

NOMADe

Opinion on the effectiveness of physiotherapy management of neuro-musculo-skeletal disorders by telerehabilitation

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Summary

In this period of containment related to Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), **the objective of this article is to formulate an opinion on the effectiveness of physiotherapy management of Neuromusculoskeletal Disorders (NMSD) by telerehabilitation (TR) as well as guidelines for physiotherapists.** The effectiveness of TR physiotherapy management will be evaluated based on the results published in the scientific literature regarding disability, pain, sense of self-management and health-related quality of life. Particular attention will be paid to the Belgian and French contexts, although the validity of the bibliographical synthesis presented is more wide-ranging.

From a technical point of view, the material necessary to practice TR is already available to a large majority of Belgian and French citizens. **Assessment in TR physiotherapy is technically feasible for various NMSD** with good validity and excellent reliability for many variables. Even if the most basic technological modality for TR is the telephone interview, in the context of contemporary and efficient physiotherapy practice, **we rather advocate the use of video, both in a synchronous and asynchronous delivery, which allows sharing physical exercises with patients** through numerous applications available on the internet.

TR physiotherapy helps maintain the compliance of patients with NMSD in the upper and lower limbs to the exercises as well as their motivation. **Strong evidence for effectiveness of synchronous and asynchronous TR after orthopaedic knee or hip surgery is available in the literature.** For low back pain, positive results have been observed in patients with both acute and chronic conditions.

Within the framework of the Interreg FWVI NOMADe project, and despite certain methodological limitations related to our literature search and the urgency to formulate an opinion before the end of the SARS-CoV-2 containment, **we conclude that during the containment period TR is feasible and even desirable for patients suffering from NMSD affecting both the upper and lower quadrants.** We have no doubt that the practice of TR physiotherapy on the French and Belgian slopes will allow patients suffering from NMSD to benefit from quality physiotherapy care, both during the confinement period and as a complement to the usual face-to-face care when deconfinement will take place. There is no doubt that TR has a bright future in Europe and the rest of the world.

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Introduction

Severe acute respiratory syndrome coronavirus 2, clinically known as SARS-CoV-2, is the coronavirus responsible for Covid-19 disease (Lu 2020). It was first observed at the end of 2019 in Wuhan, a provincial city in Hubei Province in China, and rapidly spread around the world and specifically in Europe and the United States.

This pandemic prompted the Belgian and French governments to impose strict containment on the population through the Spring 2020. Given the highly contagious nature of SARS-CoV-2, general practitioners practicing in offices quickly adapted to this situation and consultations by telephone and then videoconferencing quickly became the preferred modality in the event of suspicion of infection by the virus in order to be able to provide the best advice and guidance to patients.

However, this type of telephone consultation is not well suited to other health professions, such as physiotherapy, which requires at least the ability to visually examine patients. Consequently, the abrupt cessation of face-to-face physiotherapy consultations during this pandemic raises the question of the use of virtual health care as a means of management. These appear to offer viable alternatives for the assessment, education and management of patients and families (Agostini 2015, van Egmond 2018, Orlando 2019) during pandemic periods. Outside of these crisis periods, virtual health care can also provide new

alternatives to improve patient access to care in rural areas as well as opportunities to contain costs while maintaining high quality of care.

Internationally, in the field of rehabilitation, these healthcare applications are referred to as telerehabilitation (TR) (Lee et al. 2018). TR is the provision of rehabilitation using information and communication technologies, regardless of the patient's geographic location (Rosen 1999). Like traditional rehabilitation, TR consists of patient assessment, clarification of goals, patient-friendly therapies, including exercise, and interdisciplinary collaboration between different health professionals.

The main objective of this article is to formulate an opinion on the effectiveness of physiotherapy management of neuromusculoskeletal disorders (NMSD) using the different categories of TR. The secondary objective is to highlight guidelines for conducting a TR session or set of sessions in an efficient manner and to detail the technological needs related to the practice of TR. The opinion formulated will be based on international literature but will be more specifically aimed at TR practice in Belgium and France.

