



The following information resources have been selected by the National Health Library and Knowledge Service Evidence Virtual Team in response to your question. The resources are listed in our estimated order of relevance to practicing healthcare professionals confronted with this scenario in an Irish context. In respect of the evolving global situation and rapidly changing evidence base, it is advised to use hyperlinked sources in this document to ensure that the information you are disseminating to the public or applying in clinical practice is the most current, valid and accurate.

YOUR QUESTION

What evidence is available re physiotherapy rehabilitation of a COVID-19 patient?

IN A NUTSHELL

A team of expert researchers and clinicians within the intensive care and acute cardiorespiratory fields have collaborated to produce: [Physiotherapy management for COVID-19 in the acute hospital setting: recommendations to guide clinical practice](#)¹. These recommendations were released on 23 March 2020 and should be read in full. They address both the respiratory treatment and physical rehabilitation of patients with COVID-19.

Specific recommendations for physiotherapy mobilisation, exercise and rehabilitation interventions are included.

Physiotherapy and rehabilitation clinicians should keep up to date with the latest information on the COVID-19 outbreak through WHO updates and their local institution. This will support physiotherapists in disease symptom recognition, treatment and patient education. Free online courses are available to educate and inform physiotherapists about COVID-19 [14,15,16,17](#). Cheng et al.¹⁰ shared their institutions experience of providing face-to-face education for frontline healthcare workers including physiotherapy, occupational therapy and pharmacy.

Infection prevention and control (IPC) is another key consideration for physiotherapists and rehabilitation teams. Appropriate PPE are recommended as per [HPSC](#) guidance in addition to standard precautions including hand hygiene, safe waste management, cleaning and disinfection of equipment and cleaning of the environment. Koh et al.⁸ recommend infection control of rehabilitation equipment to be conducted in consultation with local IPC experts.



The potential value of technology to enhance and support rehabilitation is increasingly recognised, particularly in the case of infectious diseases ^{7,8}.

Landry et al.⁹ suggest that survival from an infectious disease is the first step and that infectious disease can lead to long term impairment. They suggest that multidisciplinary rehabilitation teams should be more fully incorporated along the disease trajectory from acute and inpatient care, through to the ambulatory settings and onward into the community. To be effective, rehabilitative interventions must be considered during the planning and allocation of resources used to fight a disease outbreak.

IRISH AND INTERNATIONAL GUIDANCE

[World Confederation for Physical Therapy \(2020\). Physiotherapy management for COVID-19 in the acute hospital setting: recommendations to guide clinical practice¹](#)

These recommendations have been developed by a team of expert researchers and clinicians within the intensive care and acute cardiorespiratory fields. The guidance focuses on the acute hospital setting and includes recommendations for physiotherapy workforce planning and preparation; a screening tool for determining the requirement for physiotherapy; recommendations for the selection of physiotherapy and mobilisation treatments; personal protective equipment; and categories of patients including patients with comorbidities creating significant functional decline or at risk of ICU-acquired weakness.

These recommendations were released on 23 March 2020 and should be read in full.



[Irish Society of Chartered Physiotherapists \(2020\). Professional Development Update \[COVID-19\]²](#)

Provides a weekly update with new or updated resources or guidance on COVID-19.

What does the World Health Organization say?

[World Health Organization \(2020\). Clinical management of severe acute respiratory infection when novel coronavirus \(2019-nCoV\) infection is suspected³](#)

Physiopedia has summarised the WHO recommendations for hospitalised patients of relevance to physiotherapy, which includes the following considerations:

