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International consensus on best practice on video consultation in musculoskeletal physiotherapy

Master's thesis

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Rahvusvaheline konsensus parima videokonsultatsiooni praktikaks muskuloskeletaalsüsteemi füsioteraapias

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Author’s declaration of originality

I hereby certify that I am the sole author of this thesis. All the used materials, references to the literature and the work of others have been referred to. This thesis has not been presented for examination anywhere else.

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Abstract

Musculoskeletal (MSK) conditions are a huge burden worldwide and physiotherapy is a health care profession that plays an important role in their conservative management. The pandemic has led to limitations accessing in-person services and video consultation has become an alternative to provide MSK physiotherapy to patients. However, although national guidelines have been developed to help physiotherapists deliver video consultation, no specific guideline to provide the service to patients with MSK conditions was created. Moreover, most physiotherapists did not feel prepared to deliver the service.

The aim of this study was to reach an international consensus on best practice on the provision of physiotherapy via video consultation for patients with MSK conditions, to guide physiotherapists in their daily practice. To achieve this aim, a mixed method research design using a three-round Delphi strategy was performed. International experts were invited to produce and rate statements regarding the different stages of the video consultation: pre-MSK video consultation, MSK video consultation intervention and post-MSK video consultation. The experts, throughout the Delphi process, agreed on 100 statements to frame the list of recommendations that formed the international consensus. The recommendations included the different aspects of the video consultation: preparation, information exchange, technical considerations, environment considerations, physiotherapist-patient introduction, communication, physical assessment, diagnosis, management plan, closing of the video consultation, registration, evaluation and follow-up actions.

The outcomes of this study might be of value to help MSK physiotherapists provide video consultation services in their clinical practice and may also be a good foundation to develop guidelines for the provision of video consultation for specific MSK conditions. Moreover, this thesis can be used as a validation tool for the general aspects of video consultation provision included in the existing national guidelines.

This thesis is written in English and is 56 pages long, including 7 chapters, 7 figures and 5 tables.

Annotatsioon

Rahvusvaheline konsensus parima videokonsultatsiooni praktikaks muskuloskeletaalsüsteemi füsioteraapias

Muskuloskeletaalsüsteemi (MSK) haigused on kogu maailmale suureks probleemiks. Füsioteraapia on tervishoiuvaldkond, mis mängib nende häirete konservatiivses ravis olulist rolli. Pandeemia on piiranud kontaktvisiitide kättesaadavust ja videokonsultatsioonid on kujunenud alternatiiviks MSK kaebustega patsientidele füsioteraapiateenuste pakkumisel. Videokonsultatsioonide läbiviimiseks on füsioterapeutidele loodud riiklikud juhised, kuid seni pole koostatud ühtki spetsiifilist juhendit, mis toetaks teenuste pakkumist MSK probleemidega patsientidele. Lisaks sellele ei tunne enamik füsioterapeute, et neil oleks sellise teenuse pakkumise jaoks piisav ettevalmistus.

Käesoleva töö eesmärk oli jõuda rahvusvahelise konsensuseni MSK vaevustega patsientidele parima füsioteraapiateenuse pakkumisel läbi videokonsultatsioonide ja juhendada füsioterapeute nende igapäevatöös. Selle eesmärgi saavutamiseks viidi läbi segameetodil (ingl. k. – *mixed method*) põhinev uurimus, kasutades kolmeetapilist Delfi uuringut. Videokonsultatsiooni järgmisi staadiume kutsuti koostama ja hindama rahvusvahelised eksperdid: MSK videokonsultatsioonile eelnev, MSK sekkumise ning MSK sekkumisele järgnev staadium. Delfi uuringu käigus leppisid eksperdid kokku 100 soovituslikus väites, millest moodustus rahvusvaheline konsensus. Soovitused hõlmasid videokonsultatsiooni erinevaid aspekte: ettevalmistus, infovahetus, tehnilised ja keskkonna kaalutlused, füsioterapeudi ja patsiendi omavaheline sissejuhatus, kommunikatsioon, kehaline hindamine, diagnoosimine, raviplaani koostamine, videokonsultatsiooni lõpetamine, registreerimine, hindamine ja järelkontrolliga seonduvad tegevused.

Antud töö tulemused võivad aidata MSK-ga tegelevatel füsioterapeutidel pakkuda oma kliinilises praktikas videokonsultatsioone ning töö tulemustele tuginedes oleks võimalik arendada juhised videokonsultatsioonideks ka spetsiifiliste MSK häirete puhul. Lisaks

sellele on antud uurimust võimalik kasutada ka olemasolevate riiklike videokonsultatsioonide juhiste üldiste aspektide valideerimisel.

Käesolev magistritöö on koostatud inglise keeles ning sisaldab teksti 56 leheküljel, selles on 7 peatükki, 7 joonist ja 5 tabelit.

List of abbreviations and terms

ACEFIT	*Asociación Colombiana de Estudiantes de Fisioterapia*
AHANZ	Allied Health Association of New Zealand
APA	Australian Association of Physiotherapy
APTA	American Physical Therapy Association
ASCOFAFI	*Asociación Colombiana de Facultades de Fisioterapia*
ASCOFI	*Asociación Colombiana de Fisioterapia*
ATA	American Telemedicine Association
CAPR	Canadian Alliance of Physiotherapy Regulators
COLFI	*Colegio Colombiano de Fisioterapeutas*
COLKINE	*Colegio de Kinesiólogos de Chile*
CSP	Chartered Society of Physiotherapy
CTCR	*Colegio de Terapeutas de Costa Rica*
EHIF	Estonian Health Insurance Fund
ICT	Information and communication technology
INPTRA	International Network of Physiotherapy Regulatory Authorities
IQR	Interquartile range
IS	Information system
MSK	Musculoskeletal
PBNZ	Physiotherapy Board of New Zealand
PREM	Patient-reported experience measures
PROM	Patient-reported outcome measures
RCT	Randomized controlled trial
SD	Standard deviation
TKA	Total knee arthroplasty
WCPT	World Confederation for Physical Therapy
YLD	Years lived with disability

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1 Introduction

Musculoskeletal (MSK) conditions are a major burden to society and health care systems [1]. Real-time telephysiotherapy is considered an appropriate path to overcome barriers to access MSK care [2] and this is the reason why the use of video consultation has increased significantly in recent times [3]. However, to date, consensus on best practice on video consultation for physiotherapy in MSK conditions has not been reported.

MSK conditions are considered a leading cause of worldwide morbidity and account for one fifth of total "years lived with disability" (YLDs), placing limitations on daily activities, occupations and leisure activities [1].

Millions of people globally would benefit from rehabilitation [4]. International evidence-based guidelines advise tailored conservative interventions for most MSK conditions, when "red-flags" are previously ruled out; physiotherapists being the professionals of choice, along with other health care professionals, for these interventions [5], [6].

However, access to conservative treatments might be limited for some patients. For instance, those with socioeconomic disadvantages or living in rural areas [7], [8]. Moreover, obstacles to access are not limited to social, economic and geographical reasons; but can be also due to unexpected circumstances, like the COVID-19 pandemic has shown the world. These barriers to access have led to search for alternative means to deliver health care services, with the adoption of telehealth services by different organizations and health care professionals becoming a common practice [9].

Several guidelines have been elaborated by physiotherapy professional bodies and other organizations from different countries, with a range of recommendations on the provision of telephysiotherapy services [10]–[18]. Nevertheless, these documents offer either general guidance on telephysiotherapy or video consultation, not focusing on MSK conditions in particular. The lack of guidelines on video consultation for MSK conditions might be due to MSK physiotherapy being traditionally considered a "hands-on"

discipline, which led in most cases to rule out video consultation as a means to provide services up until the pandemic was declared [19].

This thesis aims to give answer to the question “what can be considered best practice in MSK physiotherapy via video consultation?” In order to give response to the question, a mixed method research design using the Delphi technique was performed with help of international experts.

This document consists of seven chapters. The first chapter is the introduction. The second chapter is a literature overview that comprises information regarding the impact of MSK conditions in society, the role of physiotherapy within e-health, the clinical evidence of video consultation in MSK physiotherapy, the different quality attributes and applications of video consultation and the guidelines developed by different organizations to deliver telephysiotherapy. This chapter will end with the description of the research problem. The third chapter presents the aim and research question of this thesis. The fourth chapter describes the methodology and methods used. The fifth chapter presents the results of the study. The sixth chapter discusses the relevance of the results, implications and possible future directions of research. The seventh and final chapter shares a conclusion of the thesis.

2 Literature overview

2.1 MSK conditions

MSK conditions include more than 150 diagnoses that affect the locomotor system and entail those that occur suddenly, such as strains and fractures, and also those considered lasting conditions like osteoarthritis. These conditions can present with pain and decreased physical function (limitations in mobility, dexterity and functional ability), often leading to a greater risk of acquiring other health conditions and increased all-cause mortality [20]. Moreover, MSK conditions account for the highest proportion of persistent pain worldwide at all ages and are considered a leading cause of morbidity and total "years lived with disability" [1], [21]. Furthermore, the prevalence of MSK conditions is expected to increase as the worldwide population ages and the prevalence of risk factors for noncommunicable diseases rises [22]. The most common and disabling MSK conditions are back and neck pain, fractures associated with bone fragility, osteoarthritis and systemic inflammatory conditions such as rheumatoid arthritis; these posing major risks to healthy ageing by reducing mental and physical capacities [20].

MSK health is indispensable for sustaining economic independence. Reduced MSK health accounts for the greatest loss of productive years of life, which might result in premature retirement and decreased financial security [23]. As an example of the economic impact of MSK conditions, in the United States of America (USA), 1 in 2 people live with an MSK condition, which translated in 153,000 million euros in 2011 [24]. Moreover, decreased MSK health has a high impact on the participation of individuals in social life and the richness of communities in low- and middle-income economies [25].

There are approximately 1.71 billion people with MSK conditions worldwide who require rehabilitation [4]. Physiotherapy is one of the rehabilitation fields patients could benefit from, as international guidelines recommend personalised conservative treatments for the

vast majority of MSK conditions, as long as "red-flags" are ruled out, and MSK physiotherapists specialise in these types of interventions [5], [6].

2.2 Physiotherapy within e-health

The terms "telehealth", "telemedicine" and "e-health" need to be defined to reach a better comprehension of the context where digital physiotherapy, telephysiotherapy and video consultation in physiotherapy arose. Telehealth and telemedicine are frequently used as synonyms. However, telemedicine is also considered a subcategory of telehealth, as telemedicine is the use of medical information exchanged at a distance via information and communication technology (ICT) to provide or support clinical care; whereas telehealth is a broader concept that, apart from providing care, uses ICT to deliver preventive health interventions and other public health actions at a distance [26]. Moreover, "e-health" is an umbrella term that encompasses not only all aspects of telehealth, but also other uses of digital technology related to health care, for instance, mhealth, which refers to mobile health [27], [28].

Over the years, new terminology has emerged to describe the particular health care profession involved in the service [29]. Regarding the involvement of physiotherapy in telehealth, "telerehabilitation" has been the most used term in scientific literature [30]. Telerehabilitation is considered a branch of telemedicine [31]. However, the copiousness of terminology can be overwhelming, as there are different terms to define similar concepts [32]. For instance, the terms "telerehabilitation", "telepractice", "teleconsultation" and "telephysiotherapy" can be found as synonyms [16]. Nonetheless, telephysiotherapy could be also considered as a type of telerehabilitation, when taken into account the definition "Telerehabilitation is the provision at a distance of rehabilitation services such as physiotherapy, speech pathology or occupational therapy" [33].

Furthermore, in 2019, the former World Confederation for Physical Therapy (WCPT) in collaboration with the International Network of Physiotherapy Regulatory Authorities (INPTRA), developed a report to propose an international definition for digital physiotherapy practice agreed by different physical therapy stakeholders drawn from the WCPT and INPTRA member organizations. The proposed definition was "Digital physiotherapy practice is a term used to describe health care services, support, and information provided remotely via digital communication and devices" [34]. This implies

that the terms “telephysiotherapy” and “digital physiotherapy” could be used indistinctly. However, “digital physiotherapy” seems to be considered a broader term, with the term “telephysiotherapy” being a type of digital physiotherapy service, rather than a synonym. Therefore, telephysiotherapy would be to digital physiotherapy what telemedicine is to e-health.

2.3 Telephysiotherapy services

Definitions and descriptions of services and interventions differ depending on the literature consulted. Based on the type of professional-patient interaction taking place, telephysiotherapy can be divided into synchronous and asynchronous [29], [34]. On one hand, synchronous telephysiotherapy refers to real-time interaction where the physiotherapist and the patient exchange information instantaneously. Common examples of synchronous telephysiotherapy are video consultation and consultation over the telephone. On the other hand, asynchronous telephysiotherapy is the interaction where there is a chronological delay between the transfer and viewing of digital health data (e.g., text, sound and video files). Examples of asynchronous telephysiotherapy are emails and data portals [35]. Moreover, telephysiotherapy can be hybrid. Hybrid telephysiotherapy is a combination of synchronous and asynchronous physiotherapist-patient interaction [36]. Furthermore, telephysiotherapy can be also found in the literature divided into synchronous, asynchronous and remote monitoring. Remote monitoring refers to constant evaluation of a clinical status, either via direct video monitoring of the patient or through review of images and tests collected remotely [37]. For the purpose of this document, video consultation will be the topic of study.

2.3.1 Defining video consultation

Video consultation is a type of telemedicine that uses technology to provide real-time visual and audio assessment at a distance [38]. It was developed for health care professionals to connect with patients who could not attend to the clinics or hospitals, due to different barriers that resulted in inequalities in patient care [39]. The use of video consultation has rapidly increased owing to advances in technology (e.g., new webcams and fast internet connection) and changes in health care systems (e.g., more outpatient care and remote interventions) [40]. Currently, video consultation is used in different

health care fields, such as dermatology, surgery, paediatrics, oncology and physiotherapy [2], [41], [42].

In physiotherapy practice, video consultation can be defined as a type of synchronous intervention where patient and physiotherapist are at the same time, but not co-located, present during the consultation, with audio-visual support to communicate [34]. Figure 1 visualises where video consultation in physiotherapy is placed within e-health.

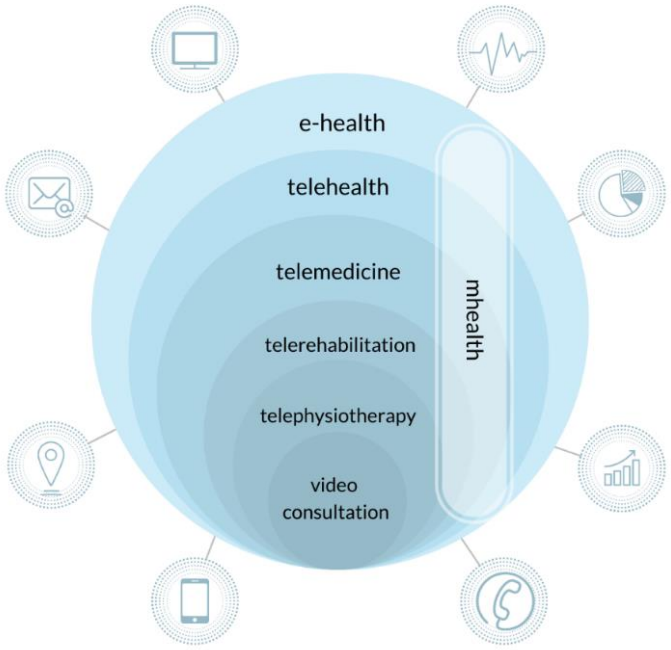

Figure 1. Video consultation in physiotherapy within e-health.
Adapted from [28].

Video consultation is used for health care professional education, consultations between health care professionals and patient care [43]. For the purpose of this thesis, only video consultation between physiotherapist and patient for clinical intervention will be discussed.

2.3.2 Benefits and disadvantages of video consultation

The benefits of telehealth services have been widely described in the scientific literature. Some of them are improved access to information and health care services, enhanced care delivery, improved health care professional education and monitoring of screening

programmes, and possibly lowered health care costs [44]. However, generalisation might not be appropriate and video consultation needs to be analysed independently.

Video consultation offers advantages at different levels. Benefits that are common in different health care fields are safety and being less physically challenging than in-person care [45]. Also, saving travelling time, reducing impact of travel on symptoms and decreasing travel cost and productivity losses are important benefits [46, p. 19], [47]. Moreover, video consultation is more convenient than in-person consultation for people with mobility or transport difficulties [48], and has the potential to support patients whose conditions are sensitive or intimate in nature [49]. Furthermore, patients might have the opportunity to be assisted by family members, which may not be possible in other circumstances [50].

The benefits are especially evident when a pandemic is declared. Social distancing, individual freedom limitation and COVID-19 prioritization for in-person health care make video consultation an essential service for those with nonurgent conditions, such as most patients with MSK conditions, helping physiotherapists maintain continuity of care [51].

Nonetheless, disadvantages have been also reported. Video consultation might be a barrier in reading body language and might have negative implications due to lack of physical contact, inequality of access, need of digital literacy and lack of regulation in some countries [34], [45], [50].

2.3.3 Clinical evidence of video consultation in MSK physiotherapy

A significant body of scientific literature regarding telerehabilitation has emerged in the last years. A search of the database PubMed for the term “telerehabilitation” returned 447 results from 2000 to 2015, whereas the same search carried out for the following five years, from 2015 to 2020, returned 824 results. However, the term “telephysiotherapy” revealed only 2 and 8 results, respectively. This does not mean that telephysiotherapy has not been studied much, but that this term has not been widely used in scientific research and “telehealth” and “telerehabilitation” have been the main terms used when referring to remote physiotherapy.

According to a systematic review and meta-analysis, real-time telerehabilitation has proved to be effective and comparable to conventional management of MSK conditions, such as osteoarthritis, non-specific low back pain or following total knee arthroplasty (TKA); improving pain, disability and physical function [2].

Regarding video consultation, a systematic review determined the validity and reliability of physiotherapy assessment for MSK conditions, finding that remote evaluation of different components of physical assessment is technically feasible to measure swelling, pain, range of motion, balance, gait, muscle strength and functional outcomes, with overall good concurrent validity. Also, inter-rater and intra-rated reliabilities showed good to excellent levels for physiotherapy assessment of MSK conditions [52]. Moreover, the validity of video consultation assessment was reported by a primary study, with a high level of agreement on diagnosis compared to standard in-person assessments [48].

Two systematic reviews and meta-analysis recommended video consultation for patients after TKA, as pain control and improvements in physical activity were comparable to in-person service, and improvement of functional recovery was comparable or better [53], [54].

Also, a controlled study showed that video consultation was feasible and effective for the management of patients who underwent shoulder joint replacement. The patients treated via video consultation improved significantly more in mobility, function, shoulder pain and quality of life than those who received conventional in-person treatment [55].

Moreover, a randomized controlled trial (RCT) reported that there is strong evidence for clinical noninferiority of video consultation and its use is considered an effective alternative to conventional service for follow up after TKA [56]. In addition, another RCT showed that acceptance and commitment therapy provided via video consultation was noninferior to in-person acceptance and commitment therapy for chronic pain [57].

Furthermore, a RCT analysed the cost of video consultation compared to home visits for patients post-TKA, reporting cost savings in the video consultation group [58].

Additionally, a RCT and an embedded study in a randomized trial informed that MSK physiotherapy via video consultation shows high levels of patient and physiotherapist satisfaction [59], [60].

The above-mentioned studies reported validity and reliability of video consultation for physiotherapy assessment, noninferiority, cost savings and high satisfaction among patients and physiotherapists. Therefore, video consultation may be considered as a means to provide MSK physiotherapy services.

2.3.4 Quality attributes and applications of video consultation

In 2002, the Quality Attribute Model was developed to facilitate the comprehension of the attributes involved in direct patient care in medical video consultation provision. The different quality attributes described were technology attributes, usability attributes, physical environment attributes and human element attributes. The technology attributes comprised the features of the equipment and telecommunication involved in video consultations. The usability attributes entitled different features that patients and health care professionals experience in video consultations. The physical environment attributes represented the surrounding conditions. The human element attributes referred to the interactions between stakeholders [43]. Figure 2 shows all the attributes of the model.

