



# KNGF Position Statement on Physical Therapy during COVID-19

Recommendations for physical therapy activities  
in the primary care setting

Version 3.0

Royal Dutch Society for Physical Therapy (Koninklijk Nederlands Genootschap voor Fysiotherapie)

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For the most current version, please refer to the [KNGF Knowledge Platform](#).

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De fysiotherapeuten van Nederland

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# Summary of the recommendations

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## Recommendations regarding persistent complaints after a COVID-19 infection

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- Identify the following symptoms in patients recovering from a COVID-19 infection: fatigue, dyspnoea, anxiety and sleep problems.
- If relevant for the symptomology, also consider identifying other complaints and symptoms of patients who are recovering from a COVID-19 infection (see the box 'Persistent complaints and symptoms after a COVID-19 infection').
- Assess whether the identified symptoms and complaints are a starting point for physical therapy treatment (such as information, advice and coaching or a training programme), or are a motivation for intra- or interdisciplinary collaboration (see D 'Organisation of healthcare').
- When taking the medical history, ask whether the patient experiences increased symptoms after exertion, such as fatigue, cognitive dysfunction ('brain fog'), pain, fever or sleep problems.

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## Recommendations for determining indications

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- Contact the patient by phone to find out if they are experiencing functional impairment in daily life and whether there is an indication for physical therapy after they have been discharged from the hospital or another healthcare facility, such as a rehabilitation centre or care home, or after the patient is symptom-free after having recovered from COVID-19 at home.
- Be alert to any existing and/or newly occurring co-morbidity, such as very severe obesity, hypertension, diabetes, cardiovascular disease, kidney disease or chronic lung disease.
- Consider intra- and interdisciplinary collaboration for a demand for healthcare that is increasing in complexity (see D 'Organisation of healthcare').

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## Recommendations regarding red flags

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- Stop the examination/treatment and consult with the general practitioner if there are red flags present (see B.2 'Red flags').

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## Recommendations regarding measurement instruments

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- Use the recommended measurement instruments (Patient-Specific Complaints (PSC), Borg Scale (0-10), the transcutaneous oxygen saturation meter and the Six Minute Walk Test (6MWT)) for all patients who are recovering from a COVID-19 infection for diagnosing, monitoring and evaluating the physical therapy treatment, unless there is a reason not to do this.
- Consider optional measurement instruments when the associated domain coincides with the diagnostic process or is relevant for the individual patient's treatment goal.
- Consider using Timed Up and Go (TUG) as an optional measurement instrument instead of the Six Minute Walk Test (6MWT) if the 6MWT is too difficult for the patient.
- Consider using Incremental Shuttle Walk Test (ISWT) as an optional measurement instrument instead of the 6MWT if the 6MWT is beneath the patient's level.

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## Recommendations regarding information, advice and coaching

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- Provide information and advice about the disease process, the expected course and the physical therapy treatment plan.
  - Inform the patient about possible causes of persistent fatigue and overstimulation.
  - Inform the patient about energy management and building physical capacity.
  - Consider applying pacing in patients with fatigue, patients with increased complaints and symptoms after exertion (see A.8 'Persistent complaints and symptoms after a COVID-19 infection') and patients whose load appears to exceed the capacity.
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## Summary of the recommendations



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### Recommendations regarding building physical capacity

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- Make an inventory together with the patient of the current and desired level of physical fitness, functioning and participation and adjust the training programme accordingly.
- Monitor the patient's load and capacity during the training and during the training period based on the resting heart rate, fatigue and dyspnoea. Adjust the training intensity and give advice about the daytime energy distribution, if necessary.
- Monitor the contraindications for physical exertion prior to starting the training and during the training in the entire training period (see [C.3 'Building physical capacity'](#)).

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### Recommendations regarding breathing exercises and respiratory muscle strength training

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- Consider breathing exercises for patients with dyspnoea, patients with a dysfunctional breathing pattern after six weeks, patients with a dysfunction of the diaphragm and patients who are unable to get their breathing at rest under control.
- Apply inspiratory respiratory muscle strength training for patients with respiratory muscle weakness, patients with dyspnoea and if there are no contraindications.
- Do not start respiratory muscle strength training if there are contraindications (see [C.3 'Building physical capacity'](#)).
- Practice taking 30 breaths three to five days per week, twice per day at 30% of the Maximal Inspiratory Pressure (PI-max/MIP) with a maximal perceived degree of exertion of 4 on the Borg Scale (0–10), with a constant or variable 'threshold loading'.

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### Recommendation regarding relaxation therapy

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- Consider using accessible relaxation exercises for patients who have shortness of breath, sleep problems, stress and/or a high degree of muscle tension.

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### Recommendations regarding conclusion of the therapeutic process

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- Stop the therapy (prematurely):
    - if the patient's need for assistance has been met due to therapeutic treatment goals being achieved; and/or
    - if no or inadequate alleviation of the complaints has been achieved during evaluations without a clear explanation; and/or
    - if the patient is sufficiently able to maintain or further improve his/her learned skills by himself or herself; and/or
    - if the patient, regardless of the complaints, is not motivated to take responsibility him/herself for the complaints; and/or
    - if there is a red flag or a gut feeling that something is not right or there is a contraindication for a physical therapy intervention; and/or
    - if the patient indicates wanting to stop.
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# A General information

## A.1 Motivation

At the beginning of the COVID pandemic it quickly became clear that the patients who had a COVID-19 infection could experience many different complaints and had to recover and rehabilitate after going through COVID-19. The physical therapist plays an important role in the rehabilitation process. In order to meet physical therapists' great need for tools for treating this patient group, the KNGF drafted a position statement on physical therapy for patients with COVID-19 in a short time frame in 2020. This position statement was developed in collaboration with professors, researchers, physical therapists and patient representatives.

The position statement provides recommendations for physical therapy activities for these patients, such as diagnosis, measurement instruments, treatment, evaluation and collaboration with other (para)medical disciplines. The most recent version of the document (version 2.0) dates from June 2020. In the meantime, in addition to more physical therapy expertise, more evidence has been amassed about the clinical presentation of patients, the course of the complaints and the recovery in the primary care setting. Version 2.0 of the KNGF position statement is no longer fully aligned with the new (international) insights into the clinical presentation, recovery and rehabilitation of patients who recover at home after a COVID-19 infection. These new insights required an update of the recommendations for physical therapy activities in the primary care setting. The present document is version 3.0.

## A.2 Goal of the position statement

The aim of this position statement is to provide a guide for the daily practice of physical therapists in diagnosing and treating patients in a primary care setting who are recovering after a COVID-19 infection.

By evaluating scientific evidence and considering patient preferences and professional expertise, the position statement supports therapists and patients in the clinical decision-making process and also offers transparency for other healthcare providers and stakeholders with regard to activities by physical therapists for patients recovering from a COVID-19 infection.

The [KNGF website](#) contains answers to the most frequently asked questions. For current information, please also see the [COVID-19 \(Corona\)](#) theme page.

### Definition

The KNGF position statement is a guide with recommendations and is not a treatment guideline, because the position statement was not developed according to the KNGF guideline methodology (KNGF 2019b). There are no specific conditions tied to the development of a position statement. The following definition of a position statement is applied: *'A position statement is a document that addresses a current and/or delicate demand for healthcare / healthcare task and provides direction to healthcare providers and healthcare users when a quality standard is lacking or is no longer up-to-date. These documents are often compiled ad hoc and in an accelerated manner by one or more national entities and are not developed according to the methodology as described in the guideline of the Quality Standards Advisory and Expert Group'* (AQUA guideline, Quality Standards Advisory and Expert Group 2021).