Legislation, social security and reimbursement of sessions

In France, TR is not subject to official pricing. Tele-consultations by telephone by doctors are covered by health insurance. The initial text (15 September 2018) limited these consultations to those carried out with a practitioner who already knows the patient and which are secondary to a face-to-face consultation. These restrictions are cancelled during the current epidemic, which has also led to a transitional authorisation and reimbursement of speech therapy sessions in TR but not the equivalent in physiotherapy. At the beginning of containment, physiotherapists were recommended to close their practices and practice in patients' home in case of essential treatment. The decree of April 18 (https://www.legifrance.gouv.fr/jo_pdf.do?id=JORFTEXT000041807257), however, changes the situation by authorizing the use of TR with videotransmission (telecare) for a list of masso-physiotherapy procedures. Billing the health insurances is now authorized.

In Belgium, while a study by the Centre d'Expertise des Soins de Santé (Study 2019-07(HSR)) on the impact of teleconsultation in healthcare had been underway since 2019, things have accelerated since the start of the pandemic. Since March 31 (with retroactive effect to March 14), physiotherapists have had a lump-sum payment for monitoring their patients via telephone or video consultations. This compensation, granted by the l'Institut National d'Assurance Maladie-Invalidité (INAMI), is a special measure related to the "Covid-19 containment" required by the government.

During the confinement period, a fee of €40 may be requested for a video teleconsultation, certifiable if at least 2 contacts by video, one of which lasts at

least 20 minutes, have been made with the patient over a period of one week for the implementation of an exercise program. Telephone teleconsultation is certifiable if at least 2 telephone contacts have been made with the patient over a period of one week for the implementation of an exercise program and can be remunerated up to 25 € (<https://www.axxon.be/fr/newsletteritem/1787/>).

The uncertainty as to the perennial nature of the measures authorizing the reimbursement of teleconsultations makes it necessary to reflect beyond the necessity generated by the emergency: according to the scientific literature, can it be affirmed that the principle of teleconsultations and TR is effective in the diagnosis and/or treatment of NMSD? Is this effectiveness global or restricted to certain pathologies? How do practitioners and patients perceive these methods?

Telerehabilitation: principle and technical needs

From a technological perspective, health care applications can be of two types: synchronous (real-time) or asynchronous (time-shifted) (Lee 2018). Synchronous applications often use videoconferencing, but can no longer be carried out over the telephone. As for asynchronous applications, these are mainly based on the use of e-mail and/or the use of an internet forum.

Use of phone

Telephone consultations, augmented by sending a booklet at home explaining the exercise program to be carried out (the so-called "PhysioDirect" method), showed an effectiveness equivalent to conventional physiotherapy sessions in 2249 patients with various NMSD over a period of 6 months (Hollingshurst 2013, Salisbury 2013). The objective of the randomized controlled trial (RCT) conducted by Hinman et al (2019 & 2017) was to evaluate the effects of a telephone interview led by a physiotherapist to guide physical activities and provide personalized support to patients suffering from knee osteoarthritis. Participants were allocated to either : (1) an existing telephone service (at least one consultation by a nurse for self-management advice) or (2) telephone interviews led (5 to 10 consultations) by a physiotherapist trained in behaviour change to provide individualized strengthening exercises and a physical activity program in addition to the existing telephone service. The primary outcome indicators were overall knee pain and physical function at 6 months. Secondary outcome indicators were cost effectiveness and 12-month follow-up. Results showed that at 6 months, exercise advice and support resulted in greater improvement in function, but not in overall knee pain. The secondary results were in favor of exercise advice and support at 6 months. At 12 months, most of the results were similar between groups. The authors concluded that the provision of telephone physiotherapy to provide physical activity advice and individualized support moderately improved physical function but not knee pain at 6 months. Functional benefits were not maintained at 12 months. The clinical significance of this effect is uncertain.

Use of video

We believe that the use of video in the TR is now technologically accessible enough to advantageously replace the telephone/explanatory booklet combination. The minimum requirements for a synchronous TR system are: (1) Ability to track the duration of a session to be legally able to charge the patient for a consultation. Provision of a talking interface with the possibility of video interaction. (2) Security with regard to patient confidentiality. Specifically, the interaction cannot be recorded or broadcasted in any way.