- **RECOGNISING AND SORTING PATIENTS WITH SEVERE ACUTE RESPIRATORY DISEASE:** early recognition of suspected patients allows for timely initiation of infection prevention and control. Early identification of those with severe manifestations allows for immediate, optimised supportive care treatments and safe, rapid admission or referral to the ICU according to institutional or national protocols.
- **STRATEGIES FOR IPC:** Standard precautions include hand hygiene; use of PPE to avoid direct contact with patients' blood, body fluids, secretions including respiratory secretions and non-intact skin; prevention of needle-stick or sharps injury; safe waste management; cleaning and disinfection of equipment; and cleaning of the environment.
- **EARLY SUPPORTIVE THERAPY AND MONITORING:** Provide supplemental oxygen therapy immediately to patients with severe acute respiratory illness (SARI) and respiratory distress, hypoxaemia or shock. Use conservative fluid management in patients with SARI when there is no evidence of shock. Closely monitor patients with SARI for signs of clinical deterioration, such as rapidly progressive respiratory failure and sepsis, and apply supportive care interventions immediately. Understand the patient's co-morbid condition(s) to tailor the management of critical illness and appreciate the prognosis. Communicate early with the patient and family.
- **COLLECTION OF SPECIMENS FOR LABORATORY DIAGNOSIS:** Collect blood cultures for bacteria that cause pneumonia and sepsis, ideally before antimicrobial therapy. Collect specimens from both the upper



respiratory tract – nasopharyngeal and oropharyngeal – and lower respiratory tract.

- **MANAGEMENT OF RESPIRATORY FAILURE AND ARDS:** Recognise severe hypoxaemic respiratory failure when a patient with respiratory distress is failing standard oxygen therapy. In the case of respiratory failure, intubation and protective mechanical ventilation may be necessary. Non-invasive techniques can be used in non-severe forms, however, if the scenario does not improve or even worsen within 1–2 hours then mechanical ventilation must be preferred.
- **MANAGEMENT OF SEPTIC SHOCK:** Haemodynamic support.

What does the European Centre for Disease Prevention and Control say? [European Centre for Disease Prevention and Control \(2020\). Factsheet for health professionals](#)⁴

ECDC provide general guidance for healthcare professionals about the importance of strict IPC procedures [see [HPSC](#)]. For aerosol-generating procedures, such as tracheal intubation, broncho-alveolar lavage, manual ventilation and chest physiotherapy, airborne precautions, PPE, including gloves, long-sleeved gowns, eye protection and fit-tested particulate respirators [N95 or equivalent or higher level of protection] are recommended. The guidance recommends that the procedure should be performed in an adequately ventilated room with the number of persons in the room limited to a minimum.

[Zhejiang University \(2020\). Handbook of COVID-19 Prevention and Treatment](#)⁵

Critically ill patients may experience respiratory insufficiency, dyskinesia and cognitive impairment, during both acute and recovery stages. An early rehabilitation intervention aims to reduce breathing difficulties, relieve symptoms, ease anxiety or depression and lower the incidence of complications. The process of early rehabilitation intervention is: rehabilitation assessment — therapy — reassessment.

Rehabilitation assessment: based on general clinical assessment, especially functional evaluation, including respiration, cardiac status, motion and ADL should be emphasized. Focus on respiratory rehabilitation assessment: evaluation of thoracic activity, diaphragm activity amplitude, respiratory pattern and frequency, etc.



Rehabilitation therapy: position management, respiratory training, and physical therapy.

Position Management

Postural drainage may reduce the influence of sputum on the respiratory tract and may improve the patient's V/Q. Patients must learn to tip themselves into a position which allows gravity to assist in draining excretion. For patients using sedatives and suffering from consciousness disturbance, a standing-up bed or the bed head elevation (30°-45°-60°) may be applied. Standing is the best body position for breathing in a resting state and can increase the patient's respiratory efficiency and maintain lung volume. As long as the patient feels good, let the patient take a standing position and gradually increase the time standing.

Respiratory Exercise

Deep-slow breathing: while inhaling, the patient should try his/her best to move the diaphragm actively. Breathing should be as deep and slow as possible to avoid the reduction of respiratory efficiency. This kind of breathing has better tidal volume and V/Q value.

Chest expansion breathing combined with shoulder expansion: when taking a deep-slow breath, one expands his/her chest and shoulders while inhaling; and moves back his/her chest and shoulders while exhaling. Due to the special pathological factors of viral pneumonia, suspending breathing for a long time should be avoided in order not to increase the burden of respiratory function, and the heart, as well as oxygen consumption. Meanwhile, avoid moving too fast. Adjust the respiratory rate at 12-15 times/min.