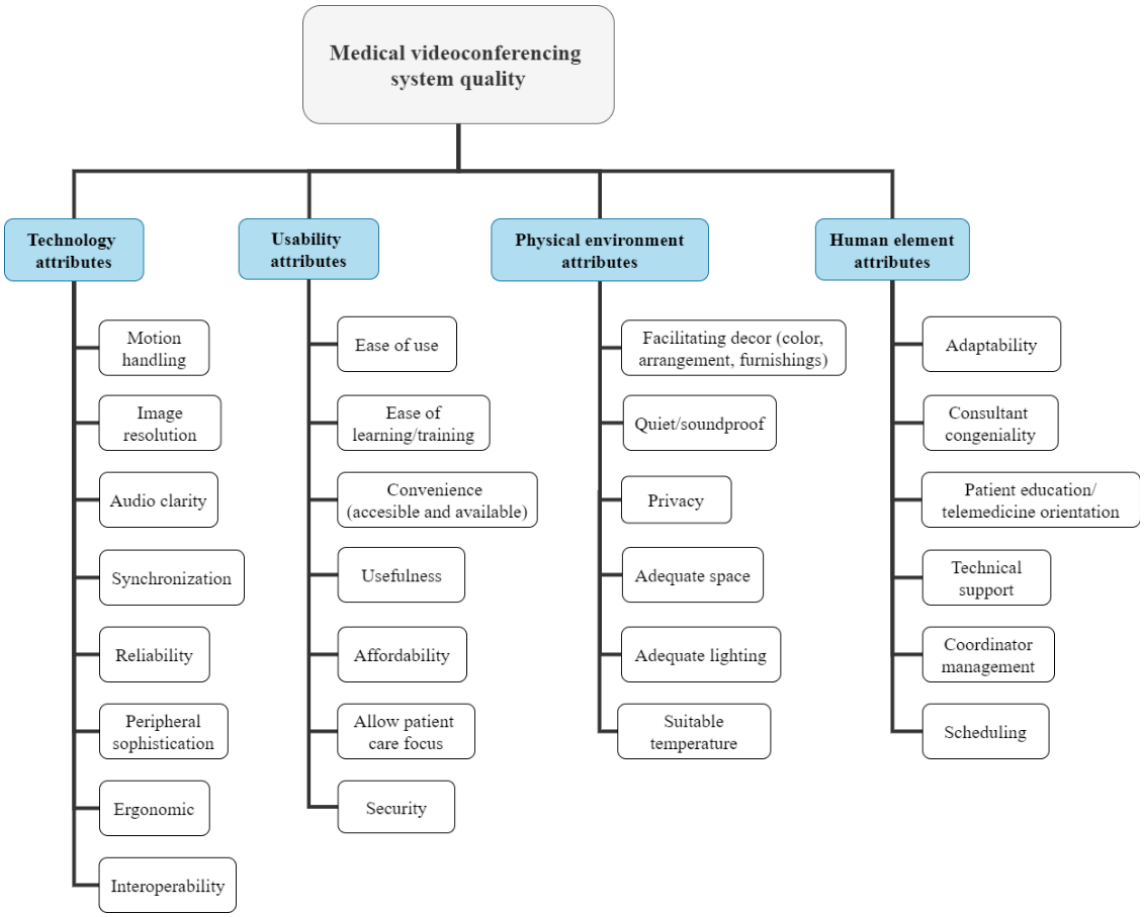

Figure 2. Medical video consultation quality attributes [43].

The information regarding the different attributes was gathered in interviews, observations and review of relevant literature. One of the main values of this study lies on the involvement of different stakeholders, which enriched the result. However, an important stakeholder was not taken into consideration, the patient. For this reason, another study was conducted in 2014 to explore the quality attributes required in video consultations from the perspective of the patient, based on the Quality Attributes Model [61]. In this study, the attributes did refer to the video consultation process, pre-consultation and post-consultation. Moreover, this study divided the video consultation process into three stages: beginning of the video consultation, body of the video consultation and closing of the video consultation. Furthermore, the different attributes were grouped into system quality, information quality, service quality and use quality. Additionally, the information quality attributes were divided into technology and physical environment aspects, and service quality attributes into human and physical environment aspects. Figure 3 shows all the attributes of the model.

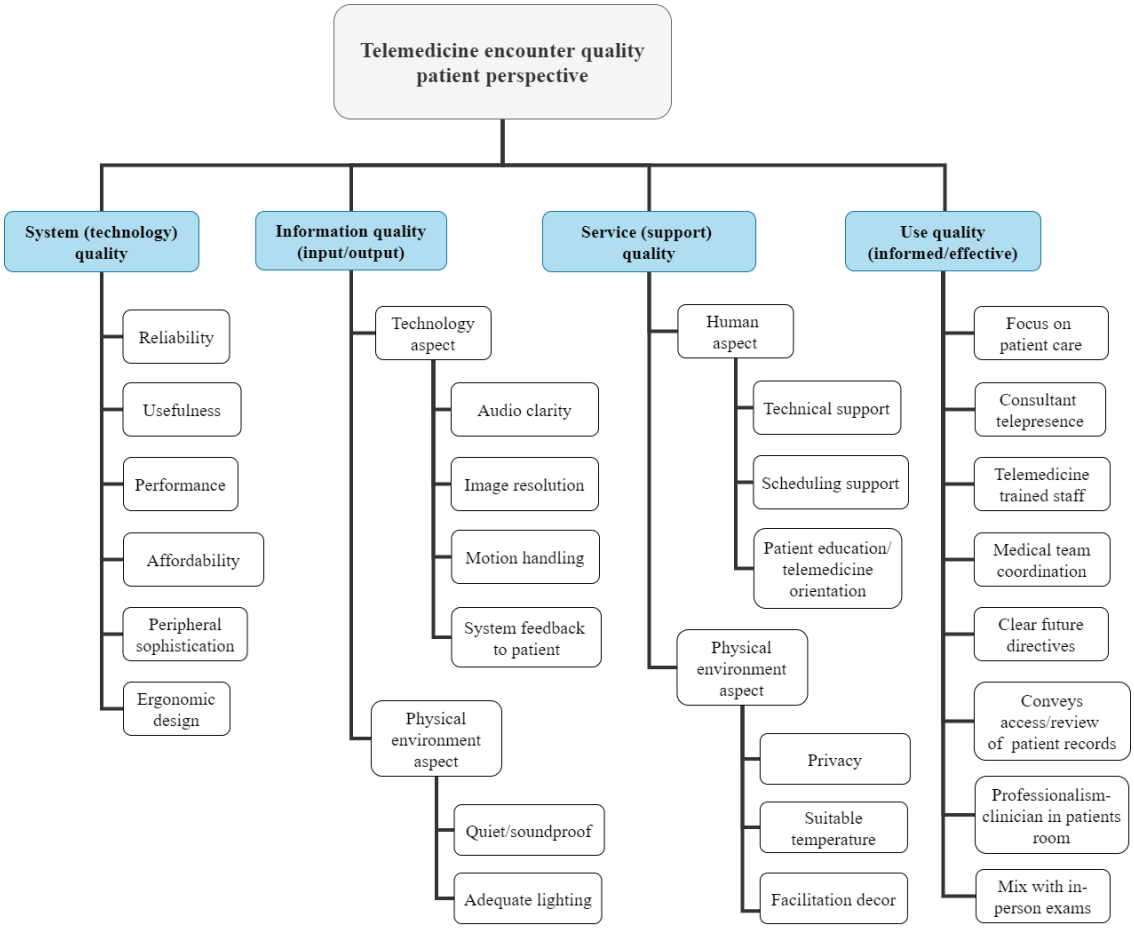

Figure 3. Telemedicine service encounter quality model – patient perspective [61].

The purpose of this study was to provide a taxonomy to assess the quality of video consultation encounters according to the existence or absence of the mentioned attributes and the suitability for their recommended use. This paper may be considered as a good overview to understand the different needs for good practice on video consultation, as it followed a validation process. However, the authors reported that it was unclear if the model could be generalisable to private sector facilities and other countries, as the study was performed in the USA [61]. Also, it refers to video consultation in medical settings in general, not a specific health care field in particular.

Another aspect of interest is the fact that telehealth services commonly comprise clinical and nonclinical applications [62]. The different applications are summarised in Figure 4. The clinical applications are relevant for this thesis, as assessment, diagnosis, treatment, consultation, monitoring and review are part of the management process of MSK conditions in physiotherapy.

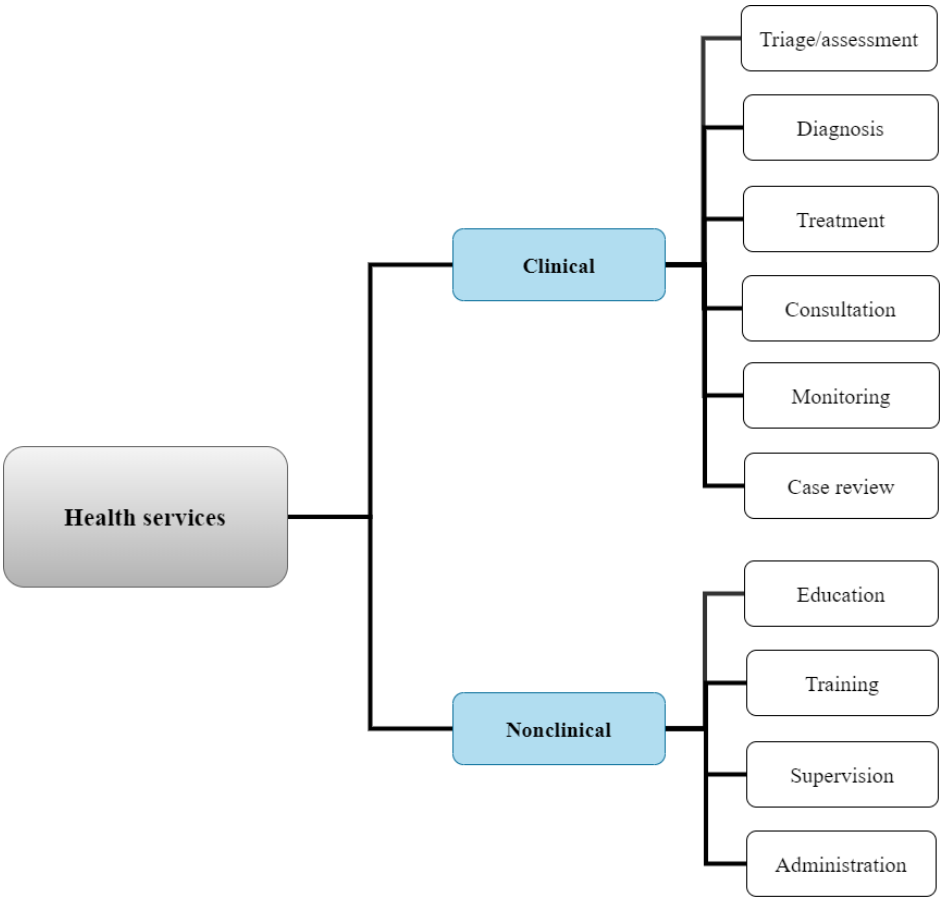

Figure 4. Health services classification. Adapted from [62].

The taxonomy described in this section might be a good overview to understand the general context where video consultation for MSK conditions can be positioned, as well as its possible general characteristics.

2.3.5 Telephysiotherapy guidelines

The previously mentioned report (chapter 2.2) developed by the WCPT, in collaboration with the INPTRA, highlighted the importance that digital physiotherapy has acquired in recent years in physiotherapy practice and how the development of guidelines by professional physiotherapy organizations were becoming more prevalent [34].

Different guidelines for the provision of telephysiotherapy in general and video consultation in particular have been developed by physiotherapy professional bodies and other organizations worldwide. The number of guidelines has undergone rapid growth in recent times due to the urgency of alternative services to provide care during the coronavirus pandemic. The guidelines developed by the Australian Physiotherapy Association (APA) and the *Colegio de Kinesiólogos de Chile* (COLKINE), professional body for Chilean physiotherapists, could be considered the most extensive and comprehensive.

The APA developed the "Telehealth Guidelines Response to COVID-19", which have been the most referred guidelines during the pandemic. The purpose of these guidelines was to help physiotherapists ensure safety and quality in the provision of video consultation through the development of a framework. The body of this document gave recommendations divided into the different stages in which the service is provided: pre-consultation, consultation and post-consultation. The recommendations included information regarding informed consent, data collection and safety, communication with the patient and possible carer or family member involved, privacy, risks derived from the service, possible technical issues and ethical considerations; always contemplating the standards of physiotherapy practice [10].

The COLKINE developed guidelines with clinical recommendations, ethical and safety considerations, tips for environment preparation and a checklist with actions to undertake before and during the video consultation. The clinical recommendations mainly related to informed consent, privacy and confidentiality, and records keeping. The ethical and safety considerations focused on providing advice to ensure the application of standards

of practice and to identify possible risks for the patient. The tips for the environment preparation aimed to help physiotherapists choose the software for the video consultation, emphasizing the importance of the settings, and offered guidance on how physiotherapist and patient should prepare the room and appearance for an optimal consultation [11].

More examples of professional bodies and other organizations that also developed documents to support telephysiotherapy provision are the American Physical Therapy Association (APTA) in the USA [12]; the Allied Health Association of New Zealand (AHANZ) and the Physiotherapy Board of New Zealand (PBNZ) in New Zealand [13]; the *Colegio de Terapeutas de Costa Rica* (CTCR) in Costa Rica [14]; the *Asociación Colombiana de Fisioterapia* (ASCOFI), in cooperation with the *Colegio de Fisioterapeutas de Colombia* (COLFI), the *Asociación Colombiana de Facultades de Fisioterapia* (ASCOFAFI) and the *Asociación Colombiana de Estudiantes de Fisioterapia* (ACEFIT) in Colombia [15]; Physiotherapy Alberta - College + Association in collaboration with the College of Physiotherapists of Manitoba [16], and the Canadian Alliance of Physiotherapy Regulators (CAPR) in Canada [17]; and the Chartered Society of Physiotherapy (CSP) in the UK [18].

The documents mentioned in this section offer general information regarding clinical telephysiotherapy or video consultation in physiotherapy, but do not approach MSK physiotherapy specifically. Moreover, the methodology used to develop the documents is not specified in detail, which results in the impossibility to identify their validation process. Furthermore, it is unclear what stakeholders were involved in the production of the documents and whether the opinion from patients was taken into consideration or not.

Additionally, it is of interest to highlight that telephysiotherapy is currently covered by health funds in some countries, Australia and Estonia being two examples [63], [64]. In Australia, several private health funds provide benefits for individual telephysiotherapy consultations. On the other hand, in Estonia, reimbursement is provided by the public insurance fund, the Estonian Health Insurance Fund (EHIF), for individual and group consultations; even though detailed guidelines on the provision of telephysiotherapy have not been developed in this country.

2.4 Research problem

To date, to the best knowledge of the author, there is no consensus criteria on best practice on MSK physiotherapy via video consultation to help clinical physiotherapists in their daily provision of care.

MSK conditions are an enormous global problem that needs to be addressed [1]. The emerging evidence suggests that video consultation for MSK conditions is providing new opportunities for physiotherapists to deliver high-quality care in ways that can benefit patients and health care systems. Although video consultation in MSK physiotherapy might have not been studied and delivered as widely as other services, there is growing clinical evidence that shows its validity, reliability and noninferiority compared to traditional in-person MSK physiotherapy [48], [52]–[54]. Also, in MSK conditions with scarce clinical evidence, MSK physiotherapy via video consultation might be more beneficial than no treatment for those who cannot have in-person care due to local mobility restrictions and overloaded health care systems during the pandemic.

Physiotherapists shall be guided by clinical practice guidelines or consensus on best practice when practicing. Guidelines, along with professional standards, are usually developed by professional bodies or other organizations [30]. An example of the importance of these guidelines was shown by a survey performed by the American Telemedicine Association (ATA) that revealed that guidelines developed by the ATA and other professional societies were being habitually used in both public and private sectors [65] and telemedicine practitioners believed that guidelines were needed for guidance in clinical practice. For this reason, several guidelines have been developed by physiotherapy professional bodies and other organizations from different countries, with a range of recommendations on the provision of telephysiotherapy [10]–[18]. However, despite the enormous efforts physiotherapy professional organizations have made to help physiotherapists deliver video consultation, mainly as a response to the pandemic, all guidelines focused on either general guidance on telephysiotherapy services or guidance on video consultation in physiotherapy aimed to address any condition and not MSK conditions specifically. Also, the methodology for the development of the guidelines, as well as the stakeholders involved, were unclear. Moreover, some countries have not developed any guidelines or consensus and physiotherapists are providing the service without guidance.

The lack of guidelines on the provision of MSK physiotherapy via video consultation might be due to the novelty of the service, which in turn might be on account of MSK physiotherapy being considered a purely “hands-on” discipline [19], [51]. A recent study reported that two-thirds of MSK clinicians, physiotherapists most of them, did not use telehealth prior the pandemic, with median proportion of telehealth consultations weekly rising from 0% before the pandemic to 62% during the pandemic. This study also informed that MSK physiotherapists, along with other allied professionals treating patients with MSK conditions, adopted telehealth (mostly video consultation) during the coronavirus pandemic and took it as part of their clinical role, yet most felt they needed adequate guidance to deliver the service. Moreover, the study encouraged the development of practice guidelines and guidance for MSK clinicians [19].

It is also of importance to mention that, although quality attributes for video consultation were described in 2002 and 2014 in the USA, the technological environment has progressed rapidly and the results might not be generalisable to different sectors, nor other countries different from the USA [61]. Moreover, once again, it was a general approach to video consultation that might differ from MSK physiotherapy needs.

Consequently, the author argues that an international consensus on best practice on the provision of physiotherapy via video consultation for patients with MSK conditions is needed and such consensus should take into consideration the expert opinion of relevant stakeholders from the private and public sector, including patients, as their opinions are essential in patient-centred health care systems [66], [67].

3 Aim and research question

The aim of this study is to achieve an international consensus on best practice on the provision of physiotherapy via video consultation for patients with MSK conditions to guide physiotherapists in their daily practice.

Therefore, the research question is “what can be considered best practice on the provision of physiotherapy via video consultation for patients with MSK conditions?” The Delphi method was used to give answer to this question, aiming to reach a consensus among a panel of international experts, based on a rationale described in chapter 4.3.

4 Methodology and methods

4.1 Defining the Delphi method

In order to accomplish the aim of this thesis, a mixed method research design using the Delphi technique was performed. Mixed method research design is defined as the collection or analysis of qualitative and quantitative data in a study, with the data being collected in a concurrent or sequential way to posteriorly be incorporated at one or more phases in the research process [68].

The Delphi method or Delphi technique is a group facilitation technique that was developed by the RAND Corporation in the 1950's and uses an iterative multistage process to reach group consensus among experts [69]. It aims to obtain consensus on the opinions of experts via a series of questionnaires, commonly called rounds, completed anonymously. This approach is frequently used in health sciences [70], [71]. The opinions are shared informing the experts of the situation of the different rounds, which allows the identification of aspects not previously considered or not understood as important, offering the possibility to modify their opinions. For the purpose of this thesis the Delphi method was applied according to Hasson [71].

4.2 Strengths and limitations of the Delphi method

The Delphi method has several strengths that eliminate barriers to debate and facilitate consensus among experts. Direct confrontation of the experts is avoided [72], allowing independent opinions, not based on dominant views [73]. It enables anonymity, which facilitates creativity and honesty when sharing ideas [73], [74]. Experts have the opportunity to enrich their knowledge and revise possible misconceptions [69], [75]. Also, the Delphi method allows group communication eliminating geographical restrains, saving time and reducing travel costs [73]. Moreover, the fact that it comprises quantitative and qualitative methods, enables the provision of a more complete view [74]. Furthermore, validity of the data is enhanced by bidirectional feedback over different

rounds [73]. Additionally, the electronic Delphi, which is the case of this thesis, allows the connection of opinions of worldwide experts while ensuring security and accessing the collected data in an uncomplicated way [76].

Notwithstanding, although the Delphi method offers several benefits, there are also limitations that need to be addressed. The Delphi method is time-consuming and arduous for both author and experts, reason why it is susceptible to dropouts. Dissatisfaction with the process might also be a reason for dropouts [73]. Moreover, anonymity means that attribution of ideas does not take place, which might decrease the willingness to participate [74].

4.3 Rationale for selecting the Delphi method

Best practice is a level of agreement about certain knowledge that may narrow the gap between research and practice and offer a foundation for clinicians and researchers to work as a team to make research useful in practice [77]. The Delphi method appears to be an appropriate approach to reach such level of agreement for a number of reasons. A characteristic of the Delphi method has been described to be usefulness to achieve consensus in a field with uncertainty [78], which is the case of video consultation in physiotherapy for MSK conditions. The Delphi method shows effectiveness for obtaining consensus on criteria for best practice in different fields of study [79] and is recommended to facilitate decision-making or solution of problems [80], these also being essential for this thesis. In addition, the Delphi strategy is a popular method in information systems (IS) research [81].

Also, an important advantage of this method is that reduces possible negative impact of direct confrontation of experts, through anonymity and avoiding involvement of meetings [72], [81]. The anonymity is between experts, but not between the author and experts, which gives the opportunity to follow up for explanations or clarifications to reach more accurate conclusions [81]. This leads to the possibility to share ideas and respond to opinions, unbiased by pressures of others [82].

Moreover, the Delphi method enables the collection of opinions and summarised knowledge from experts who are in locations physically apart from each other, without requiring to get the group together, which is essential when the panel is composed of

international experts [81]. This is the case of this thesis in which the internationality of the panel was aimed to have a more heterogeneous group, as research literature has reported that heterogeneity in expert groups may lead to better outcomes. This method overcomes the logistical issues involved in meetings, for instance, different time zones [72].

Other crucial aspects are validity and non-response rate. The Delphi method enables experts to reflect on the problem and possible solutions over various rounds, which enhances the validity of the results [73]. The feedback that experts receive encourages the revaluation of the original views on the topic of study [75]. A low non-response rate is of great importance to have an adequate number of experts contributing to the consensus, and the Delphi method is suitable for this purpose, since assurance of participation is personally obtained [81].

Although other methods linked to group communication with the formation of group consensus were initially considered, the Delphi method was the most appropriate approach. Other options were nominal group technique and brainstorming, both requiring meetings with the experts, which might be a disadvantage when aiming international consensus, mainly due to the difficulties that different time zones entail [80], [83].

Therefore, the Delphi method was perfectly suitable for this thesis, as it provides a series of advantages that are necessary for the development of the consensus aimed.

4.4 Identification and selection of experts

There are mainly two key factors regarding the identification and selection of experts that need to be addressed when performing the Delphi method: the size of the panel and the qualifications and experience of the experts [84]. Regarding the size of the panel, there are no guidelines on what is considered a small, large o recommended sample size. However, it has been reported to go from a minimum of 4 to a maximum of 3000 experts [85], 5 to 10 experts being considered adequate as mentioned in [86] and [87]. Although there are no defined criteria for the selection of the panel, it is evident that the expertise and experience of the experts enhance the credibility of the Delphi study [75], [88]. Hence, the representativeness of the panel should be based on qualities of the experts rather than quantity [78]. Subsequently, the number of experts invited to take place in this

Delphi study was eight and the qualifications and experience of the experts were considered an essential prerequisite for the selection.

