

Safe Physiotherapy Practice during COVID 19 Pandemic - A collection of guidelines and recommendation from various organizations.

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I. Introduction

Coronavirus disease 2019 (COVID-19) has spread quickly around the world, and WHO categorized it as a pandemic in March, 2020¹. In India more than one million people have been infected with coronavirus disease till date². In this situation, the entire healthcare system and healthcare staff need to respond in a very short time to an exponential growth of the number of COVID-19 patients.³ The SARS CoV-2 virus is transmitted from person to person by large droplets from infected person by coughing, sneezing or rhino-rhea. An approximate distance of 2 meters is needed to protect from these droplets. SARS CoV-2. Healthy people may get infected with this virus through touching the mouth, nose, or eyes with a contaminated hand. Infected droplets which were created during a sneeze or cough persist in the air for about 3 hours.⁴

The transmission of COVID may occur during the treatment of patients to a treating physiotherapist or to patients by different routes in hospital setup. Similarly, a person who goes to an outpatient physiotherapy clinic may also get infected by inhaling polluted air, touching the contaminated surfaces by hand, through physiotherapy equipment, through the other patients etc. On the other hand, a physiotherapist may be at risk for contacting infected patients.³ It is also important to note that some infected people may have no symptoms and they are not aware of having the disease resulting in an asymptomatic carrier. Nearly 80% of cases are asymptomatic or mild, 15% have severe symptoms and 5% have critical conditions requiring ventilation and may lose their lives. Till now, there is no effective antiviral drug for the treatment of patients; hence, vaccine for this disease may be produced in future.⁵

The safe guidelines for physiotherapy practice in acute care setup as well as out-patient setups are needed for hours to save patients as well as physiotherapists from exposure to COVID 19. There are many guidelines and recommendations but the collective, simple and single framed guidelines for all types of setups for both developed and developing countries are limited.

Objectives

The main objective of this study is to provide basic infection prevention recommendations for acute care and outpatient physiotherapy settings. It also reaffirms Standard Precautions as the foundation for preventing transmission of infectious agents during patient care in all healthcare settings by compiling different guidelines/ recommendations of various organizations and institutions published recently.

Study design and aims

This study is collection of various recommendations and guidelines given by different institutions, organization such as American Physical therapy association, Australian Physiotherapy Association, Canadian Physiotherapy Association, Australian and New Zealand Intensive Care Society etc. to have a single framed and efficient guideline for safe physiotherapy practice during COVID-19 pandemic.

II. Methodology

After collecting all the recommendations of different organizations, a single framed recommendation is established. It includes the role of physiotherapy, use of PPE, recommendation for chest physiotherapy, exercise prescription and mobilization, outpatient setup safety etc which are discussed below. Ethical clearance is not applicable for this study and the originality of source articles has not been changed.

The Role of Physiotherapy on COVID 19.⁶

- Physiotherapy and rehabilitation play an essential role in the context of infectious disease outbreaks.
- Physiotherapy can mitigate adverse impacts due to respiratory and mobility complications associated with infectious disease outbreaks.
- The care and treatment offered by physiotherapists is crucial in keeping patients healthy and active, and in preventing the need to access urgent or emergency services in-hospital.
- Physiotherapy can reduce the burden on the medical system through improving patient function and independence, and allowing them to return to their homes sooner, freeing up much needed hospital resources.
- Physiotherapy is important to improve physical and mental well-being for patients diagnosed with an infectious disease, as well as for people in isolation and self-quarantine.
- Physiotherapy can help citizens to return to their communities, families, and employment faster, thus reducing the societal and financial impacts of infectious disease.
- As health care professionals, physiotherapists are trained in, and adhere to, strict infection control practices to keep Citizens safe.
- Physiotherapist can help to educate citizens and create awareness in society.⁷

