps with TheraBands Flexibility exercises • Frequency: 3 days/week, performed 3 days/week • Time: 10-15 minutes/session, Type: Tai Chi
14a (What/How: Tailoring)	Describe whether the exercises are generic (one size fits all) or tailored	• Exercises were individually tailored.
14b (What/How: Tailoring	Detailed description of how exercises are tailored to the individual	• Baseline clinical exercises were used to develop a progressive tailored exercise rehabilitation program.
15 (What/How: Tailoring	Describe the decision rule for determining the starting level	• The starting levels were based on pre-exercise clinical assessments.
16a (How Well: Compliance and Planned)	Describe how adherence or fidelity is assessed/measured	• A mobile app was used to record and track exercise progression.
16b (How Well: Compliance and Planned)	Describe the extent to which the intervention was delivered as planned	• Acute physiological responses to exercise were visible to the patient and CEP. • The patient's own data were used to develop subsequent exercise sessions using an online app, considering objective measures (eg, physiological responses to exercise, oxygen saturation, resting blood pressure) and subjective feedback (eg, RPE, dyspnea rating, symptoms).

Why clinicians should use CERT in clinical practice

- The CERT offers clinicians a transparent reporting framework to build robust exercise rehabilitation programs for patients with long COVID.[8]
- In addition, it helps researchers to design exercise interventions that are capable of being duplicated and easy to implement in real settings.
- It can also be used to guide peer reviewers and editors in the systematic evaluation of exercise trial manuscripts and could lead to better

funding and policy related to effective exercise recommendations and delivery. This guide justifies the use of CERT in the clinical rehabilitation for long COVID, using a tool that standardizes the approach for a condition with a wide array and severity of symptoms.

Resources to help clinicians with exercise prescription for long COVID

- American College of Sports Medicine: https://www.acsm.org/education-resources/covid-19
- World Health Organization Support for Rehabilitation Self-Management after COVID-19-Related Illness: https://www.who.int/publications/m/item/support-for-rehabilitation-self-management-after-covid-19-related-illness
- Centers for Disease and Control and Prevention: https://www.cdc.gov/physicalactivity/physical-activity-and-COVID-19.html

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Keywords

Exercise; Long COVID; Physical activity; Post-acute sequelae SARS-CoV-2 infection (PASC); Rehabilitation

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