A panel of experts with different qualities might enrich the results of the Delphi method, as the opinions or views on the topic may differ between them [89]. Thus, heterogeneity in the composition of the panel is advised, as it may lead to better results [90], [91]. Moreover, in studies related to clinical interventions, specialists in the particular area are considered to be appropriate [92]. Therefore, this study included heterogeneity within the MSK physiotherapy specialty, given by a panel of experts from several countries, who work in different sectors (private, public or both) under different roles. Also, as health care systems are (or aim to be) patient-centred, patients are essential stakeholders to consider; however, in many occasions this is not taken into account [67], [87]. In this thesis, due to the specialised nature of the topic, patients were represented by physiotherapists who had experience as patients.

The qualities of the experts were defined by their professional category and number of video consultations performed. All the experts were international clinical MSK physiotherapists who had performed, at least, 25 video consultations. Moreover, the MSK physiotherapists needed to meet, at least, one more requirement: being an MSK physiotherapy researcher, being a digital physiotherapy researcher, being an MSK professor, being a digital physiotherapy professor, having a management role or having experience with video consultation as a patient. MSK physiotherapists who were retired for longer than two years or were unable to speak English or Spanish to the level of comprehending the questionnaires or guidance provided were not considered. The questionnaires were elaborated in English, giving the option to translate them into Spanish, if required.

The identification and selection of the experts who participated in the Delphi study followed a three-step procedure. Firstly, an extensive search was performed to find potential experts by contacting MSK physiotherapy researchers and professors from different countries, who indicated the professionals who could be eligible according to the inclusion criteria. Secondly, the author identified the suitable experts and contacted them personally, either by telephone or email. Thirdly, the experts who accepted to participate in the Delphi study were sent a formal invitation, along with a consent form with all the information regarding the Delphi process, by email (Appendix 2 and

Appendix 3). Moreover, it is of interest to mention that the selection was performed using a combined purposive sampling technique, more specifically a combination of criterion sampling and expert opinion sampling [93].

4.5 Delphi rounds

The Delphi process included three rounds that were performed between 9 February and 12 April 2021. For the first round, a semi-structured questionnaire with intentionally broad questions, to avoid sharing preconceived ideas with the experts, was developed. The questionnaire was divided into four themes: sociodemographic information, pre-MSK video consultation, MSK video consultation intervention and post-MSK video consultation. The sociodemographic theme was comprised of 8 close-ended questions. The pre-MSK consultation, MSK video consultation intervention and post-MSK consultation themes had 2, 13 and 2 open-ended questions, respectively (Table 1 shows the outline of the first-round questionnaire and Appendix 4 shows the questionnaire in more detail). While the open-ended questions from the pre-MSK video consultation and the post-MSK video consultation themes requested recommendations in general terms, the MSK video consultation intervention questions were divided into the different phases that an MSK physiotherapy consultation comprises: introduction of the consultation, assessment, diagnosis, treatment or management plan and closing of the consultation [62]. Moreover, the technology, environment and human interaction (communication) attributes mentioned in the literature were taken into consideration for the formulation of the questions [43], [61].

Table 1. First-round questionnaire

Theme	**Questions**
Sociodemographic	Age
	Gender
	Country of residence
	Professional category
	Experience in video consultation as a patient
	Sector you work in
	Number of video consultations performed (approximately)
	Work experience (years)

Theme	Questions
Pre-MSK video consultation	What recommendations or previous information would you give physiotherapists who are going to perform MSK video consultations, before starting them?
	What recommendations or previous information would you give patients before starting an MSK video consultation?
MSK video consultation intervention	What recommendations would you give physiotherapists to address the beginning of the MSK video consultation?
	What recommendations would you give patients to address the beginning of the MSK video consultation?
	What recommendations would you give physiotherapists for the performance of the assessment and diagnosis of patients with MSK conditions via video consultation?
	What recommendations would you give patients with MSK conditions to take into account for the assessment and diagnosis via video consultation?
	What recommendations would you give physiotherapists to provide adequate emotional support and an environment of trust for video consultation for patients with MSK conditions (to overcome the screen barrier)?
	What recommendations would you give physiotherapists for adequate management of verbal and non-verbal communication during an MSK video consultation?
	What recommendations would you give patients to address communication with the physiotherapist in video consultations for MSK conditions?
	In the case of technical difficulties occurrence in MSK video consultation (e.g., audio malfunctioning and/or low-quality image), what recommendations would you give physiotherapists?
	In the case of technical difficulties occurrence in MSK video consultation (e.g., audio malfunctioning and/or low-quality image), what recommendations would you give patients?
	What recommendations would you give physiotherapists to proceed with the management program phase of the MSK video consultation?
	What recommendations would you give patients to address the management phase of the MSK video consultation?
	What recommendations would you give physiotherapists for adequate closing of an MSK video consultation?
	What recommendations would you give patients for adequate closing of the MSK video consultation?

Theme	Questions
Post-MSK video consultation	What recommendations or advice would you give physiotherapists after completing an MSK video consultation?
	What recommendations or advice would you give patients after completing an MSK video consultation?

The second round consisted of a semi-structured questionnaire based on a thematic analysis of the responses from the first-round questionnaire. The second-round questionnaire presented statements to be rated by the experts using a 5-point Likert scale ("strongly disagree", "disagree", "neither agree nor disagree", "agree", "strongly agree"), as it has been reported to be the most used rating scale when agreement is explored [94]. Also, possibility of free-text responses was offered to the experts, giving the opportunity to elaborate responses or suggest modifications for each statement. This made this part of the study process both quantitative and qualitative.

The criteria for consensus on inclusion of statements as recommendations on best practice on video consultation in MSK physiotherapy were based on the percentage of experts rating "agree/strongly agree" the statements. Only statements rated "agree/strongly agree" by, at least, 80% of the experts were included in the final list of recommendations.

The third-round questionnaire was also a semi-structured questionnaire, with statements to be rated with a 5-point Likert scale and giving the option to leave a comment after each statement. The statements of this third round were based on the responses from the second round:

- Statements rated "agree/strongly agree" by, at least, 80% of the experts in the second round were excluded from the questionnaire for the third round.
- Statements rated "agree/strongly agree" by 70-79% were included for re-rating in the third-round questionnaire. Also, statements modifications were performed when the experts suggested changes.
- Statements rated "neither agree nor disagree" by more than 50% of the experts were included in the third-round questionnaire for re-rating.

- Statements rated “agree/strongly agree” by less than 70% of the experts were excluded from the third-round questionnaire, except for those that were modified based on suggestions from the experts, that were included for re-rating.

The statements rated “agree/strongly agree” by, at least, 80% of the experts in the third round were included in the final list of recommendations, along with those that reached the inclusion criteria in the second round. The statements rated “agree/strongly agree” by less than 80% of the experts in the third round were excluded and no more rounds were performed.

This approach to the inclusion and exclusion of statements has been reported by other authors [95]. The reason why it was chosen was based on the nature of the thesis, limited by time and the busy schedules of the experts. Further rounds (for instance, a confirmation round) might have led to impossibility to finish the study within the required time frame.

The deadline for the first and second round was two weeks, whereas for the third round was 10 days. All the questionnaires were sent by email using the online survey platform Google Forms™ (Alphabet, Mountain View, CA, USA).

4.6 Data analysis

The demographic data of the experts from the first round was summarised using descriptive statistics; more specifically, mean, median and standard deviation (SD).

The responses to the open-ended questions from the first-round questionnaire were analysed using a deductive and inductive thematic analysis, following the six phases described in the literature (Figure 5). The themes being based on the different sections of the questionnaire made the analysis deductive and the sub-themes being developed taking into consideration the responses to the questionnaire made it inductive. Thematic analysis is suitable to summarize a large amount of data. Moreover, the use of thematic analysis is recommended when examining different opinions, highlighting correspondences and differences, and producing insights [96]. The coding was made manually. Once the codes, sub-themes and themes were generated, statements were elaborated and sent to the experts to be rated in the second round.

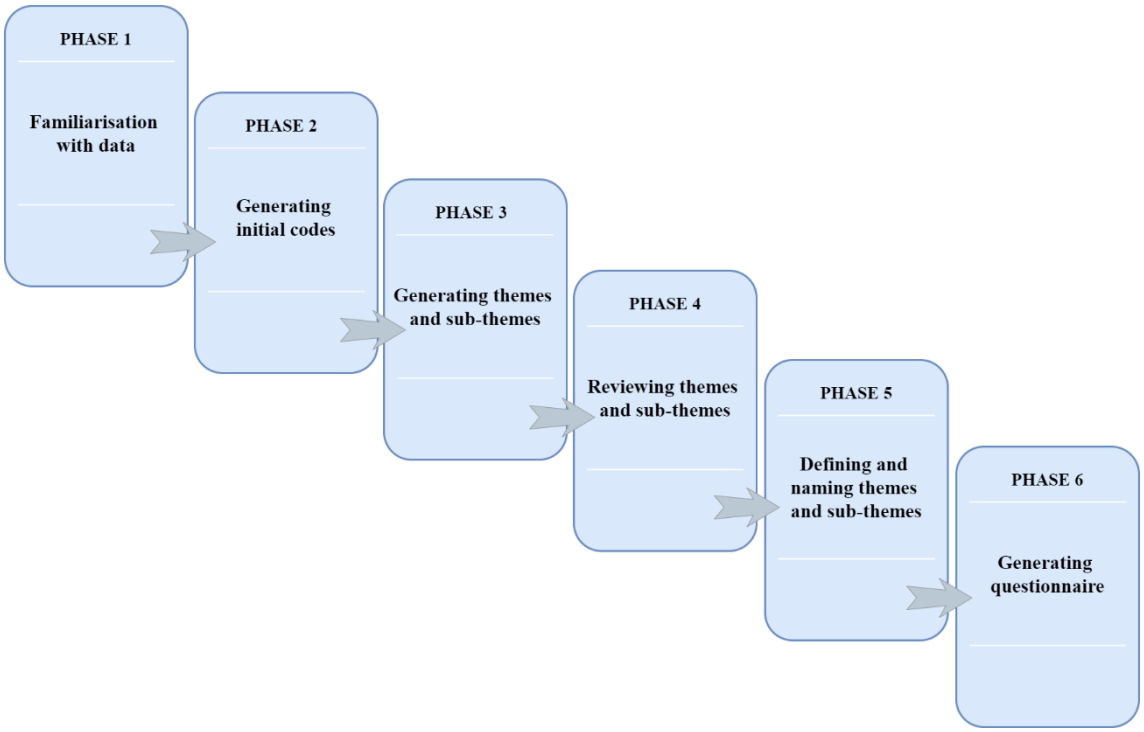

Figure 5. Thematic analysis phases. Adapted from [96].

A descriptive analysis was used to present the data gathered from the rating of the different statements from the second and third round, which was performed with the previously mentioned 5-point Likert scale. Central tendency of each statement was measured using median and percentage consensus rates, whereas interquartile range (IQR) was used to measure level of dispersion. Although the consensus criteria for inclusion of statements were based on percentage rates, median and IQR were calculated to facilitate understanding of the data collected [71]. Qualitative data from comments and suggestions shared by the experts were analysed thematically and compared with existing statements.

4.7 Reliability and validity

Reliability appears to be a common issue when performing Delphi studies [88]. This thesis overcomes such issue by following the criteria for qualitative research described by Lincoln [97]: credibility, dependability, confirmability and transferability. Credibility was enhanced by the ongoing feedback provided by the experts. Dependability was achieved by having a representative panel of experts. Confirmability was ensured by a

detailed description of the process of data collection and analysis. Transferability can be determined through verification of the pertinence of the study [88].

Regarding validity, the Delphi method is based on the hypothesis that several experts are less probable to make wrong decisions than a single person. Moreover, the involvement of experts with knowledge of the topic and the different rounds might enhance validity. Furthermore, the response rate also plays an important role, as it affects validity. The recommended response rate has been suggested to be no less than 70% [98].

4.8 Ethical considerations

Although anonymity is considered to be one of the characteristics of the Delphi method, this is partially true. The author must know the identity of the experts to detect non-respondents and ensure a high response rate by sending reminders. Therefore, it is of importance to mention that the Delphi study may be considered “quasi-anonymous” as the identity and opinions of the experts will be anonymous to others, but the author of this thesis [99].

Confidentiality of any information collected during this study that may identify the experts was maintained. Also, privacy in gathering, storing and handling data was respected. Moreover, transparency and trustworthiness were ensured with the provision of information regarding the study process and the collection of informed consent electronically (Appendix 3).

5 Results

5.1 First round

A total of eight international experts were invited to participate in this study. The response rate of the first round was 100%. Reminders were sent and the deadline of two weeks was extended for four days, as requested by one of the experts. The experts were two MSK physiotherapists from Spain and one from Australia, Argentina, England, Estonia, Chile and Brazil. However, at the time this study was performed, the experts from Brazil and Chile were resident in Australia, where they moved to conduct research. Out of the 8 experts 3 were women and 5 men; 5 worked in the private sector, 2 in the public sector and 1 in both. The mean age of the experts was 34.25 (SD=4.14). The average number of video consultations they had performed was 103.75 (SD=151.17), with a median of 50. Their work experience was 12 years (SD=4.76) on average. The different roles of the experts are presented in a comprehensive manner in Table 2.

Table 2. Roles of the panel of experts

Roles	**MSK physiotherapist**	**MSK and/or digital physiotherapy researcher**	**MSK and/or digital physiotherapy professor**	**Management**	**Patient**
Expert 1	x	x (MSK)			
Expert 2	x	x (MSK)			x
Expert 3	x	x (MSK)			
Expert 4	x	x (MSK and digital)	x (MSK and digital)	x	
Expert 5	x		x (MSK)		x
Expert 6	x		x (digital)		
Expert 7	x				x
Expert 8	x		x (digital)	x	

The data collected from the open-ended questions was manually coded, following the previously explained thematic analysis (chapter 4.6), resulting in 111 statements, divided into 3 themes and 3, 8 and 5 sub-themes respectively (Figure 6). These statements, themes and sub-themes were used to develop the second-round questionnaire. The complete list of statements divided into themes and sub-themes can be seen in Appendix 5.

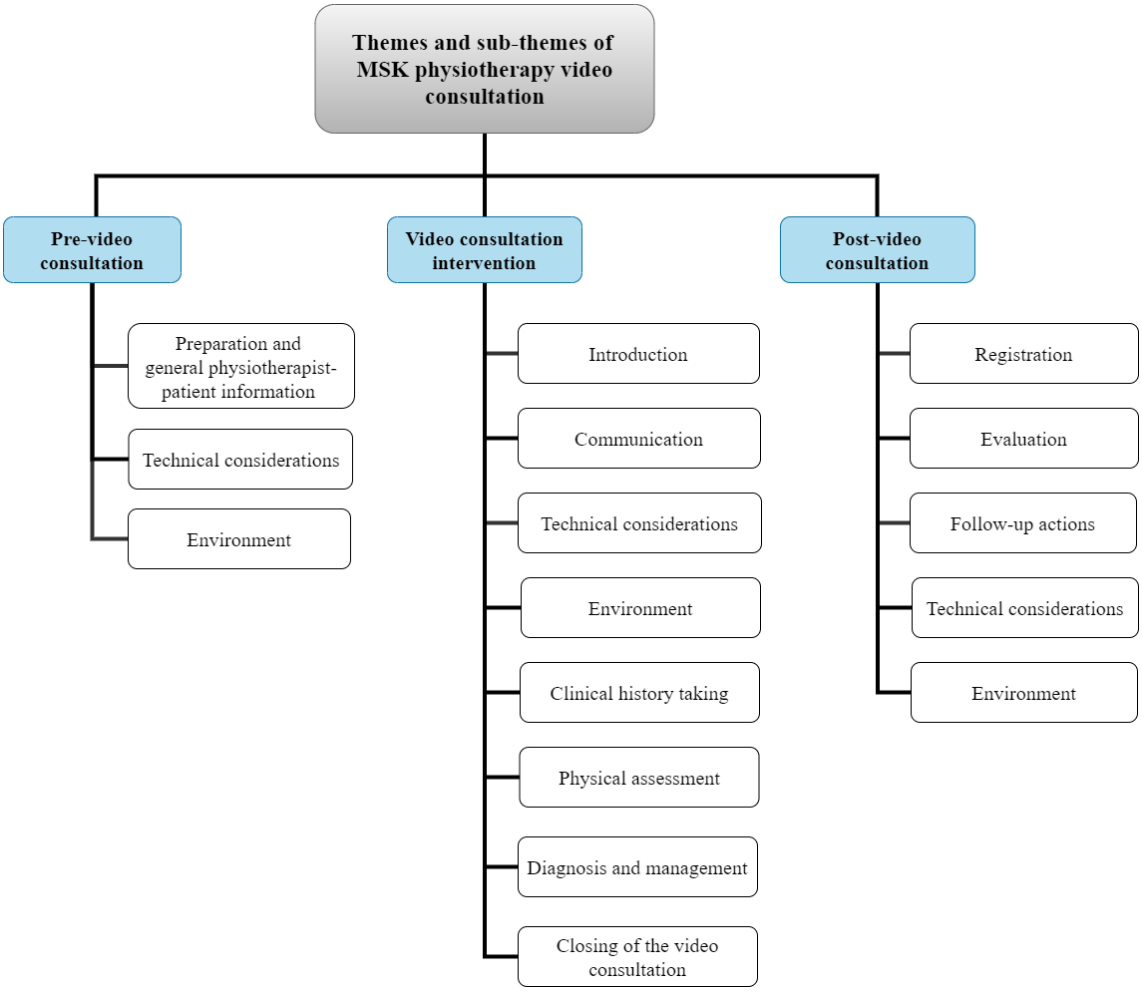

Figure 6. Themes and sub-themes extracted from the first-round Delphi study.

5.2 Second round

All the experts that participated in the first round were invited to take part in the second round. The response rate was 87.5%. The dropout of one of the experts was due to having a busy schedule. Reminders were sent during this round and the deadline of two weeks was met.

The questionnaire from the second round (based on the first-round results), along with the instructions for the completion of the questionnaire and information regarding the

results from the first round were emailed to the experts (Appendix 6 and Appendix 7), obtaining the results described below.

The number of statements that were rated “agree/strongly agree” by, at least, 80% of the experts was 91 (82%). The statements rated “agree/strongly agree” by 70-79% of the experts were 13 (11.7%) and the statements rated “agree/strongly agree” by less than 70% of the experts were 7 (6.3%). There were no statements rated “neither agree nor disagree” by more than 50% of the experts. More in-depth results are available in Appendix 8, where the rating of the experts, median and IQR for each statement are presented.

Moreover, experts suggested the modification of 3 statements, 2 rated “agree/strongly agree” by 70-79% of the experts and 1 rated “agree/strongly agree” by less than 70% of the experts. The statements to be modified are below:

- Provide the patient with information regarding scientific evidence supporting the use of video consultation (it works as well or better than face-to-face consultation, is safe, effective, convenient and most assessments, high value education and exercise can be provided, etc.).
- Feeling comfortable sharing screen is important.
- Ask the patient to leave adequate time between the consultation and his/her next obligation (e. g., meeting) to think through what was said and done.

The statements after modification are below:

- When high-quality scientific evidence is available, provide the patient with information regarding scientific evidence supporting the use of video consultation (it works as well or better than face-to-face consultation, is safe, effective, convenient and most assessments, high value education and exercise can be provided, etc.)
- Feeling comfortable sharing screen is important, for both the physiotherapist and the patient.
- Ask the patient to leave adequate time between the consultation and his/her next obligation (e. g., meeting) to think through what was said and done during the video consultation.

It is also of interest to mention the comments shared by experts explaining their reason for the low rating of 3 of the 6 statements that were excluded after the second round. Experts considered the following statement to be very similar to a previous statement and, therefore, it did not add extra value to the study:

- Ensure that the data related to the case is available, to know the purpose of the video consultation (previous history, diagnostic tests, etc.).

Also, experts commented that the following statement was not necessary, since talking about scientific evidence could be overwhelming for the patient and was not required:

- Provide the patient with information regarding scientific evidence supporting the use of video consultation (it works as well or better than face-to-face consultation, is safe, effective, convenient and most assessments, high value education and exercise can be provided, etc.)

Moreover, experts considered that the following statement should not be included in the list of recommendations on best practice, owing to the fact that there is no strong scientific evidence supporting it:

- Explain how much evidence there is about how empowering the person and providing with good self-efficacy strategies can achieve similar or better goals than face-to-face consultation.

Following the inclusion and exclusion criteria, 91 statements were included in the list of recommendations on best practice on video consultation in MSK physiotherapy from the second round, 6 were definitely excluded from the study and 14 (3 of them modified) were shared with the experts in the third-round questionnaire to be re-rated. A more comprehensive presentation of this data, as part of a final overview of the entire Delphi process, is shared in chapter 5.4 (Figure 7).

5.3 Third round

The experts who took part in the second round were invited to participate in the third round. The response rate was 100%. Reminders were sent during this round and the deadline of 10 days was delayed one week, due to one expert being on holiday.

The third-round questionnaire with the 14 statements to be re-rated, along with instructions for the completion of the round and information regarding the results from the second round, were emailed to the experts (Appendix 9 and Appendix 10). The number of statements that were rated “agree/strongly agree” by, at least, 80% of the experts was 9 (64.3%). The statements rated “agree/strongly agree” by less than 80% of the experts were 5 (35.7%). The percentages, median and IQR regarding the third-round statements can be seen in Appendix 11.

5.4 Consensus on best practice

After three Delphi rounds, a consensus on best practice on video consultation provision in MSK physiotherapy was established. Figure 7 shows a flowchart that summarises the inclusion, exclusion and re-rating criteria of the different Delphi rounds, the number of statements that were included, excluded and re-rated in every round and the final number of statements that reached the criteria to be part of the consensus on best practice.