RECOMMENDATION FOR PHYSIOTHERAPY IN ACUTE CARE SETUP/HOSPITAL⁸

Use of PPE

- All of the Physiotherapists must be donning PPE, including N95 or surgical mask in the best way. If possible, one of the healthcare staff who has had comprehensive PPE education may check the fitness of masks and teach other patients how to use the N95 in the correct way.⁸
- Physiotherapists with beards should remove beards to confirm proper mask fitness.⁸
- Physiotherapists should wear hair cover, head shield for protection from aerosol-generating procedures.⁸
- They must wear an additional apron if patients have symptoms similar to that of COVID_19. If reusable PPE items are used (such as goggles), they should be cleaned and disinfected before being used again.⁸
- Use a paper towel for each patient separately.⁸
- The physiotherapist should change his or her gloves after each examination.⁸
- If any piece of equipment is contaminated with the patients' discharge, it is necessary to clean the plant according to the instructions or by referring to the manufacturer's instructions using the appropriate disinfectant.⁸
- Stethoscopes use should be kept to a minimum. If required, be sure to disinfect them with 70% alcohol after being used.⁸
- During the procedure, that may provoke a cough, physiotherapists must teach the patients about cough etiquette.⁸
- Physiotherapists should maintain more than 2 meter distance from the patients if the procedure can be done without touching the patients.⁸

Indications for physiotherapy intervention.¹²

- Physical therapy examination and interventions should be provided only when there are clinical indications for need such as “mobilization, exercise, and rehabilitation, e.g., in patients with comorbidities creating significant functional decline and/or (at risk) for ICU-acquired weakness”.¹³
- It is essential to assess oxygen status, cardiac stability (look at ECG, enzymes, and echo), and hemodynamic stability with activity before enrolling the patient of COVID-19 for physiotherapy treatments.^{12,13}
- Physiotherapists should not implement AGPs, including humidification or noninvasive ventilation (NIV), without first obtaining agreement with a “senior physician”.^{12,13}
- If AGPs are required, they should be conducted in a negative-pressure room or at least in a single room with the door closed, with a minimum number of staff, all wearing PPE that includes an N95/P2 mask, fluid resistant long-sleeve gown, goggles/face shield, gloves, hair cover, and shoes that are impermeable to liquids. Coming in and going out of the room should be minimized during the AGPs.^{8,12,13}
- Physiotherapists should take droplet and airborne precautions, including the use of a high filtration mask, when providing mobilization exercise, as there is a risk of the patient coughing or expectorating mucous.⁸

- Direct physical therapy interventions should be considered only when there are significant functional limitations.^{12,13}
- Use of metered dose inhalers/spacers is preferred where possible. If a nebulizer is required, liaise with local guidelines for directions to minimize aerosolization.⁹

COVID-19 patient presentation (confirmed or suspected)	Physiotherapy referral?
Mild symptoms without significant respiratory compromise, e.g., fever, dry cough, no chest X-ray changes	Physiotherapy interventions are not indicated for airway clearance or sputum samples No physiotherapy contact with patient
Pneumonia presenting with features: A low-level oxygen requirement (e.g., oxygen flow \leq 5 L/min for SpO ₂ \geq 90%) Nonproductive cough or patient coughing and able to clear secretions independently	Physiotherapy interventions are not indicated for airway clearance or sputum samples No physiotherapy contact with patient
Mild symptoms and/or pneumonia AND coexisting respiratory or neuromuscular comorbidity AND current or anticipated difficulties with secretion clearance	Physiotherapy referral for airway clearance Staff use airborne precautions Where possible, patients should wear an N95 mask during any physiotherapy
Mild symptoms and/or pneumonia AND evidence of exudative consolidation with difficulty clearing or inability to clear secretions independently, e.g., weak, ineffective, and moist sounding cough, tactile fremitus on chest wall, moist/wet sounding voice, audible transmitted sounds	Physiotherapy referral for airway clearance Staff use airborne precautions Where possible, patients should wear an N95 mask during any physiotherapy
Severe symptoms suggestive of pneumonia/lower respiratory tract infection, e.g., increasing oxygen requirements, fever, difficulty breathing, frequent, severe or productive coughing episodes, chest X-ray/CT/lung ultrasound changes consistent with consolidation	Consider physiotherapy referral for airway clearance Physiotherapy may be indicated, if weak cough, productive, and/or evidence of pneumonia on imaging and/or secretion retention Staff use airborne precautions Where possible, patients should wear an N95 mask during any physiotherapy
PPE: It is strongly recommended that airborne precautions are utilized. Cough etiquette should be followed by both, the patient and therapist. They must turn the head away during cough and expectoration. Physiotherapist should position themselves \geq 2 m from the patient and out of the "blast zone" or line of cough (work from behind the patient). Not more than 8–10 min as required should be spent with each COVID-19 patient to minimize exposure to treating physiotherapists. Where respiratory equipment is used, whenever possible use single patient use or disposable options. Physiotherapists should advise on positioning requirements for postural drainage and improving ventilation perfusion matching	
PPE=Personal protective equipment, CT=Computed tomography	

