FOREWORD

In March 2020 the World Health Organization declared the outbreak of a novel corona virus disease, COVID-19, to be a pandemic, due to the spread and scale of transmission since the beginning of the outbreak in China in December 2019.

On March 12 2020, the Ministry of Health confirmed the first patient of COVID-19 and since then there has been an increase in the numbers.

This document has been prepared to provide information to physiotherapists, and acute care healthcare facilities, about the potential role of physiotherapy in the management of a hospital, admitted patients with confirmed or suspected COVID-19, on the following:

- Workforce planning
- Recommendations for Personal Protective Equipment and measures for prevention and control of infection
- Physiotherapy screening specific guidelines and additional intensive care unit interventions
- Recommendations for physiotherapy interventions
- Recommendations for physiotherapy mobilization and rehabilitation

Physiotherapists are among the healthcare professionals involved in the management and care of these patient populations. They play a key role in non-invasive support management, postural changes, mobilization, and weaning from invasive mechanical ventilation support.

These guidelines reemphasize the Ministry of Health’s advice to the population on regular hand washing, social distancing, avoiding handshaking and hugging, coughing, and or sneezing into flexed elbows and wearing facemasks, for the safety of everyone.

Ag. Director General for Health
Dr. Patrick Amoth
ACKNOWLEDGMENT

The clinical guidelines for the management of COVID-19 was prepared by a number of Physiotherapists in different key stakeholder clinical set-ups and Schools of Physiotherapy with a wealth of experience. These included the two Teaching and Referral Hospitals, Kenyatta National Hospital (KNH) and Kenyatta University Teaching, Research and Referral Hospital (KUTRRH), Physiotherapy Council of Kenya (PCK), the Kenya Society of Physiotherapists (KSP), and Karen Hospital from the private sector. The guideline was based on the clinical guidelines developed by the World Confederation of Physical therapists, (WCPT).

The development of the guideline was carried out under the auspices of the Directorate of the Healthcare Services, in the Division of Health Systems Strengthening. In this regard, the support extended by Dr. Laban Thiga and Dr. Julias Ogato is gratefully acknowledged. Others include:

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ABBREVIATIONS

ACBT  Active Cycle Breathing Technique
ADL  Activities of Daily Living
AGP  Aerosol Generating Procedures
AMREF  African Medical Research Foundation
BSc  Bachelor of Science Degree
CCU  Comprehensive Care Unit
COPD  Chronic Obstructive Pulmonary Disease
CT  Computed Tomography
DG  Director General
DPT  Doctor in Physical Therapy
GBW  General Body Weakness
JKUAT  Jomo Kenyatta University of Agriculture and Technology
KNH  Kenyatta National Hospital
KSP  Kenya Society of Physiotherapists
KUTRRH  Kenyatta University Teaching Research and Referral Hospital
MOH  Ministry of Health
MRC  Medical Research Council
NIV  Non-Invasive Ventilation
OMPT  Orthopaedic Manual Physical Therapist
PAP  Positive Airway Pressure
PCK  Physiotherapy Council of Kenya
PEP  Positive Expiratory Pressure
PPE  Personal Protective Equipment
PT  Physiotherapist/Physical Therapist
SAS  Severe Anxiety Scale
SARS  Severe Acute Respiratory Syndrome
SDS  Self Depression Scale
SG  Secretary General
WCPT  World Confederation of Physical Therapists
WHO  World Health Organization
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1.0. INTRODUCTION

1.1. Background
Severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) is a new corona virus that emerged in 2019 and causes Corona virus Disease (COVID-19). It is highly contagious. The virus is transmitted from person to person through respiratory secretions. Large droplets from coughing, sneezing, or a runny nose land on surfaces within two meters of the infected person. Infected surfaces have also been shown to transmit the disease. Individuals with COVID-19 can present with influenza like illness and respiratory tract infection demonstrating fever (89%), cough (68%), fatigue (38%), sputum production (34%), and/or shortness of breath (19%). The spectrum of disease severity ranges from asymptomatic infection, mild upper respiratory tract illness, and severe viral pneumonia with respiratory failure and/or death. Older individuals with other comorbidities are at higher risk of developing severe COVID-19 disease and may requiring hospitalization.