The consensus contains 100 statements, considered as recommendations on best practice for the provision of MSK physiotherapy services via video consultation, distributed under the themes and sub-themes previously presented in chapter 5.1 (Figure 6). The final list of recommendations can be seen below, in Table 3, Table 4 and Table 5. The recommendations under the pre-MSK video consultation theme are presented in Table 3, the recommendations corresponding to the MSK video consultation intervention theme are shared in Table 4 and the recommendations under the post-MSK video consultation theme are presented in Table 5. These tables also contain the round when each recommendation was added to the list, the percentage of experts “agreeing/strongly agreeing” to every item, median and IQR.

The different recommendations will be analysed in more detail in chapters 6.3 and 6.4, where the consensus reached will be compared to in-person MSK physiotherapy and national telephysiotherapy guidelines.

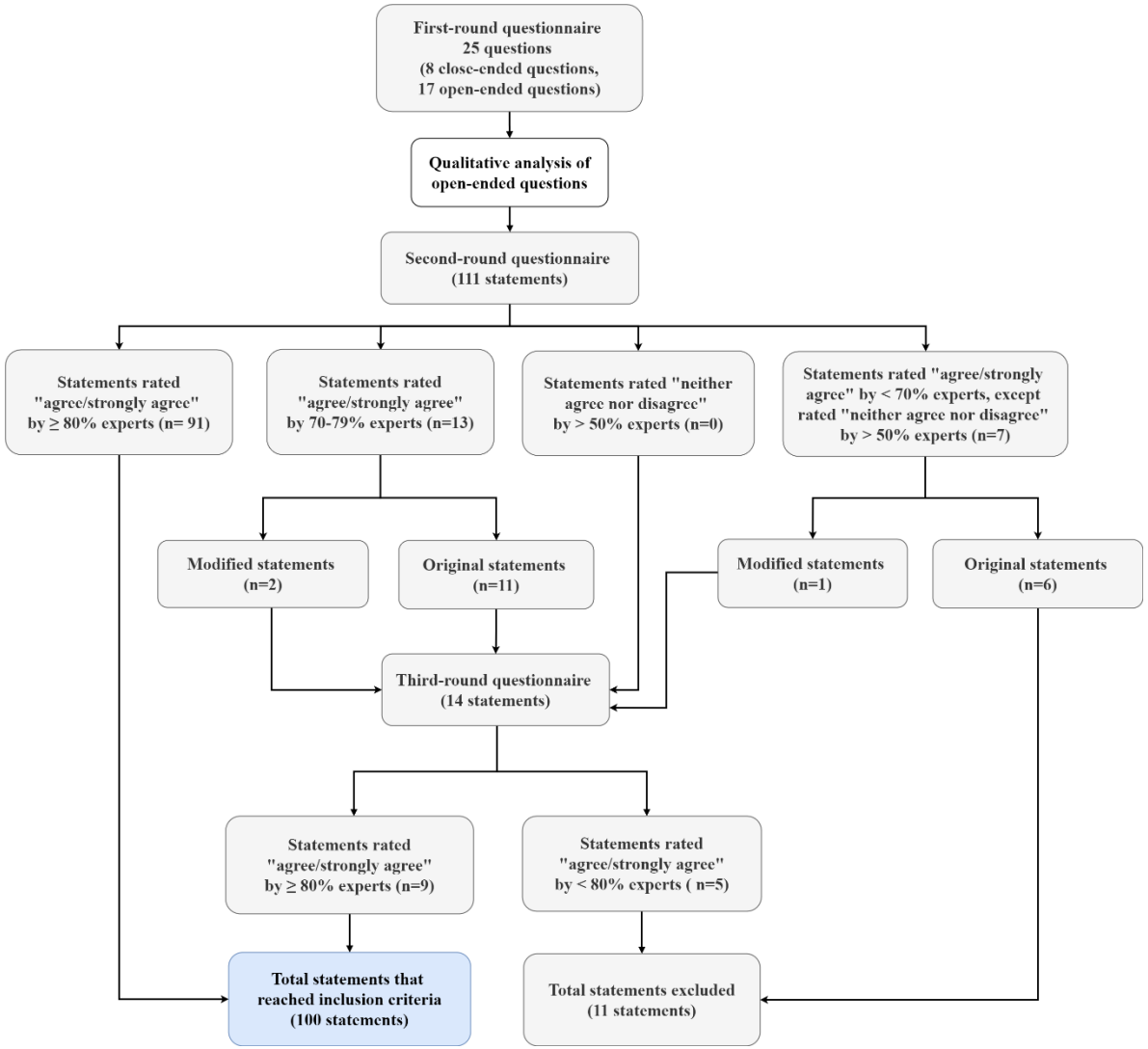

Figure 7. Statements included, excluded and re-rated.

Table 3. Recommendations for pre-MSK video consultation

Recommendations pre-MSK video consultation	**Round of inclusion**	**Experts rating agree/strongly agree (4+5) (%)**	**Median [IQR]**
Preparation and general physiotherapist-patient information			
1. Get education and training in video consultation provision (software and hardware use, verbal and non-verbal communication skills, safety, privacy, confidentiality, etc.).	2	100	5 [4,5]
2. Review the patient's medical history to determine the suitability of video consultation for the patient: type of MSK condition and other personal information and circumstances (age, sensory/cognitive/motor deficits, culture, language, etc.).	2	85.7	5 [4,5]
3. Plan the video consultation having in mind the scientific evidence available.	2	100	5 [5,5]
4. Prepare the materials to be used and shared (e.g., links to educational websites, videos of exercises and tests, etc.).	2	85.7	5 [4,5]
5. Be prepared for the activities to be performed during the session (e.g., set-up, records, physical assessment, exercise prescription, means of data collection, etc.).	2	100	5 [5,5]
6. Get the patient's telephone number and emergency contact details, in case assistance is needed, and be prepared for possible adverse events.	2	100	5 [5,5]
7. Follow same regulations and standards as required in face-to-face consultation (e.g., consent, record keeping, confidentiality), plus the specific requirements of the digital service (e.g., data handling, storage, privacy, etc.)	2	100	5 [5,5]
8. When high-quality scientific evidence is available, provide the patient with information regarding scientific evidence supporting the use of video consultation (it works as well or better than face-to-face consultation, is safe, effective, convenient and most assessments, high value education and exercise can be provided, etc.)	3	100	5 [5,5]

Recommendations pre-MSK video consultation	Round of inclusion	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
9. Provide the patient with information regarding the video consultation process via email (who the physiotherapist is, time of the consultation, possible need of a third person (e.g., to perform physical examination or in case of people at risk, children, elderly), risks of the video consultation, possibility to have other health professionals joining the video consultation, differences from face-to-face consultation (e.g., hands-on treatment is not possible, etc.)).	2	100	5 [4,5]
10. Ask the patient to wear appropriate clothing that allows to view and assess the injured site.	2	100	5 [4,5]
11. Invite the patient to share possible issues or doubts as clearly as possible during all the process (before, during and after the video consultation).	2	85.7	5 [4,5]
12. If possible, get informed consent before the consultation.	2	85.7	5 [4,5]
Technical considerations			
13. Ensure that the risks of the video consultation are not greater than other available methods. Safety goes always first.	2	85.7	5 [4,5]
14. Choose a video consultation platform that follows legislation requirements and is suitable for MSK conditions, keeping in mind attributes like privacy and security (end-to-end encryption), functionality, quality, ease of use, ease to learn, cost and built-in features.	2	100	5 [5,5]
15. Consider applications that might be needed for an MSK consultation (e.g., digital goniometer, application to share exercises, etc.). They might be stand-alone or integrated into the video consultation platform.	3	85.7	5 [4,5]
16. Embrace already available digital support tools to help (e.g., exercise videos, websites, etc.).	2	85.8	4 [4,5]

Recommendations pre-MSK video consultation	Round of inclusion	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
17. Feeling comfortable sharing screen is important, for both the physiotherapist and the patient	3	85.7	5 [4,5]
18. Keep in mind that a portable device might be needed, in case change of direction of the video is required.	2	85.7	5 [4,5]
19. Ensure that image, sound, motion handling (video), internet connection, etc., work well.	2	100	5 [4,5]
20. Verify that other software used for the video consultation (e.g., electronic medical record, billing system, etc.) and hardware (e.g., headphones, webcam, charger, microphone, etc.) work adequately.	2	100	5 [5,5]
21. Provide information to the patient via email about everything regarding technology use (how to enter the video consultation, what equipment is needed, how to set up their device/s, how the video consultation platform works, how to optimise the internet connection, how to troubleshoot and proceed when technical issues arise, how to maintain security and privacy, how to pay for the service (if required), etc.).	2	85.8	4 [4,5]
22. If possible, contact the patient (e.g., via phone) to make sure that he/she understands how to get connection.	3	85.7	5 [4,5]
Environment			
23. Arrange the environment so that it is quiet, neat, with adequate temperature, no interruptions and good lighting, avoiding light behind the physiotherapist.	2	100	4 [4,5]
24. Provide the patient with the same information regarding environment considerations, plus the importance of having enough space to stand up and do the movements that will be requested by the physiotherapist (if the MSK condition requires it).	2	85.8	4 [4,5]
25. Ensure good personal and room appearance.	2	100	4 [4,5]

Table 4. Recommendations for MSK video consultation intervention

Recommendations MSK video consultation intervention	**Round of inclusion**	**Experts rating agree/strongly agree (4+5) (%)**	**Median [IQR]**
Introduction			
26. Begin with affectionate greeting, identification and introduction physiotherapist-patient (and helpers, if present).	2	100	5 [4,5]
27. Verify patient's understanding of the information provided before the consultation and give the opportunity to ask doubts regarding that information.	2	100	5 [5,5]
28. Make clear that the patient should not hesitate to ask anything he/she considers necessary during the video consultation.	2	100	5 [5,5]
29. Get informed consent, if not previously provided, and be aware that informed consent must be an ongoing process, as collection of data not considered initially might be needed.	2	85.7	5 [4,5]
30. Make an introduction to the video consultation, explaining the reason of it, how it will work and the differences with face-to-face consultation.	2	100	5 [4,5]
31. Remind the patient of the importance of playing a more active role in video consultations than in face-to-face consultations.	2	85.8	4 [4,5]
32. Ensure that the patient's experiences and expectations are known.	2	100	5 [5,5]
33. Show confidence, which will make more probable that the patient trusts you.	2	85.7	5 [4,5]
34. Establish basic rules on how the progress will be assessed and how the physiotherapist will determine if referral to face-to-face consultation is needed.	2	100	5 [4,5]

Recommendations MSK video consultation intervention	Round of inclusion	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
35. Verify that the patient is wearing comfortable clothing that allows examination.	2	85.7	5 [4,5]
Communication			
36. Be aware that communication is key to success and language should be adapted to the patient.	2	100	5 [5,5]
37. Use open questions, in the style of a motivational interview, listen actively and give time to the patient to reply, avoiding interruptions, unless strictly necessary.	2	85.7	5 [4,5]
38. Build rapport, developing good therapy alliance with the patient by communicating in a positive way, both verbally and non-verbally (e.g., receptive body posture), to connect beyond the screen.	2	100	5 [4,5]
39. Ask the patient to communicate naturally and to answer the questions sincerely and without prejudice.	2	85.7	5 [4,5]
40. Ask the patient to cross-examine each time that a question has not been clear, and make sure that the patient is following the explanations.	2	85.7	5 [4,5]
41. Be aware of every detail that could generate greater distance with the patient, paying attention to the screen and avoiding distractors. Look straight into the camera (patient's eyes) and positively shake your head when the patient is talking.	3	100	5 [5,5]
42. Consider how the information will be shared with the patient so that the most relevant information is shared at the beginning and at the end.	2	100	4 [4,5]
Technical considerations			

Recommendations MSK video consultation intervention	Round of inclusion	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
43. Ensure that software, hardware and internet connection work adequately on both ends (e.g., ask the patient if he/she can see and hear well).	2	100	5 [5,5]
44. Make sure that unnecessary applications/websites are disconnected on both ends, to have an optimal internet connection.	3	100	5 [4,5]
45. Ensure that the hardware are in the right place to allow best possible interaction (e.g., head mid-screen, microphone close enough to the person and good framing of the video).	2	85.7	5 [4,5]
46. Make sure you know how to troubleshoot and have a guide for support handy.	2	85.7	5 [5,5]
47. Ask the patient to have the troubleshooting information emailed before the video consultation handy.	3	85.7	4 [4,5]
48. Ensure that you have alternative means to communicate with the patient (e.g., phone, email).	2	100	5 [5,5]
49. Explain to the patient that in case of technical difficulties the patient should stay calm and wait until the physiotherapist contact him/her via the alternative means.	2	85.7	5 [4,5]
50. If technical issues cannot be solved in the short term, reschedule the consultation.	2	100	5 [5,5]
Environment			
51. Verify privacy, that the rooms (patient's room and physiotherapist's room) are free of interruptions, quiet, well-lit and safe.	2	100	5 [4,5]
52. Verify that there is enough space to move around (e.g., to perform functional tests).	2	100	5 [4,5]
History taking			

Recommendations MSK video consultation intervention	Round of inclusion	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
53. Make a plan ahead: have a patient sheet to fill out options (do not start from blank).	2	85.7	5 [4,5]
54. Inform the patient about the history taking process and why it is necessary.	3	85.7	5 [4,5]
55. Take time to get a detailed history of the problem using standardised questionnaires to ensure that the patient is suitable for the MSK video consultation.	2	85.7	5 [4,5]
56. Pay attention to the initial report of the consultant, if any.	2	100	5 [4,5]
57. Refer to another health professional if "red flags" are found.	2	100	5 [5,5]
58. Be aware that the history taking is an ongoing process, it does not finish until the end of the consultation.	2	85.7	4 [4,5]
59. Ask for clarification/confirmation if needed (do not assume anything).	2	85.7	5 [4,5]
60. Assess possible psychosocial features that might help with diagnosis and treatment.	2	85.7	5 [4,5]
61. Ensure continuous feedback to avoid missing important details, encouraging the patient to give as much information as possible about what he/she is feeling.	2	100	5 [5,5]
62. Keep records of the entire process.	2	100	5 [4,5]
Physical assessment			
63. Observation (e.g., check for bruising, swelling, deformity, redness, etc.).	2	85.8	4 [4,5]
64. Ask the patient to point out the site of pain and/or other symptoms.	2	100	5 [5,5]
65. Perform movement examination through observation, measurement of ROM, measurement of angular displacements and linear distances (as required), asking the patient to report any symptoms when moving.	2	85.8	4 [4,5]

Recommendations MSK video consultation intervention	Round of inclusion	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
66. Identify functional tasks that are painful and use these as assessment.	2	100	5 [5,5]
67. Measure endurance, motor control, strength and vertical jump, if required and possible; and use the support of a helper, if needed. There are applications that can help, make use of them.	2	85.7	4 [4,4]
68. Consider whether a further valid and reliable assessment through special tests can be undertaken (e.g., orthopaedic and neurodynamic tests) and perform accordingly with the support of a helper, if needed. Consider alternative routes if required.	2	100	4 [4,5]
69. Use resources (e.g., videos, diagrams, photos, infographics) to facilitate patient's understanding of what they should do.	2	85.8	4 [4,5]
Diagnosis and management			
70. Base your diagnosis on clinical reasoning, using all the information obtained from the clinical history and assessment.	2	100	5 [5,5]
71. Management plan and goals must be decided in partnership with the patient and based on evidence, clinical reasoning and patient's preferences.	2	100	5 [5,5]
72. Encourage management based on education, reassurance, exercise prescription and active life recommendations, as required; with a biopsychosocial approach in mind.	2	85.7	5 [5,5]
73. Educate verbally and provide educational material from high-quality online resources.	2	100	5 [4,5]
74. Keep it simple, do not give more than 3 o 4 exercises and with a clear explanation of progression and how to manage possible worsening of symptoms due to the exercises.	2	100	5 [4,5]

Recommendations MSK video consultation intervention	Round of inclusion	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
75. Explain the exercises as clearly as possible, verbally and with visual support, using life demonstrations, exercise prescription software, apps and/or freely available quality resources (e.g., links to online videos). Video format is recommended over images.	2	100	5 [4,5]
76. Inform the patient that a summary of the management plan will be sent after the video consultation, so that the patient feels confident when doing the exercises alone.	2	85.7	5 [4,5]
77. Give the possibility to print the exercise program to ensure equality among patients without technology access or who do not like applications (e.g., printable pdf images).	3	85.7	5 [5,5]
78. Advise the patient to keep track of his/her progress (log booklets, apps, notes, etc.).	2	85.8	4 [4,5]
79. Ask the patient to be clear about how much time he/she has to do the exercises, being realistic.	2	100	5 [5,5]
80. Emphasize that self-empowerment is key for recovery and that the focus should be on the things that he/she can do. Commitment is important, but self-punishment should not take place if the entire plan is not done.	2	85.7	5 [4,5]
Closing of the video consultation			
81. Summarize the evolution of the condition from previous visits, if any.	2	100	5 [5,5]
82. Summarize the current consultation, planned objectives and agreed plan to achieve them.	2	100	5 [4,5]
83. Ask for feedback to confirm that the patient has understood the objectives and tasks, as well as the reason for them. If there is a purpose, the patient will remember them.	2	100	5 [4,5]
84. Ask the patient if he/she feels confident to implement the management plan.	2	85.8	4 [4,5]

Recommendations MSK video consultation intervention	Round of inclusion	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
85. Remind the patient of the importance of the implementation of the program, as well as the implication in his/her health process.	2	85.7	5 [4,5]
86. Ask for feedback about the service, if his/her expectations have been fulfilled.	2	100	5 [5,5]
87. Confirm how the patient would like to be contacted after the video consultation to share information regarding the management plan and for follow-up.	2	100	5 [5,5]
88. Inform the patient that the consultation is coming to an end, allow questions to answer possible doubts and let the patient know that he/she can contact you if questions arise.	2	100	5 [4,5]
89. Express if further consultations are needed, purpose and characteristics (duration, cost, etc.), and plan and schedule the next consultation (if required) with the patient. An automated appointment management system is helpful for this matter.	2	100	5 [4,5]
90. Arrange payment of the video consultation (if required).	2	100	5 [5,5]
91. Give thanks for the co-operation and farewell.	2	85.7	5 [5,5]

Table 5. Recommendations for post-MSK video consultation

Statements post-MSK video consultation	Round of inclusion	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
Registration			
92. Register patient's clinical notes that were not registered previously.	2	100	5 [5,5]

Statements post-MSK video consultation	Round of inclusion	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
Evaluation			
93. Review everything that has been done, how it has been done and what is next.	2	100	5 [4,5]
94. Evaluate the service providing the patient with questionnaires (PROMs and PREMs).	2	100	5 [5,5]
95. Review incidents to analyse possible solutions to improve the quality of the next video consultation.	2	100	5 [4,5]
Follow-up actions			
96. Implement agreed follow-up actions sending an email to the patient with a summary of key points from the consultation, providing useful links/resources, etc.	2	100	5 [5,5]
97. Monitor progression and adherence (can be done with applications).	2	100	5 [5,5]
98. Find out possible reasons for lack of adherence and make changes accordingly (e.g., too long, too boring, lack of understanding).	2	100	5 [5,5]
Technical considerations			
99. Ensure that software and hardware are appropriately disconnected, if it was the last appointment.	2	85.7	5 [4,5]
Environment			
100. Prepare the room and yourself for the next appointment.	2	85.7	5 [4,5]

6 Discussion

This thesis presents a consensus on best practice on video consultation in MSK physiotherapy, with a list of recommendations to guide physiotherapists in their daily practice. The results obtained might assist in solving a problem that the pandemic has uncovered, the lack of readiness to deliver video consultation among MSK physiotherapists. There is a before and after the pandemic, with MSK physiotherapy going from being (in many cases) a purely "hands-on" discipline to having ICT services as the main means of intervention [19]. The declaration of the pandemic led to the need to make rapid decisions to identify alternatives to in-person consultations, aiming to address the burden that MSK conditions have placed on worldwide societies. Video consultation, among other telehealth services, has been considered a possible means to face the unexpected situation, based on the existing evidence supporting its provision; and the results from this thesis may be a step forward to optimise the service.

This chapter will discuss the importance of the context where this study has been performed, possible reasons why video consultation in MSK physiotherapy was not established as a common service before the unforeseen current situation, results of this thesis compared to conventional in-person MSK physiotherapy consultation and existing guidelines; implications and limitations of this study, and recommendations for future research.

6.1 Video consultation in pandemic times

Shift towards video consultation in MSK physiotherapy since the pandemic was declared has been informed. Although the benefits of video consultation in MSK physiotherapy seem evident, it appears that a pandemic was needed to make many physiotherapists and health care systems realise how valuable video consultation can be when access to health care services is limited. COVID-19 prioritization for in-person health care, individual freedom limitation and social distancing make video consultation, among other digital physiotherapy services, an essential tool to maintain continuity of care among those with

nonurgent conditions, which is the case of most MSK conditions, as described by other authors [51].

Even though video consultation in MSK physiotherapy has not been studied and delivered as widely as in-person MSK physiotherapy or other health care fields where video consultation is involved, there is emergent clinical evidence suggesting that video consultation for MSK conditions might be an acceptable alternative for those with limited access to traditional in-person consultations [48], [52]–[54]. However, the author of this thesis considers necessary to highlight that despite video consultation having been reported to be valid, reliable and noninferior to conventional interventions, most clinical evidence refers to a handful of MSK conditions and further research is required to extend findings to other conditions. By contrast, the author also argues that even though clinical evidence has not been reported for some MSK conditions, video consultation might still be recommended for those patients who do not have other options to access treatment (e.g., during pandemic times) or those who present greater risk to their health attending a clinic than having remote consultations.