In the case of asynchronous applications, it is also possible to share exercises (videos, manuals, etc.) in order to maintain the patient's motivation (Lambert 2017). The objective of this randomized controlled trial (RCT) was to study whether people suffering from musculoskeletal disorders adhere better to their home exercise program when these were provided to them on an application with remote assistance, compared to paper documents. Each participant completed a 4-week home exercise program prescribed by a physiotherapist at a hospital in Australia. Participants in the intervention group received their home exercise programs on an application linked to the website www.physiotherapyexercises.com. They also received additional phone calls and motivational text messages. Participants in the control group received their home exercise program in the form of a paper document. Outcome indicators were collected at the beginning of the study and at 4 weeks. The authors concluded that people with musculoskeletal disorders adhere better to their home exercises when the programs are delivered on an application with remote assistance compared to paper documents. However, the clinical benefit of this additional adherence is unclear.

There are already platforms for TR: Physitrack (www.physitrack.com), My Medicoach (www.mymedicoach.com), Kobus (www.kobusapp.com) etc. It appears that Physitrack, in particular, meets all the minimum requirements. In addition, there is a platform that already contains exercises and users can upload their own videos. As far as privacy protection is concerned, the system complies with HIPAA (USA) and RGPD (EU) standards.

In order to make full use of the existing applications, the patient and the physiotherapist need a smartphone and/or a computer with a camera (preferably integrated), a microphone, a loudspeaker and an internet connection. If the physiotherapist chooses to contribute to an exercise platform by downloading home-made videos, it is advisable to invest in a dedicated facility for recording these videos, including for example a tripod.

Technological upgrade

According to Russell (2007), there are three categories of TRs that can be based on: (1) image, (2) sensors or (3) the use of virtual reality. The last two categories call for technological developments that are probably less accessible to

physiotherapists. Examples of attempts that have shown clinical interest include the use of goniometers to send data to the physiotherapist to ensure better follow-up of rehabilitation at home (Msayib 2017) or the inclusion of the Fitbit in a telephone consultation program (Amorim 2019). The objective of the latter RCT was to study the feasibility and effectiveness of a patient-centered physical activity intervention, supported by a health framework and a mobile application, to reduce the demand for care, pain and disability in patients still suffering from chronic low back pain at the end of treatment. Participants were recruited from four public outpatient physiotherapy services and the general community in Sydney. The intervention group received a physical activity information brochure and a face-to-face health coaching session followed by 12 telephone sessions. The intervention was supported by a web-based application and an activity tracking system (Fitbit). The control group (standard care) received the physical activity information booklet and advice on how to stay active. Feasibility indicators included recruitment rate, intervention compliance, data completeness, and participant satisfaction. Outcomes were evaluated at baseline, at 6 months and weekly for 6 months. The authors concluded that the physical activity coaching approach tested here is feasible and well accepted by participants and may reduce the demand for care in patients with low back pain after treatment is completed, although further evaluation with a sufficiently powerful trial is required.

Other technical solutions are still at the prototype stage: the inclusion of a motion measurement platform based on inertial sensors in the TR (Vallati 2019), or even the use of sensors integrated in the iPhone (Vaish 2016).

Efficacy of physiotherapy treatment by telerehabilitation, by pathologies

Meta-analyses (MA) and systematic reviews (SR) are listed in Table 1. The objectives of the SR of Grona et al. (2017) were to : (1) determine the validity and reliability of secure videoconferencing for physiotherapy and (2) determine the health outcomes of using secure videoconferencing for the management of physiotherapy for musculoskeletal disorders. The study included adults aged 18 to 80 years with chronic neuromusculoskeletal disorders. Randomized controlled trials (RCTs), pre-experimental studies and case-control studies were included. Validity and reliability studies were identified as being at high risk for bias. Intervention studies were of moderate quality, and a positive impact on health and satisfaction was observed. Two studies assessed costs, with evidence of cost savings in one study. The authors concluded that further research was needed to evaluate the long-term effects of TR in the therapeutic management of NMDSs, including cost-benefit analyses.

