KNGF Guideline on Remote Healthcare

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Koninklijk Nederlands Genootschap voor Fysiotherapie
Royal Dutch Society for Physical Therapy

Vv CM
Vereniging van Oefentherapeuten

HOGESCHOOL UTRECHT

Patiëntenfederatie Nederland
samen de zorg beter maken

Amersfoort, December 2023

All sections of the guideline, including the summary, are available at **kngf.nl/kennisplatform**

The KNGF Guideline on Remote Healthcare is a publication of the Royal Dutch Society for Physical Therapy (Koninklijk Nederlands Genootschap voor Fysiotherapie – KNGF), the Association of Cesar and Mensendieck Exercise Therapists (Vereniging van Oefentherapeuten Cesar en Mensendieck – VvOCM), University of Applied Sciences Utrecht (Hogeschool Utrecht – HU) and the Dutch Patient Federation (Patiëntenfederatie Nederland – PFN).

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Authors | Development

PRACTICE GUIDELINE

Application of the KNGF guideline methodology

In order to determine practical recommendations for physical therapy and/or exercise therapy in the generic Remote Healthcare guideline, both systematic reviews as well as qualitative research methods were used. Remote healthcare is a young research field, so the quantity of scientific literature is relatively limited. In addition, the available literature is very diffuse and contextual. Much experience with remote healthcare was also amassed during the COVID epidemic, which is not yet always available in the literature. This is why practical experiences were also used.
The qualitative methods were integrated into the KNGF guideline methodology (KNGF, 2022). By following the KNGF guideline methodology, the AQUA Guideline (version dated 2021) (Healthcare Institute of the Netherlands, 2021) was also adhered to.
Furthermore, the experiences from the FAST project regarding the development of cross-disease recommendations financed by ZonMw were also used.
The experts involved evaluate on a yearly basis whether the contextual and/or policy developments necessitate a revision of this guideline.

Preparation phase

The first step was to put together a core group, consisting of researchers in the field of remote healthcare (Faculty of Innovation and Exercise Care, University of Applied Sciences Utrecht [Lectoraat Innovatie van Beweegzorg, Hogeschool Utrecht]) and guideline advisers (Royal Dutch Society for Physical Therapy [Koninklijk Nederlands Genootschap voor Fysiotherapie, KNGF]) and the Association of Cesar and Mensendieck Exercise Therapists (Vereniging van Oefentherapeuten Cesar en Mensendieck, VvOCM]). A guideline panel was also formed with physical therapists and exercise therapists, patients and other relevant stakeholders. This guideline panel also included representatives of recently completed guideline projects within the field of physiotherapy/exercise therapy (osteoarthritis, rheumatoid arthritis and chronic obstructive pulmonary disease), so that the practical recommendations on remote healthcare could be integrated into these guidelines. The core group members and all guideline panel and review panel members signed a declaration of interests within the framework of this project.

The project and associated topics were defined during the preparation phase. The project is aimed at remote physical therapy and exercise therapy that (partially) replace in-person healthcare. The recommendations in the generic guideline are intended for the individual physical therapist or exercise therapist and focus primarily on the content of healthcare, unless an organisational recommendation is required in order to apply healthcare-related recommendations. The project is only aimed (in accordance with the ZonMw subsidy group) at remote healthcare that (partially) replaces in-person healthcare, and thus not at remote healthcare that is offered in addition to in-person healthcare. No differentiation is made at the condition level, unless the underlying condition substantially impacts the recommendations to be formulated.

The core group started with an exploratory search for scientific literature about remote healthcare within physical therapy/exercise therapy. A systematic review conducted by the University of Applied Sciences Utrecht within physical therapy on inhibiting and facilitating factors when

implementing health apps was also used. A recent study on video consults was also used, which consisted of questionnaires, interviews and focus group studies with therapists and patients (Scherpenzeel 2023.). The results of these studies were used to identify the barriers of remote healthcare. These results were then used as the basis for a comprehensive stocktaking among therapists, patients and other stakeholders by means of an invitational conference.

The barriers mentioned in the literature and the invitational conference were discussed within the guideline panel, and then a ranking was generated using a nominal group technique. This technique is a structured manner for achieving consensus with a group by identifying problems, developing solutions and making decisions. The highest priority barriers were then transformed into 5 clinical questions:

1. When is (partially) replacing in-person healthcare with remote healthcare within physical therapy and exercise therapy of added value for patients, healthcare providers and society?
2. When can remote healthcare not be applied or be applied to a lesser extent in physical therapy and exercise therapy?
3. How can you, as a physical therapist or exercise therapist, determine which form of remote healthcare to use for a patient?
4. How can you, as a physical therapist or exercise therapist, build and maintain a good patient-therapist relationship if in-person healthcare is (partially) replaced by remote healthcare?
5. How can you make choices together with the patient about the use of remote healthcare?

During the development phase it was decided to answer clinical questions 1 and 2 within one module due to the correlation between these questions.

Development phase

A systematic search for literature was conducted during the development phase, with studies through the year 2022 being included. As expected, due to the limited quantity of literature about this topic, the large variation in studies and international differences regarding remote healthcare, the literature conclusions do not provide a strong scientific basis for answering the clinical questions within the Dutch context. For the benefit of the evidence to recommendation process, qualitative research data were also collected with respect to the experiences of therapists and patients. A list was generated with topics related to the clinical questions that could not be answered or could not be adequately answered based on the literature. Eight therapists (2 exercise therapists and 6 physical therapists) and 7 patients were interviewed. The recruitment was targeted in order to obtain the maximum possible variation in the patient characteristics of the interviewees. The most important criteria for this were the patient's education level and the experience with remote healthcare (positive versus negative). The recordings of the interviews were transcribed and coded, after which the codes were pooled into categories and topics. The core group then presented the results from the literature study and the qualitative research to the guideline panel as a part of the evidence to recommendation process. Based on this, relevant considerations were described and weighed. Finally, conclusions were drawn about the content, direction and strength of the recommendations.

External review and authorisation phase

During the review phase, the draft guideline – in which all modules were combined – was sent to physical therapists and exercise therapists in the professional field for their input, as well as to all stakeholders who contributed to the development of the guideline or indicated prior to the project that they wanted to be involved in the review phase. The collected comments were summarised in a comments table, which was presented to the guideline panel. The guideline panel determined which changes and/or additions were required or desired to be made to the draft guideline. The review panel advised on this as well. After being adopted by the guideline panel and the review panel, the guideline was presented to all involved stakeholders for authorisation.

Dissemination and implementation phase

After publication of the guideline, various dissemination and implementation products were delivered, including:

- patient information;
- summary card;
- IOF annual programme;
- knowledge gaps (see Appendix A.0_1);
- article in journals;
- lectures.

Implementation activities are aimed in particular at the following three core topics:

1. determination of the form of remote healthcare;
2. the conditions for safely administering remote healthcare;
3. the willingness and skill to implement remote healthcare.

Involvement of interested parties (authors)

Therapists

The primary users of the guideline are physical therapists and exercise therapists. They made an important contribution to the guideline in all phases of its development. For example, therapists indicated barriers in the preparation phase, sat on the guideline panel and review panel in the development phase, were interviewed during the development phase, provided comments on the draft guideline in the review phase and provided feedback on the implementation products during the implementation phase.

Patients

In order to maximally ensure the patient perspective, interviews with patients about the use of video consults within physical therapy and exercise therapy during the Covid pandemic were used during the preparation phase. The experienced barriers, in combination with the barriers flagged by the therapists and the guideline panel and review panel, served as the basis for the clinical questions. In addition, patients were involved during the development phase, by sharing their experiences with remote healthcare during an interview. A representative of the Dutch Patient Federation took part in the development process, as part of the guideline panel and during the review phase.

Other stakeholders

A number of other stakeholders – including representatives of Dutch Healthcare Insurance Companies and Stichting Chronisch Zorgnet – sat on the guideline panel or review panel or were involved in the guideline during the review phase and contributed to the creation of the guideline in this way.

Declarations of interest

Prior to and upon completion of the project, all core group, guideline panel and review panel members provided a declaration of interest. The declarations of interest were evaluated by the guideline advisers and, if necessary (in the case of a conflict of interest), measures were undertaken during the guideline project (e.g. not letting someone participate in the evidence to recommendation process in the guideline panel or review panel) to prevent improper influence or the appearance thereof due to conflicts of interest to the greatest extent possible, in accordance with the 2022 KNGF guideline methodology (KNGF, 2022).
The declarations of interest state the affiliations (the organisation or institution and location of the work activities) of the project group's members. These declarations of interest are available and can be requested from the KNGF but have not been publicly disseminated because they contain personal information.

Core group	
M.C.M. van Doormaal, MSc (until June 2023)	Project manager, guideline advisor, Royal Dutch Society for Physical Therapy (KNGF)
D. Conijn, MSc (starting in June 2023)	Project manager, guideline advisor, Royal Dutch Society for Physical Therapy (KNGF)
J. van der Steen, MSc (until April 2023)	Policy-maker, guideline advisor, Royal Dutch Society for Physical Therapy (KNGF)
Dr C.J.J. Kloek (except for from July 2022 to January 2023)	Subject-matter expert scientist, University of Applied Sciences Utrecht (HU)
Dr B. Dorhout (starting December 2022)	Subject-matter expert scientist, University of Applied Sciences Utrecht (HU)
J. van der Heijden, MSc (until April 2023)	Subject-matter expert scientist, University of Applied Sciences Utrecht (HU)
B. Cijs, MSc (until September 2022)	Subject-matter expert scientist, University of Applied Sciences Utrecht (HU)
M.L. van Tilburg, MSc (starting September 2022)	Subject-matter expert scientist, University of Applied Sciences Utrecht (HU)
I. Schaffers, MSc (from September 2022 to November 2022)	Policy-maker, Association of Cesar and Mensendieck Exercise Therapists (VvOCM)
Dr D. Barten (from July 2022 to January 2023)	Subject-matter expert scientist, University of Applied Sciences Utrecht (HU)
Prof. C. Veenhof	Professor of physical therapy science, Utrecht UMC, University of Applied Sciences Utrecht (HU)

Guideline panel	
Dr T.J. Hoogeboom	Independent chairman
G. Broekema, MSc	Physical therapist, representative of the KNGF
Dr H. van der Meer	Physical therapist, representative of the NVOF
I. Kors	Exercise therapist (primary care setting), representative of the VvOCM
J. van Broekhoven, MSc	Manual physical therapist, representative of the KNGF
Dr L. Beijer	Subject-matter expert scientist
J.W. Mulder	Senior advisor, Dutch Patient Federation (PFN)
Dr M.J. Nijkrake	Physical therapist (secondary care setting), representative of the NVFG
C. van Baal, MSc	Manual physical therapist (primary care setting), representative of the KNGF

Review panel	
M. Wijffels	Exercise therapist (primary care setting), representative of the VvOCM
Dr E. Beekman	Subject-matter expert scientist
Dr A. Apeldoorn	Subject-matter expert scientist
Dr J. Meesters	Subject-matter expert scientist
B. Bergsma, MSc	Landelijk Expertisecentrum Pharos (National Expertise Centre Pharos)
F. van Trigt	Representative of Dutch Healthcare Insurance Companies (ZN)
K. Sterkenburg, MSc	Representative of the Dutch Association of Skin Therapists (NVVH)
Dr N. Krepel	Representative of Stichting Chronisch Zorgnet

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A General information

A.1 Introduction

PRACTICE GUIDELINE

Introduction to the generic guideline

Remote healthcare is aligned with the national ambitions to keep healthcare effective, accessible and affordable in the future and is also a spearhead of the Royal Dutch Society for Physical Therapy (Koninklijk Nederlands Genootschap voor Fysiotherapie – KNGF) and the Association of Cesar and Mensendieck Exercise Therapists (Vereniging van Oefentherapeuten Cesar en Mensendieck – VvOCM). In this guideline, remote healthcare encompasses all healthcare activities between patients and healthcare providers provided remotely. This includes digital healthcare through apps and wearables, for example, as well as video and/or phone consults. The healthcare can be synchronous as well as asynchronous. The term 'remote' hence indicates that the healthcare provider and patient are not located in the same physical space. This guideline is aimed specifically at forms of remote healthcare that replace in-office healthcare either entirely or in part, and not at forms that are a supplement to regular treatment.
Remote healthcare has much potential within therapeutic healthcare, given that there is increasing emphasis on the therapist's coaching role and on promoting patient self-management. Patients too recognise the potential of remote healthcare, for example because it gives them the tools to more easily implement therapeutic advice themselves at home. Given that patients typically receive a series of treatments, it is possible to offer only a part of the guidance remotely.

Despite this potential, remote healthcare was only minimally applied in daily practice until the Covid pandemic. Use of remote healthcare increased during the Covid pandemic. This was successful for some of the therapists, and they continue to implement remote healthcare. However, other therapists experienced difficulties in achieving the desired treatment effects remotely and subsequently resumed providing treatment the regular way. The varying use of remote healthcare results in undesired practice variation, leading to many patients who might benefit from receiving remote healthcare not always being offered this option. This gave rise to the development of a generic guideline that provides therapists with tools to make clinical decisions about the use and content of remote healthcare.

This generic guideline gives therapists insight into the added value of remote healthcare compared to a regular course of treatment from the patient's perspective, with so-called patient-reported outcome measures being applied. The guideline also provides insight into the therapeutic goals for which remote healthcare can be applied. In addition, recommendations are given about choosing a suitable form of remote healthcare, for establishing and maintaining a good patient-therapist relationship and for deciding about the use of remote healthcare jointly with the patient.

Initiators

KNGF initiated the development of this guideline. Co-initiators are the VvOCM, the University of Applied Sciences Utrecht (Faculty of Innovation and Exercise Care) (Hogeschool Utrecht [Lectoraat Innovatie van Beweegzorg]) and the Dutch Patient Federation (Patiëntenfederatie Nederland).

Objective of the generic guideline

The objective of this generic guideline is to integrate remote healthcare into physical therapy/exercise therapy where this adds value, thereby contributing to future-proof healthcare.

By systematically evaluating scientific research, conducting a qualitative analysis and weighing of patient and therapist preferences, using the input of therapist expertise, this generic guideline supports therapists and patients in the clinical decision-making process.

Recommendations are not laws or mandatory regulations. In principle, therapists should adhere to the recommendations, but substantiated deviation is legitimate or even necessary if this is commensurate with the individual patient's situation and wishes.

Definition

As stated above, remote healthcare in this guideline encompasses all healthcare activities between patients and healthcare providers when they are not located in the same physical space. This guideline is aimed specifically at forms of remote healthcare that replace in-office healthcare either entirely or in part, and not at forms that are a supplement to regular treatment.

Examples of healthcare technologies that can be employed for this are wearable devices, apps, platforms and telerehabilitation, virtual reality, video software, telephony, sensors or chatbots. Artificial intelligence can be a part of these healthcare technologies.

The generic guideline differentiates between synchronous and asynchronous forms of remote healthcare. In synchronous forms of remote healthcare, such as video consults and telephone consults, there is simultaneous contact between the therapist and patient. In asynchronous forms, patients and therapists can apply healthcare technologies any time they want, independently of each other.

A differentiation is also made between courses of treatment which – other than the physical examination – are offered entirely remotely and courses of treatment where a part of the healthcare is offered remotely. See the substantiation of this module for an explication of the terms used.

This guideline is aimed at all patient groups, except for patients who are undergoing cardiac rehabilitation due to coronary artery disease or chronic heart failure. The specific recommendations for this target group are described in the KNGF Guideline on Cardiac Rehabilitation.

Intended users of the generic guideline

The recommendations in this generic guideline are primarily aimed at physical therapists and exercise therapists, regardless of the setting (a primary care practice, hospital or rehabilitation facility; monodisciplinary or multidisciplinary setting). The guideline also applies to treatments of patients with all conditions. This makes the recommendations generic in nature and hence not specifically applicable to one or several conditions. An exception is for the group of patients who are receiving therapeutic treatment within the scope of cardiac rehabilitation. Specific recommendations may apply to this target group, which are described in the KNGF Guideline on Cardiac Rehabilitation.

