Koninklijk Nederlands
Genootschap voor Fysiotherapie

KNGF position statement

Physiotherapy recommendations in patients with COVID-19

Preliminary version (based on Dutch KNGF version 1.0)

The Dutch version 2.0 with more extensive information about COVID-19 and its effects on the human body, and recommendations on outcome measures and training principles is expected to be published on 31 May 2020. The translated version in English will follow around the same time.

Royal Dutch Society for Physical Therapy (KNGF), Amersfoort, the Netherlands, 2020

Version 1.0	7 May 2020

Development

This position statement is developed on initiative of the Royal Dutch Society for Physical Therapy (KNGF) together with an national working group of experts in the field of physiotherapy, patient association (Longfonds) and the Dutch Lung Association (Long Alliantie Nederland).
This position statement describes recommendations regarding physiotherapy services for patients with confirmed or suspected COVID-19 after hospital discharge or patients who have been ill at home. Recommendations in this position statement are based on international evidence and documents, expert opinion and patient preferences.

Working group	
Philip J. van der Wees, PhD	Professor of Allied Health Sciences, Radboudumc, Nijmegen, the Netherlands
Femke Driehuis, MSc	Guideline expert, KNGF, Amersfoort, the Netherlands
Marike van der Schaaf, PhD	Professor in Rehabilitation in Acute healthcare, University of Applied Sciences Amsterdam, senior researcher Amsterdam UMC (location AMC), Amsterdam, the Netherlands
Cindy Veenhof, PhD	Professor in Physiotherapy Sciences, Utrecht UMC, professor in Innovation of Human Movement care, University of Applied Sciences Utrecht, the Netherlands
Ton A.F Lenssen, PhD	Professor in Hospital Based Physiotherapy, Maastricht UMC+, the Netherlands
Rob A. de Bie, PhD	Professor in Physiotherapy Research, Maastricht University, the Netherlands

Niek Koenders, MSc	Physiotherapist and researcher, Radboudumc, Nijmegen, the Netherlands, representative of the Dutch Association for Hospital-Based Physiotherapists (NVZF)
Maurice Sillen, PhD	Physiotherapist and researcher, CIRO+ Horn, the Netherlands, representative of the Dutch Association for Cardiovascular and Respiratory Physiotherapy (VHVL)
Ward Heij, MSc	Geriatric physiotherapist and researcher, Radboudumc, Nijmegen, the Netherlands, representative of the Dutch Association for Geriatric Physiotherapy (NVFG)
Susan Blom-de Heer, MSc	Physiotherapist, Rijndam Revalidatie, Rotterdam, the Netherlands, representative of the Dutch Association for Physiotherapy in Rehabilitation (NVRF)
Thirza Douglas, MSc	Psychosomatic physiotherapist, representative of the Dutch Association for Psychosomatic Physiotherapy (NFP)
Ellen Toet	Cardiovascular and respiratory physiotherapist, Lijf & Leven, Ede, the Netherlands
Cor Zagers, MSc	Cardiovascular and respiratory physiotherapist, Adphys, Utrecht, the Netherlands
Anne-Loes van der Valk	Cardiovascular and respiratory physiotherapist, geriatric physiotherapist, FysioCompany, ‘s Hertogenbosch, the Netherlands, representative of the Long Alliantie Nederland
Renée Kool, MSc	Cardiovascular and respiratory physiotherapist and policy advisor, Longfonds, Amersfoort, the Netherlands
Marie-José Schrasser	Policy advisor, Longfonds, Amersfoort, the Netherlands

Content

Summary of the recommendations *5*

1. Introduction *6*
   Background *6*
   Purpose of the position statement *6*
   Role of the physiotherapist *7*
   Target population *7*
   General points of attention for infection risk and safety for the physiotherapist and patient *7*

2. Limitations in functioning and indication for physiotherapy *8*

3. Recommendations for physiotherapy *8*

3.1 The first six weeks after hospital discharge / or symptom-free after COVID-19 experienced at home *9*
   First consultation *10*
   Clinical outcome measures *10*
   Advice, coaching and exercise prescription *11*
3.2 Six weeks after hospital discharge / after illness from COVID-19 at home *13*
   Evaluation and (continued) indication *13*
   Clinical outcome measures *13*
   Improving the capacity to exercise *14*