1.2. Description and objectives:
This document outlines the basic guidelines for the physiotherapy management and recommendations to guide clinical practice for COVID-19. It will encompass the planning, preparation and basic screening tool to determine the requirement for Physiotherapy, treatment selection, infection prevention control measures, and Personal Protection Equipment (PPE)

1.3. Target audience
Physiotherapists and other Health Care personnel working in the care of persons suspected or confirmed to have COVID-19.

1.4. Purpose
The purpose of this document is to provide guidelines for physiotherapy on the management and recommendations to clinical practice for the Covid-19 pandemic.

1.5. Scope
1.5.1. Workforce planning and recommendation for the ideal workplace for Physiotherapists
1.5.2. Delivery of physiotherapy interventions including respiratory, postural drainage, mobilization, rehabilitation, and proper use of PPE requirements.
1.6. Statement from Ministry of Health (MOH), Kenya Society of Physiotherapists (KSP), and Physiotherapy Council of Kenya (PCK) in response to the COVID-19 pandemic

The Ministry of Health (MOH) in collaboration with The Kenya society of Physiotherapists (KSP), and Physiotherapy Council of Kenya(PCK) are cognizant of the current COVID-19 pandemic and the potential health and economic impact on the country, the Patients, the Physiotherapists and all health workers at large. We applaud the efforts that have been put in place by the Government, more so by the MOH.

We are in consensus that Physiotherapists practice patient-centered care, and acknowledge their role in cardiopulmonary physiotherapy. However, in the unprecedented circumstances of the COVID-19 pandemic, as a collaborative team, we propose international guidelines as follows from the World Confederation of Physical Therapists (WCPT).

2.0. GUIDELINES

1. Proper Physiotherapists (PT) training, careful patient screening and use of personal protective equipment (PPEs)
2. Facilities should consider organizing separate teams to manage COVID-19 versus noninfectious patients
3. The recommended staffing ratio is (One) 1 physiotherapist to 5 patient beds for 8 hours /day/40 Hours a week.
4. PTs who are practicing within the comprehensive care unit and COVID-19 set-up should be equipped with the knowledge of working in that setting.
5. Staff should be trained in donning and doffing PPE, including N95 fit-checking.
6. Staff who are pregnant should avoid exposure to COVID-19
7. Nebulization; the use of nebulizer agents (e.g. salbutamol, saline) for the treatment of non-intubated patients with COVID-19, is **NOT** recommended as it increases the risk of aerosolization and transmission of infection to health care workers in the immediate vicinity.
8. PTs should take droplet and airborne precautions, including the use of a high filtration mask when providing mobilization exercises and there is a risk of the patient coughing or expectorating mucous.
9. If Aerosol Generating Procedures (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 PPEs. Coming and going should be minimized during the AGP.

10. PTs should not implement AGPs, including humidification or noninvasive ventilation, without first obtaining agreement with the physician.

11. Direct physiotherapy interventions should be considered only when there are "significant functional limitations (e.g. [risk for] CCU-acquired weakness, frailty, multiple comorbidities, advanced age)" in the patient.

12. For COVID-19 infected patients who may require AGPs, airborne precautions should be followed, that include an N95/P2 mask, fluid-resistant long-sleeve gown, goggles/face shield, and gloves. The guidelines also recommend hair cover and shoes that are impermeable to liquids.

13. Recommended equipment: Gloves and masks, recommended N95/P2, goggles or disposable face shield that covers the front and sides mechanical ventilator, and supplemental oxygen

2.1. Responsibility:

It is the responsibility of the Director of Rehabilitative services, heads of physiotherapy units, to ensure that physiotherapists are knowledgeable and in compliance with this policy and procedures.