This generic guideline is also relevant for patients, policy-makers and organisations involved in patient healthcare. The guideline provides a clear picture of what one can expect from physical therapists and exercise therapists with regard to remote healthcare.

Reading guide

In each module, the information is divided into three levels, with each level going more in-depth into the respective topic:

- The practical tips, the recommendations, are included in the 'Practice Guideline'.
- The information about the topic being addressed and the consideration of the most important arguments that lead to the recommendations or description are contained in the 'Explication'.
- The 'Justification' provides details about how this information was collected (including the search strategy, summary of results, evaluation of the evidentiary value, interview results and description of considerations), the process with which this consideration came about and the references of the (scientific) literature used.

Where this document refers to 'he', this can also mean 'she' or 'they'.

Methodology

This generic guideline was developed in accordance with the 2022 KNGF guideline methodology (KNGF 2022). The way this methodology was applied and the manner in which stakeholders were involved in the development are described in the 'Authors | Development' module.

In order to generate a strong foundation for the evidence to recommendation process, qualitative research was also conducted – in addition to a literature review – on the experiences of therapists and patients with remote healthcare during and after the Covid pandemic.

Definitions and terms

The 'Explication' of this module describes the most important definitions and terms used in this generic guideline.

EXPLICATION

The generic Guideline on Remote Healthcare was developed in accordance with the 2022 KNGF guideline methodology (KNGF 2022). Because remote healthcare is a young field of research, the KNGF guideline methodology was combined with qualitative research to enable incorporating recent practical experiences. The Justification explains how this methodology was applied for developing this generic guideline. The generic guideline was developed within the scope of the Digi-On project and was funded by means of the Remote Healthcare subsidy, as a part of the ZonMw programme Quality of Healthcare. Healthcare Institute Support (Kwaliteit van Zorg: Ondersteuning Zorginstituut).

Most important definitions and terms

Apps/applications
A software programme that is used on a PC, laptop or mobile device.

Asynchronous remote healthcare and synchronous remote healthcare
In synchronous forms of remote healthcare, such as video consults and telephone consults, there is simultaneous contact between the therapist and patient. In asynchronous forms, patients and therapists can apply healthcare technologies any time they want, independently of each other.

Digital literacy
Competencies of people to use digital devices, such as a computer, tablet or mobile phone (Pharos, 2022).

In-person healthcare
Consult through communication between a patient and therapist whereby both are physically present.

Health literacy
Competencies of people to obtain, understand, assess and use information about health when making health-related decisions (Pharos, 2023).

Telephone consults
An appointment between a therapist and patient that takes place over the telephone and replaces an in-person consult.

Video consults
An appointment between a therapist and patient whereby the therapist provides remote healthcare to the patient by means of a direct video connection. Also called video calls.

Wearables
Wearable technology, i.e. electronic devices you can wear on the body and activity trackers, smartwatches and apps on the phone which keep track of daily (sports) activities, for example (Ros & Willemsen, 2022).

Remote healthcare
All healthcare activities between patients and healthcare providers provided remotely. This includes digital healthcare as well as video and/or phone consults. The term 'remote' hence indicates that the healthcare provider and patient are not located in the same physical space.

Healthcare technology
Digital technologies that contribute to achieving healthcare-related objectives (WHO, 2021), such as wearables, apps, platforms for telerehabilitation, virtual reality, video software, telephony, sensors or chatbots. Artificial intelligence can be a part of these healthcare technologies.

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B Diagnostic process

B.1 Application of remote healthcare

PRACTICE GUIDELINE

Together with the patient and based on clinical reasoning, consider whether or not to apply remote healthcare as part of the physical therapy/exercise therapy treatment.

Discuss the patient-specific benefits and disadvantages of remote healthcare with the patient. See module B.4 for specific tips for making this decision.

Be cautious with the application of remote healthcare for patients whose safety cannot be guaranteed, such as patients with an increased risk of falling or who may experience symptoms of overload and/or (life-)threatening situations.

Discuss the possible patient-specific risks with the patient and consider having the therapy take place fully in the patient's physical presence or take measures to guarantee safety. Remote healthcare can still be chosen at a later date.

For patients undergoing cardiac rehabilitation due to coronary artery disease or chronic heart failure, follow the specific recommendations for digital healthcare as described in the KNGF Guideline on Cardiac Rehabilitation.

Description

In general, the benefits and disadvantages of remote healthcare in physical therapy and exercise therapy are no greater or smaller than the benefits and disadvantages of in-person healthcare. Therefore, this module does not give a general recommendation about the benefit or disadvantage of remote healthcare. However, it does give recommendations about situations in which remote healthcare is or is not advisable, given that patient preferences and circumstances vary.

EXPLICATION

Reason

Remote healthcare encompasses all healthcare activities between patients and healthcare providers when they are not located in the same physical space. This guideline is aimed specifically at forms of remote healthcare that replace in-office healthcare either entirely or in part, and not at forms that are a supplement to regular treatment. The barrier analysis showed that it was unclear for which objective you as a therapist can apply remote healthcare. It is often unclear to both the therapist and the patient what the added value is compared to a regular consult in terms of treatment quality, usability of technology and time. It is also not always clear for which therapeutic goals remote healthcare can be effectively used. In addition, it was unclear how the effectiveness of technologies for using remote healthcare can be assessed. This is important when procuring (new) equipment or software, for example. These barriers led to the following clinical questions:

Clinical questions

1. What is the added value of (partially) replacing in-person healthcare with remote healthcare within physical therapy and exercise therapy for patients, healthcare providers and society?
2. When can remote healthcare not be applied or applied to a lesser extent?

Conclusions based on the literature

The results of this research were considered based on the effect size and the evidentiary value and were then formulated in a standardised manner. These standardised formulations are internationally accepted and speak to the certainty of the evidence found in a specific study (Langendam 2022).

Crucial outcome measures

The evidence is very uncertain about the effect of remote healthcare on physical functioning compared to in-person healthcare.
Explanation: For the crucial outcome measure 'physical functioning', a non-clinically relevant difference is found in favour of remote healthcare versus in-person healthcare. The evidentiary value is very low. Due to this, the evidence is very uncertain about the benefit of remote healthcare on the outcome measure physical functioning compared to in-person healthcare.

The evidence is very uncertain about the effect of remote healthcare on quality of life compared to in-person healthcare.
Explanation: For the crucial outcome measure 'quality of life', a non-clinically relevant difference is found in favour of remote healthcare versus in-person healthcare. The evidentiary value is very low. Due to this, the evidence is very uncertain about the benefit of remote healthcare on quality of life compared to in-person healthcare.

No important outcome measures were determined.

Rationale of the recommendation

The benefits and disadvantages of digital healthcare and in-person healthcare balance each other out on average. Regarding the crucial outcome measures, no clinically relevant difference is shown between remote healthcare and in-person healthcare. From the patient perspective, there are both benefits and disadvantages to be named for both forms of treatment. Because the benefits and disadvantages of both forms of treatment appear to balance each other out, it is not possible to establish a positive recommendation for one of the forms of treatment over the other.

The guideline panel is making a conditional recommendation in order to make a choice together with the patient – based on patient characteristics and preferences – on whether or not to (partially) replace in-person healthcare with remote healthcare. Specific tips for this are provided in module B.4.

The guideline panel is of the opinion that the desired effects (positive effects on physical functioning and quality of life) appear to outweigh the adverse effects. The economic considerations, health equity, cost effectiveness and patient values and preferences appear to be in favour of remote healthcare compared to in-person healthcare. For the remaining

criteria applied in the evidence to recommendation process (acceptability, feasibility and implementation), the guideline panel is of the opinion that they are either not objectionable or in favour of remote healthcare. However, focus areas for the implementation of asynchronous forms of remote healthcare are mentioned.
In conclusion, the evidence is uncertain about the positive or negative effect of using remote healthcare as a replacement for in-person healthcare, but the guideline panel is of the opinion that the favourable effects prevail, resulting in a conditional recommendation for the intervention. The guideline panel indicates that patient-specific benefits and disadvantages (addressed in module B.4) do need to be taken into account here.

JUSTIFICATION

Literature

Search and selection

Research question

To answer the clinical question, a systematic review was carried out for the following research question (PICO):
What is the effectiveness of (partially) replacing in-person physical therapy/exercise therapy with remote healthcare compared to only in-person healthcare in the area of physical functioning and quality of life?

Relevant outcome measures

The guideline panel deemed the outcome measures *physical functioning and quality of life* to be crucial for the decision-making process.

- For *physical functioning and quality of life*, the guideline panel employed a cut-off value of 0.2 standardised mean difference (SMD) for assessing the effect as important (clinically relevant difference) (Sawilowsky, 2009).
- With regard to the adverse effects, the guideline panel focused specifically on adverse events, because the guideline panel considers safety to be important for the decision-making process.

No other important outcome measures were formulated.

Search

On 26 August 2022, researchers (Mr B. Cijs and Mr J. van der Heiden, University of Applied Sciences Utrecht), in consultation with an information specialist (Ms A. van der Velden, University of Applied Sciences Utrecht), conducted a systematic search in PubMed and Embase (see Appendix B.1-1 for the search rationale). In this project, it was decided to expound on various search queries within one search. A broad approach was employed for the systematic search and the screening by title and abstract in order to – in addition to randomised studies appropriate to the search query of this module – also find other relevant studies about remote digital physical therapy and exercise therapy in order to substantiate the considerations and the other clinical questions.
The complete systematic search produced 3,090 unique articles. When selecting by title and

abstract, all studies were included which possibly dealt with remote healthcare as physical therapy or exercise therapy intervention and which made a comparison with in-person physical therapy or exercise therapy. After screening the title and abstract based on the inclusion criteria (see table below), 2,296 articles were excluded.

Inclusion criteria for title and abstract screening

Type of studies	All types of studies
Type of patients	All types of patients
Type of intervention	Remote healthcare as physical therapy or exercise therapy intervention All healthcare activities between patients and healthcare providers that are provided remotely and are a replacement for in-office healthcare, including digital healthcare as well as video and/or telephone consults. The term 'remote' hence indicates that the healthcare provider and patient are not located in the same physical space.
Type of comparison	In-person physical therapy or exercise therapy
Type of outcome	All types of outcomes
Type of timeline	All types of timelines

Of 794 articles, the complete article was screened in order to find out which articles met the inclusion criteria of the search query of this module (see table below). This screening of the complete article yielded 24 relevant studies (*Cerdán de las Heras 2021; Dunphy 2021; Tarakci 2021; Saywell 2021; Correira 2022; van de Wiel 2021; Dadarkhah 2021; Santiago 2022; Zanaboni 2016; Moffet 2017; Chen 2017; Bini 2017; Cerdán de las Heras 2022; Odole 2014; Odole 2013; Russel 2011; Piron 2009; Tousignant 2011; Dong 2019; Bettger 2020; Koppenaal 2022; Nelson 2020; Wagner 2022; Cerdán de las Heras 2021*). Appendix B.1-2 shows the flowchart of the inclusion process. The articles that were excluded based on the complete text and the reason for the exclusion are listed in Appendix B.1-3. However, some of these excluded studies (*n*=144) were used as relevant literature for the considerations of these or other modules.

Inclusion criteria for complete articles

Type of studies	Randomized controlled trials
Type of patients	All types of patients, except patients with heart disease*
Type of intervention	Remote healthcare as physical therapy or exercise therapy intervention
Type of comparison	In-person physical therapy or exercise therapy
Type of outcome	Physical functioning and/or quality of life
Type of timeline	All types of timelines

* Studies that are solely aimed at patients with heart disease were excluded because at the time of this literature review, a literature review with a comparable search query was already conducted within the scope of revising the KNGF Guideline on Cardiac Rehabilitation.

Characteristics of the included studies

The characteristics of the included studies are provided in Appendix B.1-4. The 24 included studies included a total of 2,040 unique patients with various conditions, specifically pulmonary fibrosis (*n*=29), anterior cruciate ligament reconstruction (*n*=51), multiple sclerosis (*n*=41), arthroscopic rotator cuff revision (*n*=50), stroke (*n*=131), breast cancer (*n*=127), prostate cancer (*n*=70), (non-specific) low back pain (*n*=264), incontinence (*n*=35), chronic obstructive pulmonary disease (*n*=174), total knee (*n*=658) and hip prosthesis (*n*=70), sarcoidosis (*n*=30), knee osteoarthritis (*n*=50) and Parkinson's (*n*=260). The studies were conducted in Denmark, the UK, Turkey, Portugal, New Zealand, the Netherlands, Iran, Norway, Australia, Canada, China, the USA, Nigeria, Italy and Germany. In 13 studies the intervention consisted of partial remote healthcare (2 or more in-person sessions); in the remaining 11 studies the intervention took place entirely remotely. In 8 studies there was only synchronous contact between the therapist and the patient during the treatment, in 2 studies only asynchronous contact and in the remaining 13 studies there was both synchronous and asynchronous contact. The average age of the patients varied between 28.4 and 74.1 years. It is unknown what percentage was of patients with limited health literacy, limited digital literacy and/or low socio-economic status (SES) within the studies. The post-intervention measurement varied from one month to two years.

The studies included in the systematic review describe a variety of physical therapy or exercise therapy interventions for both the intervention group (remote healthcare) and the control group (regular in-person physical therapy or exercise therapy). See Appendix B.1-4 for details of these interventions.

Individual study quality (RoB)

The risk of bias (RoB) was assessed by JvdS and BD with the help of the Cochrane Risk-of-Bias tool (Higgins 2011). The opinion regarding the various items was discussed with JvdS and BD, after which consensus was achieved. An overview of the study quality assessment (RoB) per study is provided in Appendix B.1-5 (Risk-of-bias table).

Effectiveness and evidentiary value

See the 'Explication' for this module for the conclusions based on the literature. Below is a description of the effectiveness and the evidentiary value for the comparison(s). An overview of the results is depicted in the following table.

Certainty assessment							Number of patients		Effect		Evidentiary value	Importance
Number of studies	Study design	Risk of bias	Inconsistency	Indirect evidence	Inaccuracy	Other factors	Remote healthcare	Regular healthcare	Relative (95% CI)	Absolute (95% CI)		
Physical functioning												
18	Randomised trials	Severe[a]	Severe[b]	Very severe[c,d,e]	Severe[f]	Not found	726	740	-	SMD **0.18 SD higher** (0,05 lower to 0,31 higher)	●○○○ Very low	CRUCIAL

Quality of life												
18	Randomised trials	Severe[a]	Severe[b]	Very severe[c,d,e]	Not severe	Not found	811	872	-	SMD **0.09 SD higher** (0,01 lower to 0,19 higher)	●○○○ Very low	CRUCIAL

[a] Includes unblinded studies in combination with self-reported outcomes; [b] effect sizes differ in size and direction between the studies; [c] time differences in outcomes; [d] differences in outcome measures; [e] differences in population; [f] 95% CI exceeds the clinical relevance threshold
CI: confidence interval; SMD: standardised mean difference; SD: standard deviation

Remote digital physical therapy and exercise therapy compared to regular physical therapy and exercise therapy

The effect of remote digital physical therapy and exercise therapy (intervention) compared to regular physical therapy and exercise therapy (control) has been described in 24 studies (Cerdán de las Heras 2021; Dunphy 2021; Tarakci 2021; Saywell 2021; Correira 2022; van de Wiel 2021; Dadarkhah 2021; Santiago 2022; Zanaboni 2016; Moffet 2017; Chen 2017; Bini 2017; Cerdán de las Heras 2022; Odole 2014; Odole 2013; Russel 2011; Piron 2009; Tousignant 2011; Dong 2019; Bettger 2020; Koppenaal 2022; Nelson 2020; Wagner 2022; Cerdan de las Heras 2021). Two of the 24 studies could not be included in the meta-analysis due to a lack of results in the article (Dadarkhah, 2021; Tousignant, 2011). These studies were excluded. See Appendix B.1-6 for the forest plots of the outcomes for physical functioning and quality of life. The effectiveness and evidentiary value per outcome measure are described below.