When revising the position statement, we kept as close as possible to version 2.0. The KNGF opted to revise the position statement and not develop a guideline in order to ensure that the up-to-date information will be available for the professional field and other healthcare providers in the shorter term. For other healthcare providers, the position statement provides clarity about the physical therapy options for patients who had COVID-19.

The revision of the position statement is primarily aimed at describing the content of good physical therapy care for patients recovering from a COVID-19 infection. If necessary, information will be provided about the organisation of healthcare required to provide the described care. At the initiative of the Federation of Medical Specialists (Federatie Medisch Specialisten – FMS), the Dutch College of General Practitioners (Nederlands Huisartsen Genootschap – NHG) and the Dutch Lung Alliance (Long Alliantie Nederland – LAN), a 'Long-Term Complaints after COVID-19' guideline is currently under development (FMS 2021a; NHG 2021). The revised KNGF position statement is aligned with this guideline as much as possible, thereby preventing duplication and/or contradictory advice. For recommendations on physical therapy activities in the hospital phase, refer to the 'KNGF Position Statement on Physical Therapy during COVID-19, recommendations for physical therapy activities during hospitalisation' (KNGF 2021b).

### A.3 Target group

The recommendations in this position statement are aimed at physical therapy in a primary care setting and apply to patients who are recovering from COVID-19 at home or in a care hotel. The position statement is aimed at both patients who were discharged from the hospital (with or without having been admitted to the intensive care unit (ICU)) as well as patients who recovered from a COVID-19 infection at home.

See appendix 1 for an overview of the patient journey a patient can take. Physical therapy support can be indicated in all settings.

#### Hospitalised patients

In most people, an infection with COVID-19 causes mild to moderate complaints. A small number of patients develop complaints that are serious enough that hospitalisation is indicated. Possible reasons for hospitalisation are: warning signs (low saturation, tachycardia, tachypnoea, appearing ill, confusion or drowsiness and fever), signs of organ failure or existing co-morbidity and/or vulnerability. A very small group develops very serious complaints necessitating admission to the intensive care unit (ICU) (FMS 2020).

Patients who required hospitalisation generally need more time to recover. Patients with (long-term) stays in the ICU form an extra vulnerable group with a very low physical capacity, possibly in combination with mental and/or cognitive problems. Patients who were admitted to the ICU often exhibit symptoms of Acute Respiratory Distress Syndrome (ARDS). ARDS is a pulmonary manifestation of a systemic inflammatory response (Felten-Barentsz 2020). This group also has a greater risk of developing Intensive Care Unit-Acquired Weakness (ICU-AW) and Post-Intensive Care Syndrome (PICS) (Needham 2012; Vitacca 2020). These patients may suffer from severe physical deconditioning and malnutrition, with physical, mental and/or cognitive impairments. These patients' load capacity is extremely low, and the risk of overload is great. For more information about PICS, please refer to the [REACH Network](#).

It is very advisable to refer patients with an extremely low capacity and/or (severe) physical, emotional, cognitive and/or social impairment to a rehabilitation centre (through the physician/general practitioner). This may be one of the [Knowledge Centres for Complex Chronic Pulmonary Diseases](#) or a centre for medical specialist or geriatric rehabilitation (for more information, see the website of [Revalidatie Nederland](#) [Rehabilitation Netherlands]).

Due to the limited hospital capacity and the pressure on the healthcare system, patients (even those who were in the ICU) are sometimes discharged earlier than would be the case under normal circumstances. The criteria for discharge are: independence in basic functional daily activities, such as being able to independently sit upright, make transfers and stand up and move around at home. In the event of early discharge to home, sometimes at the patient's own express request, the amount of assistance available in the home is an important factor, such as help from loved ones and caregivers. In some regions, early discharge to home with oxygen is possible if self-monitoring of the respiratory rate, oxygen saturation and dyspnoea score is possible, in collaboration with GPs and home care organisations. In addition to going home or to a care hotel (primary care setting), patients can be discharged to a care home, a post-clinical hospital department or a rehabilitation facility (secondary care setting).

#### **Patients who recovered from a COVID-19 infection at home**

The great majority of patients who had a COVID-19 infection did not require hospitalisation in the acute phase of their illness in order to recover from the infection. The recovery duration differs from person to person; this can vary from several days or several weeks to persistent long-term complaints (RIVM 2021a).

#### **Patients with persistent complaints (post-COVID syndrome)**

Some of the people who were hospitalised, but also some patients who recovered from a COVID-19 infection at home, have persistent complaints. This situation is called Post-Acute Sequelae of SARS-CoV-2 Infection (PASC) internationally and [post-COVID syndrome](#) in the Netherlands (Dutch Health Council 2022). People with post-COVID syndrome may have complaints such as fatigue, dyspnoea, chest pain, headache, muscle aches, heart palpitations, persistent elevated body temperature, persistent loss of smell, depression or forgetfulness. These complaints can last for several weeks, even several months after infection with COVID-19 (RIVM 2021b). The frequency of post-COVID syndrome is still largely unknown. According to initial estimates, at most one in five people still experiences complaints four or five weeks after a positive test. This number further decreases 12 weeks after the infection (RIVM 2021b).

Patients with long-term complaints after a COVID infection can receive help from C-support, an organisation working on behalf of the Ministry of Health, Welfare and Sport. C-support provides information, advice and support in all areas of life affected by this complex and still unknown illness: health, (psycho)social and work and income.

#### A.4 Development process

For the revision of the position statement, a project group was composed consisting of a core group, a working group and a review panel. In the first instance, barriers were assessed with regard to physical therapy care for patients recovering from a COVID-19 infection, based on position statement version 2.0. To this end a digital questionnaire was circulated among the members of the project group and among KNGF members by means of a digital newsletter (Fysio E-nieuws [Physical Therapy E-News]). The core group divided the collected barriers into topics and converted them into clinical questions. The clinical questions were presented to the working group and prioritised during the first working group meeting (on 19-10-2021). A report of this meeting, including the list with prioritised clinical questions, was presented to the review panel for comments. The review panel's comments were incorporated, after which the core group determined the definitive clinical questions.

Five prioritised and specified clinical questions were elaborated by the core group members in collaboration with the members of the working group. The clinical questions were elaborated based on the evidence in scientific literature and considerations for practical application, such as clinical expertise and patient preferences and values. The result was then presented to the entire working group during the second working group meeting (on 13-12-2021).

The core group then incorporated the working group's comments and revised the position statement. The existing text was simultaneously updated where necessary. The revised position statement was presented to the entire project group for comments, which were incorporated by the core group in collaboration with the working group, after which the final position statement version 3.0 was generated.

##### Clinical questions

Five clinical questions were prioritised for the revision of the position statement. These are included in the following table, supplemented by a reference to the elaboration of the respective clinical question.

##### Prioritised clinical questions with a brief description and a reference to the elaboration of the respective clinical question

Clinical question	Elaboration
1. Which <b>recovery-impeding factors</b> are recommended to identify during the medical history taking and the physical examination for patients who are recovering from a COVID-19 infection?	This clinical question was answered by describing the risk factors for persistent complaints (see A.7 'Clinical presentation and course') and by describing the most common persistent complaints after a COVID-19 infection (see A.8 'Persistent complaints and symptoms after a COVID-19 infection').
2. Which <b>measurement instruments</b> are recommended for diagnosing, monitoring and evaluating a physical therapy treatment in patients who are recovering from a COVID-19 infection?	This clinical question was answered by describing the recommended and optional measurement instruments for diagnosing and treating patients who are recovering from a COVID-19 infection (see B.3 'Measurement instruments').





