

## Long Covid and Rehabilitation



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### Abstract

Corona virus also called Novel Corona Virus (COVID-19) is a newly identified virus in 2019 in Wuhan, China. Its infection soon declared as pandemic by WHO. It causes a wide variety of illness from common cold and respiratory problems to severe diseases like ARDS and ADEM (Acute Disseminated Encephalomyelitis).

**Keywords:** Covid-19; Rehabilitation; Long haul syndrome; Persistent complication; Telehealth; Telerehabilitation; Hospice; Comorbidity; Psychosocial; Quality of life; Physiotherapy

**Abbreviations:** WHO: World Health Organization; ADEM: Acute Disseminated Encephalomyelitis; NGO: Non-Government Organization; FES: Functional Electrical Stimulation

### Introduction

By the term 'Long Covid' Also called Long Haul Syndrome, we mean that the patients who have suffered from covid, and the symptoms are still persistent after the acute phase usually 3-4 weeks and it has become chronic illness usually beyond 12 weeks of infection. A study suggests that 6.7% of patient died due

to covid while 15.1% patients required re-admission and 32.6% reported persistent symptoms. The term Rehabilitation depicts that the group of interventions made by the therapist or the family and community members, by which a patient can gain his lost skills and achieve self-sufficiency.

### Need for and Importance of Rehabilitation in Long Covid



Figure 1: Importance of rehabilitation in long covid.

As the Covid -19 disease is not associated with a single organ or organ system and is linked with almost all the organ systems of the body, the need for rehabilitation increases because, it is still unknown when and which intensity a patient may develop persistent complications. Apart from the inclusion of respiratory system, it is seen that the musculoskeletal (sarcopenia), cardiovascular, CNS, along with renal system (Figure 1) is also involved. So, the specific method of rehabilitation for covid-19 is unknown, but a combined design can be made to rehabilitate the patients suffering from Long Haul Syndrome.

**Configuration of rehabilitation services in Persistent covid**

As we have seen in past 1 and half years, the changes implemented in the health care system have not fitted so well because the disease was not known. So, [1,2] in this crisis time, apart from the general medical services, the local services like the PHC's, ASHA workers and the social workers have proved helpful

themselves. The disease was so devastating that it was impossible for the health care system to monitor patient's progress over time along with history taking and assessment. In this era of persistent covid we need more Hospices, in which the team of doctors, nurses, Physiotherapists, allied health professionals along with the family members of the patient will be there to support the patient. We have seen that the disease has reached every corner of the world, and most of the patients who are suffering from long haul syndrome have never been hospitalised and tested for covid-19. We can reach them through Community Based Rehabilitation. It can be modulated by both government as well as the NGO's. We can aware the population (Figure 2) through the telehealth rehab, and by this we can reach the maximum population. We can use the caller tune service as done by the Indian Government along with social media like Facebook, Instagram and twitter, also we can use mass communication like TV, Newspaper, FM Radio etc and for general local awareness we can use folk media.

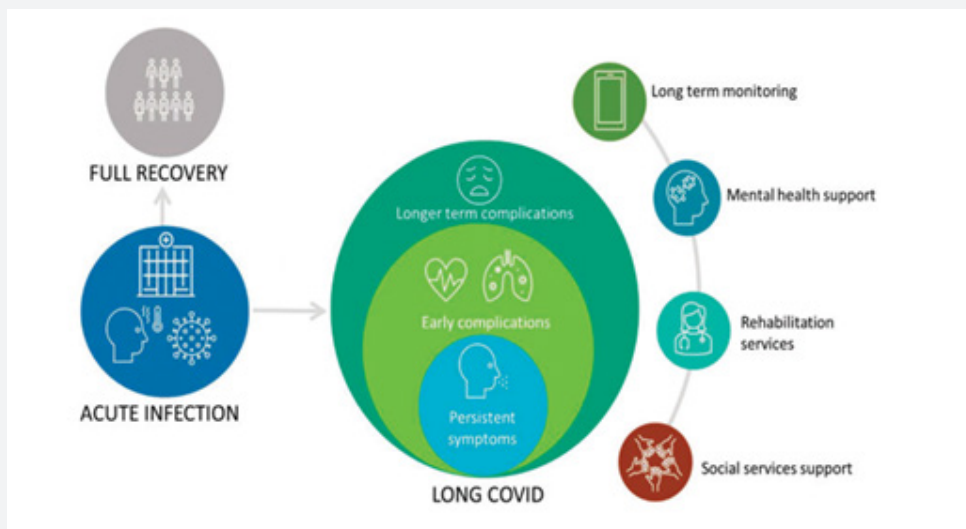


Figure 2: Area of implementation of rehabilitation in long covid.

**Area of implementation of rehabilitation in long covid**

Table 1: Recent advancement in rehabilitation for persistent covid.

Consequences	Chest PT.	Musculoskeletal	Neuromodulation	Cardiovascular
With Productive Cough	Postural drainage, Percussion, Controlled coughing, Deep breathing, Vibration	PNF, Stretching Exercises, Eccentric Exercises, NPF, NMES	FES (Functional Electrical Stimulation), DCS (Direct Cortical Stimulation), VNS (Vagus Nerve Stimulation), CES (Cranial Electrical Stimulation), NMES, Cycle Ergocise, IFT	Aerobic exercises, Resistance training, MET, Telerehabilitation
Without Productive Cough	Deep Diaphragmatic breathing, Inter costal stretch, Positive Expiratory Pressure (PEP) Device, High Frequency Chest wall Oscillation (HFCWO) device, Intra Pulmonary Percussive Ventilation (IPV)	Concentric Exercises, Isometric Exercises, Isotonic Exercises, Endurance Exercises, Mobilisation, Range of Motion Exercises		

Stepping in with the rehabilitation we must follow the basic process along with planning, assessment and formulation of the patient's condition coupled with knowledge of the prognosis and consequences. Concerning the whole body and body systems, we can execute the rehabilitation by giving general exercise training for strengthening of respiratory muscles, upper and upper and lower body (Table 1) strengthening along with stretching, balance awareness, energy conservation techniques, various advanced techniques like chest physiotherapy, PNF breathing, deep diaphragmatic breathing [3-5] and functional electrical Stimulation (FES). We can educate the patient for lifestyle modification and improvement in quality of life. We can enforce cognizance of self-management, execution of psychosocial therapies should be done with breathing control training, body positioning training and screening of psychosocial comorbidities that frequently coincide with fatigue symptoms.

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