The SR of Pastora-Bernal et al. 2017 had the following objectives: (1) to study the effects of TR after orthopaedic surgery, and (2) to describe the design of interventions and determine whether TR is comparable to conventional delivery methods. This study summarizes the levels of evidence and degrees of recommendation for synchronous or asynchronous TR provided through TR alone

or in conjunction with other treatment interventions. The quality of the included studies was assessed using scores from the Physiotherapy Evidence Database (PEDro) and the Oxford Centre for Evidence-Based Medicine recommendation score. The PEDro scale, graded from 0 to 10 points, is used to characterize the internal validity and statistical information of the studies. Three studies had PEDro scores between 6 and 8, which is considered Level 1 evidence (good), 4 studies had a score of 5, which is considered Level 2 evidence (acceptable), and the remaining 8 studies had scores of 4 or less, which is considered poor. Strong and moderate scores for evidence (recommendation grade A-B) were found in total knee (TKR) and hip (THR) replacements. Only one upper extremity study had a moderate level of evidence (recommendation grade B) and the others were of poor methodological quality with little evidence (recommendation grade C). The authors concluded that sufficient evidence of the efficacy of TR for treatment after orthopedic surgery, regardless of pathology, was lacking. However, strong evidence in favor of TR in patients who have undergone TKR or THR surgery exists, as well as moderate and weak evidence in upper extremity procedures.

Table 1: Results of meta-analyses (MA) and systematic reviews (SR). TKR: total knee replacement, THR: total hip replacement.

AUTHORS	DESIGN	POPULATIONS/ AREAS	STUDIES (N), PARTICIPANTS (n)	RESULT INDICATORS	TECHNOLOGY
GRONA ET AL. 2017	SR	TKR, Shoulder, Lumbar	N=17, n=121	Validity, Reproducibility, Satisfaction, Health	Synchronous
PASTORABERNAL ET AL. 2017	SR	TKR, THR	N=15, n=1316	Pain, Quality of Life, Disability, Function	Synchronous and asynchronous
DARIO ET AL. 2017	SR, MA	Lumbar	N=11, n=2280	Pain, Quality of Life, Disability, Function	Synchronous and asynchronous
VAN EGMOND ET AL. 2017	SR, MA	TKR, Hip fracture	N=23, n=3424	Pain, Quality of Life, Disability, Function	Synchronous and asynchronous
COTTRELL ET AL. 2017	SR, MA	TKR, THR, Knee arthrosis	N=13, n=1520	Pain, Quality of Life, Disability, Function	Synchronous
MANI ET AL. 2016	SR	Healthy, Lumbar	N=11, n=122	Validity, Reproducibility, Pain, Disability, Function	Synchronous
AGOSTINI ET AL. 2015	SR, MA	PTG	N=12, n=1047	Pain, Function	Synchrone et asynchrone

The objective of the SR of Dario et al. 2017, supplemented with MA, was to evaluate whether interventions provided by TR improved pain, disability, function, and quality of life of patients with non-specific low back pain. The included studies were RCTs that examined the effectiveness of TR interventions, alone or in combination with other interventions, for non-specific low back pain compared to a control group. For chronic low back pain, TR interventions had no significant effect on pain in the short or medium term compared to a control group. Similarly, there was no significant effect for disability. Results from three RCTs showed that TR was superior to a control intervention in improving quality of life. Interventions combining TR with usual care were more beneficial than usual care alone in patients with recent low back pain symptoms. The authors concluded that there was moderate-quality evidence that current TR interventions, in isolation, were no more effective than minimal interventions in reducing pain and disability in patients with chronic low back pain.