4. Organisation of care *15*

5. The physiotherapist, recommended specialisation for complex patients *15*

   Footnote *16*

   References *17*

Appendix

Core set of clinical outcome measures, first six weeks 18
Patient Specific Functioning Scale (PSFS) *18*
Borg Scale CR10 for Shortness of Breath and Fatigue *18*

Additions to the core set of clinical outcome measures, after six weeks 19
Short Physical Performance Battery (SPPB) *19*
Grip strength *19*
Six Minute Walk Test (6MWT) *19*

Summary of the recommendations

General recommendations

- There is still substantial uncertainty about the (duration of) contagiousness of COVID-19 and therefore the safety for the physiotherapist and their patients.
- Patients presenting with limitations in physical functioning have an indication for physiotherapy.
- There is still little known about the course of recovery, the physical capacity and physical limitations in patients who have had an active COVID-19 infection. Therefore, caution is required when assessing and treating these patients.
- Physiotherapy should be provided adhering to principles of 'social distancing', e.g. using e-health, as much as possible.
- Always refer to the national guidelines on safety, infection control and transmission prevention.

Initial six weeks after hospital discharge or COVID-19 illness at home

- During the first two weeks, contact the patient by telephone, e-consult or e-health to determine if any limitations are experienced in daily physical functioning and if there is an indication for physiotherapy.
- Patients who have been admitted to the ICU and show symptoms of Post Intensive Care Syndrome (PICS) have very low exercise tolerance.
- Advise and coach the patient to gradually resume their activities of daily living and physical functioning. Ensure adequate monitoring of their daily physical functioning.
- Activities of daily living and additional exercise therapy should be performed at low to moderate intensity and with short interval durations.
- Use the following clinical outcome measures: the Patient Specific Functioning Scale, oxygen saturation and heart rate frequency, and the Borg Scale CR10 for Shortness of Breath and Fatigue. As maximum threshold for exercise intensity use a score of 4 (out of 10) on the Borg Scale CR10 for Shortness of Breath and Fatigue.
- Allow patients to only perform physical exercises in the home situation when patients are able to understand and apply adequate exercise load management (frequency, intensity, time/duration and type). Focus on physical functioning of activities of daily living.

After six weeks

- Determine whether physiotherapy is indicated based on the patient's needs and their current, actual level of physical functioning (e.g. derived from hospital based exercise tests, lung/heart function tests or field tests).
- Set further treatment goals related to physical activity and/or exercise capacity based on the exercise test and/or physical activity measurement.
- Use the following clinical outcome measures: Patient Specific Functioning Scale, Short Physical Performance Battery, hand-held dynamometer for grip strength, 6-Minute Walk Test and a pedometer / accelerometer to assess and evaluate the patient's daily physical functioning. Monitor oxygen saturation and heart rate frequency, and use the Borg Scale CR10 for Shortness of Breath and Fatigue before, during and immediately after physical exercise.
- Ensure a gradual increase in training frequency, intensity and time/duration based on the patient's needs, treatment goals and physical abilities.
- During exercise, a score of 4 to 6 (out of 10) on the Borg Scale CR10 for Shortness of Breath and Fatigue and/or an intensity of 60-80% of the tested maximum exercise performance (e.g. bicycle test, 6MWT and/or the 1 RM) is recommended.