Active Cycle of Breathing Techniques

Three stages: breathing control, thoracic expansion and exhalation. How to form a cycle of breathing should be developed according to the patient's condition.

Positive Expiratory Pressure Trainer

The pulmonary interstitium of COVID-19 patients has been severely damaged. After the removal of mechanical ventilation, positive expiratory pressure trainer can help the movement of excretions from the low volume lung segments to the high-volume segments, lowering the difficulty of expectoration.



Physical Therapy

Including ultrashort wave, oscillators, external diaphragm pacemaker, electrical muscle stimulation, etc.

[McMaster University \(2020\). Rehabilitation for patients with COVID-19: guidance for occupational therapists, physical therapists, speech-language pathologists, and assistants⁶](#)

There is an urgent need to guide rehabilitation practice during the COVID-19 crisis. Informed by the best available evidence, including consultation with the clinical community, this living document consolidates findings from resources for frontline rehabilitation professionals.

INTERNATIONAL LITERATURE

What does the international literature say?

[\[Chinese Association of Rehabilitation Medicine \(2020\). Recommendations for respiratory rehabilitation of COVID-19 in adult\]⁷](#)

[Article in Chinese; English abstract]

Proposes the following recommendations based on the experiences of front line clinical experts and a review of the literature and existing evidence: 1. For inpatients with COVID-19 pulmonary rehabilitation would relieve the symptoms of dyspnea, anxiety, and depression; and eventually improve physical function and the quality of life. 2. For severe or critical inpatients, the early performance of pulmonary rehabilitation is not suggested. 3. For patients in isolation the pulmonary rehabilitation guidance should be conducted through education video, instruction manual or remote consultation. 4. Assessment and monitoring should be undertaken throughout the entire pulmonary rehabilitation process.

[Koh et al. \(2020\). How Should the Rehabilitation Community Prepare for 2019-nCoV?⁸](#)

Increasing IPC measures, such as patient screening for fever and flu symptoms at the entrance to the facility, and clinician hand washing between patients, is recommended. Infection control of rehabilitation equipment such as electrode sponges, water for hot pack units, topical lotions and therapy ball pits should be conducted in consultation with local



IPC experts. Isolation rooms should be designated with adequate PPE and training for staff.

Strategies to ensure continuity of care may include split teams and restricted movement. Split teams involve the complete physical division of a workforce into, usually two, sub-teams with each containing the necessary skill sets to continue most of its functions if one sub-team becomes unable to work. Restricted movement means that the staff in a sub-team does not come in physical contact with any staff from other sub-team(s) to minimise risk of cross-infection.

Telerehabilitation to provide remote supervision of rehabilitation may be advantageous, particularly for immunocompromised patients.

[Landry et al. \(2020\). Early Reflection on the Global Impact of COVID19, and Implications for Physiotherapy⁹](#)

This paper suggests that survival from an infectious disease is only the first step, and that infectious disease can lead to long-term impairment, activity limitation and participation restrictions. They suggest that multidisciplinary rehabilitation teams, inclusive of physiotherapy, should be more fully incorporated along the disease trajectory from acute and inpatient care, through to the ambulatory settings and onwards into the community. To be effective, rehabilitative interventions must be considered during the planning and allocation of resources used to fight a disease outbreak.

[Cheng et al. \(2020\). Preparedness and proactive infection control measures against the emerging novel coronavirus in China¹⁰](#)

In this correspondence, clinical staff share their hospital's experience in ensuring proactive infection control measures. They provided face-to-face right-on-time education for frontline healthcare workers in the AEDs, acute medical wards, isolation wards, intensive care units, general wards, ambulatory day centres, physiotherapy, occupational therapy and pharmacy. Open staff forums were provided during the first week of preparedness in the hospitals. During the training sessions, staff were reminded to be alert to the identification of suspected cases, and to use infection control measures by using PPE when performing aerosol-generating procedures on all patients in both AIRs and general wards, in case suspected patients had been missed by the surveillance system. The staff forum also reminded staff about waste and linen management, environmental cleaning and supply of PPE.