Physical functioning in the first post-intervention measurement

Eighteen studies measured the effectiveness of remote digital physical therapy and exercise therapy compared to regular physical therapy and exercise therapy on physical functioning during the first post-intervention measurement (Cerdán de las Heras 2021; Dunphy 2021; Tarakci 2021; Saywell 2021; Correira 2022; Zanaboni 2016; Moffet 2017; Chen 2017; Bini 2017; Cerdán de las Heras 2022; Odole 2013; Russel 2011; Piron 2009; Dong 2019; Bettger 2020; Koppenaal 2022; Nelson 2020; Cerdán de las Heras 2021). The standardised mean difference (SMD) between the groups in the first post-intervention measurement was 0.18 points (95% CI 0.05 to 0.31; *n*=1466) in favour of remote digital physical therapy and exercise therapy. This effect does not exceed the previously defined threshold value for clinical relevance. The evidentiary value was decreased by four levels to 'very low' given the encountered risk-of-bias (1 level), inconsistency (1 level) and indirect evidence (2 levels).

Quality of life in the first post-intervention measurement

Eighteen studies measured the effectiveness of remote digital physical therapy and exercise therapy compared to regular in-person physical therapy and exercise therapy on quality of life during the first post-intervention measurement (Cerdán de las Heras 2021; Dunphy 2021; Tarakci 2021; Saywell 2021; van de Wiel 2021; Santiago 2022; Zanaboni 2016; Moffet 2017; Bini 2017; Cerdán de las Heras 2022; Odole 2014; Russel 2011; Dong 2019; Bettger 2020; Koppenaal 2022; Nelson 2020; Wagner 2022; Cerdán de las Heras 2021).

The SMD between the groups in the first post-intervention measurement was 0.09 points (95% CI 0.01 to 0.19; *n*=1682) in favour of remote digital physical therapy and exercise therapy. This effect does not exceed the previously defined threshold value for clinical relevance.

The evidentiary value was decreased by four levels to 'very low' given the encountered risk-of-bias (1 level), inconsistency (1 level) and indirect evidence (2 levels).

Adverse effects
There were no indications in the included RCTs of an increased risk of adverse effects when applying remote healthcare compared to in-person healthcare.

Subgroup analysis
Separate analyses of the outcome measures were conducted for two of the previously selected subgroups, specifically patients with hip or knee osteoarthritis and COPD patients. In addition, the outcomes of studies that offered either complete remote healthcare or partial remote healthcare were analysed.
Overall, no clinically relevant differences were found in these subgroup analyses. However, given the small number of included studies, these findings should not be overestimated (see Appendix B.1-6).

Criteria for formulating the recommendations

From evidence to recommendation
Internationally recognised criteria were used to assess the evidence on which the recommendations are based. These are the desired effects, adverse effects, quality of evidence, patient values and preferences, balance between desired effects and adverse effects, economic considerations and cost effectiveness, equity, acceptability and finally feasibility. These criteria, as well as the remaining considerations formulated by the guideline panel, determine the strength of the recommendation.

Desired effects
For the crucial outcome measure physical functioning, a non-clinically relevant difference was found in favour of digital healthcare versus in-person healthcare. A non-clinically relevant difference was found in favour of digital healthcare versus in-person healthcare for the crucial outcome measure quality of life as well.

The guideline panel assesses that the desired effects of remote healthcare as a physical therapy or exercise therapy intervention compared to in-person physical therapy or exercise therapy healthcare are not clinically relevant.

Adverse effects
There were no indications in the included RCTs of an increased risk of adverse effects when applying remote healthcare compared to in-person healthcare.

The Health and Youth Care Inspectorate (Inspectie voor Gezondheidszorg en Jeugd, IGJ) has no reports of incidents as a result of remote healthcare within the physical therapy and exercise therapy professional field. However, it is possible that not all adverse effects and incidents are reported, meaning that underreporting is possible.

The guideline panel believes that remote healthcare can be used for most patients within physical therapy and exercise therapy without this creating additional risks for adverse events compared to in-person healthcare. There are a number of patient groups with a possible increased risk during remote physical therapy and exercise therapy compared to in-person physical therapy and exercise therapy. This applies to patients whose safety cannot be guaranteed, such as patients with an increased risk of falling or who may experience symptoms of overload and/or (life-) threatening situations. Such characteristics do not necessarily mean that all forms of remote healthcare are impossible, but it must be determined for each individual patient whether there exists an increased risk and whether measures can be taken to mitigate this risk. It is important to note here that the risk of adverse events exists for both digital healthcare as well as in-person healthcare. However, one should be extra alert to this with remote healthcare. There are specific recommendations about remote healthcare for patients undergoing cardiac rehabilitation. See the KNGF Guideline on Cardiac Rehabilitation for this.

The guideline panel assesses that the adverse effects of remote healthcare as a physical therapy or exercise therapy intervention compared to in-person physical therapy or exercise therapy are not clinically relevant. However, the risk of adverse events is moderate in two subgroups: patients with an increased risk of falling and patients whose vital signs need to be monitored during the therapy.

Quality of evidence

The guideline panel assesses the evidentiary value of the desired effects on the crucial outcome measures to be very low.
The guideline panel assesses the evidentiary value of the adverse effects on the crucial outcome measures to be very low.

Patient values and preferences

The systematic review yielded 15 studies that examined patient satisfaction with remote healthcare compared to in-person healthcare. There is no difference in patient satisfaction in any of these studies (Santiago 2022; Cerdán de las Heras 2022; Mobbs 2022; Cerdán de las Heras 2021; van de Winckel 2021; Flynn 2021; Svingen 2021; van de Wiel 2021; Lambert 2017; Hwang 2017; Moffet 2017; Tousignant 2011; Piotrowicz 2010; Piron 2008; Nelson 2020). In these studies, it is unknown how many participants have limited health literacy, limited digital literacy and/or low SES and whether these characteristics impact patient satisfaction.

The guideline panel provides arguments both for and against remote healthcare based on experiences and input from the patient perspective. The most important arguments given for remote healthcare are easy accessibility and contact and no travel time. The most important arguments given for in-person healthcare are more personal attention/a relationship of trust and the added value of being physically seen in a space. The added value of in-person consults is explained in more detail in module B.2 and module B.3.
Whether the mentioned arguments play a role and how much they are taken into consideration depends greatly on the specific context and the preferences of the individual patient. Important reasons for the variation between patients are: the patient's digital literacy, health literacy, type of health problems, need for assistance, type of therapy and time/effort it takes to come to the practice.

The guideline panel assesses that patients attach moderate value to the intervention (remote healthcare) and that there is a lot of variation between patients.

Balance of desired effects and adverse effects

The desired effects and adverse effects are in balance. That's because the literature shows that there are no clear differences between remote healthcare and in-person healthcare with regard to the desired effects and adverse effects. However, given that there is a lot of variation in the possible adverse effects in and the preferences of patients, the desired effects may outweigh the adverse effects or vice versa at the individual patient level.

Economic considerations and cost effectiveness

A total of 7 articles were found that researched the (cost) effectiveness of remote healthcare. No articles were found that included time as an outcome in the analysis. At the guideline panel's request, the costs are broken down below into the components cost effectiveness from the societal perspective and cost (difference) for the clinical setting/practice/healthcare. No articles were found that examine cost effectiveness from the healthcare or patient perspective. No articles were found that examine cost (difference) at the societal or patient level either. Remote healthcare in specific clinical settings appears to be associated with lower societal costs and appears to be more cost effective, even though the encountered differences are not statistically significant (Brouwers 2021b; Kraal 2017b). Additional costs for remote healthcare in various specific clinical settings turned out to be relatively low (Farr 2021b; van de Wiel 2021b), lower than in-person healthcare (Bettger 2020b; de Lima 2022b; Tousignant 2015b) and sometimes relatively low, but higher than regular medical care due to the purchase of sensors, for example (Brouwers 2021b).

The guideline panel believes that the (possible) cost savings may benefit both society and patients. It is hence a solution to the challenge of keeping current healthcare affordable. For the therapist, providing remote healthcare can sometimes lead to investment and ongoing costs, just like those associated with providing in-person healthcare. That is why these investments are assessed as moderate. The financial benefits and disadvantages for synchronous and asynchronous forms of remote healthcare are summarised in the table below.

	Societal perspective	Practical/therapist perspective	Patient perspective
Synchronous forms of remote healthcare	• No direct cost savings because the number of sessions remains the same. • There are indirect cost savings, however, due to less travel, resulting in a more favourable impact on the environment.	• There are investment cost for material and running costs for software. The amount depends on the technology.	• Less travel, less time needed and less work absence leads to fewer costs. • If specific digital tools are needed, this may lead to increased costs for the patient.

Asynchronous forms of remote healthcare	• Results in direct cost savings due to fewer sessions.	• Personalising, coaching and interpreting values often costs non-declarable time. • There are investment cost for material and running costs for software. The amount depends on the technology. • Training material in the practice is used less and thus undergoes less wear and tear.	• Fewer sessions are an advantage for patients if the number of insured treatments is insufficient. • Less travel, less time needed and less work absence leads to fewer costs. • If specific digital tools are needed, this may lead to increased costs for the patient.

Equity

Given that the balance between the desired effects and adverse effects is equal but is greatly dependent on patient-related factors, it is important to consider for each patient whether or not to use remote healthcare. For patients who have difficulty travelling or for whom costs are a reason to postpone healthcare, remote healthcare removes a barrier. This can hence create more equity. However, it is important that there not be a barrier raised for patients who prefer to receive in-person healthcare, for example due to an increased safety risk, the lack of the necessary digital tools, limited digital literacy or limited health literacy. If receiving in-person healthcare is hindered, this can increase inequity again. This can be prevented by, for example, in-person consults in the patient's home.

The guideline panel expects that offering digital healthcare will result in a possible increase of health equity if in-person healthcare also remains available without barriers. The use of remote healthcare is a means to meet the growing demand for exercise care.

Acceptability

The acceptability of administering remote healthcare by therapists, patients and other stakeholders depends on a number of conditions. Therapists' additional costs must be tolerable (see table), or a solution must be sought with parties to the system (the government and health insurance companies). There must also remain room to assess for each individual patient whether remote healthcare has societal or patient-related benefits.

The guideline panel expects that the acceptability of remote healthcare varies.

Feasibility

According to the guideline panel, the feasibility of successful implementation is closely linked to acceptability among therapists in particular and possibly among patients. Another important condition is that therapists feel competent to provide remote healthcare.

Given the importance attached to remote healthcare by initiatives such as Appropriate Care (Passende Zorg) and the Integral Care Agreement (Integraal Zorgakkoord), the guideline panel trusts that in the coming years the above-mentioned conditions pertaining to acceptability will be worked on.

The guideline panel assesses implementation of remote healthcare as probably realistic.

Additional considerations

Based on the interviews conducted for this project, application of remote healthcare can also have a positive influence on self-direction, self-management and therapy compliance. In addition, the guideline panel is of the opinion that implementing more digital healthcare could be a promoting factor for facilitating digital data exchange between healthcare providers, under the condition that the patient consents to this.

Focus areas for implementation

It is important to examine, together with the parties to the system, ways to implement digital remote healthcare with limited investments for the therapist. Give that the role of digitisation in society will increase, some investment is acceptable.

It is also important for both therapists and patients to be open to remote healthcare; at the moment, the number of therapists extensively and structurally implementing digital healthcare is relatively small. Limited digital literacy on the part of therapists is also named as a potential inhibiting factor for successful implementation. It is important for therapists who have insufficient digital literacy to be trained in administering remote healthcare, both in their basic education as well as in continuing education.

Finally, it is important for digital healthcare to be widely available and accessible to patients. For example, the language level of digital tools as well as the use of these tools by people who have limited skills in using them must be taken into account.

Knowledge gaps

The included studies in this module do not provide information about the percentage of participants with limited health literacy, limited digital literacy and low SES. These factors may influence the results. It is therefore unknown whether the effectiveness of remote healthcare is the same in the presence of (one of) these factors.

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B.2 Form of remote healthcare

RECOMMENDATION(S)

Together with the patient, assess which forms of remote healthcare might be suitable.
See module B.4 for specific tips.

Together with the patient, make a choice from among the suitable forms of remote healthcare. When doing so, consider the below characteristics of various types of remote healthcare and characteristics of in-person consults:

Characteristics of video consults or telephone consults

- Choose telephone or video consults if you want to have personal contact with the patient but it is not necessary to be in the same room.
- Video consults are preferred over telephone consults due to the visual aspect and are particularly suited for observing, informing and advising, instruction, non-complex exercise therapy and feedback thereon, progress evaluation, monitoring therapy compliance and treatment evaluation moments. Video consults can also be used for a workplace evaluation or to obtain an idea of the home situation.
- Only consider telephone consults if the visual aspect is not desired or if the patient or therapist has insufficient digital literacy for a video consult. Telephone consults are particularly suitable for monitoring therapy compliance or a brief evaluation of the treatment progress or severity of the complaints.

Characteristics of apps/wearables
- Choose apps/wearables if the patient is able to work on therapy goals without direct supervision.
- Apps are particularly suitable for informing and advising, instruction, non-complex exercise therapy, monitoring therapy compliance and monitoring the severity of the complaints.
- Wearables, either linked or not linked to apps, are particularly suitable for monitoring, feedback, coaching, setting goals and evaluating.

Characteristics of in-person consults
- Choose in-person consults if there is added value to seeing each other in person and/or the form of treatment cannot be offered remotely.
- In-person consults are particularly suitable for performing physical examinations when making the physical therapy/exercise therapy diagnosis, when remote observation is insufficient for forming a complete picture of the patient's exercise behaviour, conversations where it is important to fully observe body language and posture, complex exercise therapy, passive mobilisation and other manual operations.

Together with the patient, choose the part of the healthcare that will be offered remotely and the part that will be offered in person.

- Start the remote physical therapy treatment only after the patient has been seen in person.
- Always determine the ratio between in-person and remote treatment in consultation with the patient. See module B.4.
- Be flexible; the choice for a specific ratio can always be changed.
- Choose from among various options to set up remote healthcare:
  - First consult remotely, then determine how to continue.
    Only consider this form of remote healthcare for a screening, supplemented by taking a medical history and formation of an initial hypothesis, if necessary. Then determine whether a physical examination needs to take place. Advantages are that initial recommendations can be quickly provided and it can be ascertained whether physical therapy/exercise therapy might be indicated, or if the patient should rather be referred to a colleague or other (healthcare) professional.
  - First consult in person, then remotely.
    Consider this form of remote healthcare if the initial in-person consult shows that remote healthcare is best aligned with the patient's characteristics and preferences and there are no reasons to choose in-person consults.
  - Alternating in-person and remote consults.
    Consider this form of remote healthcare because the positive aspects of remote healthcare and the positive aspects of in-person consults complement and reinforce each other. If asynchronous forms of remote healthcare are used, provide feedback to the patient. This includes things like monitoring progress, evaluating therapy compliance, providing positive feedback or reviewing what the patient learned in the completed exercises and/or modules.
  - Almost the entire course of treatment in person; only follow-up remotely.
    Consider this form of remote healthcare in order to be able – during the last phase of the course of treatment – to continue with the provided tools, such as exercises and recommendations, independently and evaluate this remotely.

Tips for various forms of remote healthcare

Tips for consults over the telephone or video
- Help the patient find good positioning of the camera which is aligned with the objective of the video consult.
- Guarantee privacy aspects by making use of an enclosed space and asking the patient to be alone in this space.