3.0. WORKFORCE PLANNING AND PREPARATIONS INCLUDING SCREENING TO DETERMINE INDICATIONS FOR PHYSIOTHERAPY

The COVID-19 outbreak has put the world healthcare systems in distress. The first part will try to give guidelines into physiotherapy workplace planning and response to the demand. The workforce scheduling will be based on the hospital shift system for all the other medical personnel (doctors, nurses) with consideration of the exposure period and also time spent in the PPE. Other guidelines to look at will be the WHO set guidelines on exposure and isolation protocols.

Table 1 will detail resource planning for CCU physiotherapy from level I(normal CCU operations) to level IV (Large scale emergency). Table 2 will cover screening guidelines for physiotherapy and there needed involvement with a suspect and or confirmed Covid-19 patients.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Bed capacity</th>
<th>Description &amp; location of patients</th>
<th>Physiotherapy staffing</th>
<th>Equipment related to physiotherapy respiratory care, mobilization, exercise and rehabilitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal CCU</td>
<td>Eg. 10 ICU Beds</td>
<td>All patients within existing CCU physical resources.</td>
<td>2 per shift</td>
<td>• 3 oxford chairs</td>
</tr>
<tr>
<td>operation</td>
<td></td>
<td></td>
<td></td>
<td>• 5 high back sitting chairs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 3 Rollators/wheeled walking</td>
</tr>
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8 PHYSIOTHERAPY COVID-19 MANAGEMENT GUIDELINES
<table>
<thead>
<tr>
<th>Level I</th>
<th>e.g. expansion with an additional number of CCU beds provided (e.g. opening previously noncommissioned beds)</th>
<th>Less than 4 patients with COVID-19.</th>
<th>e.g. additional 1 per shift per 4 CCU beds 1 Senior PT will screen patients with COVID-19 in consultation with an CCU medical Consultant. Patients will be provided with treatment in isolation rooms. 1 Tilt table quarantined for use with COVID patients. Quarantined in a room, or cleaned and located for storage in isolation. Additional respiratory equipment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level II</td>
<td>e.g. Further expansion to maximum CCU capacity</td>
<td>The number of patients with COVID-19 exceeds the availability of isolation rooms necessitating the care of infectious patients outside the confines of isolation rooms. Infectious patients will be coholed in the open ward of the CCU. Normal CCU admission / noninfectious patients located in a separate CCU</td>
<td>e.g. calculation for an additional per shift as above. Infections CCU Pod PTs allocated, including 1 Senior PT Non-infections CCU Pod PTs allocated, including 1 Senior PT Infectious and noninfectious staff allocated, including on weekends. Additional chair resources may be required. Quarantine fleet of chairs/tilt tables etc for infectious and noninfectious patients.</td>
</tr>
<tr>
<td>Level III</td>
<td>Additional CCU beds created outside of CCU (e.g. in Anaesthetic areas).</td>
<td>A surge in patients with COVID-19 exceeds the capacity of the allocated infectious area. Bed allocation for patients with COVID-19 allocated across the entire CCU. Non-infectious satellite CCU will be</td>
<td>e.g. calculation for additional staff per shift as above</td>
</tr>
</tbody>
</table>

As above.
| Level IV | Additional beds created across clinical areas in other parts of the hospital e.g. special medical wards; operating theatres | Large scale emergency | e.g. calculation for additional staff per shift as above | As above. |

Table 1 Example CCU physiotherapy resource plan

### 3.1. Personal Protective Equipment (PPE) recommendations for Physiotherapists

Physiotherapists are likely to be in close contact with the patient e.g. for mobilization, exercise, or rehabilitation interventions that require assistance. In these cases, consider the use of a high filtration mask (e.g. P2/N95). Mobilization and exercise may also result in the patient coughing or expectorating mucus. Refer to local guidelines regarding the ability to mobilize patients outside of their isolation room. If mobilizing outside of the isolation room, ensure the patient is wearing a surgical mask.