The objective of the SR of van Egmond et al. 2017, supplemented by an MA, was to study the efficacy of physical therapy with TR on postoperative functional outcomes and quality of life in surgical patients. RCTs, controlled clinical trials, quasi-randomized and quasi-experimental studies with controls were included in this study. The methodological quality of the included studies was assessed using the Cochrane Risk of Bias Tool. Twenty-three studies were included for a qualitative synthesis and seven were eligible for a quantitative QoL synthesis, and the standardized mean difference indicated an increase in favor of TR in surgical patients. The diversity of intervention content and outcome indicators limited the performance of the meta-analysis. The authors concluded that TR physiotherapy had the potential to improve quality of life, was feasible and at least as effective as usual care in surgical populations. This may be sufficient reason to choose TR based physiotherapy for surgical populations, although the overall effectiveness on physical outcomes remains uncertain.

The objectives of the SR of Cottrell et al. 2016, supplemented by an MA, were: (1) to evaluate the effectiveness of real-time TR for the management of musculoskeletal conditions, and (2) to determine whether real-time TR is comparable to conventional delivery methods in this population. The methodological quality of the included studies was assessed using the Downs & Black "Quality Measurement Checklist". The overall results suggested that TR was effective in improving children's physical and mental health, while being slightly more favorable than the control cohort after the intervention. Subgroup analyses revealed that TR in addition to usual care was more effective than usual care alone, while treatment with TR alone was equivalent to face-to-face treatment for improvement in physical function. Pain improvement was also found to be comparable between cohorts following the intervention. The authors concluded that real-time TR appeared to be effective and comparable to conventional health care delivery methods for improving physical function and pain in a variety of musculoskeletal conditions.

Table 2: Results of Controlled Randomized Trials (RCT). exp : experimental group (TR). ctrl : control group (standard physiotherapy).

AUTHORS	DESIGN	POPULATION/ AREA	PARTICIPANTS (n)	RESULT INDICATORS	TECHNOLOGY
HINMAN ET AL. 2019	RCT	Knee arthrosis	n= 175, exp=87, ctrl=88	Pain, Function	Synchronous
AMORIM ET AL. 2019	RCT	Low back pain	n=68, exp=34, ctrl=34	Care-seeking, Pain, Activity limitation	Synchronous and asynchronous
LAMBERT ET AL. 2017	RCT	Upper and lower limbs	n=80, exp=40, ctrl=40	Membership in the exercise program	Synchronous and asynchronous
HOLLINGHURST ET AL. 2013	RCT	Upper and lower limbs, Lumbar	n=2249, exp=1506, ctrl=743	Cost-Effectiveness, Overall Improvement, Response to Treatment, Satisfaction, Wait Times, Quality of Life	Synchronous

The objective of the SR of Mani et al. 2016 was to explore and summarize the validity and reliability of TR physiotherapy for musculoskeletal disorders. The QUADAS (Quality Assessment of Diagnostic Accuracy Studies) tool was used to assess the methodological quality of the included studies. Nine studies explored concurrent validity, inter- and intra-rater reliability, while two studies examined convergent validity only. The studies reviewed were of moderate to good methodological quality. Physiotherapy assessments such as pain, swelling, range of motion, muscle strength, balance, walking, and functional assessments showed good convergent validity. However, the convergent validity of lumbar spine posture, special orthopedic tests, neurodynamic tests, and scar assessments ranged from low to moderate. The authors concluded that the TR physiotherapy evaluation was technically feasible with good convergent validity and excellent reliability, except for lumbar spine posture, special orthopedic tests, neurodynamic tests and scar assessments.

The objective of the SR of Agostini et al. 2015, supplemented by a MA, was to determine whether TR was more effective than other modes of rehabilitation in restoring motor function in different patient populations. The included studies involved populations of patients with neurological or cardiac conditions or with TKR. Inconclusive results were found on the effect of TR for neurological patients, while for cardiac and TKR patients the results were in favor of TR. The authors concluded that there was no evidence of the efficacy of TR for the treatment of motor function.

Nevertheless, a significant positive effect was found for patients after orthopaedic knee surgery, suggesting that increasing the intensity provided by TR is a promising option for patients.

RCTs are listed in Table 2; they are discussed in other chapters of this text.