1. INTRODUCTION

Background

At this moment, many questions are still unanswered regarding COVID-19. This includes its contagiousness and the chance of reinfection as well as the impact on physical functioning, the degree of physical exercise tolerance and optimal (physiotherapy) care after hospitalisation or illness at home. To support physiotherapists in clinical reasoning and decision making, we have formulated recommendations on physiotherapy assessment, treatment and evaluation. The recommendations in this position statement will be updated when new relevant information comes available from clinical experience and scientific publications.
Patients who have been hospitalised, whether or not admitted to the intensive care unit (ICU), are currently discharged from hospital earlier than expected under normal circumstances. Patients who are medically stable and independent in basic activities of daily living, i.e. those able to sit upright independently, to make transfers and to stand and walk, will be discharged.
In addition to hospitals' current limited admission capacity, early discharge may also be related to the patient's wishes to return home as soon as possible. An important factor for discharge is the level of assistance that these patients need and can receive in their home setting. For example, care or assistance from relatives or other caregivers.
Physiotherapists can assist patients in their recovery at patients' homes, in nursing homes or rehabilitation centres.
It is acknowledged that physiotherapy services and practice vary around the world. Therefore, the local context, including national guidelines on safety, infection control and transmission prevention should be taken into account when interpreting and using these recommendations.

For recommendations regarding physiotherapy treatment for COVID-19 patient during hospital admission, please refer to the guideline 'Physiotherapy management for COVID-19 in the acute hospital setting'[1].

Purpose of the position statement

This position statement describes recommendations regarding physiotherapy services for patients with confirmed or suspected COVID-19 after hospital discharge or patients who have been ill at home. This position statement focuses in particular on physiotherapy and rehabilitation of patients in their home situation. However, in the next version of this position statement the aim is to provide more information on physiotherapy care in a rehabilitation centre or nursing home. Recommendations in this position statement are based on international evidence and documents, expert opinion and patient preferences, and will be updated when new evidence becomes available.

[1] https://www.wcpt.org/covid19/practice

Role of the physiotherapist

The physiotherapist can play an important role in the rehabilitation of patients with COVID-19 who experience limitations in daily physical functioning. This specifically relates to patients who experience reduced functional capacity and/or reduced physical activity levels after active infection of COVID-19. Patients who have been severely or critically ill can have (very) low exercise capacity. They need time to recover from illness and time to rehabilitate from the related limitations they (may) experience. It is therefore important to assess the need for physiotherapy care and severity of limitations, and provide guidance to gradually increase the patient's physical functioning and monitor physical function and activity levels in the first six weeks after discharge from the hospital or after the active COVID-19 illness infection at home.
It is important to note here, that it still remains largely unclear to what extent COVID-19 may affect organ function (potentially cause organ tissue damage or multiple organs failure) in the short and long term and the course of recovery from organ tissue damage. Currently, experts have identified possible risk of (irreversible) tissue damage to organs, such as the lung and heart, with restrictive lung disease, myocarditis, cardiomyopathy and/or polyneuropathy. However, much uncertainty about this phenomenon remains. Monitoring a patient's bodily functions in the short and long term is therefore important.

Target population

The recommendations in this position statement are written for physiotherapists who may treat patients with confirmed or suspected COVID-19 after being discharged from hospital (with or without admission to ICU) or patients who were ill at home. Patients with prolonged ICU admission most likely can be considered a vulnerable group with very low functional capacity for physical activity, possibly in combination with mental and/or cognitive problems. Beside this group of patients, it is expected that a strongly reduced physical functioning can also occur in patients with COVID-19 who have been hospitalised without having been to ICU and in patients who have been ill in their home environment.

General points of attention for infection risk and safety for the physiotherapist and patient

Currently, it remains unknown how long patients can be infectious to others after symptoms of the active COVID-19 infection have subsided. There are indications that infectiousness can persist while being free of symptoms.
Given the current uncertainty regarding contagiousness and the importance of safety of the physiotherapist, patient and their environments, it is recommended to provide physiotherapy services through e-health as much as possible. In the Netherlands, physiotherapists must adhere to the recently published (30 April 2020) protocol: physiotherapy services need to be delivered with physical distancing, keeping 1.5 meter distance as much as possible, and the use of e-health/e-consult should be considered. When visiting a patient after COVID-infection, personal protective equipment is mandatory up to 14 days after symptoms have subsided.

However, we want to stress that delivery of physiotherapy services should be in accordance with national guidelines of healthcare delivery. These may indicate the need for specific infection risk assessment, physical distancing and personal protective equipment.

