



# PHYSIOTHERAPUETIC MEASURES IN IMPROVING THE QUALITY OF LIFE IN COVID-19 PATIENTS: A Review

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## ABSTARCT

The ongoing global pandemic of COVID-19 has brought the whole world to silence, causing an increased rate of morbidity and day-to-day changes in personal life roles. COVID-19 is an infectious disease caused by SARS-CoV 2 virus which can lead to hypoxic respiratory failure and acute respiratory distress syndrome (ARDS). The more common causes of morbidity and mortality in Covid-19 tested positive patients include pneumonia and respiratory failure, which cause the patients to acquire artificial ventilation and other invasive/non-invasive techniques which improves their respiratory function. Early rehabilitation is known to be effective in critically ill patients to reduce functional impairment due to their prolonged stay in hospital setting. It is intended for use by physiotherapists in the acute care setting for patients with confirmed or suspected COVID-19 to improve the quality of life. This document outlines the common physiotherapy measures advised by doctors as personal protective equipment's during this pandemic crisis.

Keywords: ARDS, COVID-19, Early rehabilitation, Quality of life, Physiotherapeutic measures.

## INTRODUCTION

Severe acute respiratory syndrome (SARS-COV-2) is a highly contagious variant of coronavirus that emerged in late 2019 costing the life of many people across the globe. COVID-19 was declared pandemic in March 2020. The name corona in Latin means crown which portrays the unique appearance of the virus (1). According to World Health Organization, COVID-19 is an air born disease, transmitted via respiratory droplets through human-to-human transmission occurring 2 to 10 days prior to the individual becoming symptomatic (2). The disease symptoms ranges from asymptomatic to critical and even fatal. Symptoms of covid-19 can be collectively grouped as fever 88%, hyposomia or anosmia of 85%, dry cough of 65-70%, myalgia and dyspnea of 30% (1). Recently in 2021 it was estimated that about 80% of cases were asymptomatic or mild, 15% were severe cases and 5% were critical cases which required ventilation and basic life support management (2) (3).

Diagnostics for corona virus includes RTPCR (reverse transcription polymerase chain reaction), rrtPCR (real time RTPCR), RTLAMP (reverse transcription loop mediated isothermal amplification) in which about 71% cases were RTPCR positive. CT scan is the next level of diagnostic tool in which 86% of patients showed ground glass opacity, 71% showed consolidation of one or more lobe and 76% showed bilateral lobar involvement in positive/negative tested patients and hence it is also useful to assess the severity in asymptomatic cases (4).

The treatment protocol for Covid-19 comprised of antiviral treatment with chloroquine which was used to reduce exacerbation of pneumonia showing symptomatic decrease in viral clearance. Apart from antiviral therapy, antibacterial therapy and corticosteroids, physical therapy also played a very important role in covid 19 patients (4). COVID 19 challenges the world massively with the preventive measures to be followed like wearing mask, hand washing frequently, maintaining social distance (1). It is also found that the surface disinfectant with 62-71% ethanol and/or 0.5% hydrogen peroxide and/or 0.1% of sodium hypochloride for 1 minute inactivates the corona virus to desirable extent (4).

Physical treatment comprises of various techniques including posture correction, breathing exercise, mobilization and training to wean the patient from invasive mechanical ventilator support (5),(6). Other therapies include prone positioning, respiratory control, passive joint motion, muscle stretching, neuromuscular electrical stimulation, bedside standing training, walking exercise and maintaining physical strength and exercise endurance (7). Physical rehabilitation techniques improved the gas exchange, reversed the pathological progression and also the use of artificial ventilation. Chest physiotherapy of respiratory muscle training, diaphragmatic training, and stretching exercises found to improve the FEV1 (L), FVC (L), FEV/FVC % (8).

## I. **PHYSIOTHERAPEUTIC MEASURES**

Chest physiotherapy plays an important role in conditions like pneumonia and other respiratory ailments. It is intended for use by physiotherapists in the acute care setting for patients with confirmed or suspected COVID-19 to improve the quality of life. Chest physiotherapy has been shown to reverse pathological progression, improve gas exchange, and reduce or avoid the need for artificial ventilation when adequate therapy has been rendered to patient. Basic but life-saving physiotherapeutical measures are discussed as follows;

### a) **DEEP BREATHING EXERCISE:**

Deep breathing exercises improve gas exchange in lungs and increase the amount of oxygen reaching the cells regulating the work of pulmonary circulation. Deep breathing exercises reduce the level of anxiety and thereby improve blood pressure of the patients. A study has proven that breathing exercise with trifle improved anxiety, dyspnea and quality of life in patients tested positive for COVID-19 (9). It increases the Total lung capacity (TLC) and thus prevents the occurrence of respiratory complications.