1. All staff will be trained in correct donning and doffing of PPE, including N95 “fit checking”. A registry of staff who have completed PPE education and fit checking should be maintained.
2. “Fit testing” is recommended when available, but the evidence for fit testing effectiveness is limited and the variation in the supply of N95 mask types may make any recommendation on fit testing difficult to implement from a practical perspective.
3. Staff with beards should be encouraged to remove facial hair to ensure a good mask fit.
4. For all suspected and confirmed cases, extra precaution is implemented. Staff will wear the following items:
   a. Surgical mask,
   b. The fluid-resistant long-sleeved gown
   c. Goggles/face shield,
   d. Gloves
5. Also, the following can be considered:
   a. Hair covers for AGPs.
   b. Shoes that are impermeable to liquids and can be wiped down.
6. PPE must remain in place and be worn correctly for the duration of exposure to potentially contaminated areas. PPE, particularly masks should not be adjusted during patient care.
7. PPE should be don on/of using step-by-step as per local guidelines
8. Precaution should be taken on: wearing uniforms outside of work if exposed to COVID-19. Changing into scrubs may be recommended in local guidelines and/or staff may be encouraged to get changed out of their uniform before
leaving work and to transport worn uniforms home in a plastic bag for washing at home.

9. Minimize personal effects in the workplace. All personal items should be removed before entering clinical areas and donning PPE. This includes earrings, watches, lanyards, mobile phones, pagers, pens, etc.
   a. Stethoscope use should be minimized.
   b. If required, use dedicated stethoscopes within isolation areas.
   c. Hair should be tied back out of the face and eyes.

10. Staff caring for infectious patients must apply correct PPE irrespective of physical isolation. For example, if patients are cohorted into isolation with open rooms, staff working within the confines of the CCU isolations but not directly involved in patient care should also wear PPE. Similarly, once infectious patients are nursed in an open ward.
11. When a unit is caring for a confirmed or suspected COVID-19 patient it is recommended that all donning and doffing are supervised by an additional appropriately trained staff member.
12. Avoid sharing equipment. Preferentially use only single-use equipment.

4.0. SCREENING GUIDELINES FOR PHYSIOTHERAPY

When screening, discussion with nursing staff, the patient (e.g. via phone) is recommended before deciding to enter the patient’s isolation room. Physiotherapists may screen to determine need for physiotherapy intervention.

<table>
<thead>
<tr>
<th>COVID-19 patient presentation (confirmed or suspected)</th>
<th>Physiotherapy referral</th>
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| Mild symptoms without significant respiratory compromise e.g. fevers, dry cough, no chest x-ray changes. | • Physiotherapy interventions are not indicated for airway clearance or sputum samples  
• No physiotherapy contact with the patient. |
| Pneumonia presenting with features:  
  • a low-level oxygen requirement (e.g. oxygen flow ≤5L/min for SpO2 90%).  
  • non-productive 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 the patient. |
| Mild symptoms and/or pneumonia AND co-existing respiratory or neuromuscular comorbidity e.g. Cystic Fibrosis, neuromuscular disease, spinal cord injury, bronchiectasis, COPD) | • Physiotherapy referral for airway clearance.  
• Staff use airborne precautions.  
• Where possible, patients should wear a surgical mask during any... |
<table>
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<th>AND current or anticipated difficulties with secretion clearance</th>
<th>physiotherapy.</th>
</tr>
</thead>
</table>
| 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 the chest wall, moist/wet sounding voice, audible transmitted sounds | • Physiotherapy referral for airway clearance.  
• Staff use airborne precautions.  
• Where possible, patients should wear a surgical 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, particularly if weak cough, productive, and/or evidence of pneumonia on imaging and/or secretion retention.  
• Staff use airborne precautions.  
• Where possible, patients should wear a surgical mask during any physiotherapy. |
| 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 a surgical mask during any physiotherapy whenever possible. |

Table 2 Screening guidelines for physiotherapy involvement with COVID-19
5.0. INTERVENTION