2. LIMITATIONS IN FUNCTIONING AND INDICATION FOR PHYSIOTHERAPY

Patients who have been severely or critically ill and/or have been hospitalised (for a prolonged time) are at risk of encountering (severe) limitations in physical, emotional, cognitive and/or social functioning.
Physiotherapy can play an important role in the rehabilitation of these patients and focuses mainly on limitations in physical functioning. It is important that the physiotherapist is aware of and identifies other potential limitations that the patient may experience. In these cases, intra- or interdisciplinary collaboration may be required.
Not all patients with COVID-19 will have an indication for physiotherapy. Only patients with a request for guidance and presenting with limitations in physical functioning, e.g. activities of daily living, physical activity or exercise capacity, are eligible for physiotherapy.
Intra- and/or interdisciplinary collaboration is important for patients with a complex clinical situation and need for health care services. Patients with multiple and severe problems (physical, mental, cognitive and/or social) may benefit from other health care providers during their rehabilitation. In these patients, physiotherapy as a sole health care service is not sufficient.

Functional limitations and indication for physiotherapy

- Patients with a request for guidance and limitations in physical functioning have an indication for physiotherapy.
- In complex cases, such as post-ICU patients with severe limitation and/or co-morbidities, intra- and interdisciplinary collaboration is required.

3. RECOMMENDATIONS FOR PHYSIOTHERAPY

There is still little known about the course of recovery, physical capacity to load and physical limitations in patients who have had an active COVID-19 infection. Patients planned to be discharged from hospital will not undergo an exercise test around the time of discharge, which normally provides an indication of lung and/or heart function. Therefore there is lack of clinical information on the patient's physical function and exercise capability. Hence, the physiotherapist has no specific clinical information to determine parameters for exercise prescription.
Internationally, the organisation of healthcare and clinical follow-up is organised differently. In some countries, such as the Netherlands, most patients receive a medical follow-up in the hospital after approximately six weeks of discharge. During the follow-up appointment physical functions (including lung and/or heart function) can be tested and physical activity and performance levels can be assessed. Based on these tests results, the

physiotherapist can determine more adequately the patient's exercise capacity and how to gradually increase their physical activity levels (using exercise prescription principles: frequency, intensity, time/duration and type).

Physiotherapy treatment

- The patient's personal needs and request for guidance and the perceived limitations in physical functioning are the main focus of physiotherapy.
- There is still little known about the course of recovery, the physical capacity to load and physical limitations in patients who have had an active COVID-19 infection. Therefore, caution is recommended when assessing and treating these patients.

In the following sections of this position statement, the clinical recommendations are divided into two main sections, based on time after illness and experienced physical abilities: the first six weeks after hospital discharge or illness at home, and the period after these six weeks.

3.1 The first six weeks after hospital discharge / or symptom-free after COVID-19 experienced at home

Patients who have been discharged from the hospital often receive advice to gradually increase their activities of daily living, and are given functional physical exercises to perform at home. When there is an indication for physiotherapy at discharge, it is expected that patients will receive transfer information from the hospital. In some cases, patients will be contacted by telephone by (the physiotherapist of) the hospital after approximately two weeks. The aim of this consultation is to assess the progress of these patients' daily functioning after discharge. When the patient still has (severe) limitations in their daily physical functioning there is an indication for physiotherapy. The hospital will refer the patient to a physiotherapist who can provide physiotherapy care to the patient in their home environment. However, the follow-up and organisation of remote assessment may differ per hospital, region and country.
Patients who have gone through COVID-19 in the home situation will often have been and be in contact with their general practitioner (GP). This may also apply to patients who have been discharged from hospital and transferred to the GP for medical follow-up. The GP can consult with and inform a physiotherapist if deemed necessary.
Patients, their relatives or other caregivers can also contact the physiotherapist directly. This group is expected to be small given the coordinating role of medical health care service providers, i.e. hospitals and GPs. In case of direct access to physiotherapy, it is strongly recommended to contact the patient's GP prior to commencement of treatment. Interdisciplinary communication and collaboration are of great importance in delivery of adequate health care services.