Therefore, the consensus reached in this thesis might be considered an opportunity to reduce the burden that MSK conditions represent for societies worldwide. As previously mentioned in this thesis, video consultation enhances access for those patients who have difficulties to receive MSK physiotherapy services, due to different barriers, for instance, those living in rural areas or those with mobility difficulties; and also saves travelling time, reduces impact of travelling on symptoms and decreases travelling cost [46], [47]. Nonetheless, it should not be forgotten that video consultation in MSK physiotherapy also presents disadvantages; for instance, communication barriers and need of digital literacy [50].

The benefits of video consultation have not gone unnoticed by those making decisions in health care systems. A clear example is the fact that the pandemic has led to a situation where health funds are supporting telephysiotherapy provision in different countries, as mentioned in chapter 2.3.5. It is not surprising to note that Estonia, known for being a pioneer in digital health, is one of these countries. In Estonia, remote physiotherapy services are reimbursed by the EHIF [64]. However, to the best knowledge of the author of this thesis, Estonia does not have detailed guidelines to support physiotherapists in the provision of telephysiotherapy. This might result in services that are not optimal for the

patient, nor for the physiotherapist and health care system. The optimisation of health care services does not only aim to offer the best possible treatments, but also to have a cost-effective system that can face the different challenges of current societies. The author considers that value-based care needs to be aligned with a patient-centred approach, and the optimisation of services is crucial for this to become a reality. Funding services without offering guidance for their provision might lead to poor outcomes for patients and health care systems, and this thesis may well be valuable to fill that gap. The consensus reached can be an instrument to optimise the service; however, cost-effectiveness cannot be determined without further research.

Furthermore, the question arises whether video consultation will remain as a regular service after the pandemic or if the situation will revert. The author argues that this should be an opportunity to make definitive changes that will enhance health care services, and not only an exceptional measure to address a difficult situation.

6.2 MSK physiotherapy, traditionally a "hands-on" discipline

The pandemic has shown physiotherapists the value of video consultation and has uncovered an important issue that needed a rapid solution. Lack of training and digital skills within the profession makes physiotherapists feel unprepared to deliver an optimal service [19]. The author of this thesis argues that this might be due to the fact that video consultation in MSK physiotherapy can be considered a novel service that has been implemented for necessity rather than through a more natural and conventional process.

However, to get a better understanding of the issue, the question that needs to be answered is "why was video consultation in MSK physiotherapy not widely used before the pandemic?". Giving a simple answer to this question is not possible, as different factors might be involved depending on the context referred to. Nonetheless, a factor that seems to prevail in many societies is the fact that physiotherapy services have historically been based on a post-war model where patients attended in-person consultations, and passive interventions (e.g., massage, manipulations, mobilisations and electrotherapy) were the treatment of choice. This situation has not changed much in some countries and MSK physiotherapy is considered a "hands-on" discipline by many, which some authors argue might have contributed to the slow implementation, if any, of telephysiotherapy as an alternative to provide physiotherapy to those with MSK conditions [19], [51]. It is

common to find physiotherapists who sell their services using the term “hands-on”, since many patients, and physiotherapists, believe that touch is an essential part of MSK consultations. This belief is so deeply established in some cultures that anything different from it seems wrong. Beliefs guide decisions, they get into the unconsciousness effortlessly, but removing them is a challenging process.

However, it is also true that, although passive treatment technics still play a role in MSK physiotherapy interventions, in recent years there has been a shift (in some countries more than in others) towards “hands-off” interventions, “hands-on” techniques becoming an adjuvant to active treatments rather than the core of the management process. The reason for this is that active approaches, such as exercise prescription, have shown to be crucial to enhance outcomes in patients of all ages [100], which the author argues might be the stimulus telephysiotherapy for MSK conditions needed to be further developed.

6.3 Comparison of the consensus to traditional physiotherapy consultation

It is of interest to compare the recommendations on MSK video consultation retrieved from this thesis to traditional in-person consultations, to understand the considerations that are more relevant to the remote service. The recommendations on best practice extracted from this thesis are going to be explained in a comprehensive manner, indicating, when relevant, how they match or differ from conventional in-person MSK physiotherapy advice.

This thesis highlights the need for planning video consultations to optimise the service process. Being aware of the evidence regarding MSK conditions management is not enough and many other considerations regarding communication, technical aspects and environment are essential to achieve the desired outcomes. Planning always comes with a structure and video consultations can be divided into three main stages: pre-MSK video consultation, MSK video consultation intervention and post-MSK video consultation.

The essential preparation for physiotherapists is receiving education and training in video consultation provision through reliable means, such as official organizations and scientific literature. As previously mentioned, physiotherapists have reported that they do not feel prepared to delivered video consultations, which the author argues might be due

to the lack of guidance in their country of practice. Education and training need to focus on the differences from conventional in-person MSK physiotherapy, for instance, software and hardware election and use, regulations, standards, ways to minimise the communication barrier that the digital service implies, safety, privacy, confidentiality and data handling. Therefore, digital literacy is crucial for physiotherapists to provide an optimal service. Otherwise, video consultation might become a barrier rather than an enabler.

Before delivering video consultations, it is of importance to have a plan with all actions to implement, as well as all materials to be used, in order to ensure the best possible service. For instance, setting-up the video consultation, record keeping, history taking, physical assessment, exercise prescription and providing educational material via links to videos and websites. Moreover, having previous information regarding the patient is essential to undertake those actions. The physiotherapist needs to ensure that the patient is suitable for the service, considering the MSK condition, cognitive, sensory and motor deficits, language, culture and age, among others. All this is also part of the process in face-to-face consultations, video consultation differing in the need of evaluation of the suitability of the digital means and tools.

The implementation and provision of video consultation have the patient in the centre of the service, as it is in traditional in-person consultations. This has been agreed by the experts involved in the study, who shared different opinions in this direction. The experts emphasized the importance of having a well-informed patient through transparent communication during the different stages of the service process. This information is normally provided by email, but other means might be used. Also, minimising risks was considered essential to define best practice, having been reported that safety comes always first. Feeling comfortable and ensuring that the patient feels comfortable sharing screen should also be considered by the physiotherapist. Moreover, patients should be given the possibility to request any information considered necessary during the process.

Regarding the technology to be employed, the video consultation platform needs to be suitable for MSK conditions and consider attributes such as privacy, security, functionality, quality, ease of use, ease to learn, cost and built-in features. Currently, many platforms have built-in applications that might not be strictly necessary to deliver the service, but may make the process more efficient. Using stand-alone applications is also

an option and physiotherapists should decide which approach is more suitable for the purpose. Patients need to be informed about the way the platform works, hardware and software needed for the consultation and how to ensure an optimal connexion. Internet connection has a high impact in the appropriate provision of the service. Video, sound and image quality are other attributes to consider. Also, in MSK conditions, it is important to take into consideration that being able to move the camera might be necessary, mainly in the physical assessment stage. Moreover, having the information to be prepared to troubleshoot when technical problems occur is essential for physiotherapists and patients. Furthermore, alternative forms of communication need to be agreed in advance, in case issues arise.

Regarding the environment, it needs to be quiet, neat, with good temperature, well-lit, free of interruptions and with enough space to move around, when required. This applies to both, the patient and the physiotherapist. Also, it is important to ensure that the patient wears clothes that allow examination and freedom of movement. Moreover, a helper might need to be available, in case the characteristics of the patient and MSK condition require assistance. These recommendations are common to in-person consultation.

When focusing on the MSK video consultation intervention *per se*, communication skills seem to be indispensable. Building rapport with the patient from the beginning of the conversation appears to be essential. Empathy and creating an alliance between the patient and the physiotherapist are crucial for the delivery of the service. Video consultation might present some barriers compared to in-person consultation that need to be addressed. In this regard, communication adapted to the circumstances is important, both verbal and non-verbal, considering how the screen can interfere in such communication. Looking straight into the camera (into the eyes of the patient) and positively shaking the head might be a way to enhance communication. Moreover, the physiotherapist needs to show confidence, which might lead to the patient feeling comfortable. Furthermore, the author of this thesis argues that, even if it has not been shared by any of the experts of this study, it might be valuable to highlight the importance of optimising communication as a way to overcome the absence of contextual factors that usually play a significant role in face-to-face physiotherapy consultations, as mentioned by other authors [101]. Physiotherapy is not only history taking, examination and management plan; there are several contextual factors that are part of the "healing ritual" (e.g., touch, smells and noises) and communication skills in video consultation may positively influence the outcomes of the

intervention, enhancing desired placebo effects and avoiding nocebo effects, which, in face-to-face consultations, is normally achieved by the above-mentioned contextual factors.

At the beginning of the video consultation, informed consent is required, if not previously collected. One of the most important characteristics of physiotherapy consultations (in-person and remote) is the obligation to get informed consent, which must be considered as an ongoing process, as unplanned data collection might take place in later stages. Informed consent is essential to comply with one of the principles of medical ethics, principle of self-determination, which states that patients should have the right to decide about their care [102].

This stage of the video consultation is also when the physiotherapist needs to verify that all the information provided to the patient is understood, the environment and clothes are optimal for the upcoming phases of the consultation; software, hardware and internet connection work adequately on both ends and troubleshooting guidance is in place in case technical issues arise. Moreover, the physiotherapist should ensure that the patient understands the differences between in-person consultation and video consultation, and how playing a more active part in the process might be required.

The history taking does not differ from in-person consultation. A patient sheet, with all the information that need to be obtained by the physiotherapist, is useful. Standardised questionnaires, as well as reports from other professionals, are essential to ensure suitability of the MSK condition for the service and to refer the patient to another specialist if required. Also, the physiotherapist needs to be aware that the clinical history taking is an ongoing process that does not finish until the end of the consultation and keeping records is crucial.

The physical assessment is one of the stages of the video consultation that differs the most from in-person MSK physiotherapy, as the patient will play a more active role on taking measurements and reporting findings. Observation, specific orthopaedic tests performance and measurement of range of motion, angular displacements, linear distances and vertical jump, among other actions, might require the assistance of the patient and, possibly, some digital tools that might differ from in-person MSK physiotherapy.

Regarding the diagnosis, it needs to follow clinical reasoning, which is something already known by physiotherapists in any physiotherapy specialty. However, in video consultation, all the data physiotherapists use for the decision-making is gathered electronically, unlike in-person diagnosis.

The management plan and objectives are decided in partnership with the patient, ensuring a patient-centred approach; however, they might differ from some in-person consultations, as education (biopsychosocial), exercise prescription and active life recommendations are shared through digital means like high quality MSK educational websites or exercise prescription applications. Also, patients are advised to monitor their progress with assistance of technology, such as tracking applications, which facilitates record keeping and later evaluation. Moreover, expectations and preferences of the patient regarding the service and possible outcomes derived from it seem to play an important role when providing video consultation, as they may be crucial for the adherence to the management plan, which is also the case in face-to-face MSK physiotherapy. Furthermore, it is important to offer the patient the possibility to have the exercise program in paper, to ensure equality among patients without technology access or those who are not interested in using applications.

Something that has not been reported by the experts of this Delphi study, when talking about management plans in video consultation, and that the author considers might be fundamental, is the availability of tools to perform the prescribed exercises at home. For instance, physiotherapists usually have resistance bands, weights and fitness balls in their clinics, whereas patients seldom have them at home. Physiotherapists need to take this into consideration and be prepared to provide alternatives.

To close the video consultation, sharing a summary of the MSK video consultation with the patient is advised, focusing on objectives, management plan and evolution of the MSK condition (if it was not the first appointment). Again, this is the normal procedure in face-to-face consultation, but digital tools might be of help to enhance communication. The means of contact will depend on the preferences, digital literacy and skills of the patient. Payment and scheduling of new appointments can be arranged through automated management systems.

In the post-MSK video consultation stage, the physiotherapist ensures that all the necessary notes are taken, evaluates the quality of the video consultation, to proceed with the necessary changes to enhance future consultations, and asks the patient to assess the service providing patient-reported outcome measures (PROMs) and patient-reported experience measures (PREMs). The physiotherapist also needs to ensure that the follow-up actions are performed, and progression and adherence to the management plan are monitored (applications can be of help). The last step to end the process is to ensure appropriate disconnection of hardware and software, if it was the last video consultation to be delivered.

6.4 Comparison of the consensus to the most relevant national telephysiotherapy guidelines

This thesis has highlighted the necessity of achieving a consensus on best practice on video consultation in MSK physiotherapy, arguing that national guidelines have been developed in different countries to help physiotherapists with the provision of video consultation in their daily practice; however, they addressed telephysiotherapy or video consultation in physiotherapy in general, not video consultation in MSK physiotherapy specifically. Also, the author argued that it was difficult to determine what stakeholders were involved in the development of these guidelines, as well as the methodology used for their realisation. Nevertheless, the results of this thesis show that the opinions of the international experts involved in the Delphi study performed are very similar to the recommendations from the mentioned national guidelines. Consequently, the consensus reached in this thesis might serve as a validation tool for existing national guidelines.

The recommendations gathered in this thesis are going to be compared to the guidelines developed by the APA and the COLKINE, as they are the most extensive and comprehensive guidelines developed worldwide. In fact, the guideline from the APA has been widely cited and some organizations have used it to develop their own guidelines, the COLKINE among them.

There are more similarities than differences between this thesis and the mentioned guidelines. Thus, the focus is going to be on the differences, which will make the similarities self-explanatory. The recommendations that differ from the guidelines

developed by the APA and the COLKINE are mainly related to the particular aspects to consider when choosing the video consultation platform and applications needed to support the different actions to be performed by physiotherapists, and patients with MSK conditions. This refers to the needs that MSK physiotherapists have when performing the physical examination and designing the management program; and also, the actions the patient undertakes to assist the physiotherapist. The physical examination in MSK physiotherapy makes use of special tests that differ from other fields. It has been previously mentioned in this thesis how professionals in the MSK physiotherapy field need to take into consideration that observation, specific orthopaedic tests, measurement of range of motion, linear distances, angular displacements and vertical jump might be required, and specific applications might be helpful for this matter. The management program might require applications slightly different from those used for other conditions. For instance, the educational websites recommended to the patient might differ from those advised in other physiotherapy fields.

Moreover, the existing national guidelines present information related to reimbursement, billing, claiming and law that apply to their countries, which, for obvious reasons, have not been recommended by the international panel of experts who participated in the Delphi study.

Furthermore, it is of interest to highlight that the guideline from the COLKINE offers more in-depth practical information regarding sound, image and internet connection, compared to the consensus of this thesis; and it also has a valuable list of recommended video consultation platforms, as well as a description of their characteristics, to facilitate the selection by the physiotherapist.

Lastly, the APA and the COLKINE explain ethical considerations in more detail than the panel of experts of the Delphi study. The consensus reached includes some actions that address possible ethical issues, such as obtaining informed consent or respecting privacy, but without highlighting the word “ethics”, which the author of this thesis considers of interest to possibly generate a higher impact among physiotherapists.

6.5 Implications and future research

The results of this thesis can be used as a guideline of recommendations on the provision of video consultation in MSK physiotherapy. Also, the consensus reached can be the starting point to develop general video consultation guidelines in those countries where guidance is inexistent, as it contains all the basic information required for the provision of the service. Moreover, it can be used as the foundation to develop guidelines on best practice on video consultation for specific MSK conditions. In any case, the application of the consensus achieved, or possible future guidelines based on it, might result in improved access to MSK services, enhanced outcomes and more efficient health care systems.

Scrutinising all the information shared in this thesis, the author argues that video consultations should be part of the physiotherapy arsenal, also after the pandemic. However, this is not saying that all in-person consultations should be replaced by video consultations, nor that video consultation is the only telephysiotherapy service to be considered. For instance, consultation via telephone might be a better option for some patients, whereas others might benefit more from in-person consultation or a blended approach where video consultation and in-person consultation are delivered during the same treatment program. The suitability of different options, compared to each other, needs to be studied to guide physiotherapists on making optimal decisions, always with a patient-centred approach.

Additionally, it would be of interest to have this consensus validated by a larger panel of researchers, professors, clinical physiotherapists and patients, from countries that have not been involved in this study. This could give a broader view, which may enrich the results. Also, investigating the impact of the application of the consensus in health care systems is recommended. Moreover, research on the development of a consensus for the provision of video consultation for specific MSK conditions is advised, to adapt the results of this thesis to the particularities of each condition.

6.6 Limitations

This thesis is not exempt from limitations. Firstly, only physiotherapists who spoke English or Spanish were included in the panel of experts and, perhaps, similar studies

should be performed taking into consideration opinions from physiotherapists who speak other languages, from countries where video consultation is being used as a way to deliver MSK physiotherapy. Secondly, the performance of a confirmation round would have been interesting to give the experts the possibility to re-rate all the statements; however, the nature of this document (a thesis with a specific deadline) and the characteristic attrition of Delphi studies, made the author decide to perform a three-round Delphi study without the mentioned confirmation round. Lastly, the author did not have access to all the video consultation guidelines developed by physiotherapy professional bodies, due to the fact that some of them are only available to the members of the organizations.

7 Conclusion

An international consensus on best practice on video consultation in MSK physiotherapy has been achieved in this thesis. A list of 100 recommendations based on the opinions of international experts and divided into three themes (pre-MSK video consultation, MSK video consultation intervention and post-MSK video consultation) has been gathered throughout the study process. The recommendations address different aspects of the MSK video consultation: preparation, physiotherapist-patient information, technical considerations, environment considerations, introduction, communication, clinical history taking, physical examination, diagnosis, management plan, closing of the consultation, registration, evaluation and follow-up actions. The consensus can be used to optimise the provision of video consultation by MSK physiotherapists, addressing the lack of clinical guidance in the field and improving the service quality during the pandemic and further.

Moreover, this thesis might serve as an international validation of existing national guidelines for the provision of video consultation in physiotherapy, due to the fact that most general recommendations from this study are equal to those from the national guidelines analysed.

Further research is advised to validate the results of this thesis and to study its impact in health care systems. Also, research on the provision of video consultation for specific MSK conditions is recommended, to identify particular aspects to consider in each condition.

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Appendix 2 – Invitation to participate in Delphi study

Dear Colleague,

I am writing to invite you to participate in an international Delphi study that aims to reach consensus on best practice on video consultation in MSK physiotherapy.

This study is part of my Master's Thesis at Tallinn University of Technology (Digital Health Master's Programme). As an MSK physiotherapist with experience in video consultation, I am keen to gain your views on the topic of study.

This email is to formalise your willingness to participate in this study, showed in our previous conversation. To become one of the experts of the panel you need to read the information contained in this link https://forms.gle/tc9ANUWRA6DLsSHA7 and give your consent.

Yours sincerely,

Jorge Rodríguez

MHCP Physiotherapist

Appendix 3 – Consent form for Delphi study

Title of research study:

International consensus on best practice on video consultation in musculoskeletal physiotherapy

Principal investigator:

Jorge Rodríguez

MHCP Physiotherapist and Digital Health MSc Program student

Supervisor:

Dr. Peeter Ross

Professor at Tallinn University of Technology

Co-supervisor:

Dr. Antonio Cuesta-Vargas

Professor at University of Malaga

You are being asked to participate in a Delphi study to extract opinions of an expert panel knowledgeable on video consultation in MSK physiotherapy, through iterative surveys in an attempt to reach group consensus. As an MSK physiotherapist with experience in video consultation who reaches the inclusion criteria (MSK physiotherapist who has delivered at least 25 video consultations and is either MSK researcher, digital physiotherapy researcher, MSK physiotherapy professor, digital physiotherapy professor, has a management role or has experience in video consultation as a patient), I am keen to gain your views on the topic of study.

Purpose: The purpose of this study is to develop a consensus on best practice to help physiotherapists deliver video consultation for patients with MSK conditions, as the lack of it has been reported.

Procedures: If you volunteer to participate in this Delphi study, you are asked to do the following:

1. Consent to participate after reading the consent form.

2. Complete the first-round questionnaire, including the demographic questionnaire and the 17 open-ended questions related to the different stages of a video consultation in MSK physiotherapy, within two weeks of the invitation to participate.

3. One week later, you will receive the second-round survey which you will rate according to the second-round survey instructions, and submit this within two weeks of receipt.

4. One week later, if consensus has not been reached, you will receive the third-round survey which you will rate according to the third-round survey instructions, and submit this within approximately two weeks of receipt.

Time commitment: Your participation in the Delphi study will last for the length of time it takes to consent to participate after reading the Delphi study consent form, complete the Delphi study demographic questionnaire and give answer to 17 open-ended questions regarding video consultation in MSK physiotherapy. In addition, one or two more rounds (depending on whether consensus has been reached or not) with statements extracted from the previous round will take place. Overall participation in the Delphi study will take approximately 1,5-2 months.

Potential risks or discomforts: The risks associated with participation in this study are minimal. If you feel uncomfortable about participating in the Delphi study, you can discontinue your participation at any time by asking the investigator to be removed from the panel. All data collected will be stored in a computer file protected with a password in the office of the investigator.

Potential benefits: There are no direct benefits to experts. However, you will have the opportunity to make a contribution to physiotherapy education.

Payment for participation: You will not receive any payment for participating in this research study.

Confidentiality: Confidentiality of any information that is collected during this research study will be maintained, as well as any information that can identify you. Your confidentiality will be protected by ensuring that there will be no identifying information on any of the data from the Delphi study. You will be identified by a study ID number. Your study ID number will be associated with your email address which will be stored in a computer protected with a password available only to the principal investigator. You will need to be contacted by the principal investigator by email during the study if you do not respond during the requested time frame between each Delphi round. All data collected will remain confidential. There will be privacy in gathering, storing and handling data. The supervisor, co-supervisor and university that oversee this thesis may have access to research data to monitor the thesis. Research records will not contain identifiable information about you. Publications and/or presentations that result from this study will not identify you by name.

Participants' rights: Your participation in this research study is entirely voluntary. You can decide to withdraw your consent and stop participating in the research at any time.

Questions, comments or concerns: If you have any questions, comments or concerns about the study, you can talk to Jorge Rodriguez: jrodri@ttu.ee

The Delphi study consent form is an internet consent form which will allow respondents to either consent to participate in the study or not consent to participate in the study. If you click NO and choose not to participate in the study, you will be excluded from it. If you click YES and consent to participate in the study, you will automatically continue your participation.