5.1. Hospital Intervention

5.1.2 Recommendation for Physiotherapy Respiratory Interventions:

1. Personal protective equipment (PPE): It is strongly recommended that airborne precautions are utilized during Respiratory Physiotherapy Interventions.
2. Cough hygiene: Both patients and staff should practice cough etiquette and hygiene.
   a. Ask the patient to turn head away during cough and expectoration
   b. Able patients should cough with a tissue, dispose of tissue, and perform hand hygiene. If patients are unable, staff should assist.
   NB: Physiotherapists should position themselves ≥ 2m from the Patient line of cough. Physiotherapists should weigh up the risk versus benefit of using Aerosol Generating Procedures (AGPs) as they risk creating an airborne transmission of COVID-19 during treatments. PPEs should be used if such procedures are to be carried out.
3. There is no evidence for incentive spirometry in patients with COVID-19. Physiotherapy management.
4. Avoid the use of machines, however, if clinically indicated and alternative options have not been effective, consult with both senior medical staff and infection prevention and monitoring services within local facilities before use.
5. Where respiratory equipment is used, whenever possible use single patient use, disposable options e.g. single patients use PEP devices. Re-usable respiratory equipment should be avoided if possible.
6. Physiotherapists should not implement humidification or Non-Invasive ventilation (NIV) or other AGPs without consultation and agreement with a senior doctor (e.g. medical consultant).
7. Sputum inductions should not be performed. Physiotherapy is not required for a sputum sample. If physiotherapy interventions are required to facilitate a sputum sample then full airborne PPE should be worn.
8. Positioning including gravity-assisted drainage (postural drainage): Physiotherapists can continue to advise on positioning requirements for patients including prone position.

5.1.3 Physiotherapy Management Principles – Mobilization, Exercise, and Rehabilitation Interventions:
Physiotherapists are responsible for the provision of Musculoskeletal/Neurological/Cardiopulmonary Rehabilitation tasks. Holistic management of the patient with emphasis on reassurance, patient education, and prevention of potential circulatory and respiratory complications are key. Some of the tasks include:

1. When performing activities with ventilated patients or patients with a tracheostomy, ensure airway security is considered and maintained e.g. dedicated airway person to prevent inadvertent disconnection of ventilator connections/tubing.
2. Use of Thrombo-Embolic Deterrent (TED) stockings for purposes of Deep Venous Thrombosis (DVT) prevention.

3. Passive, active assisted, active, or resisted joint range of motion exercises to maintain or improve joint integrity, range of motion and muscle strength.

4. Mobilization and rehabilitation (e.g. bed mobility, prone position, sitting out of bed, sitting balance, sit to stand, walking, tilt table, standing hoists, upper limb or lower limb ergometry, exercise programs). Only where there are significant functional limitations (e.g. acquired weakness, frailty, multiple comorbidities, advanced age) should the requirement for Direct Physiotherapy interventions be considered.

5. Early mobilization is encouraged. Actively mobilize the patient early in the course of illness when safe to do so.

6. Patients should be encouraged to maintain function as able within their rooms e.g. Sit out of bed and perform simple exercises and activities of daily living.

7. Mobilization and exercise prescription should involve careful consideration of the patient’s state (e.g. stable clinical presentation with stable respiratory and hemodynamic function).

8. Mobility and exercise equipment: The use of equipment should be carefully considered and discussed with local infection monitoring and prevention service staff before used with patients with COVID-19 to ensure it can be properly decontaminated.

9. Use equipment that can be single patient use. For example, use Thera-band rather than distributing hand weights.

10. Larger equipment (e.g. mobility aids, ergometers, chairs, tilt tables) must be easily decontaminated. Avoid the use of specialized equipment unless necessary for basic functional tasks.

11. When mobilization, exercise, or rehabilitation interventions are indicated:
   a. Plan well
   b. Identifying/use the minimum number of staff required to safely perform the activity.
   c. Ensure all equipment is available and working before entering rooms
   d. Ensure all equipment is cleaned appropriately/decontaminated.
   e. If equipment needs to be shared among patients, clean and disinfect between each patient
   f. Specific staff training for cleaning of equipment within isolation rooms may be required.
   g. Whenever possible, prevent the movement of equipment between infectious and non-infectious areas.
h. Whenever possible, keep dedicated equipment within the isolation zones, but avoid storing extraneous equipment within the patient’s room.