Table - Recommendations for respiratory physiotherapy interventions.¹²

Aerosol generating procedures.

It includes

- Tracheotomy.
- Cardiopulmonary resuscitation before intubation.
- Extubation.
- Bronchoscopy.
- HFNO use (negative pressure rooms are preferable).
- NIV.
- Open suctioning (closed inline suction catheters are recommended), and oxygen therapy.¹⁰

Respiratory support via HFNO (limiting the flow rate to not $>$ 30 L/min to reduce potential viral transmission). Oxygen therapy targets may vary depending on the clinical status of the patient.¹¹

- For patients with presenting with severe respiratory distress, hypoxemia, or shock, SpO₂ $<$ 94% is targeted.¹¹
- Once a patient is stable, the target is $>$ 90% in non pregnant adults and 92%–95% in pregnant patients.¹¹
- In adults with COVID-19 and acute hypoxemic respiratory failure, the SpO₂ target should not be maintained higher than 96%.¹¹

Where AGPs are indicated and considered essential, they should be undertaken in a negative-pressure room, if available or in a single room with the door closed. Only the minimum number of required staff should be present, and they must all wear PPE as described. Entry and exit from the room should be minimized during the procedure. Masks should be removed after coming out of patient's room and closing the door behind⁸.

COVID-19 patient presentation (confirmed or suspected)

For any patient at significant risk of developing or with evidence of significant functional limitations

E.g., Patients who are frail or have multiple comorbidities impacting on their independence

E.g., Mobilization, exercise, and rehabilitation in ICU patients with significant functional decline and/or (at risk for) ICU-acquired weakness

Physiotherapy referral

Use droplet precautions

Use airborne precautions if close

Contact required or possible AGPs

If not ventilated, patients should wear N95 mask during any

Physiotherapy whenever possible [Figure 1: Algorithm]

1. PPE: Droplet precautions should be appropriate for the provision of mobilization, exercise and rehabilitation. Mobilization and exercise may also result in the patient coughing or expectorating mucous, generating aerosol
2. Direct physiotherapy interventions should be considered only in those patients with significant functional limitations (e.g., ICU-acquired weakness, frailty, multiple comorbidities, or advanced age)
3. The patient should be encouraged for early and safe mobilization and maintaining function as much as possible in the ward. E.g. Sit out of bed, perform simple exercises and activities of daily living. Charts for the same should be displayed so that they are easily visible
4. Mobilization and exercise prescription should involve careful consideration for stable clinical presentation with stable respiratory and hemodynamic function
5. Use Theraband rather than distributing hand weights to ensure it is single patient use. Larger equipment (e.g., mobility aids, ergometers, chairs, tilt tables) must be easily decontaminated if at all used
6. When mobilization, exercise or rehabilitation interventions are indicated in ventilated patients or patients with a tracheostomy, it has to be well planned and airway security should be ensured and maintained, e.g., dedicated airway person to prevent inadvertent disconnection of ventilator connections/tubing is recommended
7. Decline in SpO₂ by 3% after 6MWT or 1 MSTS test indicates inadequate oxygenation, and it should be brought to the notice of the attending physician. If the 1 MSTS test is used, it should be followed by monitoring for at least 1 min to observe for desaturation
8. Patients can be referred for tele-rehabilitation after discharge