3. How can the <b>physical capacity</b> be built up of patients who are recovering from a COVID-19 infection?	This clinical question was answered by describing recommendations regarding the type and expansion of the training programme, with specific attention paid to the balance between the load and the capacity and contraindications for physical exertion (see <a href="#">C.3 'Building physical capacity'</a> ).
4. Which criteria are employed for <b>ending the treatment period</b> of patients who are recovering from a COVID-19 infection?	This clinical question was answered by describing recommendations for when the therapeutic process should be concluded (see <a href="#">C.4 'Conclusion of the therapeutic process'</a> ).
5. Which recommendations for the physical therapist should be formulated regarding the <b>intra- and interdisciplinary collaboration</b> for diagnosing, treating and evaluating patients who are recovering from a COVID-19 infection?	This clinical question was answered by describing the indications for the disciplines with which the physical therapist works the most and describing when the patient should be referred (back) to the GP or when a colleague with a specialisation or special certification should be contacted (see <a href="#">D 'Organisation of healthcare'</a> ).

### Topicality of the position statement

Version 3.0 is an interpretation and elaboration of the previously published version 2.0 (dated 3 June 2020). Version 3.0 hereby replaces version 2.0. Version 3.0 is valid starting on 1 March 2022. The KNGF guideline advisers regularly assess whether partial or full revision of the current position statement is necessary. To this end, guideline advisers consult with subject-matter experts such as (a) subject-matter expert scientist(s) and experienced physical therapists. Based on this assessment, a determination is made as to whether revision of certain modules or the entire position statement is necessary, and depending on the urgency for revision and available time and resources, a determination is also made as to whether the revision will be prioritised. Important developments can result in premature revision.

## A.5 The physical therapist's role

The physical therapist in a primary care setting plays an important role in the recovery of patients who experience impairment in movement-related functioning after a COVID-19 infection. See [B.1 'Determination of indications'](#) for an overview of the physical therapy treatments indicated for these patients.

The physical therapist provides information, advice and coaching as well as exercise therapy aimed at the patient's treatment goals after a COVID-19 infection. The physical therapist guides and coaches the patient (and/or his/her loved one[s]), geared to the patient's living environment, with the goal of promoting the patient's movement-related functioning and self-management (KNGF 2021a). The physical therapist evaluates the treatment goals and adjusts them, if necessary. See also [C 'Therapeutic process'](#) for more information about the substance of the treatment.

The physical therapist also plays a role in detecting issues in the areas of complications and co-morbidity and assesses whether these are a reason to refer the patient (back) to the GP/physician. Intra- and interdisciplinary collaboration plays an important role for the physical therapy treatment of patients who are recovering from a COVID-19 infection (see [D 'Organisation of healthcare'](#)).

## A.6 Epidemiology and pathophysiology

Since the outbreak of the coronavirus (SARS-CoV-2, also called COVID-19) in Wuhan, China (December 2019), the virus quickly spread throughout the globe. In February 2020, the pandemic was a reality (Zhou 2020). The first infection in the Netherlands was reported on 27 February 2020 (RIVM 2020). Since then, the country has gone through multiple waves of infection. The website of the [RIVM \(Dutch National Institute for Public Health and the Environment\)](#) contains current information about the number of infections and hospitalisations as well as other relevant information about the pandemic. Current information regarding Europe can be found on the website of the [European Centre for Disease Prevention and Control \(ECDC\)](#) and information about the worldwide situation is available on the website of the [World Health Organisation \(WHO\)](#). COVID-19 is an illness that is caused by a virus of the coronavirus family. The coronavirus is related to the virus that caused the outbreak of Severe Acute Respiratory Syndrome (SARS) in 2003 and the virus that caused the outbreak of the Middle East Respiratory Syndrome (MERS) in 2012 (Letko 2020). The virus causing COVID-19 is a beta-coronavirus and consists of a strand of ribonucleic acid (RNA) with a protein shell. These proteins can bind to the 'angiotensin converting enzyme' 2 (ACE2) receptors of a cell, after which the RNA can penetrate the cell. Cells with ACE2 receptors are found on various parts of the body, including the lungs, oesophagus, blood vessels, gallbladder, heart, kidneys and bladder. All of these organs and tissues can potentially become infected with the virus (Letko 2020; Sohrabi 2020).

The virus has an incubation period of 2 to 14 days (5–6 days on average) (RIVM 2021a). Source and contact tracing by the RIVM shows that 99% of contacts develop symptoms within 10 days after the last contact with an infected person (RIVM 2021a). This incubation period may change with the emergence of new variants. For example, there are indications that the incubation period of the Omicron variant is about three days, which is therefore shorter than the incubation period of the previous variants (Jansen 2021). COVID-19 is spread through drops in the air (aerosols and droplets), for example when coughing, sneezing or speaking. The chance that COVID-19 is spread through surfaces (such as a door handle, shopping cart or keyboard) seems small. This manner of spreading has been proven, however, only under ideal circumstances that occur rarely in practice (RIVM 2021a).

## A.7 Clinical presentation and course

COVID-19 is often manifested as a respiratory infection. Due to changing circumstances, such as vaccinations, developments in healthcare and the treatment of COVID-19, but also due to the emergence of new variants, the numbers regarding symptoms and the course of COVID-19 can change over time. See the RIVM website for the current numbers (RIVM 2021a).

In 80% of patients the illness causes mild to moderate symptoms (Livingston 2020; Remuzzi 2020; Wu 2020). The risk of hospitalisation can differ with the different variants. For all variants to date, the most common symptoms in the acute phase are: common cold, cough, shortness of breath, elevated body temperature or fever and sudden loss of smell and taste. Cardiovascular, respiratory, gastrointestinal and neurological complications may occur (e.g. pulmonary embolism, myocarditis and neurological involvement in respiratory failure), as well as immune system complications (cytokine storm). COVID-19 must therefore be seen as a systemic condition, whereby the mechanism of action of these complications is not yet fully understood.

It is also largely unknown why some people suffer long-term complaints after a COVID-19 infection.

There appears to be a link between advanced age and the number of complaints someone has in the first phase of the infection. People who are hospitalised due to COVID-19 or who have a higher body mass index (BMI) or asthma also appear to have long-term complaints more often after an infection. But people who were not hospitalised can also have these persistent complaints. It appears that women suffer from post-COVID syndrome more frequently (RIVM 2021b).

#### **Risk factors for persistent complaints after a COVID-19 infection**

- advanced age (> 70 years) (RIVM 2021b)
- gender (women) (RIVM 2021b)
- hospitalisation as a result of the COVID-19 infection (RIVM 2021b)
- history of asthma (RIVM 2021b)
- elevated BMI (> 25) (RIVM 2021b)
- more than five symptoms in the first phase of the infection (Sudre 2021), with the following main predictive values:
  - fatigue, headache, shortness of breath, hoarseness and muscle aches (Siso-Almirall 2021)
  - for people aged > 70 year: loss of smell, fever, history of cardiac problems (Siso-Almirall 2021)

### **A.8 Persistent complaints and symptoms after a COVID-19 infection**

Not a lot is known about the natural course of the complaints after a COVID-19 infection and the effects of COVID-19 on long-term physical functioning. The described symptoms vary widely with greatly varying prevalence numbers and occur both in patients who were hospitalised and patients who recovered from a COVID-19 infection at home (FMS 2021a). There is some scientific substantiation for fatigue and dyspnoea as common symptoms after an acute infection, for anxiety during the first three months after an acute infection and for sleep problems after the first three months (FMS 2021a).

Fatigue comes in different forms. Complaints of overstimulation can be experienced as fatigue, for example. Overstimulation can occur when shopping at a busy supermarket or working in a busy office, for example. Fatigue can also occur or be exacerbated by sleep problems, worrying or anxiety and/or sadness (NHG 2021). Almost 75% of people with persistent complaints experience increased symptoms while and after exceeding (physical) boundaries, even as late as after six months (NHG 2021; WCPT 2021).