Tips for implementing healthcare technology as a supplement to the treatment
- Consider using (encrypted) chat or email as a supplement, in particular for coaching, coordination or if a consult needs to be scheduled, or for answering brief content-related questions.
- Consider using (encrypted) chat or email for sending educational videos, video messages, videos of filmed elements from in-person consults or recordings of video consults if the patient wishes this, to facilitate information, advice and instruction, or if you estimate that there is added value in involving the patient's direct environment in the treatment.

EXPLICATION

Reason

Remote healthcare encompasses all healthcare activities between patients and healthcare providers when they are not located in the same physical space. This guideline is aimed specifically at forms of remote healthcare that replace in-office healthcare either entirely or in part, and not at forms that are a supplement to regular treatment. The barrier analysis (see the 'Authors | Development' module) showed that it is unclear when which form of remote healthcare can be used. This pertains to the choice for the type of healthcare technology that can be used, as well as the place this healthcare technology occupies in the treatment as a whole. This barrier resulted in the following clinical question:

Clinical question

How can you, as a physical therapist or exercise therapist, determine which form of remote healthcare to use for a patient?

Conclusions based on the literature and interviews

The systematic review of qualitative and 'mixed-methods' studies and semi-structured interviews do not provide direct input for the evidentiary value or effects for answering the clinical question. The literature review and interviews with patients and therapists do, however, provide insight into various aspects that are important for determining how the remote healthcare is provided ('determination of the form'). These aspects are divided into three main topics: considerations for remote healthcare, configuration of remote healthcare and type of remote healthcare.

Rationale of the recommendation

There are various important aspects when determining the most suitable form and configuration of the treatment through remote healthcare. The values and preferences of both the patient and therapist can vary greatly. That is why the guideline panel believes it is important to make choices about the form and configuration of the treatment through remote healthcare together with the patient by means of a strong recommendation. These choices should be made based on

the characteristics and preferences of both the patient and the therapist, aspects of in-person consults and various types of remote healthcare and various possibilities of configuring the treatment through remote healthcare.

The considerations (such as feasibility and acceptability) that are mentioned in the evidence to recommendation process are in line with the considerations in module B.1. Additional considerations were the direct and indirect costs that impact some forms of remote healthcare. The guideline panel stresses the necessity of saving healthcare costs at the societal level, but also sees that a cost increase resulting from licences, material and non-declarable time also constitutes an impediment to implementing asynchronous forms of remote healthcare in particular. Therefore, the guideline panel indicates that structural financial solutions should be sought within the healthcare system to ensure that the administration of digital healthcare is acceptable to both therapists and patients. The guideline panel also indicates that digital literacy on the part of the therapist can also influence the form to be chosen. Training and information about the application of remote healthcare is needed in order to teach everyone how to work with the various forms.

JUSTIFICATION

Literature and interviews

Search and selection

In order to answer the clinical question in this module, a 'mixed-methods' study was conducted. First, a qualitative systematic review was carried out. In semi-structured interviews with patients, physical therapists and exercise therapists, the question was then posed as to whether the results of the review are recognised within the Dutch context. The results were supplemented based on the interviews, where necessary.

Search

The search for the clinical question's literature is the same as the search for the clinical questions in module B.1. Of 794 articles, the complete article was screened in order to see which articles met the inclusion criteria of the search queries of this module (see table below). This screening for the complete article yielded 40 relevant articles. See Appendix B.2-1 for the flowchart of the inclusion process.

Inclusion criteria for complete articles

Type of studies	Qualitative studies, with the exception of 'survey' studies. 'Mixed-methods' studies, where only the qualitative component of the results was analysed.
Type of patients	All types of patients
Type of intervention	Remote healthcare as physical therapy or exercise therapy intervention. See module B.1 for the definition.
Type of comparison	Not applicable

Type of outcome	Results regarding 'determination of form'
Type of timeline	All types of timelines

Characteristics of the included studies

The characteristics of the included studies are provided in Appendix B.2-2. The 40 included studies included patients with various conditions, specifically neurological conditions, knee osteoarthritis, multiple sclerosis, chronic pain, bronchiectasis, non-urgent rehabilitation services, musculoskeletal pain or problems, cardiac rehabilitation, bariatric surgery, Covid-19, incontinence, chronic or non-specific low back pain, Achilles tendinopathy, traumatic brain and/or spinal cord injury, cerebral paresis, COPD, orthopaedic treatment, vestibular dysfunction, shoulder instability, shoulder joint replacement, total knee prosthesis, stroke, breast cancer, temporomandibular disorder, and Rett syndrome. (Abramsky 2018; Albahrouh & Buabbas 2021; Alrushud 2022; Barton 2022; Bernal-Utrera 2021; Brennan 2020; Buabbas 2022; Cartledge 2022; Casillas 2022; Chen 2020; Damhus 2018; Eiken 2022; Eriksson 2011; Firet 2021; Geraldo 2022; Gilbert 2019; Hasani 2021; Hoaas 2016; Jassil 2022; Kairy 2013; Knox 2022; Lawford 2018, 2019; Lee 2022; Lotan 2021; Martínez De La Cal 2021; Odole 2020; Pahwa 2021; Palazzo 2016; Pollock 2022; Renard 2022; Skolasky 2022; Smaerup 2017; Szturm 2021; van der Meer 2022; van Tilburg 2022; Vorrink 2017; Warland 2019; Wittmeier 2022; Ziani 2022)
The studies were conducted in Canada, the USA, Australia, New Zealand, Saudi Arabia, Kuwait, Nigeria, India, Norway, Portugal, the UK, Spain, the Netherlands, France, Sweden and Ireland. In 14 studies the intervention consisted of partial remote healthcare (two or more in-person sessions); in the remaining 26 studies the intervention took place entirely remotely. In 9 studies there was only synchronous contact between the therapist and the patient during the treatment, in 4 studies only asynchronous contact and in the remaining 27 studies there was both synchronous and asynchronous contact. The method consisted of interviews (33 studies) or focus group studies (4 studies) or a combination of interviews and focus group studies (3 studies). The perspective was that of the patient (20 studies), the physical therapist or occupational therapist (8 studies), patients and physical therapists (5 studies) or other (7 studies). A total of 391 patients, 140 therapists and 96 others (including nurses, managers of insurance services, instructors) took part in the interviews or focus groups in the studies.
The average age of the patients varied between 14 and 76 years, and the age of the therapists varied between 24 and 83 years.

Interviews

A researcher with experience in qualitative research conducted semi-structured interviews with 8 physical therapists/exercise therapists and 7 patients. The therapists were recruited by the KNGF and the VvOCM through so-called 'regional advisors' who maintain contact with members; newsletters and social media were also used for the recruitment. Patients were recruited by the Dutch Patient Federation (Patiëntenfederatie Nederland). The recruitment was targeted in order to obtain the maximum possible variation in patient characteristics. The most important criteria for this were the patient's education level and the experience with remote healthcare (positive versus negative).

Characteristics of interviewed therapists

During the interviews conducted for this guideline, 6 physical therapists and 2 exercise therapists were surveyed: 7 women and 1 man. The age varied between 31 and 55 years. Four of the interviewees had completed their Master's degree (2 Master's in geriatric physical therapy, 2 Master's

in manual therapy). The experience of the interviewees with remote physical therapy and/or exercise therapy was positive for 4, negative for 1 and both positive and negative for 3.

Characteristics of interviewed patients

A total of 7 patients were interviewed for this guideline: 4 women and 3 men. The age varied between 32 and 72 years. The highest completed level of education was elementary school (*n*=1), secondary general education (*n*=1), secondary vocational education (*n*=2), higher vocational education (*n*=1), academic education (*n*=1) and post-graduate education (*n*=1). Their experience with remote physical therapy and/or exercise therapy was positive for 2, both positive and negative for 3 and negative for 2.

Data extraction

Review

The results sections of the included articles were coded in three steps in Atlas.ti 23. Open coding was done first. Then one researcher combined the codes into categories by means of axial coding. Selective coding resulted in overarching topics and a description of the results per clinical question. See Appendix B.2-3 for the definitive code tree of the qualitative literature review. The codes per clinical question are listed here. It is also shown which articles yielded results for the clinical question in this module. A total of 23 articles provided input for this clinical question. A comprehensive overview of this can be found in the Excel file '*UV3, 4, 5 - Articles per clinical question*'. Also shown is which codes stem from which article, subdivided into the remaining clinical questions. A comprehensive overview of this can be found in the Excel file '*UV3, 4, 5 - Codes per article*'.
Both Excel files can be requested from the core group. Based on the overarching topics and axial codes, an interview guideline for physical therapists/exercise therapists and patients was generated (see Appendix B.2-4).

Qualitative analysis

The interviews were recorded and then transcribed verbatim. The transcripts were coded in three steps in Atlas.ti 23. Coding was initiated using the code tree from the qualitative literature review (Appendix B.2-3). Codes were added to this code tree which had not yet emerged from the qualitative literature review. See Appendix B.2-5 for the additional codes from the interviews. This resulted in an expansion of the code tree that stemmed from the qualitative literature review. Appendix B.2-6 contains the definitive code tree, which combines the coding of the qualitative literature review and the interviews. Subsequently, two researchers jointly combined the codes into categories by means of axial coding. Selective coding resulted in overarching topics and a description of the results per clinical question.

Results of the qualitative analysis

The results of the systematic review of qualitative and 'mixed-methods' studies and the outcomes of the semi-structured interviews are summarised in this section. The results provide insight into the aspects that patients and therapists deem important for shaping the remote healthcare. These aspects are divided into three main topics: considerations for remote healthcare, configuration of remote healthcare and type of remote healthcare. These topics are further subdivided into subtopics.

Considerations for remote healthcare

Before remote healthcare is considered in the treatment, it is important to take into account the different circumstances and personal factors of the patient and the physical therapist/exercise therapist.

Circumstances

There are several circumstances that hinder or facilitate the use of remote healthcare or that are a precondition for its use. First, the societal context is important: according to therapists, there are increasingly more people with chronic conditions that could benefit from remote healthcare. The expectation is that society will be geared more and more towards digitisation, due to which remote healthcare could be suitable for more and more patients as well. Therapists believe that they must dare to engage in the conversation with patients and not be afraid to innovate or try out remote healthcare. One problem here is that it is unclear to therapists exactly what forms of remote healthcare are available; therapists do not have an overview of the e-health offer. Guaranteeing privacy is a precondition that plays a role for therapists and patients. Patients want to have insight into and influence over who can access their data when remote healthcare is used. Therapists indicate, for example, that compulsory authentication is a challenge when the treatment takes place fully digitally.
Furthermore, there may be material limitations to the use of remote healthcare. The technology must be available and the space must be suitable both on the patient side (e.g. presence of exercise materials) as well as the therapist side (e.g. professional background during video calls).

Personal factors of the physical therapist or exercise therapist

Personal factors of the physical therapist or exercise therapist influence the choice for remote healthcare. First there is the therapist's personal preference. In addition, work experience plays a role. For example, therapists who recently completed their education have not yet developed habits and work routines, possibly making it easier for them to learn that remote healthcare is a treatment option. The therapist's digital literacy is also an influencing factor. Some advantages that impact the choice for remote healthcare according to therapists are: larger reach of specialised healthcare, ease, time savings, location and time independence and objective data about exercise behaviour. Therapists also deemed increased patient empowerment and self-reliance as an important advantage. Disadvantages that the therapists listed include: costs of remote healthcare, time investment and less work satisfaction.

Personal factors of the patient

Important factors for patients are the patient's type of complaint and need for assistance. Patients too have a personal preference regarding remote healthcare. Patients also indicate that in-person treatment is usual and that this is why remote healthcare isn't always thought about. The patient's motivation is also an important factor, for example how much time patients want to dedicate to the treatment and how motivated they are to independently work on their recovery. Safety also plays a role: safety should be taken into account for vulnerable patients in particular. Exercises can be adapted or (informal) care can be involved, for example. In most cases, age did not appear to directly influence the choice for remote healthcare. Other factors that influence the consideration of remote healthcare are: digital literacy, language comprehension/ accent, cultural barriers and cognitive limitations/intelligence.

Some advantages that influence the choice for remote healthcare according to patients are: better access to (specialised) healthcare (even with little reimbursement), no travel time or travel costs, continued effect of the treatment after completion, improved integration into daily life/ personal situation, continuity of the treatment and better insight into one's own treatment process. Disadvantages mentioned are: possibly less physical manipulation/mobilisation, lack of peer support and social contact. Patients saw more empowerment in the recovery as both an advantage and a disadvantage.

Configuration of the course of treatment with remote healthcare

Whether remote healthcare can be provided or physical presence is required depends on the type of intervention needed. Apps and wearables for monitoring can provide patients with insight into their exercise behaviour and personalise recommendations. Informing and advising, (pain) education, non-complex exercise therapy, workplace evaluations and treatment evaluation moments can easily take place by means of a video or telephone consult. Practicing transfers or treatments with a physical component are less suitable to taking place remotely.
The complexity of the symptomology and the treatment also influences the configuration of remote healthcare. Treatment of less complex complaints can more often take place remotely. However, conditions can worsen spontaneously. That is why therapists prefer to be physically present to be able to immediately help the patient during therapy sessions. However, therapists also believe that their physical presence is not needed for every therapy or training session. The patient could also contact the therapist if the complaints worsen, after which a consult could be scheduled specifically for this. This can increase the session's added value.
When a new exercise is added, physical therapists prefer teaching the patient the exercise when the patient is physically present. Therapists also indicate that if patients need to build up exercise therapy, it is easier to challenge patients in the practice than in the home environment. Thresholds can also be better monitored in the practice. If specific or expensive exercise materials are needed for a treatment or session, the training can also not take place remotely.

If remote healthcare is considered, it is important to determine the configuration of the healthcare. This makes it possible to personalise the treatment, resulting in the patient feeling more involved. Additionally, the ratio between in-person treatment and remote treatment can be adapted to the situation.

Personalisation

If remote healthcare is used for a treatment, it is very important to listen to the patient and personalise the treatment accordingly. When doing so, it is important to opt for a flexible approach: you must examine for each individual patient how the treatment should be configured so that it is best aligned with the patient's individual (healthcare) needs. This cannot be established in a strict protocol. Patients also want to receive a personal exercise schedule and prefer not to pursue a general programme. A personal exercise programme makes the patient feel more connected and catered to. The therapist will also have to adjust the treatment if the remote healthcare isn't working or is working well. The interviewed patients also indicate that current instructional exercise videos often feature a healthy and fit person; they would like to know whether – and if yes, how – the exercise is also suitable for them, such as by means of a comment in the video.

In-person to remote ratio

When remote healthcare is chosen, this can be either entirely or partially remote. In the latter case, a division is made into a part of the sessions in person at the practice and a part of the training in the home environment. Various ratios of in-person and remote healthcare are possible.

- First consult remotely, then determine how to continue
  With this option the suggestion is to do the screening/intake remotely and then form a hypothesis based on this. The hypothesis can then be checked in an in-person consult, if needed. The advantage of this option is that initial recommendations can be quickly provided to the patient and sometimes no treatment is needed, or the patient can be referred to other specific healthcare providers.
- First consult in person, then remotely
  It is greatly preferred to not start the physical therapy treatment (in-person and/or remote) until the patient has been seen in person. The patient's physical limitations can be ascertained during the initial consult. This will facilitate the remote treatment. With this form patients indicate that it is important to be flexible in order to nevertheless agree on one or more in-person treatments should the patient or therapist find added value in this.
- Remote and in person in parallel
  The combination of remote healthcare and in-person healthcare is deemed to be a good option because the positive aspects of both forms reinforce and complement each other. An in-person consult is often scheduled for evaluations or if the therapist sees a specific reason for this. The patient can then be better reassured and the subsequent course can be properly coordinated. Patients and therapists also indicated that fewer treatments may be necessary in this combination, because telephone, video or in-person consults can take place when there are still focus areas, but the patient can get to work independently.
- First entirely in-person treatment, then remote follow-up
  Sometimes it is necessary to provide the treatment entirely in person. The follow-up care can then be offered in the form of remote healthcare, if needed. The patient can then continue working with the provided tools, such as exercises and recommendations, independently.