First consultation

Within two weeks after hospital discharge or after symptoms of active COVID-19 infection have subsided the physiotherapist contacts the patient, in case a referral from the hospital or GP was received or in case of direct access. The aim of this first contact is to understand how the patient is feeling and what possible (physical) limitations the patient is experiencing using all domains of the WHO International Classification of Functioning, Disability and Health (WHO-ICF) model. The physiotherapist should preferably use remote communication, such as telephone contact or video calling, as much as possible.
Besides, recording existing and newly acquired comorbidities prior to or from COVID-19 including possibly affected organs, such as lungs and/or heart, is essential to be able to assess the patient's current health status. When the patient is referred from a hospital or by a GP, such information is expected to be described in a transferal/referral note.
Based on the obtained information from health care providers and the patient, the physiotherapist assesses the severity of limitations in the patient's physical functioning using all domains of the WHO-ICF model. Together with the patient's specific needs and request for guidance, the physiotherapist decides whether there is an indication for physiotherapy.
Patients who have been on ICU may have ICU-acquired weakness (ICU-AW) and may experience Post Intensive Care Syndrome (PICS). These patients may experience severe physical deconditioning and malnutrition, with physical, mental and/or cognitive impairment. The capacity to exercise and perform (daily) activities is very low in these patients and the risk to overload is high. In these patients it is highly recommended to refer them (via the GP) to a rehabilitation centre.

First consultation

- Within the first two weeks after hospital discharge or after symptoms of active COVID-19 infection have subsided, contact the patient by telephone or video calling to assess the perceived limitations in physical functioning and determine whether there is an indication for physiotherapy.
- Patients with a request for guidance and limitations in physical functioning have an indication for physiotherapy.
- Be aware of existing or newly acquired comorbidities.

Clinical outcome measures

It is important to identify factors which can influence recovery and/or can guide clinical decision making. The WHO-ICF can serve as a model to capture and organise several constructs from subjective and objective assessment. Clinical outcome measures can be used to assess and evaluate the functioning of patients, guide clinical decision making and optimise treatment.

The preliminary core set of clinical outcome measures in the first six weeks consists of:

- Patient Specific Functioning Scale (PSFS), to determine the perceived limitations in daily physical functioning.
- Oxygen saturation (SpO_2) and heart rate frequency (HR) measurements at rest, during and after physical activity and therapeutic exercise. Based on the possible influence of COVID-19 on lung and/or heart function, it is recommended to use a pulse oximeter to monitor SpO_2 and HR. If the physiotherapist has a pulse oximeter, it can be delivered to the patient's home, when treatment is provided remotely.
- The HR can also be measured by instructing the patient how to measure it themselves with the heart rate indicated by the patient ('counting strokes aloud'). The physiotherapist should be aware that outcomes can be influenced by medication.
- Borg Scale CR10 for Shortness of Breath and Fatigue, indicating the shortness of breath and fatigue experienced by the patient. A maximum threshold for exercise intensity score of 4 on the Borg Scale CR10 applies at this stage.

See the appendix for an overview of the recommended clinical outcome measures.

The decision on specific clinical outcome measures also depends on collaboration with other healthcare disciplines. Use of different clinical outcomes for the same constructs by different healthcare disciplines should be avoided to facilitate interdisciplinary communication and monitoring of the patient, and not burden the patient unnecessary.

Preliminary core set of clinical outcome measures 'first six weeks'

- Use the Patient Specific Functioning Scale to identify perceived limitations in activities of daily living.
- Before, during and after physical activity and exercises, monitor the patient's oxygen saturation and heart rate frequency and use the Borg Scale CR10 for Shortness of Breath and Fatigue.

Advice, coaching and exercise prescription

If physical functioning of the patient is limited, the physiotherapist advises and coaches the patient to gradually increase activities of daily living and physical functioning, and provides instructions for specific exercises that support recovery in daily functioning. Resuming daily activities in the home environment should be gradual and well monitored, in particular in patients who have (had) PICS. Activities of daily living and supporting therapeutic exercises should be performed at low to moderate intensity and of limited duration at this stage. See further recommendations for exercise prescription below.

Advice and coaching

- Patients who have been admitted to the ICU and show symptoms of PICS are likely to have a very low capacity to perform activities and exercise.