[Boldrini et al. \(2020\). Impact of COVID-19 outbreak on rehabilitation services and Physical and Rehabilitation Medicine \(PRM\) physicians' activities in Italy. An official document of the Italian PRM Society \(SIMFER\)¹¹](#)

Summarises the recommendations of the Italian Society of Physical and Rehabilitation Medicine to enable rehabilitation settings to continue to provide services while protecting staff and patients and limiting the spread of the virus. Infection control measures are highlighted as is the need to offer a remote service to overcome the restrictions to accessing services.

[Pederesini et al. \(2020\). Italian Physical Therapists' Response to the Novel COVID-19 Emergency¹²](#)

Summarises Italian physiotherapists' response to the COVID-19 pandemic with recommendations based on their experience.

[Simonds et al. \(2010\). Evaluation of droplet dispersion during non-invasive ventilation, oxygen therapy, nebuliser treatment and chest physiotherapy in clinical practice: implications for management of pandemic influenza and other airborne infections¹³](#)

NIV and chest physiotherapy are droplet- [not aerosol-] generating procedures, producing droplets of > 10 µm in size. Due to their large mass, most fall out on to local surfaces within 1 m. The only device producing an aerosol was the nebuliser and the output profile is consistent with nebuliser characteristics rather than dissemination of large droplets from patients. These findings suggest that health-care workers providing NIV and chest physiotherapy, working within 1 m of an infected patient should have a higher level of respiratory protection, but that infection control measures designed to limit aerosol spread may have less relevance for these procedures.



OTHER

EDUCATIONAL RESOURCES FOR PHYSIOTHERAPISTS

[Coronavirus eLearning Programme¹⁴](#)

An open-access online learning programme developed by Health Education England suitable for all health and social care professionals.

[PhysioSpot COVID-19 Update¹⁵](#)

An open-access online programme comprising four courses covering the following topics:

- Introduction to Coronavirus Disease (COVID-19)
- Infection Prevention and Control
- Role of Physiotherapy in COVID-19
- Respiratory Management of People with COVID-19

[Physiopedia. Role of Physiotherapy in COVID-19¹⁶](#)

This course aims to provide you with an understanding of the role physiotherapists can play in managing issues related to the COVID-19 disease from case identification, limiting transmission in different clinical settings and treating patients with mild symptoms.

[Association of Chartered Physiotherapists in Respiratory Care¹⁷](#)

Features UK physiotherapy guidance for clinicians and managers and learning materials including podcasts and webinars.

[Global Physio Podcast: Coronavirus and Physiotherapy: Managing in Complexity with Mike Landry \(US\)¹⁸](#)

- Physiotherapists should be part of the early intervention team for infectious diseases.
- Lead by example and follow guidance, including social distancing.

[International COVID19 Physiotherapy Collaborative \(ICPC\)¹⁹](#)

This group is in development, with Irish representation. Contact [Rachel Moses](#).

Produced by the members of the National Health Library and Knowledge Service Evidence Team.[†] Current as at 27 March 2020. This evidence summary collates the best available evidence at the time of writing. Emerging literature or subsequent developments in respect of COVID-19 may require amendment to the information or sources listed in the document. Although all reasonable care has been taken in the compilation of content, the National Health Library and Knowledge Service Evidence Team makes no representations or warranties expressed or implied as to the accuracy or suitability of the information or sources listed in the document. This evidence summary is the property of the National Health Library and Knowledge Service and subsequent re-use or distribution in whole or in part should include acknowledgement of the service.

The following PICO(T) was used as a basis for the evidence summary:

	COVID-19
	PHYSIOTHERAPY REHABILITATION
	
	

The following search strategy was used:

[ABBREVIATED] ((coronavirus OR COVID-19 OR (Wuhan ADJ3 virus) OR 2019-nCoV OR SARS-COV-2) AND
 Keywords: respiratory exercise OR pulmonary rehabilitation OR rehabilitation OR physical therapy OR physiotherapy
 OR physical medicine OR exercise therapy
 EMTREE (EMBASE) : exp physiotherapy practice/ or exp physiotherapy/ or exp rehabilitation/
 Medline (MeSH): (MM rehabilitation+ OR MM physical therapy modalities+ OR MM physical therapy speciality+)

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