In addition to fatigue, dyspnoea, anxiety and sleep problems, frequently reported symptoms include headache, chest pain, joint problems, smell and taste disorders, cognitive problems, forgetfulness and memory problems, concentration problems, depression and sadness, although not much is known about this from scientific research.

The mentioned symptoms and complaints can be a starting point for physical therapy treatment or a motivation for intra- or interdisciplinary collaboration (see [D 'Organisation of healthcare'](#)).

### Persistent complaints and symptoms after a COVID-19 infection

Common persistent complaints (low to very low evidentiary value)

- fatigue (FMS 2021a; NHG 2021)
- dyspnoea (FMS 2021a; NHG 2021)
- anxiety (FMS 2021a)
- sleep problems (FMS 2021a; NHG 2021)

Other complaints (very low evidentiary value)

- decreased exercise tolerance (NHG 2021)
- muscle weakness (NHG 2021)
- headache (FMS 2021a)
- chest pain (FMS 2021a)
- joint problems (FMS 2021a)
- smell and/or taste disorders (FMS 2021a; NHG 2021)
- cognitive complaints (FMS 2021a; NHG 2021)
- forgetfulness (RIVM 2021b) and memory problems (C-support 2022)
- concentration problems (C-support 2022)
- depression (RIVM 2021b)
- anxiety (NHG 2021)
- sadness (C-support 2022)

### Increased complaints and symptoms after exertion

Exacerbation of complaints and symptoms due to exertion (such as fatigue, cognitive dysfunction ('brain fog'), pain, fever, sleep problems and diarrhoea) is called post-exertional symptom exacerbation (PESE) or post-exertional malaise (PEM) or post-exertional neuroimmune exhaustion (PENE). PESE is a very restrictive and often delayed exhaustion that is not proportional to the exertion expended. Such an exacerbation is sometimes called a 'crash'. The activity causing the complaints to worsen differs per person and may be something that could easily be performed in the past, such as daily activities, social activities, walking, having emotional conversations or being in an environment with lots of stimulants (WCPT 2021). The exacerbation can occur immediately but sometimes even up to 72 hours after the exertion. Recovery can take days, weeks or even months (WCPT 2021). One possible strategy for dealing with PESE is pacing (see [C.2 'Information, advice and coaching'](#)) and monitoring of the load and the capacity (see [C.3 'Building physical capacity'](#)).

### Recommendations regarding persistent complaints and symptoms after a COVID-19 infection

- Identify the following symptoms in patients recovering from a COVID-19 infection: fatigue, dyspnoea, anxiety and sleep problems.
- If relevant for the symptomology, also consider identifying other complaints and symptoms from the 'Persistent complaints and symptoms from a COVID-19 infection' framework for patients recovering from a COVID-19 infection.



- Assess whether the identified symptoms and complaints are a starting point for physical therapy treatment (such as information, advice and coaching or a training programme), or are a motivation for intra- or interdisciplinary collaboration (see [D 'Organisation of healthcare'](#)).
- When taking the medical history, ask whether the patient experiences increased symptoms after exertion, such as fatigue, cognitive dysfunction ('brain fog'), pain, fever or sleep problems.

## B Diagnostic process

### B.1 Determination of indications

An indication for physical therapy exists when there is a need for assistance related to movement-related functioning in daily activities and participation at home or in society which can relate to one or more of the following areas:

- decreased muscle function and/or mass, balance or endurance;
- decreased physical (exertion) capacity and/or physical activity;
- impairment when performing daily activities due to long-term immobilisation, e.g. in the event of severe muscle weakness and fatigue;
- respiratory complaints, such as dyspnoea, and coping with this problem in daily life;
- tension and/or sleep problems and coping with this;
- disrupted balance between load and capacity and decreased self-reliance.

For more information, see the [information materials for the physical therapist](#) on the KNGF knowledge platform.

#### **After discharge from the hospital, rehabilitation centre or care home**

When being discharged from the hospital, patients often receive advice about gradual resumption of daily activities, supplemented by exercises. This advice can be found in the KNGF position statement along with recommendations for physical therapy activities during hospitalisation (KNGF 2021b). Some patients have an indication for physical therapy at discharge. For these patients, it is expected that the hospital will provide a referral. Some hospitals reach out to patients over the phone after about two weeks with the aim of assessing how the patient is doing during daily functioning. When this assessment shows that the patient still has an indication for physical therapy, the expectation is that the hospital will arrange a referral, either through the GP or not, to a physical therapist in a primary care setting for further assistance. The approach and organisation of the assessment can differ per hospital. If the intended referral is missing, the physical therapist is advised to contact (the physical therapy department of) the hospital for further information. Discharge and referral can also take place from another healthcare facility, such as a rehabilitation centre or care home.



**After recovery from COVID-19 infection at home**

For patients who recover from a COVID-19 infection at home, the GP maintains contact with the patient as part of his/her coordinating role. This can also apply to patients who are transferred to the GP from the hospital or another healthcare facility. The GP can then inform and involve the physical therapist.

A patient, or the patient's loved one or caregiver, can also contact the physical therapist (direct accessibility to physical therapy – DAPT). In the event of DAPT, it is strongly advised that the physical therapist establish contact with the respective GP.

**Initial contact**

When the GP or the patient involves the physical therapist him/herself, the physical therapist contacts the patient after discharge or after the first symptom-free day for patients who recovered from COVID-19 at home. This contact is intended to get to know the patient and to ask how the patient is doing, what the need for assistance is and what impairments the patient is experiencing, if any. If needed, the physical therapist can use means of communication, such as phone contact or video chat.

The physical therapist must identify the existing co-morbidity, such as very severe overweight, hypertension, diabetes, cardiovascular disorders, kidney disease or chronic lung disease, prior to getting COVID-19 as well as possible multiple organ damage, such as lung/heart damage that the patient incurred during the COVID-19 infection. If the patient is referred from the hospital or other healthcare facilities, this information is expected to be described in a transfer.

Based on the acquired information, the physical therapist can evaluate the patient's physical impairment using the International Classification of Functioning, Disability and Health (ICF) model (WHO 2001). Based on this and taking into account any red flags, and depending on the patient's need for assistance, the physical therapist will determine whether or not there is an indication for physical therapy.

**Recommendations for determining indications**

- Contact the patient by phone to find out if they are experiencing functional impairment in daily life and whether there is an indication for physical therapy after they have been discharged from the hospital or another healthcare facility, such as a rehabilitation centre or care home, or after the patient is symptom-free after having recovered from COVID-19 at home.
- Be alert to any existing and/or newly occurring co-morbidity, such as very severe obesity, hypertension, diabetes, cardiovascular disease, kidney disease or chronic lung disease.
- Consider intra- and interdisciplinary collaboration for a demand for healthcare that is increasing in complexity (see [D 'Organisation of healthcare'](#)).

## B.2 Red flags

Screening for red flags is crucial for these patients. For some red flags, the examination or the treatment must be temporarily stopped. For some red flags, the physical therapist must consult with the GP.