Continued on next page

- Advise and coach the patient to gradually increase activities of daily living and physical activity, such as therapeutic exercises. Monitor the patient's levels of daily functioning.
- Activities of daily living and additional exercise therapy should be performed at low to moderate intensity and of short duration (see further recommendations for exercise prescription below).

Specific parameters for exercise prescription depend on activity levels of the patient prior to the COVID-19 infection, the patient's needs and current physical abilities of the patient. In the first six weeks, the emphasis should lie on returning to activities of daily living. A maximum score of 4 out of 10 on the Borg Scale CR10 for Shortness of Breath and Fatigue is recommended. Reasons for this recommendation are:

- COVID-19 can have a severe impact on lung function (including oxygen desaturation during exercise due to virus-induced and/or pre-existing lung disease).
- COVID-19 can also severely affect cardiac function (including virus-induced myocarditis, arrhythmia and/or pre-existing cardiac disease).
- After the active COVID-19 infection, no maximal exercise testing is done, partly due to organisational limitations in hospitals due to the corona crisis. Adequate clinical information to determine patient specific training parameters for exercise prescription is therefore not available, nor is it possible to estimate the possible risk of physical training at a moderate / high intensity.

During exercise, it is important that SpO_2 is monitored to identify potential desaturation. Therefore, measure oxygen saturation prior to, during and immediately after exercise training or physical activity, in particular when patients experience breathlessness or fatigue. Whenever possible, the patient should use a pulse oximeter at home. Use 90% of SpO_2 as lower limit at rest and 85% of SpO_2 during exercise or physical activities. Stop physical activities or exercises when desaturation (SpO_2 < 85% during exercise) occurs.

Exercise prescription

- Focus on the activities of daily living.
- Use the Borg Scale CR10 for Shortness of Breath and Fatigue to monitor the patient's physical exertion and training intensity while performing physical activities and exercises. A score of 4 out of 10 on the Borg Scale for Shortness of Breath and Fatigue is the maximum.
- Whenever possible, use a pulse oximeter to monitor oxygen saturation. Stop physical activities or exercises when desaturation (SpO_2 < 85% during exercise) occurs.
- Let patients only perform physical exercises in the home situation with prescribed training parameters regarding frequency, intensity, time/duration and type.

3.2 Six weeks after hospital discharge / after illness from COVID-19 at home

Evaluation and (continued) indication

Some hospitals organise a six week follow-up after discharge. Patients will visit a medical specialist (e.g. pulmonologist, internal medicine, cardiologist) and undergo additional lung and heart function assessment and exercise testing. Based on these test results, exercise capacity and current physical exercise tolerance levels can be determined to adequately determine physical functioning. With this information the physiotherapist can more specifically prescribe exercises and guide patients based on their needs and goals. Treatment goals may aim at further improvement of activities of daily living, increase physical activity levels and/or capacity to exercise, e.g. muscle strength and exercise tolerance. Clinical outcome measures should be used to evaluate current and set new or adjusted treatment goals.

Evaluation and (continued) indication after six weeks

- Determine any further treatment goals based on the patient's needs and their current levels of physical functioning (using the results from function tests and/or exercise testing).
- Formulate treatment goals aiming at further improving performance of activities of daily living, increase physical activity levels and/or capacity to exercise.

Clinical outcome measures

After six weeks, the physiotherapist can use the same clinical outcome measures used within the first six weeks and additional outcome measures to assess and evaluate the patient's physical capacity.

The recommended preliminary core set of outcome measures from six weeks onwards consists of:

- Patient Specific Functioning Scale (PSFS), to identify perceived limitations in activities of daily living.
- Short Physical Performance Battery (SPPB), which includes: a standing balance test, a walking speed test over 4 meters, and 5 times chair stand test.
- **Note**: Ensure the safety of the patient if they are (severely) weakened.
- Grip strength, use a hand-held dynamometer if available.
- Oxygen saturation (SpO_2) and heart rate frequency (HR) measurement prior to, during and after exercise.
- Borg Scale CR10 for Shortness of Breath and Fatigue, indicating the shortness of breath and fatigue experienced by the patient.
- Pedometer / accelerometer, to assess physical activity levels.
- Six Minute Walk Test (6MWT), to assess exercise capacity.