Fig 1. The method of doing deep breathing exercise. Available at:

<https://www.istockphoto.com/search/2/image?mediatype=illustration&phrase=breathing+exercises+cartoons>.

Retrieved on: 13.09.2021

Breathing exercise increases the oxygen saturation (SpO<sub>2</sub>) level, respiratory rate and heart rate thereby reducing the need for oxygen supplementation in Covid-19 patients which further reduces their hospital stay into half. It is known that respiratory physiotherapy not only improves physical symptoms but also weans psychological symptoms (10) in patients who are suspects or even affected by Covid-19.

b) **PRONE POSITINING:**

A tremendous reduction in mortality rate and PaO<sub>2</sub>/PiO<sub>2</sub> ratio improvement in ARDS patient was recorded when patients were involved in prone positioning. With regular prone positioning exercises, non-ventilated patients who is need of oxygen supplementation, improve their oxygen saturation status to normal levels. 17% fraction of ARDS symptoms is seen to be in high prevalence among patients tested positive for Covid-19.



Fig 2. Prone positioning. Available at: [healthifyme.com/blog/what-is-proning-and-how-does-it-help-with-covid-19-patients/](https://healthifyme.com/blog/what-is-proning-and-how-does-it-help-with-covid-19-patients/). Retrieved on 13.09.2021

**c) EXERCISES:**

Physical exercises such as aerobics, endurance training, high intensity interval training, and resistance exercise are given to Covid 19 patients. Immense improvement in primary symptoms like fever, fatigue, and cough was noted. Myalgia, rhinorrhea, chest distress, nausea, vomiting also reduced on succeeding workups. Improvement in CT imaging and negative nucleic acid test for Covid-19 was also recorded (13). Aerobic and breathing exercises found to improve cardio respiratory fitness, dyspnea, exercise tolerance and quality of life (14).

**d) PULMINARY REHABILITATION:**

Pulmonary rehabilitation is a supervised program that includes exercise training, health education, and breathing techniques that helps you manage your breathing problem, increase your stamina (energy) and decrease your breathlessness. Patients on long term pulmonary rehabilitation, benefitted them by increasing their cardiac endurance, improving their physical function, reducing their anxiety and depression and thus promoting them to get back to society with enhanced and ameliorated quality of life (15). Chest physiotherapy has been shown to reverse pathological progression, improve gas exchange, and reduce or avoid the need for artificial ventilation when adequate therapy has been rendered to patient. The percussion with force gravity effectively removed the sticky, thick secretion in pneumonia patients with severe viral load (16).

**CONCLUSION**

Physiotherapists will help patients in the edge of a bed to sit in a chair and stand up from a seated position. Often they use tilting chairs or hoists to support movement. Simple exercises also force patients to breathe a little harder. This strengthens a patient's respiratory system, which prepares them for normal regular activities. Chest physiotherapy plays an important role in conditions like pneumonia and other respiratory ailments. It helps to gain strength, reduce symptoms of anxiety or depression, and make it easier to manage routine activities, work, and outings or social activities that you enjoy. It is recommended for all people to follow regular deep breathing exercises, endurance and high intensity training exercises to prevent ourselves from the severe attack of ongoing Covid-19 pandemic crisis.

**ACKNOWLEDGEMENT**

My Heartfelt thanks to my lovable professor and well wisher Dr. C. Ishwarya vardhini who is the reason for what I am today. Our heartfelt thanks to our parents and siblings for their unconditional love and support to us through all the tough and happy moments. This work is dedicated to all the Physiotherapists who work whole heartedly only for the betterment of their patients without any expectations.

## FUNDING

This review process received no specific grant from any funding agency in the public, commercial, or not for-profit sectors.

## CONFLICT OF INTEREST

The authors declare no conflict of Interest.

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