AGP=Aerosol-generating procedures, PPE=Personal protective equipment, ICU=Intensive care unit, 6MWT=6-min walk test, MSTS=Min sit to stand

Table -Recommendations for mobilization, exercise, and rehabilitation. ¹²

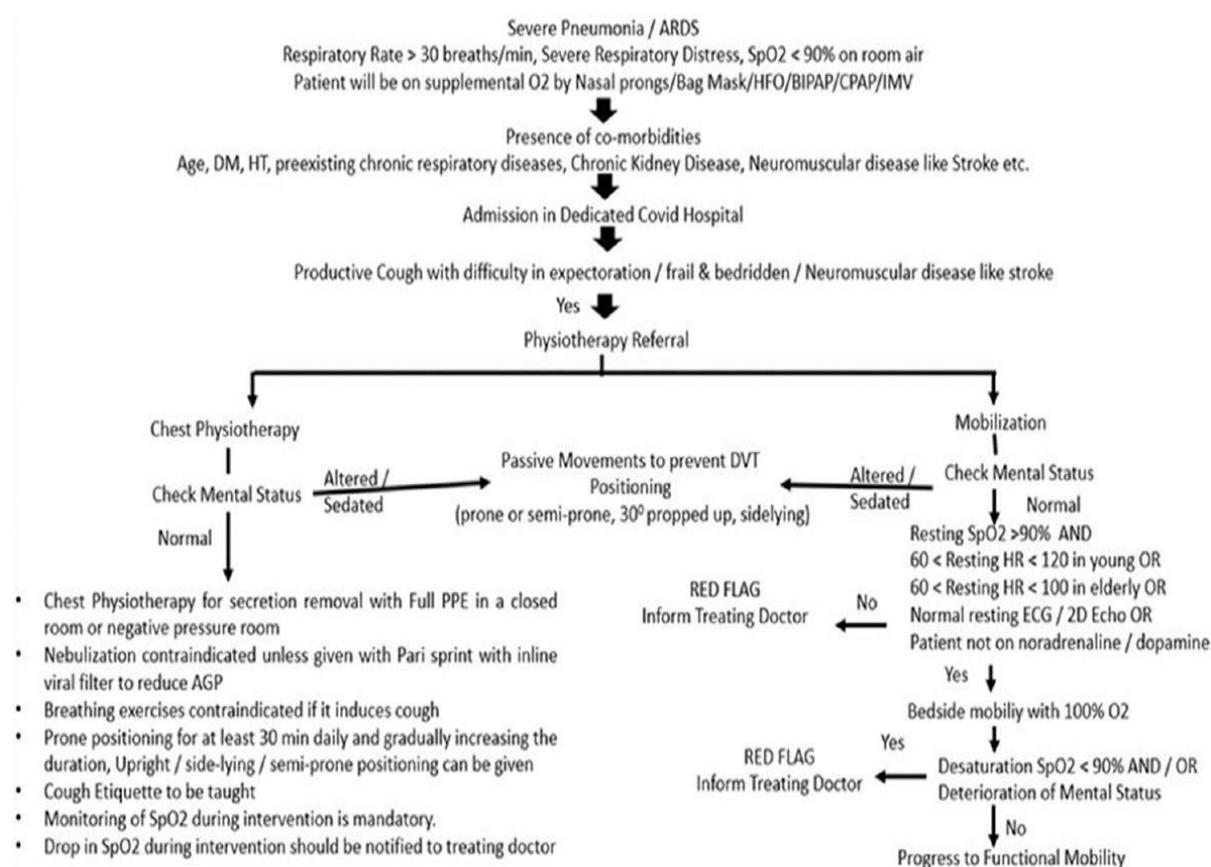


Image - Algorithm of guidelines for physiotherapy management in acute care setup. ⁹

Exercise-induced fall in oxygen saturation.