### Recommendations regarding red flags

Stop the examination or the treatment and consult with the GP in the following cases:

- heart rate at rest  $< 40$  or  $> 130$  beats/minute (KNGF 2021b)
- respiratory rate  $> 40$  p/minute (KNGF 2021b)
- oxygen saturation at rest and/or during exertion  $\leq 90\%$  (KNGF 2021b)
- arrhythmias (WCPT 2021)
- deep-vein thrombosis (painful, swollen limbs)
- acute shortness of breath (in connection with suspected pulmonary embolism) (WCPT 2021)
- recent myocardial ischemia (KNGF 2021b)
- excessive sweating, abnormal complexion, excessive anxiety (KNGF 2021b)

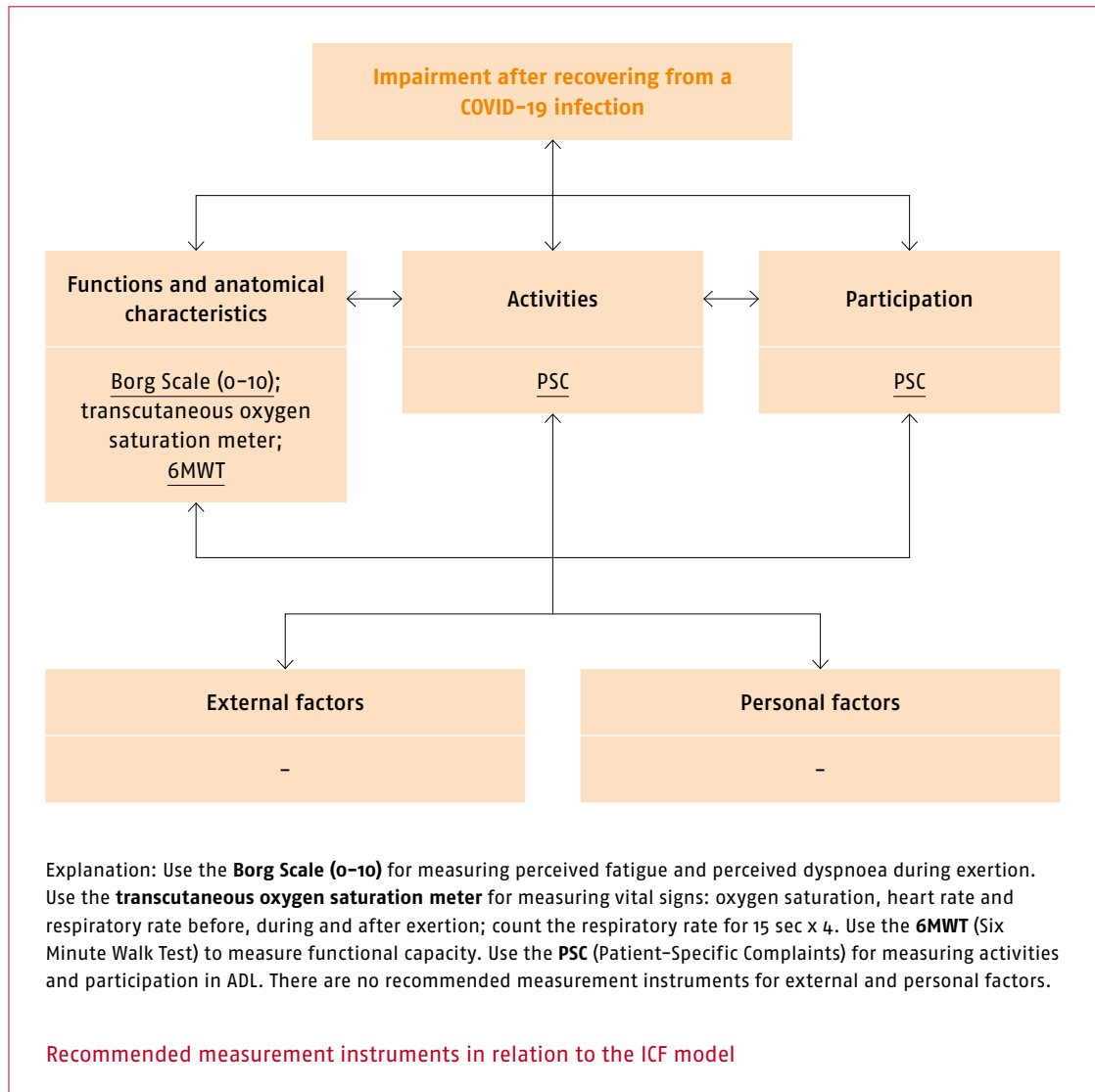
Stop the examination or the treatment and repeat the measurement at another time in the following cases:

- fever (body temperature  $> 38.0^{\circ}\text{C}$ )
- exhaustion (FMS 2021a) (Borg score  $\geq 5$  at rest) (Webber 2021)
- high blood pressure at rest ( $< 60$  mmHg and  $> 110$  mmHg) (KNGF 2021b)

## B.3 Measurement instruments

The position statement differentiates recommended and optional measurement instruments. The following figure shows the recommended measurement instruments, ordered by the ICF model.

The measurement instruments per domain are shown in the following table, ordered by recommended and optional measurement instruments.



Recommended and optional measurement instruments per physical therapy domain

Domain	Recommended measurement instruments
activities and participation in ADL	<u>Patient-Specific Complaints (PSC)</u>
perceived fatigue and perceived dyspnoea during exertion	<u>Borg Scale (0–10)</u>
vital signs	transcutaneous oxygen saturation meter <sup>a</sup> for measuring oxygen saturation, heart rate and respiratory rate <sup>b</sup>
functional capacity <sup>c,d</sup>	<u>Six Minute Walk Test (6MWT)</u>
shortness of breath (dyspnoea)	<u>Modified Medical Research Council scale (mMRC)</u>
fatigue	<u>Fatigue Severity Scale (FSS)</u>





Domain	Optional measurement instruments
muscle function of lower extremity	<u>10 Times Sit To Stand (10 TSTS)</u>
muscle strength	<u>Hand-held dynamometer (HDD)</u>
balance	<u>Short Performance Physical Battery (SPPB)</u>
functional test	<u>Timed Up and Go test (TUG)</u>
functional capacity	<u>Incremental Shuttle Walk Test (ISWT)</u>
general muscle function	<u>PROMIS Physical Function</u>
physical activity	Pedometer
respiratory muscle strength	<u>Maximal Inspiratory Pressure test (Pi-max/MIP)</u>
signalling nutritional condition	<u>Short Nutritional Assessment Questionnaire (SNAQ65+)<sup>a</sup></u> (or the <u>Malnutrition Universal Screening Tool (MUST)</u> )
anxiety and depression	<u>Hospital Anxiety and Depression Scale (HADS)</u>
cognition	<u>Montreal Cognitive Assessment (MOCA)</u>
general perceived effect and satisfaction with the treatment	<u>Global Perceived Effect – Dutch Version (GPE-DV)</u>

<sup>a</sup> The transcutaneous oxygen measurement (pulse oximetry) provides a non-invasive indication of the oxygenation of the arterial blood. Pulse oximetry is based on the presence of a pulsating arterial signal (such as the finger, earlobe or forehead). An advantage of using the oxygen saturation meter for the finger during treatment is that this meter simultaneously measures heart rate in addition to oxygen saturation.

<sup>b</sup> The oxygen saturation, heart rate and respiratory rate can be used at rest and during and after exertion. Count the respiratory rate for 15 sec x 4.

<sup>c</sup> If the 6MWT is too difficult for the patient, the TUG can be an alternative.

<sup>d</sup> If the 6MWT is below the patient's level, the ISWT can be an alternative.

<sup>e</sup> See also the SNAQ on the website of the Dutch Malnutrition Steering Group (Stuurgroep Ondervoeding).

PROMIS-LF = Patient-Reported Outcomes Measurement Information System, Bodily Function (Lichamelijk Functioneren) scale (Short Form of Computer Adaptive Test (CAT))

### Recommendations regarding measurement instruments

- Use the recommended measurement instruments for all patients recovering from a COVID-19 infection for diagnosing, monitoring and evaluating the physical therapy treatment, unless there is a reason not to do this.
- Consider optional measurement instruments when the associated domain coincides with the diagnostic process or is relevant for achieving the individual patient's treatment goal.
- Consider using Timed Up and Go (TUG) instead of the Six Minute Walk Test (6MWT) as an optional measurement instrument if the 6MWT is too difficult for the patient.
  - Consider using the Incremental Shuttle Walk Test (ISWT) as an optional measurement instrument instead of the 6MWT if the 6MWT is beneath the patient's level.