6.0. DISCHARGED REHABILITATION PLAN

To further improve the Covid-19 patients discharged from the wards, there is a need to check the following key issues: Respiratory, Physical and Psychological Functions, Activities of Daily Living (ADLs) and ability to participate in social, technical, and operational specifications to the Rehabilitation process.

The rehabilitation places for patients after discharge, such as designated rehabilitation medical institutions level 4-6 Hospitals, communities, and families. At the same time, a targeted assessment method, and treatment method are proposed for the main obstacles of respiratory function, physical function, psychological function, the ability of daily living and social participation in patients discharged from new Covid-19 Pneumonia. Besides, the contraindications for rehabilitation, the situation that patients need to stop immediately during treatment, the conditions that patients should pay attention to when they have other comorbidities, and the problems that elderly patients need to pay attention to.

Special explanations are given for severe, critically ill patients, and moderate to ordinary patients who have different requirements for rehabilitation after discharge.

To improve the respiratory, physical, and psychological dysfunctions of patients discharged from the wards, with new corona virus, and to standardize the operating techniques and procedures for rehabilitation, this plan is specially formulated.

**Goal**

- Improve the symptoms of dyspnea and dysfunction
- Prevent and reduce chances of complications
- Relieve anxiety and depression
- Reduce disability
- Reduce stigma
- Maximize the ability of daily living
- Improve the Quality of Life (QOL)
6.1. Content of Discharge Rehabilitation package
6.1.1. Dysfunctions that require rehabilitation.

**Respiratory dysfunction.** It manifests as cough, sputum, dyspnea, shortness of breath after activity, and may be accompanied by respiratory muscle weakness and impaired lung function.

**Physical dysfunction.** Manifestations include General Body Weakness (GBW), fatigue, muscle soreness, and some may be accompanied by muscle atrophy and decreased muscle strength.

**Mental dysfunction.** There are emotional problems such as fear, anger, anxiety, and depression.

**Barriers to Activities of Daily Living (ADLs) and social participation.** Unable to complete dressing/undressing, toileting, bathing, etc. Inability to achieve normal interpersonal communication and return to work.

6.1.2. Evaluation of Rehabilitation Function.

Assessment of respiratory function: Assessment is made using the Dyspnoea Index Scale (MRC) (Figure 1), etc., and lung function tests are recommended in areas or institutions where conditions permit.

**Figure 1**

<table>
<thead>
<tr>
<th>MRC Dyspnoea Scale</th>
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<tr>
<td><strong>Grade</strong></td>
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<tr>
<td>---</td>
</tr>
<tr>
<td>1.</td>
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<td>5.</td>
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*MRC Dyspnoea Scale
Source: National Health and Medical Commission official website 1.*

Physical Function Assessment. The evaluation was performed using the Borg conscious fatigue scale and freehand muscle tests.

Assessment of Psychological Function. Self-depression scale (SDS), anxiety scale (SAS), and Pittsburgh sleep questionnaire were used for evaluation.
Assessment of Activities of Daily Living. The evaluation was performed using a modified Pap index.

Six-minute Walk Test. The patient is required to walk as fast as possible in a straight corridor, and the six-minute walking distance is measured. The minimum re-entry distance is ≥30 meters.

6.2. Rehabilitation Interventions

6.2.1 Respiration Function Training

Active Cycle breathing technique (ACBT). A circulation cycle consists of three parts

- Breathing Control,
- Thoracic Expansion Movement
- Forced Expiratory Technology.

The breathing control phase instructs the patient to breathe at a normal tidal volume in a relaxed manner, encourages the shoulders and upper chest to remain relaxed, the lower chest and abdomen actively contract, and completes breathing in the diaphragm breathing mode. Adaptation to needs, the chest expansion phase emphasizes inhalation, instructing the patient to inhale deeply to the inspiratory reserve, hold their breath for 1-2 seconds, and then exhale passively and easily. The forced exhalation phase is interspersed with breathing control and breath. Breathing is a quick but hard-working exhalation, and the glottis should remain open during the process. Use the technique of sputum to expel sputum instead of cough to reduce the work of respiratory muscles. Be careful to cover with a mask during the breath.