Implementation and Perception of Telerehabilitation for NMSD

Implementation for low back pain

We can see from the literature that TR opens up new perspectives for improving the care trajectory of the patient with NMSD. As health professionals, we can easily imagine different benefits to the implementation of TR in the management of NMSD. Taking the example of low back pain, the development of TR tools could enable a first-line triage approach in line with the latest international recommendations (Bernstein 2017, Jonckheer 2017, Maher 2017, Qaseem 2017). These recommendations highlight the primary need to differentiate between non-specific low back pain and specific low back pain that is due to serious pathologies and may be life-threatening (Downie 2014). These patients should be referred for physical consultation.

In the case of non-specific low back pain, which accounts for 90% of low back pain patients, the TR approach is a viable option; see Fig. 1 for a graphical summary. In these patients, the next step is to assess the risk of chronicity using a validated questionnaire such as the STarT Back Tool. This tool will enable a stratified care pathway (Hill 2011) and can be easily integrated into TR. Patients with non-specific low back pain, but at medium and high risk of developing persistent pain, can be referred for physical consultation. The recommended first-line treatment is an approach based on advice and education, where the therapist will reassure the patient (Foster 2018). The TR approach may be a relevant and accessible choice to provide this advice tailored to the low-risk patient. This approach could greatly reduce the cost of care pathways (e.g. unnecessary imaging or invasive treatments) and also avoid the transition to chronicity (Hill 2011, Foster 2018). In the second line, a physical consultation is still possible after an interview using TR. Physical treatment combined with an exercise program can be implemented and follow-up can be provided by the therapist at regular intervals. This approach promotes patient self-management and is consistent with the recommendations (Bernstein 2017, Jonckheer 2017, Maher 2017, Qaseem 2017).

There are concrete benefits for therapists. This type of approach, after the development of interactive tools such as videos or thoughtful games, would allow the therapist to save a significant amount of time. TR can also open up rehabilitation to the multidisciplinary approach by allowing, for example, the monitoring of the lumbago patient in collaboration with a doctor (general practitioner or specialist) or a psychologist. It can promote better communication

between care providers such as physiotherapists and general practitioners (Cottrell 2017). Patient adherence to treatment can increase while decreasing the rate of visits' absenteeism (Cottrell 2017).

According to the literature, TR is a justified practice. However, some limitations noted in the literature should be kept in mind. Since the time spent with a patient is identical, the problems of overloading structures such as pain centers will not necessarily be resolved. The physical examination, which is a very important part of the consultation, is impossible or non-adapted via TR. Other therapists explain that the importance and benefits of physical contact will be lost (Cottrell 2017). However, TR can be integrated as a complementary approach for remote treatment follow-up alternating with face-to-face consultations that include physical examinations. As with any new approach, a framework needs to be defined to develop good practice in this area in terms of content and form.