Type of remote healthcare

The type of remote healthcare that is best for therapist to use varies per treatment or consult. Listed below are the aspects of in-person consults, video and telephone consults, videos/chat (asynchronous: with the goal of communicating remotely with the therapist) and apps/wearables (for remote coaching and monitoring) that are relevant for making the right choice between the various treatment forms.

In-person consults

In-person consults are usually necessary for diagnostics. In-person diagnostic tests, muscle strength tests, exertion tests, balance tests or palpation are sometimes needed in order to differentiate when making physical therapy or exercise therapy diagnoses. Sometimes therapists do perform the (in-person) diagnostics remotely; they then come up with adapted ways of in-person tests, for example, so that they can make a diagnosis nevertheless. However, they do doubt the reliability of such methods. What's more, instructing the patient for specific diagnostics can be difficult.

According to patients, the added value of an in-person consult for diagnostics is that they can voice their concerns and identify structures. Patients can indicate what they are feeling and the therapist can clarify this feeling. If no physical examination has been performed, patients find the diagnostics to be less thorough and they therefore sometimes find the treatment to be less effective than it could have been. If a diagnosis has already been made, or no hands-on treatment is needed, patients find an in-person consult to be less essential.

Not every therapist is convinced that in-person diagnostics is always necessary, because it is often sufficient to have patients perform general exercises or to supervise them in their ADL.

The advantage of in-person consults is that it is easier to make small observations such as 'the patient reaches for his knee after walking a few metres'. Therapists also indicate that observation of body language/posture – such as 'how does the patient move' or 'can the patient relax' – is easier during an in-person consult than during a video consult or recorded video.

Other mentioned advantages of in-person consults are practicing transfers in the patient's personal situation (during home visits) and being able to administer hands-on treatment techniques, such as passive mobilisation or taping. Exercise therapists indicated using relatively fewer hands-on treatment techniques than physical therapists, due to which treatment techniques might not be as much of a hindrance for remote healthcare for them.

The interaction and communication during in-person consults differs from that during remote healthcare. Therapists indicate that a remote consult can be more 'business-like', leading the consult to be more 'to-the-point' and hence shorter. Other therapists indicate that patients find it more difficult to start talking about certain subjects during remote healthcare and ask fewer questions than during an in-person consult.

Telephone/video consults (synchronous interaction)

The experience of patients and therapists is that informing and advising, (pain) education, non-complex exercise therapy, workplace evaluations and treatment evaluation moments can often easily take place by means of a video or telephone consult. In some cases, a telephone consult is sufficient, for example when monitoring therapy compliance or a brief evaluation of the treatment progress or the severity of the complaints. Therapists indicate that telephone consult are not always sufficient for thorough observation or diagnostics because there is no visual aspect. This visual aspect, which is present during video consults, is needed for good observation and thereby a better understanding of the symptom. The visual aspect is also necessary for explanation and direct feedback on the performance of exercises, for example. Therapists indicate that during video consults it is necessary to find a good camera angle in order to assess the total picture, thereby optimally benefitting from the visual aspect.

The visual aspect of video consults also generates more of a 'human touch', trust in the communication (because facial expressions provide a lot of information about comprehension, for example) and trust in the correct performance of exercises. It also provides insight into the patient's context, such as the home or work environment.

A disadvantage of the visual aspect is that some patients find it annoying to see themselves on screen. Other disadvantages of video consults compared to telephone consults are that patients do not have sufficient digital literacy for a video consult and that the technology is not always user-friendly. A disadvantage of telephone consults is that therapists don't always declare these because they don't feel like a real consult. This is often the case when a patient calls the practice instead of a consult being scheduled, for example.

Videos/chat (asynchronous interaction)
Not a lot of respondents had experience with this type of remote healthcare. What was mentioned, however, was that sending videos (which were recorded during the treatment, for example) can lead to more engagement on the part of the patient or the patient's direct environment, such as the parents of a minor patient. When video consults are recorded, patients can view these again at their leisure, which they like. Therapists see added value in a chat function in an app programme, for example. The chat is used, among other things, if a high pain score is determined, in order to decide whether a consult is needed, or for coaching. Patients also used email to ask questions between treatments.

Apps/wearables (for remote coaching and monitoring)
According to therapists, offering a video consult in combination with the startup of an app programme with multiple functionalities, such as exercises, monitoring and coaching, offers more than a telephone consult alone, for example. This is a reason to choose the first-mentioned option for people with limited reimbursement for exercise care in particular, because 'both cost one session'.

Patients indicate that exercise reminders by app programmes lead to better therapy compliance. An app programme also makes patients feel that they are receiving continuous support from the therapist, which is motivating and encourages therapy compliance. However, patients do indicate that it is important to receive feedback from the therapist, e.g. for the therapist to monitor the severity of the complaints, monitor that a patient always skips a certain exercise or indicate that a certain exercise can be performed with an increasing amount of reps.

On the other hand, patients indicated that with an app programme the goal of every exercise is not always clear and that there is no direct feedback on how the exercise was performed. This can lead to less motivation and therapy compliance. Remote treatment can also make patients feel that they are facing their problem alone, mostly need to contemplate their problem themselves and figure out all the solutions themselves. That is why it is important to combine this with chat, video or telephone consults. In this case, apps or wearables can be used with the goal of promoting empowerment, self-management and therapy compliance.

Criteria for formulating the recommendations

From evidence to recommendation

Internationally recognised criteria were used to assess the evidence on which the recommendations are based. These are the desired effects, adverse effects, quality of evidence, patient values and preferences, balance between desired effects and adverse effects, economic considerations and cost effectiveness, equity, acceptability and finally feasibility. These criteria, as well as the remaining considerations formulated by the guideline panel, determine the strength of the recommendation.

Desired effects

The systematic review of qualitative and 'mixed-methods' studies and semi-structured interviews do not provide direct input for the evidentiary value or effects for answering the clinical question. Because of this the guideline panel did not formulate any desired effects of the various forms of remote healthcare.

Adverse effects

The systematic review of qualitative and 'mixed-methods' studies and semi-structured interviews do not provide direct input for the evidentiary value or effects for answering the clinical question. Because of this the guideline panel did not formulate any adverse effects of the various forms of remote healthcare.

Quality of evidence

The systematic review of qualitative and 'mixed-methods' studies and semi-structured interviews do not provide direct input for the evidentiary value or effects for answering the clinical question. Because of this, the guideline panel did not formulate any quality of evidence.

Patient values and preferences

When configuring the treatment with remote healthcare, the patient's values and preferences are very important.

Configuration of a course of treatment with remote healthcare

If remote healthcare is considered, it is important to determine to which extent remote healthcare should take place in person and to which extent the treatment should take place remotely. In addition, it is important to listen to the patient and personalise the treatment accordingly. A flexible approach is needed; you must examine for each individual patient how the treatment should be configured so that it is best aligned with the patient's individual (healthcare) needs. This cannot be established in a strict protocol. Patients also want to receive a personal exercise schedule and prefer not to pursue a general programme. A personal exercise programme makes the patient feel more connected and catered to. The therapist will also have to adjust the treatment if the remote healthcare isn't working or is working well. If an instructional exercise video features a healthy and fit person, which is currently often the case, patients would like there to be an associated comment stating whether – and if yes, how – the exercise is also suitable for them. Additionally, online material should be customised to the practice whenever possible, such as with the addition of a logo.

The configuration of remote healthcare depends on the intervention. Apps and wearables for monitoring can help provide patients with insight into their exercise behaviour and personalise recommendations. Informing and advising, (pain) education, non-complex exercise therapy, workplace evaluations and treatment evaluation moments can easily take place by means of a video or telephone consult. Practicing transfers or treatments with a physical component are less suitable to taking place remotely from the patient perspective.
The complexity of the symptomology and the treatment also influences the configuration of remote healthcare. Treatment of less complex complaints can more often take place remotely. However, conditions can worsen spontaneously. That is why therapists prefer to be physically present at these moments to be able to immediately support the patient during therapy sessions.

This is not necessary for all training sessions. There is also the option of the patient contacting the therapist if the complaints worsen, after which a consult can be scheduled specifically for this, thereby increasing the added value of the session.
When a new exercise is added, the preference is also to teach the patient this exercise in person. Therapists also indicate that if patients need to build up exercise therapy, it is easier to challenge patients in the practice than in the home environment. Thresholds can also be better monitored in the practice. If specific or expensive exercise materials are needed for a treatment, the training can also not take place entirely remotely. In this case, the training must be divided: partially at the practice and partially at home.

The extent to which treatment takes place in person or remotely can vary. The guideline panel stresses that there is no right or wrong ratio for configuring remote healthcare. Various options can be considered:

- First consult remotely, then determine how to continue
  With this option the remote consult is used for a remote screening/intake, based on which a hypothesis is formed. The hypothesis can then be checked in an in-person consult. The advantage of this option is that initial recommendations can be quickly provided to the patient and sometimes no treatment is needed, or the patient can be referred to other specific healthcare providers. The guideline panel points out that it is greatly preferred to not start the physical therapy treatment (in-person and/or remote) until the patient has been seen in person.
- First consult in person, then remotely
  In most cases, an initial in-person consult needs to take place in any case in order to understand and differentiate the patient's physical limitations. This will facilitate the remote treatment. Still, patients indicate that it is important to have flexibility in order to agree on one or more in-person treatments should the patient or therapist find added value in this.
- Remote and in person in parallel
  This form of remote healthcare is a good option because the positive aspects of remote healthcare and the positive aspects of in-person consults complement and reinforce each other. An in-person consult is often scheduled for evaluations or if the therapist sees a specific reason for this. The patient can then be better reassured and the subsequent course can be properly coordinated. Patients and therapists find that in some cases, fewer treatments may be necessary because telephone, video or in-person consults can take place when there are still focus areas, but the patient can get to work independently.
- First entirely in-person treatment, then remote follow-up
  Sometimes it is necessary to provide the treatment entirely in person. The follow-up care can then be offered in the form of remote healthcare, if needed. The patient can then continue working with the provided tools, such as exercises and recommendations, independently.

Choosing the type of remote healthcare

In addition to determining the ratio of in-person to remote treatment, it is important to choose which type of remote healthcare is best for the therapist to use. The guideline panel stresses that the treatment goal should be used as the starting point for choosing the type of remote healthcare. The guideline panel believes that the form of remote healthcare should in any case be user friendly, that patient safety must be guaranteed and that the patient must have trust.

The user-friendliness of the form of remote healthcare can be estimated through the wish list for accessible and comprehensible eHealth, for example. In addition, the guideline panel agrees that the patient must be empowered to choose the form of remote healthcare. The guideline panel also believes it is important for patients to feel heard. Making shared decisions is of great importance in this regard.

The KNGF Physical Therapist Professional Profile 2021 (Royal Dutch Society for Physical Therapy 2021) describes the following phases of physical therapy activities:
'Physical therapy activities consist of intake, examination and treatment. The intake includes screening and taking a medical history. Physical therapy examination includes physical examination and diagnostic procedures, with the physical therapist using suitable clinimetrics (measurement instruments), if needed. All of this results in a physical therapy diagnosis. Physical therapy treatment consists of therapeutic procedures and evaluation.'
A number of court rulings have stated that making a diagnosis remotely is careless. See figure 1.

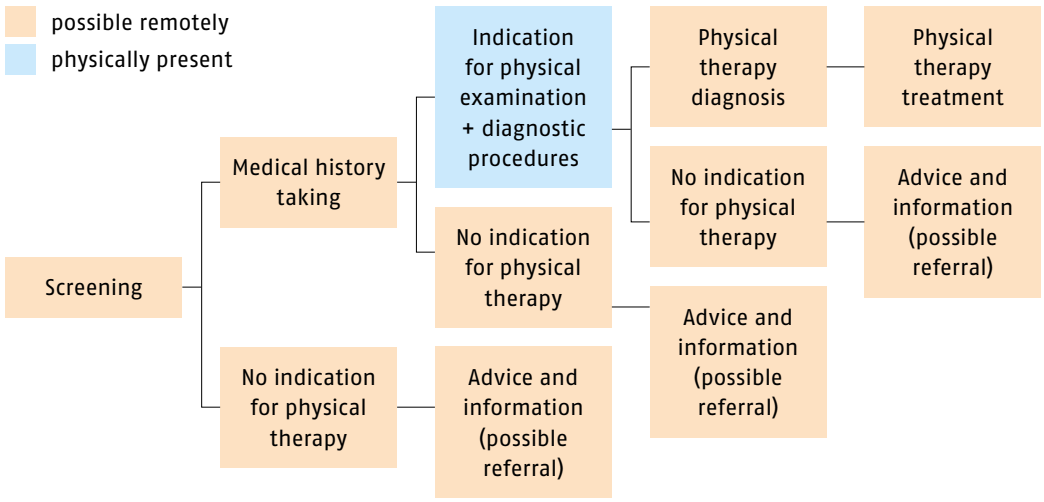

Figure 1. Phases of physical therapy activities. In-person and remote treatment.

The following is concluded based on this information:

1. The screening and medical history taking can be performed remotely.
2. Based on the screening and medical history, the patient can be remotely referred or advised and/or informed about a wait-and-see policy, for example.
3. It is not possible to start the physical therapy treatment (in-person and/or remote) until the patient has been seen in person.

Aspects of in-person consults

The advantage of in-person consults is that it is easier to make small observations such as 'the patient reaches for his knee after walking a few metres'. Therapists also indicate that observation of body language/posture – such as 'how does the patient move' or 'can the patient relax' – is easier during an in-person consult than during a video consult or recorded video. Other mentioned advantages of in-person consults are practicing transfers in the patient's personal situation (during home visits)

and being able to administer hands-on treatment techniques, such as passive mobilisation or taping. Exercise therapists use relatively fewer hands-on treatment techniques than physical therapists, due to which treatment techniques might not be as much of a hindrance for remote healthcare for them. The difference in the interaction and communication during in-person consults and remote healthcare is also an important aspect to consider when making a choice. A remote consult is seen as more 'business-like', leading the consult to be more 'to-the-point' and hence shorter. Conversely, it has also been observed that patients find it more difficult to start talking about certain subjects during remote healthcare and ask fewer questions than during an in-person consult.

Aspects of telephone/video consults (synchronous interaction)
The experience of patients and therapists is that informing and advising, (pain) education, non-complex exercise therapy, workplace evaluations and treatment evaluation moments can often easily take place by means of a video or telephone consult. In some cases, a telephone consult is sufficient, for example when monitoring therapy compliance or a brief evaluation of the treatment progress or the severity of the complaints. Telephone consult are not always sufficient for thorough observation because there is no visual aspect. This visual aspect, which is present during video consults, is needed for good observation and thereby a better understanding of the symptom. The visual aspect is also necessary for explanation and direct feedback on the performance of exercises, for example. In order to optimally benefit from the visual aspect, it is necessary to find a good camera angle in order to assess the total picture. The visual aspect of video consults also generates more of a 'human touch', trust in the communication (because facial expressions provide a lot of information about comprehension, for example) and trust in the correct performance of exercises. It also provides insight into the patient's context, such as the home or work environment.
A disadvantage of the visual aspect is that some patients find it very annoying to see themselves on screen. Other disadvantages of video consults compared to telephone consults are that patients do not have sufficient digital literacy for a video consult and that the technology is not always user-friendly. A disadvantage of telephone consults is that therapists don't always declare these because they don't feel like a real consult. This is often the case when a patient calls the practice instead of a consult being scheduled, for example.

Aspects of videos/chat (asynchronous interaction)
Not much experience has been garnered with videos and chat messaging in the practice. Sending videos (which were recorded during the treatment, for example) may lead to more engagement on the part of the patient or the patient's direct environment, such as the parents of a minor patient. When video consults are recorded, patients can view these again at their leisure, which they like. Therapists see added value in a chat function in an app programme, for example. The chat can be used if a high pain score is determined, for example, in order to decide whether a consult is needed, or for coaching. Patients also use email to ask questions in between treatments. Because these forms do not fit within the usual definition of remote healthcare, technical tips for this have been included in a separate box with the advice.