## C Therapeutic process

### C.1 Physical therapy activities

In performing physical therapy activities the patient's need for assistance and the (degree of) physical impairment are always the focus. There is still a lot of uncertainty about the physical capacity, course of the recovery, physical impairment and exercise capacity of patients who are recovering from a COVID-19 infection. Because of this they need customized and adjusted dosing.

### C.2 Information, advice and coaching

Giving the patient information and advice about the disease process, the expected course and the physical therapy treatment plan is essential. The physical therapist advises and coaches the patient with the gradual resumption of activities of daily life and movement-related functioning at home, at work or during exercise. More information for patients about physical therapy care is available at [defysiotherapeut.com](https://defysiotherapeut.com) and about GP care at [Thuisarts.nl](https://thuisarts.nl).

#### Pacing

Pacing is saving energy by keeping activities short and resting frequently (WCPT 2021) and can be applied as a part of information and advice if complaints and symptoms increase during exertion, such as fatigue, cognitive dysfunction ('brain fog'), pain, fever and sleep problems (see [A.8 'Persistent complaints and symptoms after exertion'](#)). The goal of pacing is to stabilise and improve the severity of the symptoms over time and optimise physical functioning (CSP 2021; WCPT 2021). The assumption is that pacing can be effective in patients who are recovering from a COVID-19 infection because this is also the case in patients with myalgic encephalomyelitis (ME)/chronic fatigue syndrome (CFS) (WCPT 2021).

Pacing is based on three pillars (CSP 2021; WCPT 2021):

- STOP trying to push boundaries. Overload can impair recovery.
- REST is important for control and recovery. Rest is also important if the complaints and symptoms don't worsen.
- The PACE of ADL activities, physical activities and activities requiring concentration must be adjusted.

Pacing consists of the following five steps (WCPT 2021):

- **step 1:** getting to know your energy reserves;
- **step 2:** learning to feel how much energy you have;
- **step 3:** learning how activities can be planned;
- **step 4:** learning to save energy;
- **step 5:** learning to take breaks (resting) between activities.

More information can be found in 'Information Sheet 4' in the World Physiotherapy [toolkit](#) (WCPT 2021).

**Recommendations regarding information, advice and coaching**

- Provide information and advice about the disease process, the expected course and the physical therapy treatment plan.
- Inform the patient about possible causes of persistent fatigue and overstimulation.
- Inform the patient about energy management and building physical capacity.
- Consider applying pacing in patients with fatigue, patients with increased complaints and symptoms after exertion (see A.8 '[Persistent complaints and symptoms after a COVID-19 infection](#)') and patients whose load appears to exceed the capacity.

**C.3 Building physical capacity**

Various interventions can be used to build up the physical functioning of a patient recovering from a COVID-19 infection.

**Training programme**

Given that there is limited scientific literature and the fact that the pattern and course of the complaints vary greatly between patients, it is not possible and is even viewed as undesirable to recommend a specific training programme or a specific or gradual increase in dosing (NICE 2020). This is because the physical activity needs to be continually adjusted based on the patient's symptoms. If a patient is overloaded, it is possible for the symptoms to be exacerbated and for this exacerbation to persist (see A.8 '[Persistent complaints and symptoms after a COVID-19 infection](#)'). It is therefore important to consistently monitor the balance between load and capacity and the contraindications, regardless of which intervention is used, in order to prevent overloading the patient.

Within the training programme, interventions can aim to encourage:

- activities of daily life (ADL) and participation;
- muscle function and balance;
- endurance;
- respiration;
- relaxation.

**Recommendation regarding the training programme**

- Make an inventory together with the patient of the current and desired level of physical fitness, functioning and participation and adjust the training programme accordingly.

### Load and capacity

It is important to monitor the patient's load and capacity during the training for the entire training period in order to prevent an increase of symptoms after exertion. This is based on the following:

- The virus can have a serious impact on the lung function (diffusion), such as oxygen desaturation during exertion due to a virus-induced and/or pre-existing lung disease. Lung function problems can occur in patients who had oxygen supplementation (Van den Borst 2021). These problems consist primarily of a diffusion disorder and limited restriction, especially in patients who were admitted to the ICU. These problems are not seen in patients with delayed recovery without oxygen supplementation.
- The virus can have a serious impact on the cardiac function, such as virus-induced myocarditis, arrhythmias and/or a pre-existing cardiac disease.

The following table lists the parameters monitored by the physical therapist and how these parameters are applied.

#### Parameters and how they are applied when monitoring load and capacity

Parameters	Application
Resting heart rate	<ol style="list-style-type: none"> <li>1. Teach the patient to measure his/her (resting) heart rate immediately after waking.</li> <li>2. Determine the average resting heart rate of one week.</li> </ol> <p><b>Note</b> The risk of symptom exacerbation after exertion increases if the resting heart rate on the day of training and one day after the training is more than 15 beats higher than the weekly average (WCPT 2021).</p>
Fatigue	Measure the fatigue before, during and after the training using the Borg Scale 0–10 (FMS 2021a); the score should not be higher than 4 (Webber 2021).*
Dyspnoea	Measure the dyspnoea before, during and after the training using the Borg Scale 0–10 (FMS 2021a; WCPT 2021); the score should not be higher than 4 (Webber 2021).*

\* If the Borg score of 4 is exceeded very frequently, this may point to PESE, for which pacing is indicated.

#### Recommendations for load and capacity

Monitor the patient's load and capacity during the training and during the training period based on the following parameters:

- resting heart rate;
- fatigue;
- dyspnoea.

Adjust the training intensity and give advice about the daytime energy distribution, if necessary.

### Contraindications for physical exertion

Contraindications for physical exertion can be divided into contraindications for starting physical exertion and contraindications that can occur during the physical exertion and that are a reason to pause the physical exertion.

#### Recommendation regarding contraindications for physical exertion

Monitor the contraindications for physical exertion prior to starting the training and during the training in the entire training period.

Do not have the patient start physical exertion in the following cases:

- fever ( $> 38.0^{\circ}\text{C}$ ) (WCPT 2021);
- dyspnoea at rest (WCPT 2021);
- chest pain (WCPT 2021);
- heart palpitations (WCPT 2021);
- oedema in the lower extremity (WCPT 2021);
- if the patient has not yet physically recovered (see the [parameters for monitoring load and capacity](#)) (Salman 2021);
- if new symptoms occur and/or exacerbation of symptoms occurs after the previous training (see [C.2 'Information, advice and coaching'](#)) (Salman 2021).

Stop with physical exertion in the following cases:

- heart rate  $< 40$  or  $> 130$  (KNGF 2021b)
- desaturation  $< 90\%$  (KNGF 2021b);
- dizziness (WCPT 2021);
- increased dyspnoea (WCPT 2021);
- chest pain (WCPT 2021);
- cool and clammy skin (WCPT 2021);
- excessive fatigue (WCPT 2021);
- irregular heart beat (WCPT 2021);
- other concerning complaint (WCPT 2021).

### Breathing exercises and respiratory muscle strength training

Use of therapy for improving respiration is especially dependent on the patient's capabilities. There are two ways to improve respiration: breathing exercises and respiratory muscle strength training. These interventions should only be used when there is an indication for them.