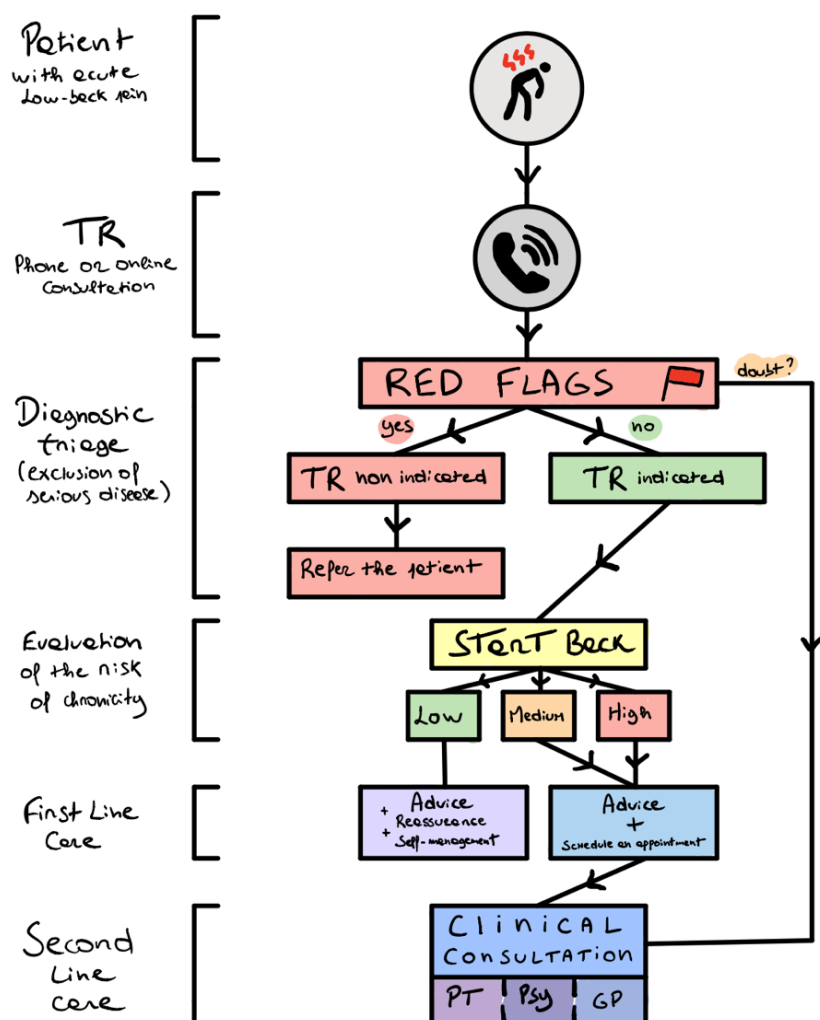


Figure 1: Use of TR to improve the management of patients with NMSD.

Cost

The objective of the RCT conducted by Hollinghurst (2013) was to compare the cost-effectiveness of PhysioDirect (an intervention based on telephone assessment and advice and supplemented by face-to-face care if necessary) with usual physiotherapy care for patients with NMSD. The study took place in four physiotherapy departments in England. The primary outcome indicator was the summary of the physical component of the SF-36v2 at 6 months. The SF-36v2 is a validated 36-question questionnaire that measures functional health and well-being from the patient's perspective. In terms of cost implications: there was no evidence of a difference between the two groups in the cost of physiotherapy, other National Health Service services, personal care, or length of time off work. The results of the SF-36v2 were similar in the two groups. PhysioDirect offered "Quality-Adjusted Life Years" benefits at a very slightly higher cost. The authors concluded that PhysioDirect can be a cost-effective alternative to usual physiotherapy care, but only with careful management of physiotherapists' working time.

Perception

The literature shows a generally high patient satisfaction in TR management (Lovo 2019, Cottrell 2018, Russel 2011). In a recent SR, 81% of participants in the TR intervention were overall satisfied (Orlando 2019). TR improves access to care by improving the speed of management and the possibility of specific treatment (Pearson 2016, Cottrell 2017). Patients at risk or with mobility difficulties could greatly benefit from it. In addition, it is an approach of choice for receiving advice on self-management of the condition at home (Pearson 2016, Lovo 2019).

TR is flexible and can be fully adapted to the patient's context. Moreover, TR offers a number of advantages. He can be monitored in his personal environment and avoid having to take time off work or adjust his schedule, which can have family and economic repercussions. A study has already shown that patients who can reduce their work absenteeism with TR are more likely to use it (Cottrell 2018). Multidisciplinary follow-up is facilitated and appreciated thanks to the TR flexibility. This allows the implementation of patient-centered management. Moreover, the technology enabling TR is globally widespread and accessible (Lovo 2019, Kairy 2013). In a study by Cottrell (2018), 78% of patients (most of whom were in the 30-80 age group) had access to the necessary equipment and 53% felt able to communicate with their healthcare provider using TR. However, TR can be an impediment to the establishment of therapeutic relationship. Some patients have prior beliefs that can be barriers, such as a willingness to be examined and touched (Pearson 2016). It is also difficult for some patients to explain the location of symptoms if TR is done by telephone (Pearson 2016). In addition, lack of interest in technology may be a barrier in older populations (Lovo 2019, Sanders 2012). For patients to engage in a TR program, the perceived benefit must be greater than the health care they already have access to (Cottrell 2018). The perception of a health care experience is multifactorial. The role of therapists is therefore vital to ensure that the TR approach is a personal experience using elements such as communication, active listening, and empathy (Orlando 2019).