Aspects of apps/wearables (for remote coaching and monitoring)
Offering a video consult in combination with the startup of an app programme with multiple functionalities, such as information, exercises, monitoring and coaching, offers more than a telephone consult alone, for example. This is a reason to choose the first-mentioned option for people with limited reimbursement for exercise care in particular, because 'both cost one session'.

Patients find that exercise reminders by app programmes lead to better therapy compliance. An app programme also makes patients feel that they are receiving continuous support from the therapist, which is motivating and encourages therapy compliance. Patients find it important to receive feedback from the therapist, e.g. for the therapist to monitor the severity of the complaints, monitor that a patient always skips a certain exercise or indicate that an exercise can be performed with an increasing amount of reps. On the other hand, patients find that the goal of every exercise should be clear in an app programme and that they miss immediate feedback on how they are performing the exercise. This can lead to less motivation and therapy compliance. Remote treatment can also make patients feel that they are facing their problem alone, mostly need to contemplate their problem themselves and figure out all the solutions themselves. That is why it is important to combine this with chat, video or telephone consults. In this case, apps or wearables can be used with the goal of promoting empowerment, self-management and therapy compliance.

Balance of desired effects and adverse effects

The systematic review of qualitative and 'mixed-methods' studies and semi-structured interviews do not provide direct input for the evidentiary value or effects for answering the clinical question. Because of this the guideline panel did not formulate a balance between desired effects and adverse effects.

Economic considerations and cost effectiveness

The guideline panel came to the conclusion that, for certain forms of remote healthcare, there are economic considerations when in-person healthcare is (partly) replaced by remote healthcare, specifically:

- Telephone consults (synchronous interaction between therapist and patient);
  Therapists do not always find this to be a full-fledged replacement of an in-person consult. Therapists spend time on this but – for the above-mentioned reason – they still feel that they cannot justify charging the patient (or the patient's health insurance) because this will then cost the patient a session. This is especially the case if a patient calls the practice because he cannot physically come to a scheduled in-person consult on time. The guideline panel believes that in this case, the patient should be asked if he would agree to allot the reserved time for the in-person consult to a telephone or video consult.
- Video consults (synchronous interaction between therapist and patient);
  With this type of remote healthcare, no travel costs are incurred by the patient and possibly the therapist.
- Videos/chat (asynchronous interaction between therapist and patient);
  This type is used in order to have contact with a patient between consults. Therapists spend time on this, or want to spend time on it, but they are not paid or reimbursed for this investment of time, even though it is part of the healthcare. This makes it less appealing to offer this option.
- Apps/wearables (for remote coaching and monitoring)
  This type is used in order to monitor or coach a patient between consults. If patients don't have much money to spend, or have little reimbursement for exercise care, app programmes tend to be considered more readily because fewer consults are needed in certain cases. However, the therapist's feedback and interpretation are necessary, which require either a consult, or asynchronous interaction, which is currently not reimbursed. Paying for apps or wearables can also be a barrier for patients.

Equity

The guideline panel believes that, despite there being various forms of remote healthcare, the expectation is that health outcomes will not differ between the various forms of remote healthcare or a complete in-person treatment. The guideline panel therefore assesses that the intervention will not result in a possible decrease of health equity. The guideline panel believes that it can, however, lead to inequity if patients have to pay for applications and wearables, and that therapists should therefore be cautious with the use of paid applications and wearables.

Acceptability

The guideline panel has come to the conclusion that the various forms of remote healthcare are acceptable provided that:

- the patient's individual suitability for remote healthcare is taken into account (see 'making shared decisions'); and
- the most suitable form of remote healthcare should be chosen together with the patient, based on the above-mentioned aspects of the various forms of remote healthcare; and
- the costs compared to the benefits are not disadvantageous for the therapist and patient.

Feasibility

According to the guideline panel, the feasibility of successful implementation of the various forms of remote healthcare is closely linked to acceptability among therapists in particular and possibly among patients. An important condition for successful implementation is that the costs compared to the benefits are not disadvantageous for the therapist and patient.

In addition, personal factors on the part of both the physical therapist or exercise therapist and the patient can also affect feasibility. For example, both the therapist and the patient may have a personal preference for specific forms of remote healthcare or entirely in-person healthcare. The therapist's work experience is also a factor. Therapists who have recently graduated have not yet developed habits and do not yet have any established treatment routines. This might make it easier for them to learn to integrate various form of remote healthcare into the treatment. The digital literacy of the therapist and patient also affects the feasibility. Furthermore, the large range of various specific forms of remote healthcare can be a hindrance for learning and applying the various forms of remote healthcare, and continuous training in all forms of remote healthcare is unrealistic.

The guideline panel assesses the implementation of the various forms of remote healthcare to be likely realistic.

Possible additional considerations

The guideline panel has not formulated any additional considerations.

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B.3 Patient-therapist relationship regarding the use of remote healthcare

RECOMMENDATION(S)

Make an assessment of patient-specific characteristics and determine, based on this, whether building and maintaining the patient-therapist relationship requires additional attention.

- Determine the extent to which the patient-therapist relationship is important for achieving individual treatment goals.
- Determine the extent to which a patient-therapist relationship already exists.
- Examine whether the following patient-specific characteristics could affect the patient-therapist relationship:
- the degree to which the patient trusts remote healthcare;

- the degree to which the patient trusts the building and maintaining of a personal bond between the patient and therapist when using remote healthcare;
- the degree to which the patient feels responsible for his own contribution to the treatment;
- the degree to which cognitive limitations, behavioural problems, behavioural disorders or developmental disorders have been diagnosed in the patient.
- Evaluate the patient-therapist relationship with the patient on a regular basis and determine whether adjustments in the ratio between in-person consults and remote healthcare are needed in order to foster the patient-therapist relationship.
- In the case of video and telephone consults, evaluate the degree to which the patient feels safe to share experiences and feelings. Employ the same strategies for fostering the relationship between the patient and therapist as during a regular course of treatment.

Practical tips for the patient-therapist relationship with remote healthcare

Ensure that the content of the healthcare technology is personalised to the individual patient where possible.

Ensure that the healthcare technology can be linked to the practice and/or therapist (e.g. logos, branding, photos).

Specific tips for video consults:
- Explicitly encourage the patient to ask questions.
- Listen to the patient and ask more questions, if needed.
- Make sure there is mutual commitment. Explicitly engage in informal conversations.
- Be aware that non-verbal signals and physical signals, such as a different pallor in the face, are more difficult to assess.
- Ensure professional surroundings without distractions and with sufficient privacy (an enclosed space and ask the patient to be alone); this applies to both the therapist and the patient.

EXPLICATION

Reason

Remote healthcare encompasses all healthcare activities between patients and healthcare providers when they are not located in the same physical space. This guideline is aimed specifically at forms of remote healthcare that replace in-office healthcare either entirely or in part, and not at forms that are a supplement to regular treatment.
The barrier analysis (see the 'Authors | Development' module) showed that it is unclear how you, as a therapist, can build and maintain a good relationship with the patient while seeing each other less in person. This resulted in the following clinical question:

Clinical question

How can you, as a physical therapist or exercise therapist, build and maintain a good patient-therapist relationship if in-person healthcare is (partially) replaced by remote healthcare?

Conclusions based on the literature

The systematic review of qualitative and 'mixed-methods' studies and semi-structured interviews (described in 'Justification') do not provide direct input for the evidentiary value or effects for answering the clinical question. The literature review and interviews with patients and therapists do, however, provide insight into the aspects that are deemed to be important for building and maintaining a good patient-therapist relationship in a course of treatment in which the healthcare is (partially) offered remotely.

Rationale of the recommendation

There are various important aspects when building and maintaining a good patient-therapist relationship. The values, preferences and needs of patients and therapists are divergent: there is some variation in this regard. The guideline panel therefore believes it is important to employ strategies – by means of a conditional recommendation – to foster the patient-therapist relationship based on patient-therapist characteristics and preferences and based on the aspects of the treatment or intervention.

The considerations (such as feasibility and acceptability) that are mentioned in the evidence to recommendation process are in line with the considerations in module B.1. Additionally, the guideline panel indicates that building a relationship through remote healthcare is different than in person. This is because with asynchronous forms of remote healthcare there are fewer contact moments, and with synchronous forms of remote healthcare some of the communication is through the computer screen or telephone. This can make it more difficult to build and maintain a relationship if (a part of) the treatment is offered remotely. Not all therapists know how to work on this, especially not for patients with complex complaints. The guideline panel therefore indicates that training is needed regarding building and maintaining a patient-therapist relationship if in-person healthcare is (partially) replaced by remote healthcare.

JUSTIFICATION

Literature and interviews

Search and selection

In order to answer the clinical question of this module, a 'mixed-methods' study was conducted. First, a qualitative systematic review was carried out. In semi-structured interviews with patients, physical therapists and exercise therapists, the question was posed as to whether the results of the analysis are recognised within the Dutch context. The results were supplemented based on the interviews, where necessary.

Search

The search for literature regarding this module's clinical question is the same as the search for the clinical questions for the other modules. Of 794 articles, the complete article was screened in order to see which articles met the inclusion criteria of the search queries of this module (see table below). This screening for the complete article yielded 40 relevant articles. See Appendix B.3-1 for the flowchart of the inclusion process.

Inclusion criteria for complete articles

Type of studies	Qualitative studies, with the exception of 'survey' studies. 'Mixed-methods' studies, where only the qualitative component of the results was analysed.
Type of patients	All types of patients (various conditions).
Type of intervention	Remote healthcare as physical therapy or exercise therapy intervention. See module B.1 for the definition.
Type of comparison	Not applicable.
Type of outcome	Results regarding 'patient-therapist relationship'.
Type of timeline	All types of timelines.

Characteristics of the included studies

The characteristics of the included studies are provided in Appendix B.3-2. The 40 included studies included patients with various conditions, specifically neurological conditions, knee osteoarthritis, multiple sclerosis, chronic pain, bronchiectasis, various non-urgent conditions, musculoskeletal pain or problems, cardiac conditions, bariatric surgery, Covid-19, incontinence, chronic or non-specific low back pain, Achilles tendinopathy, traumatic brain and/or spinal cord injury, cerebral paresis, COPD, orthopaedic conditions, vestibular dysfunction, shoulder instability, shoulder joint replacement, total knee prosthesis, stroke, breast cancer, temporomandibular disorder, and Rett syndrome. (Abramsky 2018; Albahrouh & Buabbas 2021; Alrushud 2022; Barton 2022; Bernal-Utrera 2021; Brennan 2020; Buabbas 2022; Cartledge 2022; Casillas 2022; Chen 2020; Damhus 2018; Eiken 2022; Eriksson 2011; Firet 2021; Geraldo 2022; Gilbert 2019; Hasani 2021; Hoaas 2016; Jassil 2022; Kairy 2013; Knox 2022; Lawford 2018, 2019; Lee 2022; Lotan 2021; Martínez De La Cal 2021; Odole 2020; Pahwa 2021; Palazzo 2016; Pollock 2022; Renard 2022; Skolasky 2022; Smaerup 2017; Szturm 2021; van der Meer 2022; van Tilburg 2022; Vorrink 2017; Warland 2019; Wittmeier 2022; Ziani 2022).

The studies were conducted in Canada, the USA, Australia, New Zealand, Saudi Arabia, Kuwait, Nigeria, India, Norway, Portugal, the UK, Spain, the Netherlands, France, Sweden and Ireland. In 14 studies the intervention consisted of partial remote healthcare (two or more in-person sessions); in the remaining 26 studies the intervention took place entirely remotely. In 9 studies there was only synchronous contact between the therapist and the patient during the treatment, in 4 studies only asynchronous contact and in the remaining 27 studies there was both synchronous and asynchronous contact. The method consisted of interviews (33 studies) or focus group studies (4 studies) or a combination of interviews and focus group studies (3 studies). The perspective was that of the patient (20 studies), the physical therapist or occupational therapist (8 studies), patients and physical therapists (5 studies) or other (7 studies). A total of 391 patients, 140 physical or occupational therapists and 96 others (including nurses, managers of insurance services, instructors) took part in the interviews or focus groups in the studies.

The average age of the patients varied between 14 and 76 years, and the age of the physical or occupational therapists varied between 24 to 83 years.

Interviews

A researcher with experience in qualitative research conducted semi-structured interviews with 8 physical therapists/exercise therapists and 7 patients. The therapists were recruited by the KNGF and the VvOCM through so-called 'regional advisors' who maintain contact with members; newsletters and social media were also used for the recruitment. The physical therapists and exercise therapists applied remote healthcare during or after the lockdown period. Patients were recruited by the Dutch Patient Federation (Patiëntenfederatie Nederland). The recruitment was targeted in order to obtain the maximum possible variation in patient characteristics. The most important criteria for this were the patient's education level and the experience with remote healthcare (positive versus negative).

Characteristics of interviewed therapists

During the interviews conducted for this module, 6 physical therapists and 2 exercise therapists were surveyed: 7 women and 1 man. The age varied between 31 and 55 years. Four of the interviewees had completed their Master's degree (2 Master's in geriatric physical therapy, 2 Master's in manual therapy). The experience of the interviewees with remote physical therapy and/or exercise therapy was positive for 4, negative for 1 and both positive and negative for 3.

Characteristics of interviewed patients

A total of 7 patients were interviewed for this module: 4 women and 3 men. The age varied between 32 and 72 years. The highest completed level of education was elementary school (*n*=1), secondary general education (*n*=1), secondary vocational education (*n*=2), higher vocational education (*n*=1), academic education (*n*=1) and post-graduate education (*n*=1). Their experience with remote physical therapy and/or exercise therapy was positive for 2, both positive and negative for 3 and negative for 2.

Data extraction

Review

The results sections of the included articles were coded in three steps in Atlas.ti 23. Open coding was done first. Then one researcher combined the codes into categories by means of axial coding. Selective coding resulted in overarching topics and a description of the results per clinical question. See Appendix B.3-3 for the definitive code tree of the qualitative literature review. The codes per clinical question are listed here. It is also shown which articles yielded results for the clinical question in this module. A total of 23 articles provided input for this clinical question. A comprehensive overview of this can be found in the Excel file '*UV3, 4, 5 - Articles per clinical question*'. Also shown is which codes stem from which article, subdivided into the remaining clinical questions. A comprehensive overview of this can be found in the Excel file '*UV3, 4, 5 - Codes per article*'. *Both Excel files can be requested from the core group. Based on the overarching topics and axial codes, an interview guideline for physical therapists/exercise therapists and patients was generated* (see Appendix B.3-4).

Qualitative analysis

The interviews were recorded and then transcribed verbatim. The transcripts were coded in three steps in Atlas.ti 23. Coding was initiated using the code tree from the qualitative literature review (Appendix B.3-3). Codes were added to this code tree which had not yet emerged from the

qualitative literature review. See Appendix B.3-5 for the additional codes from the interviews. This resulted in an expansion of the code tree that stemmed from the qualitative literature review. Appendix B.3-6 contains the definitive code tree, which combines the coding of the qualitative literature review and the interviews. Subsequently, two researchers jointly combined the codes into categories by means of axial coding. Selective coding resulted in overarching topics and a description of the results per clinical question.

Results of the qualitative analysis

The results of the systematic review of qualitative and 'mixed-methods' studies and the outcomes of the semi-structured interviews are summarised in this section. The results provide insight into the aspects that are important when building and maintaining a good patient-therapist relationship. These aspects have been divided into three topics: personal aspects, aspects of the intervention/treatment and specific aspects of remote healthcare.