#### Breathing exercises

There is an indication for breathing exercises in the following cases:

- dyspnoea (FMS 2021b);
- a dysfunctional breathing pattern<sup>a</sup> which is still there six weeks after infection (FMS 2021b);
- dysfunction of the diaphragm (FMS 2021b);
- inability to get the breathing at rest under control (FMS 2021b).

<sup>a</sup> Note: Some patients only have a dysfunctional breathing pattern during exertion.



Encourage the patient to take long, deep breaths, combined with chest and shoulder expansion, if appropriate. A volume meter can be an additional stimulant in the form of visual feedback. The breathing exercise can be performed in supine position, lateral position, sitting or standing up (FMS 2021b; KNGF 2021b).

### Respiratory muscle strength training

There is an indication for respiratory muscle strength training in the following cases (FMS 2021b):

- respiratory muscle weakness (see the following table for the threshold values);
- dyspnoea;
- lack of contraindications.

Threshold values for respiratory muscle weakness based on the 'Maximal Inspiratory Pressure test' (Pi-max/MIP) (Laveneziana 2019)

Age category	Maximal Inspiratory Pressure test (cmH <sub>2</sub> O)	
	Men	Women
< 40 years	63	58
40–60 years	55	50
61–80 years	47	43
> 80 years	42	38

Do not start respiratory muscle strength training if no maximum values are known for this. During respiratory muscle strength training the inspiratory pressure can be equal to the pressure that is executed during a lung function test. This is why it is important to contact the GP if there is doubt about (relative) contraindications for respiratory muscle strength training and measurement (Cooper 2011; Laveneziana 2019). If a patient has to go to the hospital for a lung function test, it is advisable to also test the PI-max/MIP.

Respiratory muscle training is possible with a Threshold Loading Device, for example.

#### Recommendations regarding breathing exercises and respiratory muscle strength training

- Consider breathing exercises for patients with dyspnoea, patients with a dysfunctional breathing pattern after six weeks, patients with a dysfunction of the diaphragm and patients who are unable to get their breathing at rest under control.
- Apply inspiratory respiratory muscle strength training for patients with respiratory muscle weakness, patients with dyspnoea and if there are no contraindications.
- Do not start respiratory muscle strength training if the following contraindications exist:
  - a history of spontaneous pneumothorax;
  - surgery or an injury (6–8 weeks) making respiratory muscle strength training impossible;





- asthma with regular, unexpected exacerbations;
- recent myocardial infarction or other thromboembolic disorder;
- aneurysm;
- fever;
- a recent or not completely recovered eardrum perforation or other ENT problem, such as infections (FMS 2021b).
- Practice taking 30 breaths three to five days per week, twice per day at 30% of the Maximal Inspiratory Pressure (PI-max/MIP) with a maximal perceived degree of exertion of 4 on the Borg Scale (0–10), with a constant or variable 'threshold loading' (FMS 2021b).

### Relaxation therapy

Use of therapy for improving relaxation is especially dependent on the patient's need for assistance. Relaxation exercises serve to relax the entire body and to promote proper posture. Relaxation exercises can also be used for respiration.

#### Recommendation regarding relaxation therapy

- Consider using accessible relaxation exercises for patients who have shortness of breath, sleep problems, stress and/or a high degree of muscle tension.

## C.4 Conclusion of the therapeutic process

The consideration to conclude the treatment depends on the circumstances and on the patient's wishes, needs and capabilities and can hence differ per patient.

The treatment plan and the treatment goals that the physical therapist has defined together with the patient are the focus of the physical therapy treatment (KNGF 2021a). During the treatment, treatment goals are evaluated and adjusted if there is a need for this. Based on the evaluation, the physical therapist determines, in collaboration with the patient, whether the treatment goals have been (sufficiently) achieved (KNGF 2021a).

The expected recovery for patients with COVID-19 cannot yet be predicted very well because there is still insufficient knowledge about the course of the complaints. A good time to conclude the treatment, for example, can be when the patient's condition, dyspnoea and muscle function have improved significantly and the patient is able to resume his/her normal life thanks to this improvement. A longer interval between treatment sessions can reassure a patient who does the agreed at-home exercises independently and restore confidence in his/her own functioning. The treatment period can be stopped in those cases as well.

The recommendation is to employ the generic criteria described below for ending the treatment period of patients who are recovering from a COVID-19 infection.

### Recommendations regarding conclusion of the therapeutic process

Stop the therapy (prematurely):

- if the patient's need for assistance has been met due to therapeutic treatment goals being achieved; and/or
- if no or inadequate alleviation of the complaints\* has been achieved during evaluations without a clear explanation; and/or
- if the patient is sufficiently able to maintain or further improve his/her learned skills by himself or herself; and/or
- if the patient, regardless of the complaints, is not motivated to take responsibility him/herself for the complaints; and/or
- if there is a red flag or a feeling that something is not right or there is a contraindication for a physical therapy intervention; and/or
- if the patient indicates wanting to stop.

Draft reports and final reports according to the current Guideline on Information Exchange between General Practitioner and Paramedical Professional (HASP-paramedicus) (NHG 2020) and the KNGF Guideline on Physiotherapeutic File-keeping (KNGF 2019a).

\* The patient, in consultation with the therapist, assesses whether there is an (in)adequate decrease of complaints; this can optionally be supported by measurement instruments.

## D Organisation of healthcare

This module describes for each (para)medical discipline for which indications the physical therapist can consider seeking collaboration with a (fellow) paramedical professional or consulting with the GP. In addition, indications are described for intradisciplinary collaboration with a psychosomatic physical therapist, geriatric physical therapist or cardiovascular and pulmonary physical therapist. In general the 'unskilled is unauthorised' principle applies within the field of physical therapy. It is important for the physical therapist to have knowledge of and insight into the expertise of other (para)medical professionals, specialised physical therapists and physical therapists with special certification who are involved in treating patients recovering from a COVID-19 infection. It is based on this knowledge and insight that the physical therapist can assess whether he/she feels competent and authorised to provide an individual patient with physical therapeutic care. If this is not the case, the patient will be referred (back) to the general practitioner or will be advised to contact a specialised colleague or colleague with special certification. For information purposes, you can also read the [professional profile](#) of the intended specialisation.

## D.1 Intradisciplinary collaboration

### Indication for psychosomatic physical therapy

Consider collaboration with a psychosomatic physical therapist early in the process (for prevention) or, in the event of persistent complaints, based on the following recovery-impeding factors:

- physical complaints, such as fatigue;
- headache;
- cognitive problems, such as concentration;
- insomnia;
- emotional problems, such as anxiety;
- depression and decreased acceptance;
- reduced self-efficacy or an inadequate coping style;
- problems within the patient's environment, such as family, relationships and work situation;
- decreased body awareness.

### Indication for geriatric physical therapy

Consider collaboration with a geriatric physical therapist when co-morbidity, vulnerability and deconditioning in elderly patients are the focus.

### Indication for cardiovascular and pulmonary physical therapy

Consider collaboration with a cardiovascular and pulmonary physical therapist for:

- patients who had a chronic heart and/or lung condition prior to having COVID-19;
- patients who retained heart and/or lung damage after recovering from a COVID-19 infection;
- patients who require interdisciplinary treatment.

Also consider collaboration with a cardiovascular and pulmonary physical therapist for respiratory muscle training for:

- patients with respiratory muscle weakness if there are no contraindications for respiratory muscle training;
- patients who continue to have dyspnoea complaints during exertion after the eighth week in the training programme.

## D.2 Interdisciplinary collaboration

### Indication for 'consultation with the GP'

Contact the GP in the following cases:

- a need for consultation regarding referral to a paramedical discipline other than physical therapy;
- there are red flags present (see [B.2 'Red flags'](#)), thereby creating doubt about the physical therapy treatment;





persistent complaints in patients who do not improve with physical therapy interventions;  
a need for (repeated) triage and possible referral to rehabilitation care in the event of decreased capacity or other important changes that impact the recovery process (FMS 2021b).