Conclusion

From a technical point of view, the equipment needed to practice TR is already available for a large majority of Belgians and French: in 2018, 87% of Belgian households and 89% of French households had access to the Internet and therefore to the necessary software. However, older people may have difficulties with this practice. TR is scalable and may, in the future, incorporate sensors or virtual reality; it is essential that it develops a low-cost philosophy in this area in order to remain accessible to all.

The TR Physiotherapy assessment is feasible for a variety of NMSD with good validity and excellent reliability for pain, range of motion, muscle strength, balance, walking and other functional assessments. The most basic modality for TR is telephone interviewing. In physiotherapy practice, telephone interviewing combined with personalized physical exercises has been shown to be effective in improving the functions of patients with upper limb, lower limb and lumbar NMSD and acceptable in terms of financial cost. Nowadays, this modality appears too limited in a contemporary and efficient physiotherapy practice. We recommend the use of video, both in a synchronous and asynchronous modality. Indeed, video is fully justified compared to paper documents and sufficiently accessible through many applications available on the internet. The sharing of physical exercises is the main strength of video-based TR to maintain exercise adherence and motivation of patients with NMSD. In addition, strong evidence for synchronous and asynchronous TR after orthopaedic knee or hip surgery is already available in the literature. For low back pain, the results of TR in combination with usual physiotherapy care in acute patients are superior to usual care alone. In chronic phase patients, superior quality of life results were observed for TR physiotherapy compared to a control intervention.

We conclude that during a period of confinement, TR is feasible and even desirable for patients with NMSD affecting both the upper and lower quadrants. With the non-exhaustive research methodology that we have put in place and the urgency of formulating an opinion before the end of the SARS-CoV-2 containment, it should be noted that there are fewer studies that include upper quadrant disorders and that, therefore, the formulation of a clear-cut opinion is still difficult at this stage. Although the benefits of physical contact will inevitably be lost, TR is an approach that allows remote treatment follow-up that can be continued with face-to-face consultations when deconfinement becomes a reality.

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Appendix : Methodology

The following search equation was used in Pubmed (03/26/2020) to build a base of relevant documents:

((("neurology"[MeSH Terms] OR "neurology"[All Fields] OR "neuro"[All Fields]) AND musculoskeletal[All Fields] AND ("physical therapy modalities"[MeSH Terms] OR ("physical"[All Fields] AND "therapy"[All Fields] AND "modalities"[All Fields]) OR "physical therapy modalities"[All Fields] OR "physiotherapy"[All Fields])) OR (musculoskeletal[All Fields] AND ("physical therapy modalities"[MeSH Terms] OR ("physical"[All Fields] AND "therapy"[All Fields] AND "modalities"[All Fields]) OR "physical therapy modalities"[All Fields] OR "physiotherapy"[All Fields]))) AND (remote[All Fields] OR ("telemedicine"[MeSH Terms] OR "telemedicine"[All Fields] OR "telehealth"[All Fields]) OR telecare[All Fields] OR ("remote consultation"[MeSH Terms] OR ("remote"[All Fields] AND "consultation"[All Fields]) OR "remote consultation"[All Fields] OR "teleconsultation"[All Fields]))

The research resulted in 68 items, of which 35 were selected on the basis of their abstract. In the Telerehabilitation: Principles and Technical Needs section, only meta-analyses, systematic reviews and randomized controlled trials were selected. The systematic review (SR) conducted by Orlando et al. 2019 was not commented on because the patients that studies included in the rehabilitation mainly related to speech and hearing pathologies; this study is nevertheless relevant for the section Implementation and perception of TR for NMSD. The RCT of Salisbury et al. 2013 is not discussed because it is based on the same sample as that of Hollinghurst et al. 2013.

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