Personal aspects

The success of building and maintaining a good patient-therapist relationship if in-person healthcare is (partially) replaced by remote healthcare depends on both the patient and the therapist. A number of personal aspects play a role in this regard. Whether patients and therapists trust online healthcare and online communication is of influence. It is important for patients to feel safe to share their experiences and feelings. Some patients experience a feeling of closeness with remote healthcare because these patients feel more free in their home setting than in the physical therapy practice.

Personal patient aspects that can hinder remote healthcare are behavioural problems (e.g. autism), embarrassment to be in front of the camera during video calls, fear of losing personal contact with the therapist and the healthcare system, and fear of a lack of a personal bond between patient and therapist. Age can play a role in building an online relationship: some interviewees indicated that it's easier for the younger generation to create a bond online than the older generation. Disadvantageous personal factors on the therapist's part are fear of being replaced by technology and uncertainties about the use of remote healthcare.

Remote healthcare usually results in patients having to do the work themselves, with the therapist taking on more of a coaching role. For some patients, this means that they have to be encouraged to take responsibility for their own therapy. For others, remote healthcare automatically results in a stronger feeling of responsibility because these patients have more self-efficacy and more trust in their self-management when doing exercises. Remote healthcare can thus lead to more involvement. Therapists indicate that remote healthcare enables them to have more regular contact with patients.

Possibilities of fostering the relationship between patient and therapist are demonstrating sufficient involvement in remote healthcare, listening, asking questions and clarifying. For example, a therapist can reference what the patient did in his or her free time at the start of the appointment. It is also important to explicitly encourage the patient to ask questions. That's because with digital meetings there is a risk of someone tending to ask fewer questions than during an in-person appointment. Another thing that can help foster a personal bond is introducing yourself as a therapist prior to the first consult.

Environmental factors can also impact the patient-therapist relationship. It is therefore important for the patient and therapist to be able to fully focus on each other and not be distracted by environmental factors.

Aspects of the intervention/treatment

Aspects related to the intervention or treatment are also important when building and maintaining a good patient-therapist relationship if in-person healthcare is (partially) replaced by remote healthcare.

The visual aspect of video calls helps build and maintain a good patient-therapist relationship. That's because the communication is more personal than with a telephone consult, so that the patient's non-verbal signals can also be observed.

However, sometimes therapists have a hard time assessing a patient with remote healthcare. It is easier for therapists to miss non-verbal signals online. This also applies to physical signals, such as a different pallor in the face (which depends on the screen display settings and is therefore more difficult to determine). Therapists indicate that patients can also pretend that they are doing well.

Possibilities of fostering the relationship between patient and therapist during the treatment are described in the previous section 'personal aspects'.

It appears that an existing relationship between the therapist and patient benefits remote healthcare. If the therapist and patient already know each other from before, this facilitates co-operation, which is considered an added value for remote healthcare. Furthermore, it is important for the use of remote healthcare to be flexible. It helps patients trust the therapist if they have the opportunity to switch from remote healthcare to in-person physical therapy.

Specific aspects of remote healthcare

Remote healthcare in itself can also affect the building and maintenance of a good patient-therapist relationship.

On the one hand, remote healthcare can negatively impact the patient-therapist relationship. It appears that it takes longer to establish the patient-therapist relationship online than with in-person healthcare. It is difficult to create a personal bond digitally. It also appears that the patient-therapist relationship with remote healthcare is often worse than with in-person healthcare. This plays a role primarily for older patients, among other things due to cognitive and physical limitations. The worse bond is also due to the fact that online courses of treatment are sometimes shorter than in-person courses. In addition, the online bond is often seen as less personal due to the lack of personal and social contact, support and connection. It also appears that the patient-therapist relationship can worsen during the course of treatment, especially if patients do have a need to see the therapist in person in order to discuss their experiences and if they feel there is a lack of personal contact.

On the one hand, remote healthcare can benefit the patient-therapist relationship. A good bond can develop if there is sufficient communication between the patient and therapist, a shared commitment to the goal, and attention and flexibility on the therapist's part and if the patient becomes familiar with and gains trust in his own role in the treatment process. Some patients and therapists indicate they feel more involved during in-person healthcare than with remote healthcare. This is brought about through regular contact between the therapist and patient, showing interest by means of a personal chat, getting to know each other and encouraging the patient to ask questions. Some patients and therapists feel there is a higher degree of closeness during video consults than during in-person healthcare. Patients indicate that they feel they are being listened to and that they receive the therapist's undivided focus and attention. Some patients also feel more free in their own home environment and experience a greater feeling of distance. Indeed, the fact that remote healthcare is seen as less personal and there is a greater feeling of distance can also be viewed as positive. Therapists indicate that ending the treatment

is easier due to a more business-like relationship with remote healthcare. Therapists also indicate that patients have to adhere to an exercise schedule themselves, which contributes to self-management.

Criteria for formulating the recommendations

From evidence to recommendation

Internationally recognised criteria were used to assess the evidence on which the recommendations are based. These are the desired effects, adverse effects, quality of evidence, patient values and preferences, balance between desired effects and adverse effects, economic considerations and cost effectiveness, equity, acceptability and finally feasibility. These criteria, as well as the remaining considerations formulated by the guideline panel, determine the strength of the recommendation.

Desired effects

The systematic review of qualitative and 'mixed-methods' studies and semi-structured interviews do not provide direct input for the evidentiary value or effects for answering the clinical question. Because of this the guideline panel did not formulate any desired effects.

Adverse effects

The systematic review of qualitative and 'mixed-methods' studies and semi-structured interviews do not provide direct input for the evidentiary value or effects for answering the clinical question. Because of this the guideline panel did not formulate any adverse effects. The guideline panel believes that no adverse effects are to be expected from building and maintaining a patient-therapist relationship if in-person healthcare is (partially) replaced by remote healthcare.

Quality of evidence

The systematic review of qualitative and 'mixed-methods' studies and semi-structured interviews do not provide direct input for the evidentiary value or effects for answering the clinical question. Because of this, the guideline panel did not formulate any quality of evidence.

Patient values and preferences

The guideline panel assesses that patients think differently about how a good patient-therapist relationship should be built and maintained.

The majority of patients feel it is important to develop and maintain a personal bond with the therapist. The approach to building and maintaining a good patient-therapist relationship varies per patient and per therapist if in-person healthcare is (partially) replaced by remote healthcare. The patient's personal aspects play a role in this. The diversity in patients therefore necessitates a personal approach.

Personal aspects that can influence the patient-therapist relationship are: cognitive limitations, physical limitations, trust in online healthcare and communication, feeling safe, a feeling of closeness, behavioural problems, embarrassment to be in front of the camera during video calls, fear of a lack of a personal bond between the patient and therapist.

Some patients need to be encouraged to take responsibility for their own recovery. For other patients, remote healthcare more or less automatically results in a stronger feeling of responsibility because these patients have more self-efficacy and more trust in their self-management when doing exercises. Remote healthcare can then lead to more involvement. Therapists indicate that remote healthcare enables them to have more regular contact with patients. One example of this is the use of video calls for reassuring patients about their progress on a regular basis. Another option is sending emails after an exercise session to keep patients motivated for their participation.

The patient-therapist relationship can affect the treatment. Some patients and therapists feel there is a higher degree of closeness during video consults than during in-person healthcare. Patients indicate that they feel they are being listened to and that they receive the therapist's undivided focus and attention. Some patients also feel more free in their own home environment and dare to be more vulnerable. Some patients do, however, experience a feeling of distance.

The guideline panel agrees that video calling has the advantage of revealing the patient's context in their home environment. Video calling is a virtual home visit, as it were, and can provide insight into a patient's safety and cognition.

The guideline panel agrees that remote healthcare can result in faster contact between the patient and therapist (e.g. by means of a chat function), which contributes favourably to the patient-therapist relationship. This also contributes to a feeling of connection with and involvement of the therapist for patients.

However, the guideline panel adds that not all patients have a need for video calling. Sometimes telephone contact is enough. Sending videos with exercises from the consult can also be an addition for the patient, which contributes to the patient-therapist relationship.

The guideline panel adds that remote healthcare should be personalised for the practice where possible. This includes things like using the practice's logo and branding in online information materials. Another example is tailoring an exercise schedule to the individual patient through the app. This ensures recognisability of the practice and increases the patient's feeling of a personal approach.

Balance of desired effects and adverse effects

The guideline panel deems building and maintaining a good patient-therapist relationship to be important for successful treatment if in-person healthcare is (partially) replaced by remote healthcare. No adverse effects are expected in this regard.

Economic considerations and cost effectiveness

The guideline panel does not expect any additional costs when building and maintaining a good patient-therapist relationship if in-person healthcare is (partially) replaced by remote healthcare.

Equity

The guideline panel expects that building and maintaining a good patient-therapist relationship will not impact equity if in-person healthcare is (partially) replaced by remote healthcare.

Acceptability

The guideline panel assesses that building and maintaining a good patient-therapist relationship is acceptable if in-person healthcare is (partially) replaced by remote healthcare.

Feasibility

The guideline panel assesses the feasibility of the recommendations for building and maintaining a good patient-therapist relationship if in-person healthcare is (partially) replaced by remote healthcare to likely be realistic.

The following aspects can be a hindrance and negatively impact feasibility:

- Personal values, preferences and needs, which can vary per patient and per therapist and that are described above under the 'patient values and preferences' heading. The options open to the therapist for influencing the patient-therapist relationship are described below under the 'possible additional considerations' heading.
- Environmental factors and privacy can play a role during video consults. It is important for the patient and therapist to be able to fully focus on each other and not be distracted by environmental factors. Choose an environment without distractions and with sufficient privacy. A tranquil environment helps the patient and therapist focus.
- Lack of a visual aspect. If there is no visual aspect, it is difficult or impossible for therapists to assess their patients given that non-verbal signals and physical signals are lacking.

If the therapist and patient already have an existing relationship, this will foster the building and maintaining of a good patient-therapist relationship if in-person healthcare is (partially) replaced by remote healthcare. This is seen as added value and promotes co-operation during remote healthcare.

The guideline panel recognises the obtained results and also indicates that building a relationship remotely is different than in person. It is more difficult to build and maintain a relationship remotely. Not all therapists know how to work on this, especially not for patients with complex complaints. Building and maintaining a patient-therapist relationship within the scope of remote healthcare should be part of the education, so that therapists are properly trained in and amass experience with this modality.

Possible additional considerations

The guideline panel is of the opinion that the following considerations are also important when building and maintaining a good patient-therapist relationship if in-person healthcare is (partially) replaced by remote healthcare.

Remote healthcare can negatively impact the patient-therapist relationship. Patients may have a need to see the therapist in person in order to discuss their experiences and if they feel there is a lack of personal contact. In such cases, it is important to strengthen the relationship between the patient and therapist. Options for this are:

Facilitating action	Who	Explanation
Introduction	therapist	Introduce yourself prior to the start of the first consult, with a personal text and photo.
Show interest	therapist	Make sure to have a personal chat. For example, reference what the patient did in his or her free time at the start of the appointment.
Show involvement	therapist	Show sufficient involvement during remote healthcare.
Be flexible	therapist	Flexibility on the part of the therapist regarding the use of remote healthcare. It helps patients trust the therapist if they have the opportunity to switch from remote healthcare to in-person consults.
Obtain familiarity	patient	Obtaining familiarity with and self-confidence in the treatment process on the part of the patient.
Communicate	therapist and patient	Listen, ask questions and clarify. Explicitly encourage the patient to ask questions.
Commit	therapist and patient	Shared commitment to the goal.

In addition, the guideline panel agrees that the patient-therapist relationship is fostered when the therapist encourages and motivates the patient and is involved. Having closer and faster contact with the patient also contributes to this.

The guideline panel adds that the importance of building a patient-therapist relationship depends on the treatment goal and the patient group.

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B.4 Making shared decisions about the use of remote healthcare

RECOMMENDATION(S)

Always make choices about the use of remote healthcare together with the patient. In doing so, keep the following points in mind:

- Explain to the patient what you mean by remote healthcare, and provide examples of the various forms and the benefits and disadvantages for each form (see module B.2). Explain that remote healthcare is a full-fledged component of the course of treatment.
  - Potential benefits of remote healthcare can be: increased empowerment and self-management, better integration of therapy into daily life and one's own context, improved access to (specialised) physical therapy/exercise therapy, no or less travel time and travel costs, continuity of the treatment, the patient may feel safer and more free at home during video consults, using apps and wearables may produce better insight into one's own treatment process.
  - Potential disadvantages of remote healthcare can be: less personal contact, lack of peer support and lack of physical contact.
- Take stock of the patient's expectations regarding remote healthcare and state your own expectations.
- Explain any of the patient's uncertainties and misconceptions about remote healthcare and dispel these if possible.
- Have an open discussion and involve other healthcare professionals, a partner or a caregiver, if necessary.
- Discuss any use of remote healthcare at various times during the course of treatment: at the beginning, if something changes during the course of treatment that renders a different form of healthcare preferable and when the treatment is evaluated.
- Try to get an idea of the patient's personal aspects listed below and whether these aspects can be influenced, and determine based on this whether remote healthcare is suitable for the patient and if yes, in which form(s):
  a. the need for assistance;
  b. the treatment goals;
  c. the type of complaint;
  d. the patient's personal preference;
  e. the patient's previous experiences, wishes and needs;
  f. whether the patient is open to remote healthcare;
  g. whether the patient is or can be motivated;
  h. whether the patient has sufficient digital literacy (can be assessed with a quick scan, for example);
  i. whether the patient has sufficient language comprehension;
  j. whether the patient has sufficient health literacy;
  k. whether the patient has sufficient independence and self-competence;
  l. whether the patient has sufficient resources;
  m. and whether the patient has cognitive limitations or experiences cultural barriers.
- Have the patient understand the personal gains and experiences with remote healthcare in the interim. This can contribute to the patient's motivation to continue with remote healthcare.
- If necessary, refer the patient to the 'digital healthcare help desk' for support when using remote healthcare.

EXPLICATION

Reason

Remote healthcare encompasses all healthcare activities between patients and healthcare providers when they are not located in the same physical space. This guideline is aimed specifically at forms of remote healthcare that replace in-office healthcare either entirely or in part, and not at forms that are a supplement to regular treatment.
The barrier analysis (see the 'Authors | Development' module) showed that it was unclear to therapists how they can decide on the use of remote healthcare together with the patient. For example, it was unclear how you, as a therapist, can align to the patient's expectations about remote healthcare, how you can identify the patient's needs regarding remote healthcare and how you can properly inform the patient about the use of remote healthcare. These barriers resulted in the clinical question regarding shared decision-making.

Clinical question

How can you make choices together with the patient about the use of remote healthcare?

Conclusions based on the literature

The systematic review of qualitative and 'mixed-methods' studies and semi-structured interviews do not provide direct input for the evidentiary value or effects for answering the clinical question. The literature review and interviews with patients and therapists provide insight into the aspects that are important for shared decision-making. Three topics can be distinguished in this regard: the manner in which the joint decision is made (content and approach), the time of the decision and personal factors that must be considered when determining whether remote healthcare is suitable for the patient.

Rationale of the recommendation

There are various important aspects regarding shared decision-making. The values and preferences of patients and therapists barely vary. That is why the guideline panel believes it is important to make choices about the use of remote healthcare together with the patient by means of a conditional recommendation, with the content and approach, the patient's personal aspects and the moment of the joint decision playing a role. The guideline panel indicates that the use of remote healthcare should always be offered as an option when the content of the course of treatment is discussed. The use of remote healthcare can also be discussed if it is unexpectedly not possible for the patient and therapist to see each other in person.

The considerations (such as feasibility and acceptability) that are mentioned in the evidence to recommendation process are in line with the considerations in module B.1.

JUSTIFICATION

Literature and interviews

Search and selection

In order to answer the clinical question in this module, a 'mixed-methods' study was conducted. First, a qualitative systematic review was carried out. In semi-structured interviews with patients, physical therapists and exercise therapists, the question was then posed as to whether the results of the review are recognised within the Dutch context. The results were supplemented based on the interviews, where necessary.