#### Indication for exercise therapy

See [B.1 Determination of indications](#) for indications for the exercise therapist; these indications are in accordance with those for the general physical therapist.

#### Indication for dietetics

Consider collaboration with a dietician for:

- patients who are transferred from the hospital, care home or rehabilitation centre with dietary treatment and/or patients who use medical feeding such as fluid or tube feeding;
- patients with unintentional weight loss (> 5%, also in case of overweight/obesity) or a BMI that is too low (< 20 kg/m<sup>2</sup> for an age < 70 years, < 22 kg/m<sup>2</sup> for an age > 70 years);
- patients with a bad nutritional condition and/or muscle mass loss; screen for the risk of malnutrition with a validated tool such as the [SNAQ 65+](#) or [MUST](#);
- patients with reduced nutritional intake or absorption due to complaints such as nausea, vomiting, diarrhoea, severe abdominal pain, loss of smell and taste, gastric emptying disorders, extreme fatigue and decubitus; these can result in weight loss and/or muscle mass loss;
- patients with feeding problems when using medications that affect food intake (pain medication, cytostatics, antibiotics, neuroleptics, insulin, oral antidiabetics) or metabolism (corticosteroids), and medication used for COVID-19: chloroquine and lopinavir/ritonavir, due to side effects in the form of gastrointestinal complaints and psychological complaints;
- patients with problems swallowing and/or decreased chewing/swallowing muscle strength after long-term ventilation or improperly fitting dentures due to weight loss;
- patients requiring feeding interventions or in whom the effects of protein intake, for example, need to be monitored.

Obesity increases the risk of severe COVID-19. Because of this, there is also a chance that the complaints will be more severe in their course. Patients with overweight or obesity who lose weight unintentionally, have loss of muscle mass and are more or less malnourished and/or physically inactive. Involvement of a dietician is also important for patients with sarcopenic obesity in order to improve the nutritional condition in combination with strength and fitness training. If weight loss is a treatment goal during the recovery phase, then it is necessary to coordinate the nutrition with the muscle building training.

For more information, see the 'Treatment Plan for COVID-19 patients after hospital discharge' on the website of the [Dutch Society of Dieticians](#).

#### Indication for occupational therapy

Occupational therapy helps people maintain and increase their independence and capacity. Occupational therapists do this by evaluating functions, skills and strategies and effectively implementing these with an activity. This can be done through training, learning a different way of dealing with things, using an aid or adapting the activity or environment. Occupational therapy in the early recovery phase of COVID-19 and for post-COVID syndrome is aimed at restoring the

patient's self-management in daily functioning if the complaints hinder the performance of daily activities and the (desired) ability to resume his/her own roles in daily life.

Consider collaboration with an occupational therapist in one or more of the following cases:

- complaints of fatigue during daily activities;
- consequences of long-term immobilisation on the performance of daily activities, such as severe muscle weakness;
- lung problems and/or respiratory-related complaints when performing daily activities;
- cognitive complaints, such as memory or concentration problems;
- psychological complaints and sleep problems;
- work resumption, with a focus on building capacity regarding work and improving self-management;
- (over)load of the caregiver;
- advice on aids and/or services for performing daily activities and participation.

For more information, see the '[Occupational Therapy Guide for COVID-19 Clients in the Recovery Phase](#)' (EN 2021) and the '[Occupational Therapy Guide for Long COVID Clients](#)' (EN 2022).

#### **Indication for speech therapy**

Speech therapy is aimed at the maintenance, recovery and/or improvement of problems with voice, speech, language, swallowing and/or hearing. Consider collaboration with a speech therapist in the event of one or more of the following needs for assistance:

- recovery and/or improvement of chewing and/or swallowing complaints, respiratory complaints and/or voice complaints due to COVID-19;
- recovery and/or improvement of communication problems due to COVID-19 whereby cognitive problems that impact communication can play a role; advice and coaching can be aimed at both the patient as well as the patient's direct environment.

For more information, see the '[COVID-19 Position Statement](#)' of the [Dutch Association of Speech Therapy and Phoniatics](#) (NVLF 2020).

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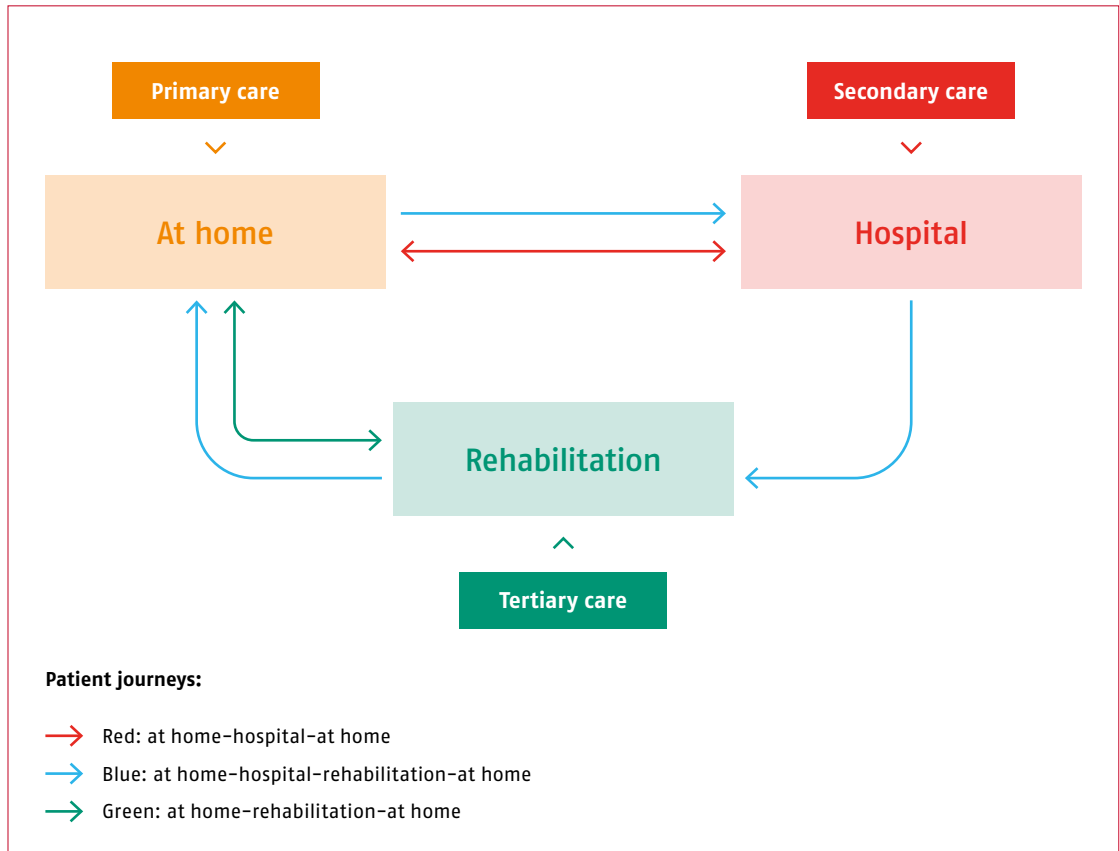
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All information for physical therapists regarding patients with COVID-19 is available on the [KNGF Knowledge Platform](#).

# Appendices

## Appendix 1 | Flow chart: 'Patient journeys for patients with COVID-19'



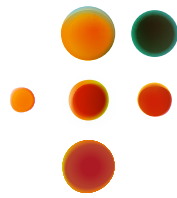
## **Colophon**

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