6.2.1.1. Breathing Mode Training:

Including adjusting the breathing rhythm (inhalation exhalation = 1:2), abdominal breathing training, lip shrinking breathing training, etc.

6.2.1.2 Respiratory Rehabilitation Exercises:

- According to the patient's physical condition, perform a series of exercises such as
- Neck flexion and extension,
- Chest expansion /Agility exercises
- Trunk rotations, and side bends,
• Squats,
• Single leg stance
• Ankle pumps
• Other exercises in the supine, sitting, and standing positions as appropriate.

6.2.2. Physical Function Training

6.2.2.1. Aerobic Exercise:

Formulate aerobic exercise prescriptions for patients with combined underlying diseases and legacy dysfunction including:

• Stepping,
• Jogging,
• Brisk walking,
• Swimming,
• Other sports.

It is advisable to exercise moderately without the feeling of fatigue the next day after exercise, starting from the low intensity and gradually progressing, 20 -30 minutes each time, 3-5 times a week. For patients who are prone to fatigue, intermittent exercises can be used. Starting 1 hour after a meal.

6.2.2.2 Strength Training:

Use sandbags, dumbbells, Thera-bands, or bottled water for progressive resistance training, 15-20 moves per group, 1-2 groups per day, 3-5 days per week.

6.2.3. Psychological Rehabilitation Intervention/Occupational Therapy

• Designing Occupational Therapies that can produce a pleasant effect and divert attention, to achieve the purpose of adjusting emotions and relieving stress.

• Be careful to use a method that allows the patient to repeat the traumatic experience, so as not to cause repeated injuries. If mental disorders occur, psychiatry intervention is recommended.
6.2.4. Activities Training for Daily Living
Guide daily activities for patients. It is mainly energy-saving technical guidance, which will decompose daily life activities such as putting on clothes, using the toilet, taking a bath, and so on. It will be performed intermittently, and it will return to normal gradually as the physical strength recovers.

Designing activities of living with the purpose of return to work, and encourage social participation when patient is clinically ready to do so.

6.3. Contraindications.

1. If the patient has one of the following conditions, the above rehabilitation treatment is not recommended.
   - Static heart rate > 100 beats / min.
   - Blood pressure <90 / 60mmHg, > 140/90 mmHg,
   - Blood pressure fluctuations exceeding the baseline 20mmHg, accompanied by obvious dizziness, headache, and other discomfort symptoms.
   - Blood oxygen saturation ≤ 95%.
   - Combining other diseases that are not suitable for sports.

2. When the patient has the following conditions during the treatment, the above rehabilitation treatment should be stopped immediately, and the treatment plan should be re-evaluated and adjusted.
   - Obvious fatigue occurs and cannot be relieved after rest.
   - Chest tightness, chest pain, dyspnea, severe cough, dizziness, headache, unclear vision, palpitations, sweating, unstable standing, etc.

3. When patients with pulmonary hypertension, congestive heart failure, deep venous thrombosis, unstable fractures, and other diseases should consult relevant specialists before starting respiratory rehabilitation treatment.

4. Elderly patients are often accompanied by a variety of basic diseases, poor physical fitness, and poor tolerance for rehabilitation training. A comprehensive evaluation should be performed before rehabilitation treatment. Serious complications.
7.0. REFERENCES


2. World Confederation of Physical Therapists WCPT, Physiotherapy management for COVID-19 version1.0 23rd March 2020


8. Used with the permission of the Medical Research Council (https://mrc.ukri.org/research/facilities-and-resources-for-researchers/mrc-scales/mrc-dyspnoea-scale-mrc-breathlessness-scale/)


There is also a modified MRC Scale which is used in the GOLD guidelines and BODE - see Fletcher CM. Standardized questionnaire on respiratory symptoms: a statement prepared and approved by the MRC Committee on the Aetiology of Chronic Bronchitis (MRC breathlessness score). BMJ 1960; 2: 1662.