Search

The search for the clinical question's literature in module B.4 is the same as the search for the clinical questions in modules B.2 and B.3. Of 794 articles, the complete article was screened in order to see which articles met the inclusion criteria of the search queries of this module (see table below). This screening for the complete article yielded 40 relevant articles. See Appendix B.4-1 for the flowchart of the inclusion process.

Inclusion criteria for complete articles

Type of studies	Qualitative studies, with the exception of 'survey' studies. 'Mixed-methods' studies, where only the qualitative component of the results was analysed.
Type of patients	All types of patients.
Type of intervention	Remote healthcare as physical therapy or exercise therapy intervention. See module B.1 for the definition.
Type of comparison	Not applicable.
Type of outcome	Results about 'shared decision-making'.
Type of timeline	All types of timelines.

Characteristics of the included studies

The characteristics of the included studies are provided in Appendix B.4-2. The 40 included studies included patients with various conditions, specifically neurological conditions, knee osteoarthritis, multiple sclerosis, chronic pain, bronchiectasis, various non-urgent conditions, musculoskeletal pain or problems, cardiac conditions, bariatric surgery, Covid-19, incontinence, chronic or non-specific low back pain, Achilles tendinopathy, traumatic brain injury and/or spinal cord injury, cerebral paresis, COPD, orthopaedic conditions, vestibular dysfunction, shoulder instability, shoulder joint replacement, total knee prosthesis, stroke, breast cancer, temporomandibular disorder, and Rett syndrome. (Abramsky 2018; Albahrouh & Buabbas 2021; Alrushud 2022; Barton 2022; Bernal-Utrera 2021; Brennan 2020; Buabbas 2022; Cartledge 2022; Casillas 2022; Chen 2020; Damhus 2018; Eiken 2022; Eriksson 2011; Firet 2021; Geraldo 2022; Gilbert 2019; Hasani 2021; Hoaas 2016; Jassil 2022; Kairy 2013; Knox 2022; Lawford 2018, 2019; Lee 2022; Lotan 2021; Martínez De La Cal 2021; Odole 2020; Pahwa 2021; Palazzo 2016; Pollock 2022; Renard 2022; Skolasky 2022; Smaerup 2017; Szturm 2021; van der Meer 2022; van Tilburg 2022; Vorrink 2017; Warland 2019; Wittmeier 2022; Ziani 2022).

The studies were conducted in Canada, the USA, Australia, New Zealand, Saudi Arabia, Kuwait, Nigeria, India, Norway, Portugal, the UK, Spain, the Netherlands, France, Sweden and Ireland. In 14 studies the intervention consisted of partial remote healthcare (two or more in-person sessions); in the remaining 26 studies the intervention took place entirely remotely. In 9 studies there was only synchronous contact between the therapist and the patient during the treatment, in 4 studies only asynchronous contact and in the remaining 27 studies there was both synchronous and asynchronous contact. The research method consisted of interviews (33 studies) or focus group studies (4 studies) or a combination of interviews and focus group studies (3 studies). The perspective was that of the patient (20 studies), the physical therapist or occupational therapist (8 studies), patients and physical therapists (5 studies) or other (7 studies). A total of 391 patients, 140 physical or occupational therapists and 96 others (including nurses, managers of insurance services, instructors) took part in the interviews or focus groups in the studies.
The average age of the patients varied between 14 and 76 years, and the age of the physical therapists or occupational therapists varied between 24 and 83 years.

Interviews

A researcher with experience in qualitative research conducted semi-structured interviews with 8 physical therapists/exercise therapists and 7 patients. The therapists were recruited by the KNGF and the VvOCM through so-called 'regional advisors' who maintain contact with members; newsletters and social media were also used for the recruitment. Patients were recruited by the Dutch Patient Federation (Patiëntenfederatie Nederland). The recruitment was targeted in order to obtain the maximum possible variation in patient characteristics. The most important criteria for this were the patient's education level and the experience with remote healthcare (positive versus negative).

Characteristics of interviewed therapists

During the interviews conducted for this module, 6 physical therapists and 2 exercise therapists were surveyed: 7 women and 1 man. The age varied between 31 and 55 years. Four of the interviewees had completed their Master's degree (2 Master's in geriatric physical therapy, 2 Master's in manual therapy). The experience of the interviewees with remote physical therapy and/or exercise therapy was positive for 4, negative for 1 and both positive and negative for 3.

Characteristics of interviewed patients

A total of 7 patients were interviewed for this module: 4 women and 3 men. The age varied between 32 and 72 years. The highest completed level of education was elementary school (*n*=1), secondary general education (*n*=1), secondary vocational education (*n*=2), higher vocational education (*n*=1), academic education (*n*=1) and post-graduate education (*n*=1). Their experience with remote physical therapy and/or exercise therapy was positive for 2, both positive and negative for 3 and negative for 2.

Data extraction

Review

The results sections of the included articles were coded in three steps in Atlas.ti 23. Open coding was done first. Then one researcher combined the codes into categories by means of axial coding. Selective coding resulted in overarching topics and a description of the results per clinical question. See Appendix B.4-3 for the definitive code tree of the qualitative literature review. The

codes per clinical question are listed here. It is also shown which articles yielded results for the clinical question in this module. A total of 15 articles provided input for this module's clinical question. A comprehensive overview of this can be found in the Excel file '*UV3, 4, 5 – Articles per clinical question*'. Also shown is which codes stem from which article, subdivided into the remaining clinical questions. A comprehensive overview of this can be found in the Excel file '*UV3, 4, 5 – Codes per article*'. *Both Excel files can be requested from the core group. Based on the overarching topics and axial codes, an interview guideline for physical therapists/exercise therapists and patients was generated* (see Appendix B.4-4).

Qualitative analysis

The interviews were recorded and then transcribed verbatim. The transcripts were coded in three steps in Atlas.ti 23. Coding was initiated using the code tree from the qualitative literature review (Appendix B.4-3). Codes were added to this code tree which had not yet emerged from the qualitative literature review. See Appendix B.4-5 for the additional codes from the interviews. This resulted in an expansion of the code tree that stemmed from the qualitative literature review. Appendix B.4-6 contains the definitive code tree, which combines the coding of the qualitative literature review and the interviews. Subsequently, two researchers jointly combined the codes into categories by means of axial coding. Selective coding resulted in overarching topics and a description of the results per clinical question.

Results of the qualitative analysis

The results of the systematic review of qualitative and 'mixed-methods' studies and semi-structured interviews are combined in this section. The results provide insight into the aspects that are important for shared decision-making. These aspects are divided into three topics, specifically content and approach (what/how), moment (when) and those involved (who).

Content and approach

In order to jointly make a choice about the use of remote healthcare, it is important to know what needs to be discussed (content) and how this can be done (approach). The literature and interviews show that discussing the benefits and disadvantages of remote healthcare can help increase trust in and acceptance of remote healthcare. Therapists also indicate that it is necessary to discuss patients' uncertainties and eliminate any misconceptions about remote healthcare. Examples of this are that the therapist can see inside the patient's house (violation of privacy) or that the patient cannot identify with the person in a recorded video. Therapists also indicate that it is important to consider patients' opinions about the use of remote healthcare. In line with this, it appears to be important to take stock of the expectations regarding remote healthcare in advance, so that both the therapist and patient know where they stand.

Some patients were initially sceptical about remote healthcare due to their fear of a lack of physical and visual contact or the expected lack of skills. At the end, many were positively surprised because remote healthcare turned out to be easier than thought, the level of exertion is the same as in-person treatment and the lack of physical and visual contact is not a problem. Seeing one's own therapy compliance also appears to motivate patients to do exercises.

The therapist can decide, in consultation with the patient, whether the situation is suitable for using remote healthcare. This depends, among other things, on the patient's digital literacy, capacities and resources. The patient must also be open to the use of remote healthcare and it must suit the treatment goal.

Therapists indicate that it is desirable to use a tool for deciding jointly with the patient which aspects facilitate and which aspects inhibit the use of remote healthcare. With such a tool a therapist can easily obtain insight into whether a patient is ready for the use of remote healthcare, what the patient's needs are and whether the patient needs help with the use of remote healthcare.
One of the therapists also points to the 'digital healthcare help desk'. You as an organisation can register with this help desk, after which all of your patients will be able to request assistance from the help desk when remote healthcare is used.

Moment
There are four moments during which choices can be made together with the patient about the use of remote healthcare:

- when the course of treatment is discussed;
- when the treatment is evaluated;
- when digital healthcare appears to be unsuitable and a switch needs to be made to in-person healthcare;
- when it is not possible for the patient to come to the practice and an online appointment is made ad hoc.

One thing that has been observed is that it is important to be flexible regarding the use of remote healthcare. Therapists indicate that an online meeting is generally easier to schedule than an in-person meeting.

Stakeholders
Therapists indicate that the patient's preference is the most important aspect to consider and that the choice of remote healthcare should always be made together with the patient. That's because it's important for the patient to be motivated to try remote healthcare and for therapists to take the patient's wishes and needs into account. Therapists indicate that it is important to have an open discussion and not impose remote healthcare on patients.
Therapists also indicate that remote healthcare should always be discussed with the patient as a viable option. At the same time, they indicate that they do not yet include this as a part of the discussion with the patient by default.
They also mention that inequity may occur when using remote healthcare. For example, only some of the patients can use remote healthcare; specifically patients who have sufficient financial resources to procure the materials for remote healthcare, older patients who receive assistance from their grandchildren and patients with sufficient intellectual capacities.
The therapist plays a role in interpreting the results of a wearable or app. For instance, they can ask more in-depth questions about the patient's experiences and interpret the results.

Criteria for formulating the recommendations

From evidence to recommendation
Internationally recognised criteria were used to assess the evidence on which the recommendations are based. These are the desired effects, adverse effects, quality of evidence, patient values and preferences, balance between desired effects and adverse effects, economic

considerations and cost effectiveness, equity, acceptability and finally feasibility. These criteria, as well as the remaining considerations formulated by the guideline panel, determine the strength of the recommendation.

Desired effects

The systematic review of qualitative and 'mixed-methods' studies and semi-structured interviews do not provide direct input for the evidentiary value or effects for answering the clinical question. Because of this the guideline panel did not formulate any desired effects.

Adverse effects

The guideline panel believes that no adverse effects are to be expected from shared decision-making if in-person healthcare is (partially) replaced by remote healthcare.

Quality of evidence

The systematic review of qualitative and 'mixed-methods' studies and semi-structured interviews do not provide direct input for the evidentiary value or effects for answering the clinical question. Because of this, the guideline panel did not formulate any quality of evidence.

Patient values and preferences

The guideline panel assesses that patients attach great value to making shared decisions and that there is little variation among patients in this regard.
The guideline panel agrees that the choice for remote healthcare should always be made together with the patient. The patient's wishes and needs must also be taken into account here. An open discussion between the therapist and patient is important. Imposing remote healthcare on patients must be avoided.

Important aspects that need to be taken into account when using remote healthcare are the type of complaint and the need for assistance. In addition, patients have a personal preference. Some assume that in-person treatment takes place because this is the custom and that remote healthcare is not always considered as a treatment option due to this.
The patient's motivation is also an important aspect; for example, it is important to determine how much time patients want to dedicate to the treatment and how motivated they are to independently work on their recovery. The guideline panel endorses the importance of the patient's independence and self-competence.
Safety is also an important aspect. Safety should be taken into account for vulnerable patients in particular. Exercises can be adapted or (informal) care can be involved, for example.
In most cases, age did not appear to directly influence the choice for remote healthcare.
Other aspects that influence the consideration of remote healthcare are: digital literacy, language comprehension/accent, cultural barriers and cognitive limitations/intelligence.

The literature review and interviews show that some patients are initially sceptical about remote healthcare, due to the fear of a lack of personal contact, or the expected lack of required skills for using remote healthcare. Many are positively surprised after using remote healthcare. This confirms that remote healthcare should always be discussed with patient as a viable option.

Balance of desired effects and adverse effects

The guideline panel assesses that making shared decisions with the patient regarding the use of remote healthcare is important for successful treatment if in-person healthcare is (partially) replaced by remote healthcare. No adverse effects are expected in this regard.

Economic considerations and cost effectiveness

The guideline panel does not expect any additional costs with regard to making shared decisions with the patient regarding the use of remote healthcare if in-person healthcare is (partially) replaced by remote healthcare.

Equity

The guideline panel expects that making shared decisions with the patient will not impact equity if in-person healthcare is (partially) replaced by remote healthcare.

Acceptability

The guideline panel assesses that making shared decisions with the patient regarding the use of remote healthcare is acceptable if in-person healthcare is (partially) replaced by remote healthcare.

The guideline panel assesses that it is acceptable to discuss only the forms of remote healthcare with the patient that the therapist has available. The guideline panel believes that discussing forms of remote healthcare which exist but are not possible in the relevant practice is not necessary given the outcomes of module B.1 regarding added value. The basic principle here should be to offer the most suitable healthcare. Should the therapist be aware of a more suitable form of remote healthcare, or should the patient prefer a specific form of remote healthcare which the therapist does not offer, then the therapist should discuss the options (alternatives, procurement of this preferred form as yet, or referral) with the patient and jointly make a definitive decision.

Feasibility

The guideline panel assesses making shared decisions regarding the use of remote healthcare together with the patient as realistic.

The guideline panel indicates that the full potential of shared decision-making is not yet being used. This has to do with the feasibility of discussing all options regarding remote healthcare (time, money). One possibility is to only discuss the options that the therapist offers, which would make it more feasible compared to discussing all options with regard to remote healthcare.

Possible additional considerations

The guideline panel is of the opinion that the following considerations are also important when making shared decisions if in-person healthcare is (partially) replaced by remote healthcare.

- Discussing the benefits and disadvantages of remote healthcare can help increase trust in and acceptance of remote healthcare. Benefits of remote healthcare according to patients are: better access to (specialised) healthcare (even with little reimbursement), no travel time or travel costs, continued effect of the treatment after completion, improved integration

- into daily life/personal situation, continuity of the treatment and better insight into one's own treatment process. Disadvantages mentioned are: possibly less physical manipulation/ mobilisation, lack of peer support and social contact. Patients considered more empowerment in their recovery as both a benefit and a disadvantage. Therapists deemed increased patient empowerment and self-reliance as an important benefit. The guideline panel agrees with this.
- Discuss patients' uncertainties and eliminate any misconceptions about remote healthcare. Examples of uncertainties are that the therapist can see inside the patient's house or that the patient cannot identify with the person in a recorded video.
- Consider patients' opinions about the use of remote healthcare.
- Take stock of the expectations regarding remote healthcare, so that both the therapist and patient know where they stand.
- The therapist's role in shared decision-making is in clarifying the results of a wearable or app. Examples are asking more in-depth questions about the patient's experiences and interpreting the results.
- The patient's circumstances are important: they indicate that an online meeting is sometimes easier to schedule than an in-person meeting.

Moments during which choices can be made together with the patient about the use of remote healthcare:

- when the course of treatment is discussed;
- when the treatment is evaluated;
- when remote healthcare appears unsuitable and a switch needs to be made to in-person healthcare;
- when it is not possible for the patient to come to the practice and a telephone or appointment or video call is made ad hoc.

It is important for the therapist to be flexible at all times when using remote healthcare.

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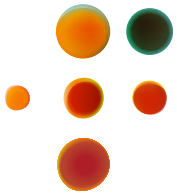
Colophon

The KNGF aims to create the conditions in which high-quality physical therapy care can be provided that is accessible to the entire Dutch population, whilst recognising the professional expertise of the physical therapist.
The KNGF represents the professional, social and economic interests of over 18,000 registered physical therapists.



The physical therapists of the Netherlands

Royal Dutch Society for Physical Therapy
Association of Cesar and Mensendieck Exercise Therapists
University of Applied Sciences Utrecht
Dutch Patient Federation