See the appendix for an overview of the recommended clinical outcome measures.

Preliminary core set of clinical outcome measures 'after six weeks'

- Use the Patient Specific Functioning Scale (PSFS) to evaluate perceived limitations in daily activities.
- Use the Short Physical Performance Battery (SPPB), a hand-held dynamometer for grip strength, the 6MWT and a pedometer / accelerometer to assess and evaluate the physical functioning
- Prior to, during and after physical activity and exercise, monitor oxygen saturation and heart rate frequency, and use the Borg Scale CR10 for Shortness of Breath and Fatigue.

Improving the capacity to exercise

The purpose of physiotherapy treatment is to further increase physical activity and capacity to exercise, such as building muscle strength and increasing exercise tolerance. Currently, it seems reasonable to apply known training principles, such as those that are also used in patients with chronic lung diseases, based on the perceived intensity or severity of symptoms (e.g. shortness of breath and fatigue).
When the exercise testing during follow up at the hospital or a field test shows that exercise at a higher intensity is safe, training intensity can be based on a Borg Scale CR10 score, with a maximum threshold of 6 (out of 10 points) and/or an intensity of 60-80% of the tested maximum exercise performance (e.g. bicycle test, 6MWT and/or the 1 RM). Be aware that (severe) exercise-induced oxygen desaturation can occur and that patients may have pre-existing and/or newly acquired COVID-19 related comorbidities that may affect their physical functioning and/or capacity to exercise. Monitoring oxygen saturation and heart rate frequency is therefore important. Use lower limits of 90% at rest and 85% for oxygen saturation during physical activity and exercise. Intensive monitoring of oxygen saturation is not indicated when patients have no signs of desaturation in the first two weeks of increasing exercise intensity.

Improving the capacity to exercise

- When physical function tests (e.g. lung / heart function) and (sub)maximal exercise testing show no severe restrictions or risks, gradually increase training frequency, intensity, time/duration and type of exercises.
- Exercise prescription should focus on the formulated treatment goals, and is based on the current levels of physical functioning and activities of the patient.
- During exercise, a maximum threshold of 6 (out of 10) on the Borg Scale CR10 for Shortness of Breath and Fatigue and/or an intensity of 60-80% of the tested maximum exercise performance (e.g. bicycle test, 6MWT and/or the 1 RM) is recommended.

4. ORGANISATION OF CARE

To ensure adequate treatment for COVID-19 patients, the physiotherapist works together with colleagues within their own discipline and with other disciplines. Intradisciplinary collaboration between physiotherapists is recommended depending on the patient's needs, limitations and comorbidities. Frail elderly patients with comorbidities who are deconditioned from hospitalisation should be treated by physiotherapists specialised in geriatric rehabilitation. Patients with limited cognitive functions or experience e.g. anxiety or reduced body awareness, are best treated by a physiotherapist with specialisation in the field of psychosomatic medicine.
The GP generally plays a coordinating role in the organisation of health care services for patients in the home situation. The GP is therefore the central point of contact for the patient. The physiotherapist should keep in close contact with the GP and report on the progression of the patient's health status.
When identified limitations cannot be considered within the field of physiotherapy, transferring the patient to or collaboration with other health care disciplines, such as dieticians, occupational therapists, speech and language therapists and/or psychologists is important. For example, in prolonged hospitalised patients with COVID-19 who have an abnormal body composition, which may include malnutrition, sarcopenia or sarcopenic obesity, interdisciplinary treatment by a dietician and a physiotherapist is important.
Patients with multiple problems (i.e. multiple physical, mental and/or cognitive problems) will often be referred to a rehabilitation centre upon discharge from the hospital. If patients are not directly referred to a rehabilitation centre (e.g. no beds available or patient preference to go home) and multiple problems remain and severely affect a patient's daily functioning after discharge from the hospital, delayed referral should be made. The physiotherapist has a signalling function and must always communicate with the patient's GP.