◯ Yes

◯ No

Appendix 4 – First-round questionnaire

Questionnaire MSK video consultation: Round 1

*Required

1. Age *

2. Gender *

Mark only one oval.

- Male
- Female
- Other: _____

3. Country of residence *

4. Professional category *

Please, select all options that fit your status. Select "other" and insert information if you consider that clarifications are needed

Tick all that apply.

- [ ] MSK physiotherapist
- [ ] MSK physiotherapy researcher
- [ ] Digital physiotherapy researcher
- [ ] MSK physiotherapy professor
- [ ] Digital physiotherapy professor
- [ ] MSK physiotherapist with management role
- [ ] Other: _____

5. Have you experienced video consultation as a patient (e.g., consultation with family doctor)? *

   Mark only one oval.

   - ◯ Yes
   - ◯ No

6. Sector you work in *

   Mark only one oval.

   - ◯ Private
   - ◯ Public
   - ◯ Both

7. Number of video consultations performed (approximately) *

   _____

8. Work experience (years) *

   _____

Pre-MSK video consultation questions

Please, give answer to the questions taking into consideration the different dimensions involved in the service (technology, interaction physio-patient, environment, etc.)

9. 1. What recommendations or previous information would you give physiotherapists who are going to perform MSK video consultations, before starting them? *

10. 2. What recommendations or previous information would you give patients before starting an MSK video consultation? *

MSK video consultation intervention

Please, give answer to the questions taking into consideration the different dimensions involved in the service (technology, interaction physio-patient, environment, etc.)

11. 3. What recommendations would you give physiotherapists to address the beginning of the MSK video consultation? *

12. 4. What recommendations would you give patients to address the beginning of the MSK video consultation? *

13. 5. What recommendations would you give physiotherapists for the performance of the assessment and diagnosis of patients with MSK conditions via video consultation? *

14. 6. What recommendations would you give patients with MSK conditions to take into account for the assessment and diagnosis via video consultation? *

15. 7. What recommendations would you give physiotherapists to provide adequate emotional support and an environment of trust for video consultation for patients with MSK conditions (to overcome the screen barrier)? *

16. 8. What recommendations would you give physiotherapists for adequate management of verbal and non-verbal communication during an MSK video consultation? *

17. 9. What recommendations would you give patients to address communication with the physiotherapist in video consultations for MSK conditions? *

18. 10. In the case of technical difficulties occurrence in MSK video consultation (e.g., audio malfunctioning and/or low-quality image), what recommendations would you give physiotherapists? *

19. 11. In the case of technical difficulties occurrence in MSK video consultation (e.g., audio malfunctioning and/or low-quality image), what recommendations would you give patients? *

20. 12. What recommendations would you give physiotherapists to proceed with the management program phase of the MSK video consultation? *

21. 13. What recommendations would you give patients to address the management phase of the MSK video consultation? *

22. 14. What recommendations would you give physiotherapists for adequate closing of an MSK video consultation? *

23. 15. What recommendations would you give patients for adequate closing of the MSK video consultation? *

Post-MSK video consultation questions

Please, give answer to the questions taking into consideration the different dimensions involved in the service (technology, interaction physio-patient, environment, etc.)

24. 16. What recommendations or advice would you give physiotherapists after completing an MSK video consultation? *

25. 17. What recommendations or advice would you give patients after completing an MSK video consultation? *

Appendix 5 – Statements extracted from thematic analysis of first-round questionnaire results

Pre-MSK video consultation	Statements
Preparation and general physiotherapist-patient information	1. Get education and training in video consultation provision (software and hardware use, verbal and non-verbal communication skills, safety, privacy, confidentiality, etc.).
	2. Ensure that the data related to the case is available, to know the purpose of the video consultation (previous history, diagnostic tests, etc.).
	3. Review the patient's medical history to determine the suitability of video consultation for the patient: type of MSK condition and other personal information and circumstances (age, sensory/cognitive/motor deficits, culture, language, etc.).
	4. Plan the video consultation having in mind the scientific evidence available.
	5. Prepare the materials to be used and shared (e.g., links to educational websites, videos of exercises and tests, etc.).
	6. Be prepared for the activities to be performed during the session (e.g., set-up, records, physical assessment, exercise prescription, means of data collection, etc.).
	7. Get the patient's telephone number and emergency contact details, in case assistance is needed, and be prepared for possible adverse events.
	8. Follow same regulations and standards as required in face-to-face consultation (e.g., consent, record keeping, confidentiality), plus the specific requirements of the digital service (e.g., data handling, storage, privacy, etc.)

Pre-MSK video consultation	Statements
	9. Provide the patient with information regarding the video consultation process via email (who the physiotherapist is, time of the consultation, possible need of a third person (e.g., to perform physical examination or in case of people at risk, children, elderly), risks of the video consultation, possibility to have other health professionals joining the video consultation, differences from face-to-face consultation (e.g., hands-on treatment is not possible, etc.)).
	10. Provide the patient with information regarding scientific evidence supporting the use of video consultation (it works as well or better than face-to-face consultation, is safe, effective, convenient and most assessments, high value education and exercise can be provided, etc.)
	11. Explain to the patient that the video consultation requires a committed and active patient.
	12. Ask the patient to wear appropriate clothing that allows to view and assess the injured site.
	13. Invite the patient to share possible issues or doubts as clearly as possible during all the process (before, during and after the video consultation).
	14. If possible, get informed consent before the consultation.
Technical considerations	15. Ensure that the risks of the video consultation are not greater than other available methods. Safety goes always first.
	16. Choose a video consultation platform that follows legislation requirements and is suitable for MSK conditions, keeping in mind attributes like privacy and security (end-to-end encryption), functionality, quality, ease of use, ease to learn, cost and built-in features.
	17. Consider applications that might be needed for an MSK consultation (e.g., digital goniometer, application to share exercises, etc.). They might be stand-alone or integrated into the video consultation platform.
	18. Embrace already available digital support tools to help (e.g., exercise videos, websites, etc.).
	19. Feeling comfortable sharing screen is important.
	20. Keep in mind that a portable device might be needed, in case change of direction of the video is required.

Pre-MSK video consultation	Statements
	21. Ensure that image, sound, motion handling (video), internet connection, etc., work well.
	22. Verify that other software used for the video consultation (e.g., electronic medical record, billing system, etc.) and hardware (e.g., headphones, webcam, charger, microphone, etc.) work adequately.
	23. Provide information to the patient via email about everything regarding technology use (how to enter the video consultation, what equipment is needed, how to set up their device/s, how the video consultation platform works, how to optimise the internet connection, how to troubleshoot and proceed when technical issues arise, how to maintain security and privacy, how to pay for the service (if required), etc.).
	24. If possible, contact the patient (e.g., via phone) to make sure that he/she understands how to get connection.
	25. If possible, set up a quick video call test with the patient.
Environment	26. Arrange the environment so that it is quiet, neat, with adequate temperature, no interruptions and good lighting, avoiding light behind the physiotherapist.
	27. Provide the patient with the same information regarding environment considerations, plus the importance of having enough space to stand up and do the movements that will be requested by the physiotherapist (if the MSK condition requires it).
	28. Ensure good personal and room appearance.

MSK video consultation intervention	Statements
Introduction	29. Begin with affectionate greeting, identification and introduction physiotherapist-patient (and helpers, if present).

MSK video consultation intervention	Statements
	30. Verify patient's understanding of the information provided before the consultation and give the opportunity to ask doubts regarding that information.
	31. Make clear that the patient should not hesitate to ask anything he/she considers necessary during the video consultation.
	32. Get informed consent, if not previously provided, and be aware that informed consent must be an ongoing process, as collection of data not considered initially might be needed.
	33. Make an introduction to the video consultation, explaining the reason of it, how it will work and the differences with face-to-face consultation.
	34. Remind the patient of the importance of playing a more active role in video consultations than in face-to-face consultations.
	35. Explain how much evidence there is about how empowering the person and providing with good self-efficacy strategies can achieve similar or better goals than face-to-face consultation.
	36. Ensure that the patient's experiences and expectations are known.
	37. Show confidence, which will make more probable that the patient trusts you.
	38. Establish basic rules on how the progress will be assessed and how the physiotherapist will determine if referral to face-to-face consultation is needed.
	39. Verify that the patient is wearing comfortable clothing that allows examination.
	40. Be aware that the first session might be awkward, but it gets better.
Communication	41. Be aware that communication is key to success and language should be adapted to the patient.

MSK video consultation intervention	Statements
	42. Use open questions, in the style of a motivational interview, listen actively and give time to the patient to reply, avoiding interruptions, unless strictly necessary.
	43. Build rapport, developing good therapy alliance with the patient by communicating in a positive way, both verbally and non-verbally (e.g., receptive body posture), to connect beyond the screen.
	44. Ask the patient to communicate naturally and to answer the questions sincerely and without prejudice.
	45. Ask the patient to cross-examine each time that a question has not been clear, and make sure that the patient is following the explanations.
	46. Be aware of every detail that could generate greater distance with the patient, paying attention to the screen and avoiding distractors. Look straight into the camera (patient's eyes) and positively shake your head when the patient is talking.
	47. Consider how the information will be shared with the patient so that the most relevant information is shared at the beginning and at the end.
Technical considerations	48. Ensure that software, hardware and internet connection work adequately on both ends (e.g., ask the patient if he/she can see and hear well).
	49. Make sure that unnecessary applications/websites are disconnected on both ends, to have an optimal internet connection.
	50. Ensure that the hardware are in the right place to allow best possible interaction (e.g., head mid-screen, microphone close enough to the person and good framing of the video).
	51. Make sure you know how to troubleshoot and have a guide for support handy.
	52. Ask the patient to have the troubleshooting information emailed before the video consultation handy.

MSK video consultation intervention	Statements
	53. Ensure that you have alternative means to communicate with the patient (e.g., phone, email).
	54. Explain to the patient that in case of technical difficulties the patient should stay calm and wait until the physiotherapist contact him/her via the alternative means.
	55. If technical issues cannot be solved in the short term, reschedule the consultation.
Environment	56. Verify privacy, that the rooms (patient's room and physiotherapist's room) are free of interruptions, quiet, well-lit and safe.
	57. Verify that there is enough space to move around (e.g., to perform functional tests).
History taking	58. Make a plan ahead: have a patient sheet to fill out options (do not start from blank).
	59. Inform the patient about the history taking process and why it is necessary.
	60. Take time to get a detailed history of the problem using standardised questionnaires to ensure that the patient is suitable for the MSK video consultation.
	61. Pay attention to the initial report of the consultant, if any.
	62. Refer to another health professional if "red flags" are found.
	63. Be aware that the history taking is an ongoing process, it does not finish until the end of the consultation.
	64. Ask for clarification/confirmation if needed (do not assume anything).
	65. Assess possible psychosocial features that might help with diagnosis and treatment.
	66. Ensure continuous feedback to avoid missing important details, encouraging the patient to give as much information as possible about what he/she is feeling.
	67. Keep records of the entire process.

MSK video consultation intervention	Statements
Physical assessment	68. Observation (e.g., check for bruising, swelling, deformity, redness, etc.).
	69. Explain to the patient the importance of following the instructions given by the physiotherapist to assess the condition.
	70. Ask the patient to point out the site of pain and/or other symptoms.
	71. Self-palpation guided by the physiotherapist with real-time demonstration is useful.
	72. Perform movement examination through observation, measurement of ROM, measurement of angular displacements and linear distances (as required), asking the patient to report any symptoms when moving.
	73. Use digital measurement support tools such as angle measurement software for the ROM.
	74. Keep in mind the possibility of recording videos to have information for posterior analysis.
	75. Identify functional tasks that are painful and use these as assessment.
	76. Measure endurance, motor control, strength and vertical jump, if required and possible; and use the support of a helper, if needed. There are applications that can help, make use of them.
	77. Consider whether a further valid and reliable assessment through special tests can be undertaken (e.g., orthopaedic and neurodynamic tests) and perform accordingly with the support of a helper, if needed. Consider alternative routes if required.
	78. Use resources (e.g., videos, diagrams, photos, infographics) to facilitate patient's understanding of what they should do.
Diagnosis and management	79. Base your diagnosis on clinical reasoning, using all the information obtained from the clinical history and assessment.
	80. Management plan and goals must be decided in partnership with the patient and based on evidence, clinical reasoning and patient's preferences.

MSK video consultation intervention	Statements
	81. Encourage management based on education, reassurance, exercise prescription and active life recommendations, as required; with a biopsychosocial approach in mind.
	82. Educate verbally and provide educational material from high-quality online resources.
	83. Inform the patient that the higher the self-efficacy, the better the prognosis.
	84. Keep it simple, do not give more than 3 o 4 exercises and with a clear explanation of progression and how to manage possible worsening of symptoms due to the exercises.
	85. Explain the exercises as clearly as possible, verbally and with visual support, using life demonstrations, exercise prescription software, apps and/or freely available quality resources (e.g., links to online videos). Video format is recommended over images.
	86. Inform the patient that a summary of the management plan will be sent after the video consultation, so that the patient feels confident when doing the exercises alone.
	87. Give the possibility to print the exercise program to ensure equality among patients without technology access or who do not like applications (e.g., printable pdf images).
	88. Advise the patient to keep track of his/her progress (log booklets, apps, notes, etc.).
	89. Ask the patient to be clear about how much time he/she has to do the exercises, being realistic.
	90. Emphasize that self-empowerment is key for recovery and that the focus should be on the things that he/she can do. Commitment is important, but self-punishment should not take place if the entire plan is not done.
Closing of the video consultation	91. Summarize the evolution of the condition from previous visits, if any.
	92. Summarize the current consultation, planned objectives and agreed plan to achieve them.

MSK video consultation intervention	Statements
	93. Ask for feedback to confirm that the patient has understood the objectives and tasks, as well as the reason for them. If there is a purpose, the patient will remember them.
	94. Ask the patient if he/she feels confident to implement the management plan.
	95. Remind the patient of the importance of the implementation of the program, as well as the implication in his/her health process.
	96. Ask for feedback about the service, if his/her expectations have been fulfilled.
	97. Confirm how the patient would like to be contacted after the video consultation to share information regarding the management plan and for follow-up.
	98. Inform the patient that the consultation is coming to an end, allow questions to answer possible doubts and let the patient know that he/she can contact you if questions arise.
	99. Express if further consultations are needed, purpose and characteristics (duration, cost, etc.), and plan and schedule the next consultation (if required) with the patient. An automated appointment management system is helpful for this matter.
	100. Arrange payment of the video consultation (if required).
	101. Ask the patient to leave adequate time between the consultation and his/her next obligation (e. g., meeting) to think through what was said and done.
	102. Give thanks for the co-operation and farewell.

Post-MSK video consultation	Statements
Registration	103. Register patient's clinical notes that were not registered previously.
Evaluation	104. Review everything that has been done, how it has been done and what is next.
	105. Evaluate the service providing the patient with questionnaires (PROMs and PREMs).
	106. Review incidents to analyse possible solutions to improve the quality of the next video consultation.
Follow-up actions	107. Implement agreed follow-up actions sending an email to the patient with a summary of key points from the consultation, providing useful links/resources, etc.
	108. Monitor progression and adherence (can be done with applications).
	109. Find out possible reasons for lack of adherence and make changes accordingly (e.g., too long, too boring, lack of understanding).
Technical considerations	110. Ensure that software and hardware are appropriately disconnected, if it was the last appointment.
Environment	111. Prepare the room and yourself for the next appointment.

Appendix 6 – Second-round email

Dear colleague,

Thank you very much for your kind participation in the first round of the Delphi study *International consensus on best practice on video consultation in MSK physiotherapy*.

I would like to share with you, in a concise way, the results of the first round of the study. I am very pleased to let you know that the response rate was 100% and that the data received was very extensive and valuable. The data has been analysed using qualitative methods resulting in 111 statements, divided into themes and subthemes that are shared in this second round. The different themes and sub-themes are as follows:

1. Pre-video consultation in MSK physiotherapy:

    - Preparation and general physiotherapist-patient information.
    - Technical considerations.
    - Environment.

2. MSK video consultation intervention:

    - Introduction.
    - Communication.
    - Technical considerations.
    - Environment.
    - History taking.
    - Physical examination.
    - Diagnosis and management plan.
    - Closing of the video consultation.

3. Post-video consultation in MSK physiotherapy:

    - Registration.
    - Evaluation.

- Follow-up actions.
- Technical considerations.
- Environment.

In this second round of the study, you are asked to rate the 111 statements using a 5-point Likert scale. The statements are rated according to how strongly you agree or disagree with them. There are five options to choose from: 1) Strongly disagree, 2) Disagree, 3) Neither agree nor disagree, 4) Agree and 5) Strongly agree.

Also, below every statement you have the possibility to leave a comment or suggestion regarding that statement or your response to it, in case you feel that a clarification of your response or modification of the statement are required.

Consensus for each statement has been defined as at least 80% of experts rating the statement “agree” or “strongly agree”. A third round will take place if consensus for all statements is not reached and/or suggestions or comments require modification of the statements.

Please find the link to the second-round questionnaire below:

https://forms.gle/TmtXzWrKv2PPHA8c9

I plan to close the second-round data collection in **two weeks** from today. Please, do not hesitate to let me know if this time frame does not work for you.

Thank you very much for your participation and your valuable time,

Sincerely yours,

Jorge Rodríguez

MHCP Physiotherapist

Appendix 7 – Second-round questionnaire

Questionnaire MSK video consultation: Round 2

IMPORTANT!!! If you don't have time to finish the questionnaire in one go, go to the bottom of the questionnaire click on "NEXT" until you get to the last page and click on "SUBMIT". Then click on "EDIT YOUR RESPONSE" and copy and save the URL wherever suits you best. You can finish filling in the questionnaire in another moment by going to the saved URL and looking for the statement where you left it off.

Pre-video consultation in MSK

Please rate the statements using the following scale: 1) Strongly disagree; 2) Disagree; 3) Neither agree nor disagree; 4) Agree and 5) Strongly agree.

Also, you have the option to leave a comment below each statement if you consider that a clarification and/or suggestion is required.

PREPARATION AND PHYSIOTHERAPIST-PATIENT INFORMATION

1. 1. Get education and training in video consultation provision (software and hardware use, verbal and non-verbal communication skills, safety, privacy, confidentiality, etc.).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

2. Comments and/or suggestions (if required)

3. 2. Ensure that the data related to the case is available, to know the purpose of the video consultation (previous history, diagnostic tests, etc.).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

4. Comments and/or suggestions (if required)

5. 3. Review the patient's medical history to determine the suitability of video consultation for the patient: type of MSK condition and other personal information and circumstances (age, sensory/cognitive/motor deficits, culture, language, etc.). A pre-consultation survey or self-reported questionnaires help for this purpose.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

6. Comments and/or suggestions (if required)

7. 4. Plan the video consultation having in mind the scientific evidence available.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

8. Comments and/or suggestions (if required)

9. 5. Prepare the materials to be used and shared (e.g., links to educational websites, videos of exercises and tests, etc.).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

10. Comments and/or suggestions (if required)

11. 6. Be prepared for the activities to be performed during the session (e.g., set-up, records, physical assessment, exercise prescription, means of data collection, etc.).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

12. Comments and/or suggestions (if required)

13. 7. Get the patient's telephone number and emergency contact details, in case assistance is needed, and be prepared for possible adverse events.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

14. Comments and/or suggestions (if required)

15. 8. Follow same regulations and standards as required in face-to-face consultation (e.g., consent, record keeping, confidentiality), plus the specific requirements of the digital service (e.g., data handling, storage, privacy, etc.)

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

16. Comments and/or suggestions (if required)

17. 9. Provide the patient with information regarding the video consultation process via email (who the physiotherapist is, time of the consultation, possible need of a third person (e.g., to perform physical examination or in case of people at risk, children, elderly), risks of the video consultation, possibility to have other health professionals joining the video consultation, differences from face-to-face consultation (e.g., hands-on treatment is not possible, etc.)).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

18. Comments and/or suggestions (if required)

19. 10. Provide the patient with information regarding scientific evidence supporting the use of video consultation (it works as well or better than face-to-face consultation, is safe, effective, convenient and most assessments, high value education and exercise can be provided, etc.)