Unpublished data suggest that some patients with mild symptoms have normal pulse oximetry at rest, but their readings deteriorate on exertion. A fall of 3% or more in pulse oximetry reading on exercise is a cause of concern and if identified in symptomatic patients with normal saturation may prevent delay in management. ¹⁴ The 1-min sit to stand test, which is less demanding and correlates well with the validated 6-min walk test as has been found to be useful for the purpose. In patients whose pulse oximeter readings are <96%, this test should not be performed. ¹⁴

In adult patients with COVID-19 and severe Acute Respiratory Distress Syndrome, prone ventilation for 12–16 h per day is recommended.¹⁵ It requires sufficient human resources and expertise to prevent known complications, including pressure areas and airway dislodgment.¹⁵ In non intubated patients or those on NIV or high-flow nasal oxygen (HFNO) therapy, the “COVID awake repositioning proning protocol” (CARP) can be implemented on suitable patients after screening for indications and SpO₂ monitored with pulse oximeter.

If patient fulfills criteria for proning ask the patient to switch positions as follows. Monitor oxygen saturations 15 min after each position change to ensure oxygen saturation has not decreased. Continue to monitor oxygen saturations

30 min to 2 h lying fully prone (bed flat)

30 min to 2 h lying on right side (bed flat)

30 min to 2 h sitting up (30–60°) by adjusting head of the bed

30 min to 2 h lying on left side (bed flat)

30 min to 2 h lying prone again

Continue to repeat the cycle

Table-CARP (COVID Awake Repositioning Protocol).¹⁵

RECOMMENDATIONS FOR OUT PATIENTS CLINICS DURING COVID 19 PANDEMIC.

Scheduling and Workflow¹⁶

- Have in place written communication of masking and symptoms policies so they can be seen upon entering the clinic.
- Have a clinic plan/policy in place.
- Consider options for how patients enter the facility and await their appointments, such as a virtual waiting area, when possible, via phone or text.
- Consider allowing only medically necessary caregivers to accompany patients within the facility and during treatment sessions.
- Set up facility and scheduling of patients and staff so that patients may maintain 6 feet distance from one another. Consider markers such as lines on the floor in the waiting and treatment areas to indicate social distances of 6 feet.
- In larger facilities, consider placing barriers to direct patient flow in, out, and around the waiting and treatment areas.
- Consider assigning treatment rooms for clinicians with a system to communicate when they are sanitized/clean or not.
- All patients on treatment tables separated by at least 6 feet.
- All patients sitting in chairs separated by at least 6 feet.
- Consider space of at least 12 feet between Physiotherapy equipment.
- Consider making cleaning supplies available nearby for patient use to wipe hands and clean equipment before and after use.
- Clean all equipment after every patient use and Entry/Waiting Area
- When physical distancing is not possible in the waiting area, recommend phone calls or texting systems to alert patients when to enter the clinic. Patients may text or call upon arrival, wait in the car; clinic texts or calls patients when therapist and space are ready.
- Hand sanitizer available at front desk if Plexiglas barrier placed between front desk staff and sanitizer, or located on wall near entrance.
- All patients asked to wear a mask/cloth face covering upon entering the clinic, or provided with one, except those for whom it is not indicated.
- Request that all patients and personnel wash their hands immediately upon arrival.
- Consider adjusting systems and keeping credit cards on file for reference each visit to minimize contact with patients.
- Consider wipe able covers for credit card processing machines or touch less payment options.