5. THE PHYSIOTHERAPIST, RECOMMENDED SPECIALISATION FOR COMPLEX PATIENTS

It is recommended that patients with chronic lung / heart disease before active COVID-19 infection and/or who have lung / heart damage from COVID-19 are treated by specialist physiotherapists with specific expertise in the treatment of patients with other chronic lung / heart conditions (such as COPD, asthma, idiopathic pulmonary fibrosis, heart failure, etc.).

Footnote

This position statement contains information and recommendations based on scientific and clinical knowledge and experiences at the time of publication.
The content of this statement will be refined and updated based on new scientific insights and clinical experiences. Further iterations will be then published. It is expected that the next version will be published in Dutch at the end of May 2020. The translated version in English will be published around the same time. The next position statement will also include more specific information and/or guidance on recommended clinical outcome measures and exercise principles (e.g. FITT, examples of therapy).
The end of May version aims for further elaboration on health care settings (first line, rehabilitation centre, nursing home) and subgroups within the patient group (patients with COVID-19 after hospital discharge with / without ICU admission, COVID-19 experienced at home, presence of comorbidities).
Various position statements and guidelines for patients with COVID-19 are currently being developed by other health disciplines. When making further iterations of this position statement we will look for (draft) versions of documents from other professions.

References

The preliminary recommendations described in this position statement are based on:

Spruit, M.A., Holland, A.E., Singh, S.J., Troosters, T. Report of an ad-hoc International Task Force to develop an expert-based opinion on early and short-term rehabilitative interventions (after the acute hospital setting) in COVID-19 survivors, version 3 April 2020, European Respiratory Society. Available at: https://www.ersnet.org/covid-19-blog/covid-19-and-rehabilitation.

Dutch references

Dutch Federation of Medical Specialists, Position statement of care for post-ICU patients with COVID-19, April 10, 2020. Available at: https://www.demedischspecialist.nl/sites/default/files/Leidraad%20Nazorg%20COVID19.pdf.

REACH, information about Post-Intensive Care Syndrome, Amsterdam UMC (location AMC) and University of Applied Sciences Amsterdam, available at: https://www.npi.nl/home-reach.

Appendix

Core set of clinical outcome measures, first six weeks

Patient Specific Functioning Scale (PSFS)
The PSFS assesses the main physical limitations in activities as perceived by the patient.
Available at: https://www.physio-pedia.com/Patient_Specific_Functional_Scale

Borg Scale CR10 for Shortness of Breath and Fatigue
The Borg Scale for Shortness of Breath and Fatigue is a scale ranging from 0 to 10, which provides clinical information on the patient-experience on shortness of breath and fatigue.
Available at: https://www.physio-pedia.com/Borg_Rating_Of_Perceived_Exertion.

Borg Scale CR10 for Shortness of Breath/Dyspneu		**Borg Scale CR10 for Shortness of Breath/Dyspneu**	
0	nothing at all	0	nothing at all
0,5	very very slight	0,5	just noticeable
1	very slight	1	very light
2	slight	2	light
3	moderate	3	moderate
4	somewhat severe	4	somewhat heavy
5	severe	5	heavy
6		6	
7	very severe	7	very heavy
8		8	
9	very very severe	9	very very heavy
10	extremely severe, maximal	10	extremely heavy, maximal

Additions to the core set of clinical outcome measures, after six weeks

Short Physical Performance Battery (SPPB)
The SPPB consists of essential tasks for independent living. It assesses balance, walking speed and functional leg strength. The three lower extremity function tests are: a standing balance test, a timed walk test and repeated chair stands.
Available at: https://www.nia.nih.gov/research/labs/leps/short-physical-performance-battery-sppb.

Grip strength
Using a hand-held dynamometer, isometric grip strength can be assessed. Maximum grip strength provides a clinically relevant indication of muscle function and is related to total lean body mass.

Six Minute Walk Test (6MWT)
The 6MWT assesses walking speed. This gives relevant clinical information on gait and endurance.
Available at: https://www.physio-pedia.com/Six_Minute_Walk_Test_/_6_Minute_Walk_Test.

Translation: AdPhysio: Research, Training & Consultancy, the Netherlands

Lay-out: Tertius, the Netherlands