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

20. Comments and/or suggestions (if required)

21. 11. Explain to the patient that the video consultation requires a committed and active patient.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

22. Comments and/or suggestions (if required)

23. 12. Ask the patient to wear appropriate clothing that allows to view and assess the injured site.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

24. Comments and/or suggestions (if required)

25. 13. Invite the patient to share possible issues or doubts as clearly as possible during all the process (before, during and after the video consultation).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

26. Comments and/or suggestions (if required)

27. 14. If possible, get informed consent before the consultation.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

28. Comments and/or suggestions (if required)

29. 15. Ensure that the risks of the video consultation are not greater than other available methods. Safety goes always first.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

30. Comments and/or suggestions (if required)

TECHNICAL CONSIDERATIONS

31. 16. Choose a video consultation platform that follows legislation requirements and is suitable for MSK conditions, keeping in mind attributes like privacy and security (end-to-end encryption), functionality, quality, ease of use, ease to learn, cost and built-in features.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

32. Comments and/or suggestions (if required)

33. 17. Consider applications that might be needed for an MSK consultation (e.g., digital goniometer, application to share exercises, etc.). They might be stand-alone or integrated into the video consultation platform.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

34. Comments and/or suggestions (if required)

35. 18. Embrace already available digital support tools to help (e.g., exercise videos, websites, etc.).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

36. Comments and/or suggestions (if required)

37. 19. Feeling comfortable sharing screen is important.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

38. Comments and/or suggestions (if required)

39. 20. Keep in mind that a portable device might be needed, in case change of direction of the video is required.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

40. Comments and/or suggestions (if required)

41. 21. Ensure that image, sound, motion handling (video), internet connection, etc., work well.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

42. Comments and/or suggestions (if required)

43. 22. Verify that other software used for the video consultation (e.g., electronic medical record, billing system, etc.) and hardware (e.g., headphones, webcam, charger, microphone, etc.) work adequately.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

44. Comments and/or suggestions (if required)

45. 23. Provide information to the patient via email about everything regarding technology use (how to enter the video consultation, what equipment is needed, how to set up their device/s, how the video consultation platform works, how to optimise the internet connection, how to troubleshoot and proceed when technical issues arise, how to maintain security and privacy, how to pay for the service (if required), etc.).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

46. Comments and/or suggestions (if required)

47. 24. If possible, contact the patient (e.g., via phone) to make sure that he/she understands how to get connection.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

48. Comments and/or suggestions (if required)

49. 25. If possible, set up a quick video call test with the patient.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

50. Comments and/or suggestions (if required)

ENVIRONMENT

51. 26. Arrange the environment so that it is quiet, neat, with adequate temperature, no interruptions and good lighting, avoiding light behind the physiotherapist.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

52. Comments and/or suggestions (if required)

53. 27. Provide the patient with the same information regarding environment considerations, plus the importance of having enough space to stand up and do the movements that will be requested by the physiotherapist (if the MSK condition requires it).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

54. Comments and/or suggestions (if required)

55. 28. Ensure good personal and room appearance.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

56. Comments and/or suggestions (if required)

MSK video consultation intervention

Please rate the statements using the following scale: 1) Strongly disagree; 2) Disagree; 3) Neither agree nor disagree; 4) Agree and 5) Strongly agree.

Also, you have the option to leave a comment below each statement if you consider that a clarification and/or suggestion is required.

INTRODUCTION

57. 29. Begin with affectionate greeting, identification and introduction physiotherapist-patient (and helpers, if present).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

58. Comments and/or suggestions (if required)

59. 30. Verify patient's understanding of the information provided before the consultation and give the opportunity to ask doubts regarding that information.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

60. Comments and/or suggestions (if required)

61. 31. Make clear that the patient should not hesitate to ask anything he/she considers necessary during the video consultation.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

62. Comments and/or suggestions (if required)

63. 32. Get informed consent, if not previously provided, and be aware that informed consent must be an ongoing process, as collection of data not considered initially might be needed.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

64. Comments and/or suggestions (if required)

65. 33. Make an introduction to the video consultation, explaining the reason of it, how it will work and the differences with face-to-face consultation.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

66. Comments and/or suggestions (if required)

67. 34. Remind the patient of the importance of playing a more active role in video consultations than in face-to-face consultations.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

68. Comments and/or suggestions (if required)

69. 35. Explain how much evidence there is about how empowering the person and providing with good self-efficacy strategies can achieve similar or better goals than face-to-face consultation.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

70. Comments and/or suggestions (if required)

71. 36. Ensure that the patient's experiences and expectations are known.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

72. Comments and/or suggestions (if required)

73. 37. Show confidence, which will make more probable that the patient trusts you.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

74. Comments and/or suggestions (if required)

75. 38. Establish basic rules on how the progress will be assessed and how the physiotherapist will determine if referral to face-to-face consultation is needed.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

76. Comments and/or suggestions (if required)

77. 39. Verify that the patient is wearing comfortable clothing that allows examination.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

78. Comments and/or suggestions (if required)

79. 40. Be aware that the first session might be awkward, but it gets better.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

80. Comments and/or suggestions (if required)

COMMUNICATION

81. 41. Be aware that communication is key to success and language should be adapted to the patient.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

82. Comments and/or suggestions (if required)

83. 42. Use open questions, in the style of a motivational interview, listen actively and give time to the patient to reply, avoiding interruptions, unless strictly necessary.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

84. Comments and/or suggestions (if required)

85. 43. Build rapport, developing good therapy alliance with the patient by communicating in a positive way, both verbally and non-verbally (e.g., receptive body posture).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

86. Comments and/or suggestions (if required)

87. 44. Ask the patient to communicate naturally and to answer the questions sincerely and without prejudice.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

88. Comments and/or suggestions (if required)

89. 45. Ask the patient to cross-examine each time that a question has not been clear, and make sure that the patient is following the explanations.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

90. Comments and/or suggestions (if required)

91. 46. Be aware of every detail that could generate greater distance with the patient, paying attention to the screen and avoiding distractors. Look straight into the camera (patient's eyes) and positively shake your head when the patient is talking.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

92. Comments and/or suggestions (if required)

93. 47. Consider how the information will be shared with the patient so that the most relevant information is shared at the beginning and at the end.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

94. Comments and/or suggestions (if required)

TECHNICAL CONSIDERATIONS

95. 48. Ensure that software, hardware and internet connection work adequately on both ends (e.g., ask the patient if he/she can see and hear well).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

96. Comments and/or suggestions (if required)

97. 49. Make sure that unnecessary applications/websites are disconnected on both ends, to have an optimal internet connection.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

98. Comments and/or suggestions (if required)

99. 50. Ensure that the hardware are in the right place to allow best possible interaction (e.g., head mid-screen, microphone close enough to the person and good framing of the video).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

100. Comments and/or suggestions (if required)

101. 51. Make sure you know how to troubleshoot and have a guide for support handy.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

102. Comments and/or suggestions (if required)

103. 52. Ask the patient to have the troubleshooting information emailed before the video consultation handy.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

104. Comments and/or suggestions (if required)

105. 53. Ensure that you have alternative means to communicate with the patient (e.g., phone, email).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

106. Comments and/or suggestions (if required)

107. 54. Explain to the patient that in case of technical difficulties he/she should stay calm and wait until the physiotherapist contact him/her via the alternative means.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

108. Comments and/or suggestions (if required)

109. 55. If technical issues cannot be solved in the short term, reschedule the consultation.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

110. Comments and/or suggestions (if required)

ENVIRONMENT

111. 56. Verify privacy, that the rooms (patient's room and physiotherapist's room) are free of interruptions, quiet, well-lit and safe.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

112. Comments and/or suggestions (if required)

113. 57. Verify that there is enough space to move around (e.g., to perform functional tests).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

114. Comments and/or suggestions (if required)

CLINICAL HISTORY TAKING

115. 58. Make a plan ahead: have a patient sheet to fill out options (do not start from blank).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

116. Comments and/or suggestions (if required)

117. 59. Inform the patient about the history taking process and why it is necessary.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

118. Comments and/or suggestions (if required)

119. 60. Take time to get a detailed history of the problem using standardised questionnaires to ensure that the patient is suitable for the MSK video consultation.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

120. Comments and/or suggestions (if required)

121. 61. Pay attention to the initial report of the consultant, if any.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

122. Comments and/or suggestions (if required)

123. 62. Refer to another health professional if “red flags” are found.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

124. Comments and/or suggestions (if required)

125. 63. Be aware that the history taking is an ongoing process, it does not finish until the end of the consultation.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

126. Comments and/or suggestions (if required)

127. 64. Ask for clarification/confirmation if needed (do not assume anything).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

128. Comments and/or suggestions (if required)

129. 65. Assess possible psychosocial features that might help with diagnosis and treatment.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

130. Comments and/or suggestions (if required)

131. 66. Ensure continuous feedback to avoid missing important details, encouraging the patient to give as much information as possible about what he/she is feeling.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

132. Comments and/or suggestions (if required)

133. 67. Keep records of the entire process.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

134. Comments and/or suggestions (if required)

PHYSICAL EXAMINATION

135. 68. Observation (e.g., check for bruising, swelling, deformity, redness, etc.).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

136. Comments and/or suggestions (if required)

137. 69. Explain to the patient the importance of following the instructions given by the physiotherapist to assess the condition.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

138. Comments and/or suggestions (if required)

139. 70. Ask the patient to point out the site of pain and/or other symptoms.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

140. Comments and/or suggestions (if required)

141. 71. Self-palpation guided by the physiotherapist with real-time demonstration is useful.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

142. Comments and/or suggestions (if required)

143. 72. Perform movement examination through observation, measurement of ROM, measurement of angular displacements and linear distances (as required), asking the patient to report any symptoms when moving.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

144. Comments and/or suggestions (if required)

145. 73. Use digital measurement support tools such as angle measurement software for the ROM.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

146. Comments and/or suggestions (if required)

147. 74. Keep in mind the possibility of recording videos to have information for posterior analysis.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

148. Comments and/or suggestions (if required)

149. 75. Identify functional tasks that are painful and use these as assessment.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

150. Comments and/or suggestions (if required)

151. 76. Measure endurance, motor control, strength and vertical jump, if required and possible; and use the support of a helper, if needed. There are applications that can help, make use of them.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

152. Comments and/or suggestions (if required)

153. 77. Consider whether a further valid and reliable assessment through special tests can be undertaken (e.g., orthopaedic and neurodynamic tests) and perform accordingly with the support of a helper, if needed. Consider alternative routes if required.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

154. Comments and/or suggestions (if required)

155. 78. Use resources (e.g., videos, diagrams, photos, infographics) to facilitate patient's understanding of what they should do.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

156. Comments and/or suggestions (if required)

DIAGNOSIS AND MANAGEMENT PLAN

157. 79. Base your diagnosis on clinical reasoning, using all the information obtained from the clinical history and assessment.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

158. Comments and/or suggestions (if required)

159. 80. Management plan and goals must be decided in partnership with the patient and based on evidence, clinical reasoning and patient's preferences.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

160. Comments and/or suggestions (if required)

161. 81. Encourage management based on education, reassurance, exercise prescription and active life recommendations, as required; with a biopsychosocial approach in mind.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

162. Comments and/or suggestions (if required)

163. 82. Educate verbally and provide educational material from high-quality online resources.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

164. Comments and/or suggestions (if required)

165. 83. Inform the patient that the higher the self-efficacy, the better the prognosis.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

166. Comments and/or suggestions (if required)

167. 84. Keep it simple, do not give more than 3 o 4 exercises and with a clear explanation of progression and how to manage possible worsening of symptoms due to the exercises.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

168. Comments and/or suggestions (if required)

169. 85. Explain the exercises as clearly as possible, verbally and with visual support, using life demonstrations, exercise prescription software, apps and/or freely available quality resources (e.g., links to online videos). Video format is recommended over images.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

170. Comments and/or suggestions (if required)

171. 86. Inform the patient that a summary of the management plan will be sent after the video consultation, so that the patient feels confident when doing the exercises alone.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

172. Comments and/or suggestions (if required)

173. 87. Give the possibility to print the exercise program to ensure equality among patients without technology access or who do not like applications (e.g., printable pdf images).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

174. Comments and/or suggestions (if required)

175. 88. Advise the patient to keep track of his/her progress (log booklets, apps, notes, etc).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

176. Comments and/or suggestions (if required)

177. 89. Ask the patient to be clear about how much time he/she has to do the exercises, being realistic.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

178. Comments and/or suggestions (if required)

179. 90. Emphasize that self-empowerment is key for recovery and that the focus should be on the things that he/she can do. Commitment is important, but self-punishment should not take place if the entire plan is not done.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

180. Comments and/or suggestions (if required)

CLOSING OF THE VIDEO CONSULTATION.

181. 91. Summarize the evolution of the condition from previous visits, if any.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

182. Comments and/or suggestions (if required)

183. 92. Summarize the current consultation, planned objectives and agreed plan to achieve them.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

184. Comments and/or suggestions (if required)

185. 93. Ask for feedback to confirm that the patient has understood the objectives and tasks, as well as the reason for them. If there is a purpose, the patient will remember them.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

186. Comments and/or suggestions (if required)

187. 94. Ask the patient if he/she feels confident to implement the management plan.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

188. Comments and/or suggestions (if required)

189. 95. Remind the patient of the importance of the implementation of the program, as well as the implication in his/her health process.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

190. Comments and/or suggestions (if required)

191. 96. Ask for feedback about the service, if his/her expectations have been fulfilled.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

192. Comments and/or suggestions (if required)

193. 97. Confirm how the patient would like to be contacted after the video consultation to share information regarding the management plan and for follow-up.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

194. Comments and/or suggestions (if required)

195. 98. Inform the patient that the consultation is coming to an end, allow questions to answer possible doubts and let the patient know that he/she can contact you if questions arise.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

196. Comments and/or suggestions (if required)

197. 99. Express if further consultations are needed, purpose and characteristics (duration, cost, etc.), and plan and schedule the next consultation (if required) with the patient. An automated appointment management system is helpful for this matter.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

198. Comments and/or suggestions (if required)

199. 100. Arrange payment of the video consultation (if required).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

200. Comments and/or suggestions (if required)

201. 101. Ask the patient to leave adequate time between the consultation and his/her next obligation (e. g., meeting) to think through what was said and done.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

202. Comments and/or suggestions (if required)

203. 102. Give thanks for the co-operation and farewell.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

204. Comments and/or suggestions (if required)

Post-video consultation in MSK

REGISTRATION

205. 103. Register patient's clinical notes that were not registered previously.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

206. Comments and/or suggestions (if required)

EVALUATION

207. 104. Review everything that has been done, how it has been done and what is next.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

208. Comments and/or suggestions (if required)

209. 105. Evaluate the service providing the patient with questionnaires (PROMs and PREMs).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

210. Comments and/or suggestions (if required)

211. 106. Review incidents to analyse possible solutions to improve the quality of the next video consultation.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

212. Comments and/or suggestions (if required)

FOLLOW-UP ACTIONS

213. 107. Implement agreed follow-up actions sending an email to the patient with a summary of key points from the consultation, providing useful links/resources, etc.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

214. Comments and/or suggestions (if required)

215. 108. Monitor progression and adherence (can be done with applications).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

216. Comments and/or suggestions (if required)

217. 109. Find out possible reasons for lack of adherence and make changes accordingly (e.g., too long, too boring, lack of understanding).

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

218. Comments and/or suggestions (if required)

TECHNICAL CONSIDERATIONS

219. 110. Ensure that software and hardware are appropriately disconnected, if it was the last appointment.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

220. Comments and/or suggestions (if required)

ENVIRONMENT

221. 111. Prepare the room and yourself for the next appointment.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

222. Comments and/or suggestions (if required)

Appendix 8 – Results of the second-round questionnaire

Statements rated "agree/strongly agree" by at least 80% of the experts

Statements pre-MSK video consultation	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
Preparation and general physiotherapist-patient information							
1. Get education and training in video consultation provision (software and hardware use, verbal and non-verbal communication skills, safety, privacy, confidentiality, etc.).	0	0	0	28.6	71.4	100	5 [4,5]
2. Review the patient's medical history to determine the suitability of video consultation for the patient: type of MSK condition and other personal	0	0	14.3	14.3	71.4	85.7	5 [4,5]

Statements pre-MSK video consultation	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
information and circumstances (age, sensory/cognitive/motor deficits, culture, language, etc.).							
3. Plan the video consultation having in mind the scientific evidence available.	0	0	0	0	100	100	5 [5,5]
4. Prepare the materials to be used and shared (e.g., links to educational websites, videos of exercises and tests, etc.).	0	0	14.3	14.3	71.4	85.7	5 [4,5]
5. Be prepared for the activities to be performed during the session (e.g., set-up, records, physical assessment, exercise prescription, means of data collection, etc.).	0	0	0	14.3	85.7	100	5 [5,5]
6. Get the patient's telephone number and emergency contact details, in case assistance is needed, and be prepared for possible adverse events.	0	0	0	0	100	100	5 [5,5]
7. Follow same regulations and standards as required in face-to-face consultation	0	0	0	0	100	100	5 [5,5]

Statements pre-MSK video consultation	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
(e.g., consent, record keeping, confidentiality), plus the specific requirements of the digital service (e.g., data handling, storage, privacy, etc.)							
8. Provide the patient with information regarding the video consultation process via email (who the physiotherapist is, time of the consultation, possible need of a third person (e.g., to perform physical examination or in case of people at risk, children, elderly), risks of the video consultation, possibility to have other health professionals joining the video consultation, differences from face-to-face consultation (e.g., hands-on treatment is not possible, etc.)).	0	0	0	42.9	57.1	100	5 [4,5]
9. Ask the patient to wear appropriate clothing that allows to view and assess the injured site.	0	0	0	28.6	71.4	100	5 [4,5]
10. Invite the patient to share possible issues or doubts as clearly as possible during	0	0	14.3	14.3	71.4	85.7	5 [4,5]

Statements pre-MSK video consultation	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
all the process (before, during and after the video consultation).							
11. If possible, get informed consent before the consultation.	14.3	0	0	28.6	57.1	85.7	5 [4,5]
Technical considerations							
12. Ensure that the risks of the video consultation are not greater than other available methods. Safety goes always first. (end-to-end encryption), functionality, quality, ease of use, ease to learn, cost and built-in features.	0	0	14.3	14.3	71.4	85.7	5 [4,5]
13. Choose a video consultation platform that follows legislation requirements and is suitable for MSK conditions, keeping in mind attributes like privacy and security (end-to-end encryption), functionality, quality, ease of use, ease to learn, cost and built-in features.	0	0	0	14.3	85.7	100	5 [5,5]

Statements pre-MSK video consultation	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
14. Embrace already available digital support tools to help (e.g., exercise videos, websites, etc.).	0	0	14.3	42.9	42.9	85.8	4 [4,5]
15. Keep in mind that a portable device might be needed, in case change of direction of the video is required.	0	0	14.3	28.6	57.1	85.7	5 [4,5]
16. Ensure that image, sound, motion handling (video), internet connection, etc., work well.	0	0	0	28.6	71.4	100	5 [4,5]
17. Verify that other software used for the video consultation (e.g., electronic medical record, billing system, etc.) and hardware (e.g., headphones, webcam, charger, microphone, etc.) work adequately.	0	0	0	14.3	85.7	100	5 [5,5]
18. Provide information to the patient via email about everything regarding technology use (how to enter the video consultation, what equipment is needed, how to set up their device/s, how the	0	0	14.3	42.9	42.9	85.8	4 [4,5]

Statements pre-MSK video consultation	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
video consultation platform works, how to optimise the internet connection, how to troubleshoot and proceed when technical issues arise, how to maintain security and privacy, how to pay for the service (if required), etc.).							
Environment							
19. Arrange the environment so that it is quiet, neat, with adequate temperature, no interruptions and good lighting, avoiding light behind the physiotherapist.	0	0	0	57.1	42.9	100	4 [4,5]
20. Provide the patient with the same information regarding environment considerations, plus the importance of having enough space to stand up and do the movements that will be requested by the physiotherapist (if the MSK condition requires it).	0	0	14.3	42.9	42.9	85.8	4 [4,5]