Patient Screening Prior to patient Visits (Virtual Check-in) ¹⁶

Consider a pre visit screen and ask patients to reschedule if any of the below apply between now and their appointment.

- Cough.
- Shortness of breath or difficulty breathing.
- Fever (ask them to take their temperature at home prior to arrival to confirm).
- Chills.
- Muscle pain.
- Sore throat.
- New loss of taste or smell.
- Less common symptoms: gastrointestinal symptoms such as nausea, vomiting, or diarrhea.
- COVID-19-Specific Questions
- Exposed to someone diagnosed with COVID-19 within the last 14 days.

SUMMARY

Physiotherapy is an essential part of the healthcare care system which cannot be ignored. To prevent the spread of COVID 19 infection different physiotherapy organizations have given recommendation and guidelines. This study has collected different guidelines and compiled it to provide a single framed, simple, structured guideline.

Conflicts of interest and funding

No conflicts and interest and any funding.

RESOURCES

- [1]. Coronavirus india lockdown day 116 updates. The Hindu net desk. July 18, 2020.
- [2]. Risk Management of COVID-19 Infection in Physiotherapy: Recommendations Paria Dehesh*. *J Biol Today's World* 2020; 9(6): e228.
- [3]. Van Doremalen N, Bushmaker T, Morris DH. Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. *New England J Med.* 2020; 382(16):1564-1567.
- [4]. Organization WH. Coronavirus disease 2019 (COVID-19): Situation Report, 72. 2020.
- [5]. CPA update: advocacy statement- the role of physiotherapy in keeping Canadian safe during the COVID 19 pandemic. March 17 2020.
- [6]. Deepa Abichandani, Vidhi Radia, Awareness of various aspects of physiotherapist among medical practitioners. *International journal of science and research.* ISSN online 2319-7064.
- [7]. Thomas P, Baldwin C, Bissett B, Boden I, Gosselink R, Granger CL, *et al.* Physiotherapy management for COVID-19 in the acute hospital setting: Clinical practice recommendations. *J Physiother* 2020; 66:73-82.
- [8]. Guidelines of physiotherapy management in acute care of COVID-19 at dedicated COVID center in Mumbai. Chhaya V Verma¹, Rachna D Arora. the journal of Indian association of physiotherapist. Volume 14, pages 55-60, 2020.
- [9]. A. Rhodes *et al.* Surviving sepsis campaign: Guidelines of the Management of Critically Ill Adults with Coronavirus Disease 2019 (COVID-19). *Critical Care Medicine*, 2020.
- [10]. Australian and New Zealand Intensive Care Society, ANZICS COVID-19 Guidelines, 202, ANZICS: Melbourne.
- [11]. Physiotherapy Management for COVID-19 in the Acute Hospital Setting: Recommendations to Guide Clinical Practice. Ver. 1. (Guidelines endorsed by WCPT, APA, ICCRPT, Canadian Physiotherapy Association, ACPRC; 23 March, 2020.
- [12]. Lazzeri M, Lanza A, Bellini R, Bellofiore A, Cecchetto S, Colombo A, *et al.* Respiratory physiotherapy in patients with COVID-19 infection in acute setting: A position paper of the Italian Association of Respiratory Physiotherapists (ARIR). *Monaldi Arch Chest Dis* 2020;90:163-68.
- [13]. Greenhalgh T, Javid B, Knight M, Inada-Kim M. What is the efficacy and safety of rapid exercise tests for exertional desaturation in covid-19? *Centre Evidence Based Med* 2020;1-9.
- [14]. COVID Awake Repositioning Protocol; (CARP). Resuscitation & Acute Critical Care, *Janus General Medicine*; 2020. last seen 11th Jun 2020. <https://emcrit.org/wp-content/uploads/2020/04/COVID-CARP-Protocol-postable.pdf>.
- [15]. Considerations for Outpatient Physical Therapy Clinics During the COVID-19 Public Health Crisis May 2020. American Physical Therapy Association.