Statements pre-MSK video consultation	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
21. Ensure good personal and room appearance.	0	0	0	57.1	42.9	100	4 [4,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
Introduction							
22. Begin with affectionate greeting, identification and introduction physiotherapist-patient (and helpers, if present).	0	0	0	28.6	71.4	100	5 [4,5]
23. Verify patient's understanding of the information provided before the consultation and give the opportunity to ask doubts regarding that information.	0	0	0	0	100	100	5 [5,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
24. Make clear that the patient should not hesitate to ask anything he/she considers necessary during the video consultation.	0	0	0	14.3	85.7	100	5 [5,5]
25. Get informed consent, if not previously provided, and be aware that informed consent must be an ongoing process, as collection of data not considered initially might be needed.	14.3	0	0	14.3	71.4	85.7	5 [4,5]
26. Make an introduction to the video consultation, explaining the reason of it, how it will work and the differences with face-to-face consultation.	0	0	0	28.6	71.4	100	5 [4,5]
27. Remind the patient of the importance of playing a more active role in video consultations than in face-to-face consultations.	0	14.3	0	42.9	42.9	85.8	4 [4,5]
28. Ensure that the patient's experiences and expectations are known.	0	0	0	14.3	85.7	100	5 [5,5]
29. Show confidence, which will make more probable that the patient trusts you.	0	0	14.3	14.3	71.4	85.7	5 [4,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
30. Establish basic rules on how the progress will be assessed and how the physiotherapist will determine if referral to face-to-face consultation is needed.	0	0	0	42.9	57.1	100	5 [4,5]
31. Verify that the patient is wearing comfortable clothing that allows examination.	0	0	14.3	28.6	57.1	85.7	5 [4,5]
Communication							
32. Be aware that communication is key to success and language should be adapted to the patient.	0	0	0	0	100	100	5 [5,5]
33. Use open questions, in the style of a motivational interview, listen actively and give time to the patient to reply, avoiding interruptions, unless strictly necessary.	0	0	14.3	28.6	57.1	85.7	5 [4,5]
34. Build rapport, developing good therapy alliance with the patient by communicating in a positive way, both verbally and non-verbally (e.g., receptive	0	0	0	28.6	71.4	100	5 [4,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
body posture), to connect beyond the screen.							
35. Ask the patient to communicate naturally and to answer the questions sincerely and without prejudice.	0	0	14.3	14.3	71.4	85.7	5 [4,5]
36. Ask the patient to cross-examine each time that a question has not been clear, and make sure that the patient is following the explanations.	0	0	14.3	14.3	71.4	85.7	5 [4,5]
37. Consider how the information will be shared with the patient so that the most relevant information is shared at the beginning and at the end.	0	0	0	71.4	28.6	100	4 [4,5]
Technical considerations							
38. Ensure that software, hardware and internet connection work adequately on both ends (e.g., ask the patient if he/she can see and hear well).	0	0	0	14.3	85.7	100	5 [5,5]
39. Ensure that the hardware are in the right place to allow best possible interaction	0	14.3	0	28.6	57.1	85.7	5 [4,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
(e.g., head mid-screen, microphone close enough to the person and good framing of the video).							
40. Make sure you know how to troubleshoot and have a guide for support handy.	0	0	14.3	0	85.7	85.7	5 [5,5]
41. Ensure that you have alternative means to communicate with the patient (e.g., phone, email).	0	0	0	0	100	100	5 [5,5]
42. Explain to the patient that in case of technical difficulties the patient should stay calm and wait until the physiotherapist contact him/her via the alternative means.	0	0	14.3	14.3	71.4	85.7	5 [4,5]
43. If technical issues cannot be solved in the short term, reschedule the consultation.	0	0	0	0	100	100	5 [5,5]
Environment							
44. Verify privacy, that the rooms (patient's room and physiotherapist's room) are	0	0	0	28.6	71.4	100	5 [4,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
free of interruptions, quiet, well-lit and safe.							
45. Verify that there is enough space to move around (e.g., to perform functional tests).	0	0	0	42.9	57.1	100	5 [4,5]
History taking							
46. Make a plan ahead: have a patient sheet to fill out options (do not start from blank).	0	0	14.3	28.6	57.1	85.7	5 [4,5]
47. Take time to get a detailed history of the problem using standardised questionnaires to ensure that the patient is suitable for the MSK video consultation.	0	0	14.3	14.3	71.4	85.7	5 [4,5]
48. Pay attention to the initial report of the consultant, if any.	0	0	0	42.9	57.1	100	5 [4,5]
49. Refer to another health professional if “red flags” are found.	0	0	0	0	100	100	5 [5,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
50. Be aware that the history taking is an ongoing process, it does not finish until the end of the consultation.	0	0	14.3	57.1	28.6	85.7	4 [4,5]
51. Ask for clarification/confirmation if needed (do not assume anything).	0	0	14.3	28.6	57.1	85.7	5 [4,5]
52. Assess possible psychosocial features that might help with diagnosis and treatment.	0	0	14.3	28.6	57.1	85.7	5 [4,5]
53. Ensure continuous feedback to avoid missing important details, encouraging the patient to give as much information as possible about what he/she is feeling.	0	0	0	14.3	85.7	100	5 [5,5]
54. Keep records of the entire process.	0	0	0	42.9	57.1	100	5 [4,5]
Physical assessment							
55. Observation (e.g., check for bruising, swelling, deformity, redness, etc.).	0	0	14.3	42.9	42.9	85.8	4 [4,5]
56. Ask the patient to point out the site of pain and/or other symptoms.	0	0	0	14.3	85.7	100	5 [5,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
57. Perform movement examination through observation, measurement of ROM, measurement of angular displacements and linear distances (as required), asking the patient to report any symptoms when moving.	0	0	14.3	42.9	42.9	85.8	4 [4,5]
58. Identify functional tasks that are painful and use these as assessment.	0	0	0	14.3	85.7	100	5 [5,5]
59. Measure endurance, motor control, strength and vertical jump, if required and possible; and use the support of a helper, if needed. There are applications that can help, make use of them.	0	0	14.3	71.4	14.3	85.7	4 [4,4]
60. Consider whether a further valid and reliable assessment through special tests can be undertaken (e.g., orthopaedic and neurodynamic tests) and perform accordingly with the support of a helper, if needed. Consider alternative routes if required.	0	0	0	57.1	42.9	100	4 [4,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
61. Use resources (e.g., videos, diagrams, photos, infographics) to facilitate patient's understanding of what they should do.	0	14.3	0	42.9	42.9	85.8	4 [4,5]
Diagnosis and management							
62. Base your diagnosis on clinical reasoning, using all the information obtained from the clinical history and assessment.	0	0	0	0	100	100	5 [5,5]
63. Management plan and goals must be decided in partnership with the patient and based on evidence, clinical reasoning and patient's preferences.	0	0	0	14.3	85.7	100	5 [5,5]
64. Encourage management based on education, reassurance, exercise prescription and active life recommendations, as required; with a biopsychosocial approach in mind.	0	0	14.3	0	85.7	85.7	5 [5,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
65. Educate verbally and provide educational material from high-quality online resources.	0	0	0	28.6	71.4	100	5 [4,5]
66. Keep it simple, do not give more than 3 o 4 exercises and with a clear explanation of progression and how to manage possible worsening of symptoms due to the exercises.	0	0	0	28.6	71.4	100	5 [4,5]
67. Explain the exercises as clearly as possible, verbally and with visual support, using life demonstrations, exercise prescription software, apps and/or freely available quality resources (e.g., links to online videos). Video format is recommended over images.	0	0	0	28.6	71.4	100	5 [4,5]
68. Inform the patient that a summary of the management plan will be sent after the video consultation, so that the patient feels confident when doing the exercises alone.	0	0	14.3	14.3	71.4	85.7	5 [4,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
69. Advise the patient to keep track of his/her progress (log booklets, apps, notes, etc.).	0	14.3	0	42.9	42.9	85.8	4 [4,5]
70. Ask the patient to be clear about how much time he/she has to do the exercises, being realistic.	0	0	0	14.3	85.7	100	5 [5,5]
71. Emphasize that self-empowerment is key for recovery and that the focus should be on the things that he/she can do. Commitment is important, but self-punishment should not take place if the entire plan is not done.	0	0	14.3	28.6	57.1	85.7	5 [4,5]
Closing of the video consultation							
72. Summarize the evolution of the condition from previous visits, if any.	0	0	0	14.3	85.7	100	5 [5,5]
73. Summarize the current consultation, planned objectives and agreed plan to achieve them.	0	0	0	28.6	71.4	100	5 [4,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
74. Ask for feedback to confirm that the patient has understood the objectives and tasks, as well as the reason for them. If there is a purpose, the patient will remember them.	0	0	0	28.6	71.4	100	5 [4,5]
75. Ask the patient if he/she feels confident to implement the management plan.	0	0	14.3	42.9	42.9	85.8	4 [4,5]
76. Remind the patient of the importance of the implementation of the program, as well as the implication in his/her health process.	0	0	14.3	14.3	71.4	85.7	5 [4,5]
77. Ask for feedback about the service, if his/her expectations have been fulfilled.	0	0	0	14.3	85.7	100	5 [5,5]
78. Confirm how the patient would like to be contacted after the video consultation to share information regarding the management plan and for follow-up.	0	0	0	14.3	85.7	100	5 [5,5]
79. Inform the patient that the consultation is coming to an end, allow questions to answer possible doubts and let the	0	0	0	28.6	71.4	100	5 [4,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
patient know that he/she can contact you if questions arise.							
80. Express if further consultations are needed, purpose and characteristics (duration, cost, etc.), and plan and schedule the next consultation (if required) with the patient. An automated appointment management system is helpful for this matter.	0	0	0	28.6	71.4	100	5 [4,5]
81. Arrange payment of the video consultation (if required).	0	0	0	14.3	85.7	100	5 [5,5]
82. Give thanks for the co-operation and farewell.	0	0	14.3	0	85.7	85.7	5 [5,5]

Statements post-MSK video consultation	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
Registration							
83. Register patient's clinical notes that were not registered previously.	**0**	**0**	**0**	14.3	85.7	100	5 [5,5]
Evaluation							
84. Review everything that has been done, how it has been done and what is next.	0	0	0	28.6	71.4	100	5 [4,5]
85. Evaluate the service providing the patient with questionnaires (PROMs and PREMs).	0	0	0	14.3	85.7	100	5 [5,5]
86. Review incidents to analyse possible solutions to improve the quality of the next video consultation.	0	0	0	28.6	71.4	100	5 [4,5]
Follow-up actions							
87. Implement agreed follow-up actions sending an email to the patient with a summary of key points from the consultation, providing useful links/resources, etc.	0	0	0	14.3	85.7	100	5 [5,5]

Statements post-MSK video consultation	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
88. Monitor progression and adherence (can be done with applications).	0	0	0	14.3	85.7	100	5 [5,5]
89. Find out possible reasons for lack of adherence and make changes accordingly (e.g., too long, too boring, lack of understanding).	0	0	0	0	100	100	5 [5,5]
Technical considerations							
90. Ensure that software and hardware are appropriately disconnected, if it was the last appointment.	0	0	14.3	14.3	71.4	85.7	5 [4,5]
Environment							
91. Prepare the room and yourself for the next appointment.	0	0	14.3	14.3	71.4	85.7	5 [4,5]

Statements rated “agree/strongly agree” by 70-79% of the experts

Statements pre-MSK video consultation	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
Technical considerations							
1. Consider applications that might be needed for an MSK consultation (e.g., digital goniometer, application to share exercises, etc.). They might be stand-alone or integrated into the video consultation platform.	0	14.3	14.3	14.3	57.1	71.4	5 [3,5]
2. Feeling comfortable sharing screen is important.	0	0	28.6	28.6	42.9	71.5	4 [3,5]
3. If possible, contact the patient (e.g., via phone) to make sure that he/she understands how to get connection.	0	28.6	0	42.9	28.6	71.5	4 [2,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
Communication							
4. Be aware of every detail that could generate greater distance with the patient, paying attention to the screen and avoiding distractors. Look straight into the camera (patient's eyes) and positively shake your head when the patient is talking.	0	28.6	0	42.9	28.6	71.5	4 [2,5]
Technical considerations							
5. Make sure that unnecessary applications/websites are disconnected on both ends, to have an optimal internet connection.	0	0	28.6	42.9	28.6	71.5	4 [3,5]
6. Ask the patient to have the troubleshooting information emailed before the video consultation handy.	14.3	0	14.3	28.6	42.9	71.5	4 [3,5]
History taking							
7. Inform the patient about the history taking process and why it is necessary.	0	0	28.6	28.6	42.9	71.5	4 [3,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
Physical assessment							
8. Explain to the patient the importance of following the instructions given by the physiotherapist to assess the condition.	0	0	28.6	28.6	42.9	71.5	4 [3,5]
9. Self-palpation guided by the physiotherapist with real-time demonstration is useful.	14.3	0	14.3	14.3	57.1	71.4	5 [3,5]
10. Keep in mind the possibility of recording videos to have information for posterior analysis.	0	0	28.6	57.1	14.3	71.4	4 [3,4]
Diagnosis and management							
11. Inform the patient that the higher the self-efficacy, the better the prognosis.	14.3	0	14.3	14.3	57.1	71.4	5 [3,5]
12. Give the possibility to print the exercise program to ensure equality among patients without technology access or who do not like applications (e.g., printable pdf images).	0	0	28.6	28.6	42.9	71.5	4 [3,5]
Closing of the video consultation							

Statements MSK video consultation intervention	**Experts rating strongly disagree (1) (%)**	**Experts rating disagree (2) (%)**	**Experts rating neither agree nor disagree (3) (%)**	**Experts rating agree (4) (%)**	**Experts rating strongly agree (5) (%)**	**Experts rating agree/strongly agree (4+5) (%)**	**Median [IQR]**
13. Ask the patient to leave adequate time between the consultation and his/her next obligation (e. g., meeting) to think through what was said and done.	14.3	0	14.3	28.6	42.9	71.5	4 [3,5]

Statements rated “agree/strongly agree” by less than 70% of the experts

Statements pre-MSK video consultation	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
Preparation and general physiotherapist-patient information							
1. Ensure that the data related to the case is available, to know the purpose of the video consultation (previous history, diagnostic tests, etc.).	0	0	42.9	0	57.1	57.1	5 [3,5]
2. Provide the patient with information regarding scientific evidence supporting the use of video consultation (it works as well or better than face-to-face consultation, is safe, effective, convenient and most assessments, high value education and exercise can be provided, etc.)	0	0	42.9	42.9	14.3	57.2	4 [3,4]
3. Explain to the patient that the video consultation requires a committed and active patient.	0	14.3	28.6	28.6	28.6	57.2	4 [3,5]
Technical considerations							

Statements pre-MSK video consultation	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
4. If possible, set up a quick video call test with the patient.	14.3	14.3	14.3	57.1	0	57.1	4 [2,4]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
Introduction							
5. Explain how much evidence there is about how empowering the person and providing with good self-efficacy strategies can achieve similar or better goals than face-to-face consultation.	0	14.3	42.9	14.3	28.6	42.9	3 [3,5]
6. Be aware that the first session might be awkward, but it gets better.	14.3	14.3	14.3	14.3	42.9	57.2	4 [2,5]
Physical assessment							

Statements MSK video consultation intervention	**Experts rating strongly disagree (1) (%)**	**Experts rating disagree (2) (%)**	**Experts rating neither agree nor disagree (3) (%)**	**Experts rating agree (4) (%)**	**Experts rating strongly agree (5) (%)**	**Experts rating agree/strongly agree (4+5) (%)**	**Median [IQR]**
7. Use digital measurement support tools such as angle measurement software for the ROM.	0	28.6	42.9	14.3	14.3	28.6	3 [2,4]

Appendix 9 – Third-round email

Dear colleague,

Thank you very much for your kind participation in the second round of the Delphi study *International consensus on best practice on video consultation in MSK physiotherapy*.

I am pleased to let you know that the response rate of the second round of the study was 87.5% and all the collected data was very valuable.

Below, I share with you a summary of the results of the second-round questionnaire to give you an overview of the progress of the study (see attachments for further information regarding all the statements and rates):

- 91 out of the 111 statements that compiled the second-round questionnaire were rated "agree/strongly agree" by at least 80% of the experts, 7 statements were rated "agree/strongly agree" by less than 70% of the experts and 13 statements were rated "agree/strongly agree" by 70-79% of the experts.
- The statements that were rated "agree/strongly agree" by at least 80% of the experts are included in the list of recommendations on best practice on video consultation in MSK physiotherapy and excluded from the questionnaire, as defined for the inclusion criteria shared with you in the previous round.
- The statements that were rated "agree/strongly agree" by less than 70% of the experts have been excluded from the questionnaire, except for 1 statement that has been reworded, as suggested by experts, and included in the questionnaire to be re-rated.

Original: *Provide the patient with information regarding scientific evidence supporting the use of video consultation (it works as well or better than face-to-face consultation, is safe, effective, convenient and most assessments, high value education and exercise can be provided, etc.)*

Modified: *When high-quality scientific evidence is available, provide the patient with information regarding scientific evidence supporting the use of video consultation (it works as well or better than face-*

to-face consultation, is safe, effective, convenient and most assessments, high value education and exercise can be provided, etc.)

- The statements that were rated "agree/strongly agree" by 70-79% of the experts are included in the third-round questionnaire, to be re-rated by the experts. Also, 2 of the statements rated "agree/strongly agree" by 70-79% of the experts were reworded, following experts' suggestions.

Original: *Feeling comfortable sharing screen is important.*

Modified: *Feeling comfortable sharing screen is important, for both the physiotherapist and the patient.*

Original: *Ask the patient to leave adequate time between the consultation and his/her next obligation (e. g., meeting) to think through what was said and done.*

Modified: *Ask the patient to leave adequate time between the consultation and his/her next obligation (e. g., meeting) to think through what was said and done during the video consultation.*

For **this third and last round**, you will need to rate **14 statements**, which will not require more than 15-20 min.

The statements are divided into the same themes and sub-themes as the second-round questionnaire (except for those sub-themes which statements are not included) and need to be rated according to how strongly you agree or disagree with them. There are five options to choose from: 1) Strongly disagree, 2) Disagree, 3) Neither agree nor disagree, 4) Agree and 5) Strongly agree.

Also, below every statement you have the possibility to leave a comment regarding that statement or your response to it, in case you feel that a clarification of your response is required.

The statements rated "agree/strongly agree" by at least 80% of the experts in this third round will be included in the list of recommendations on best practice on video consultation in MSK physiotherapy (adding up to the statements included from the second round) and no further rounds will be performed.

Please find the link to the third-round questionnaire below:

https://forms.gle/uPGtj4dKV26wBw2j6

I plan to close the third-round data collection in **ten days** from today (5th of April). Please, do not hesitate to let me know if this time frame does not work for you.

Thank you very much again for your participation and valuable time,

Sincerely yours,

Jorge Rodríguez

MHCP Physiotherapist

Appendix 10 – Third-round questionnaire

Questionnaire MSK video consultation: Round 3

Please rate the statements using the following scale: 1) Strongly disagree; 2) Disagree; 3) Neither agree nor disagree; 4) Agree and 5) Strongly agree.

Also, you have the option to leave a comment below each statement if you consider that a clarification and/or suggestion is required.

*Required

PRE-VIDEO CONSULTATION IN MSK

PREPARATION AND PHYSIOTHERAPIST-PATIENT INFORMATION

1. 1. When high-quality scientific evidence is available, provide the patient with information regarding scientific evidence supporting the use of video consultation (it works as well or better than face-to-face consultation, is safe, effective, convenient and most assessments, high value education and exercise can be provided, etc.) *

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

2. Comments and/or suggestions (if required)

TECHNICAL CONSIDERATIONS

3. 2. Consider applications that might be needed for an MSK consultation (e.g., digital goniometer, application to share exercises, etc.). They might be stand-alone or integrated into the video consultation platform. *

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

4. Comments and/or suggestions (if required)

5. 3. Feeling comfortable sharing screen is important, for both the physiotherapist and the patient *

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

6. Comments and/or suggestions (if required)

7. 4. If possible, contact the patient (e.g., via phone) to make sure that he/she understands how to get connection. *

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

8. Comments and/or suggestions (if required)

MSK VIDEO CONSULTATION INTERVENTION/PROCESS

COMMUNICATION

9. 5. Be aware of every detail that could generate greater distance with the patient, paying attention to the screen and avoiding distractors. Look straight into the camera (patient's eyes) and positively shake your head when the patient is talking. *

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

10. Comments and/or suggestions (if required)

TECHNICAL CONSIDERATIONS

11. 6. Make sure that unnecessary applications/websites are disconnected on both ends, to have an optimal internet connection. *

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

12. Comments and/or suggestions (if required)

13. 7. Ask the patient to have the troubleshooting information emailed before the video consultation handy. *

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

14. Comments and/or suggestions (if required)

HISTORY TAKING

15. 8. Inform the patient about the history taking process and why it is necessary. *

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

16. Comments and/or suggestions (if required)

PHYSICAL ASSESSMENT

17. 9. Explain to the patient the importance of following the instructions given by the physiotherapist to assess the condition. *

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

18. Comments and/or suggestions (if required)

19. 10. Self-palpation guided by the physiotherapist with real-time demonstration is useful. *

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

20. Comments and/or suggestions (if required)

21. 11. Keep in mind the possibility of recording videos to have information for posterior analysis. *

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

22. Comments and/or suggestions (if required)

DIAGNOSIS AND MANAGEMENT

23. 12. Inform the patient that the higher the self-efficacy, the better the prognosis. *

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

24. Comments and/or suggestions (if required)

25. 13. Give the possibility to print the exercise program to ensure equality among patients without technology access or who do not like applications (e.g., printable pdf images). *

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

26. Comments and/or suggestions (if required)

CLOSING OF THE VIDEO CONSULTATION

27. 14. Ask the patient to leave adequate time between the consultation and his/her next obligation (e. g., meeting) to think through what was said and done during the video consultation. *

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

28. Comments and/or suggestions (if required)

Appendix 11 – Results of the third-round questionnaire

Statements pre-MSK video consultation	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
Preaparation and general physiotherapist patient information							
1. When high-quality scientific evidence is available, provide the patient with information regarding scientific evidence supporting the use of video consultation (it works as well or better than face-to-face consultation, is safe, effective, convenient and most assessments, high value education and exercise can be provided, etc.)	0	0	0	14.3	85.7	100	5 [5,5]
Technical considerations							
2. Consider applications that might be needed for an MSK consultation (e.g.,	0	14.3	0	28.6	57.1	85.7	5 [4,5]

Statements pre-MSK video consultation	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
digital goniometer, application to share exercises, etc.). They might be stand-alone or integrated into the video consultation platform.							
3. Feeling comfortable sharing screen is important.	0	0	28.6	28.6	42.9	85.7	5 [4,5]
4. If possible, contact the patient (e.g., via phone) to make sure that he/she understands how to get connection.	0	28.6	0	42.9	28.6	85.7	5 [4,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
Communication							
5. Be aware of every detail that could generate greater distance with the patient, paying attention to the screen	0	28.6	0	42.9	28.6	100	5 [5,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
and avoiding distractors. Look straight into the camera (patient's eyes) and positively shake your head when the patient is talking.							
Technical considerations							
6. Make sure that unnecessary applications/websites are disconnected on both ends, to have an optimal internet connection.	0	0	28.6	42.9	28.6	100	5 [4,5]
7. Ask the patient to have the troubleshooting information emailed before the video consultation handy.	14.3	0	14.3	28.6	42.9	85.7	4 [4,5]
History taking							
8. Inform the patient about the history taking process and why it is necessary.	0	0	28.6	28.6	42.9	85.7	5 [4,5]
Physical assessment							
9. Explain to the patient the importance of following the instructions given by the physiotherapist to assess the condition.	14.3	0	14.3	14.3	57.1	71.4	5 [3,5]

Statements MSK video consultation intervention	Experts rating strongly disagree (1) (%)	Experts rating disagree (2) (%)	Experts rating neither agree nor disagree (3) (%)	Experts rating agree (4) (%)	Experts rating strongly agree (5) (%)	Experts rating agree/strongly agree (4+5) (%)	Median [IQR]
10. Self-palpation guided by the physiotherapist with real-time demonstration is useful.	14.3	0	28.6	28.6	28.6	57.2	4 [3,5]
11. Keep in mind the possibility of recording videos to have information for posterior analysis.	0	0	28.6	28.6	42.9	71.5	4 [3,5]
Diagnosis and management							
12. Inform the patient that the higher the self-efficacy, the better the prognosis.	0	14.3	28.6	14.3	42.9	57.2	4 [3,5]
13. Give the possibility to print the exercise program to ensure equality among patients without technology access or who do not like applications (e.g., printable pdf images).	0	0	14.3	0	85.7	85.7	5 [5,5]
Closing of the video consultation							
14. Ask the patient to leave adequate time between the consultation and his/her next obligation (e. g., meeting) to think through what was said and done.	14.3	0	14.3	42.9	28.6	71.5	4 [3,5]