



UHASSELT

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Faculteit Geneeskunde en Levenswetenschappen

master in de revalidatiewetenschappen en de
kinesitherapie

Masterthesis

***Current management strategies in Flemish physiotherapists after anterior cruciate
ligament reconstruction: an online survey***

**Laurence Guilliams
Yasmine Vandewalle**

Eerste deel van het scriptie ingediend tot het behalen van de graad van master in de revalidatiewetenschappen en
de kinesitherapie

PROMOTOR :
dr. Bart DINGENEN

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CURRENT MANAGEMENT STRATEGIES APPLIED BY FLEMISH PHYSIOTHERAPISTS IN THE REHABILITATION OF ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION: AN ONLINE SURVEY

Outline

A lack of integration of evidence-based guidelines in the clinical practice of rehabilitation is not uncommon and has been observed for several musculoskeletal injuries. This lack of integration may contribute to the current rehabilitation outcomes, which are sometimes disappointing. Hence, in order to improve on the current rehabilitation practice, it is of great importance to first investigate and identify the current management strategies applied by physiotherapists.

The main goal of this literature review is to find answers to the research question: “Which surveys are currently available to evaluate current management strategies in persons with musculoskeletal injuries of the lower extremity?” A secondary aim is to identify the answers to the following question: “What are the potential causes of and/or motivations for any disparities between practice and guidelines for management strategies in persons with musculoskeletal injuries of the lower extremity?”

The most important results of our literature search can be summarized as follows:

- Ten surveys are currently available to assess the current management strategies in persons with musculoskeletal injuries of the lower extremity.
- Evidence about the content of physiotherapy remains minimal; there is an urgent need to provide evidence-based guidelines.
- Existing evidence-based guidelines aren't sufficiently applied in clinical practice. This can be explained by multiple reasons: lack of motivation and financial means of the patient, limited access to facilities, undereducated physiotherapists, conflicting and different levels of evidence, low value care, and the age of the physiotherapist.
- The uncertainty in best practice (due to the limited evidence-based guidelines) and the multiple reasons why physiotherapists don't follow such guidelines, may clarify the general variability in the management of the musculoskeletal injuries

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Context of the master thesis

This master thesis is situated in the research domain of musculoskeletal rehabilitation. Specifically, we will focus on the rehabilitation of the anterior cruciate ligament (ACL). Anterior cruciate ligament injuries are severe injuries with disappointing long-term outcomes. Studies show that the number of athletes returning to sports successfully is not high and that the risk of a relapse, i.e., a second ACL injury after clearance to return to sports, is significant. The rehabilitation of these injuries constitutes a great challenge for physiotherapists. After the anterior cruciate ligament reconstruction (ACLR), the post-operative rehabilitation can be split into three phases. The first phase is called the early post-operative phase. The second phase is termed the intermediate phase. The final stage is a sport-specific phase. This is the most difficult stage, with many potential setbacks.

It is currently not clear whether the latest evidence-based guidelines for rehabilitation after ACLR are effectively applied within clinical practice. The lack of this integration might contribute to the current, disappointing outcomes. A lack of integration of the evidence-based guidelines into the clinical practice of rehabilitation is not uncommon and has been observed for several other musculoskeletal injuries. To the best of our knowledge, no surveys have been published in which the current management strategies after an ACLR are investigated. Before we are going to examine the current post-ACLR management strategies, we do an extensive scientific literature review on previously published surveys of musculoskeletal injuries of the lower extremity. The primary aim of this literature search is to find answers to our central research question: "Which surveys are currently available to evaluate current management strategies in persons with musculoskeletal injuries of the lower extremity?" A secondary aim is to find answers to the following question: "What are the potential causes of and/or motivations for any disparities between practice and guidelines for management strategies in persons with musculoskeletal injuries of the lower extremity?" For this literature review, the final literature search was performed in April 2018. The detailed analysis of the articles selected through the search strategy was supervised by promotor dr. Bart Dingenen and copromotor dr. Liesbet De Baets. Master thesis part one and part two are both done in Diepenbeek, at the Hasselt University, within the research group Rehabilitation Research Center (REVAL). For this thesis the central format was applied. This is a duo thesis, carried out by two students of the Master in Rehabilitation Sciences and Physiotherapy of the Hasselt University: Laurence Guilliams and Yasmine Vandewalle.

The aim of part one of the master thesis is to perform a literature review, as explained above. In the second part of the master thesis, an original scientific study and survey will be conducted. The goal is to identify in detail the current management strategies of Flemish physiotherapists after ACLR. To that purpose, we will create an original online survey, with questions specific about the rehabilitation of the ACL. Flemish physiotherapists will be recruited for participation to the survey via a variety of different communication channels: social media, advertising, personal contacts with local physiotherapists, etc. The answers collected from the Flemish physiotherapists will then subsequently be analysed. The survey will not contain a control group. The new protocol is developed by the master thesis students, under supervision of and in collaboration with both the promotor and copromotor.

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PART 1: OVERVIEW OF THE LITERATURE

1 Abstract

Background: A lack of integration of the evidence-based guidelines in the clinical practice of rehabilitation is common and has been observed for several musculoskeletal injuries.

Methods: We used the 'Advanced Search Pubmed Builder' on Pubmed: Survey (title) AND [Physiotherapy (title/Abstract) OR physical therapy (title/Abstract)]. The advanced search strategy used on Web of Science: TI=(survey) AND TS=(physiotherapy OR physical therapy).

Results: Our literature search revealed ten surveys that are currently available to evaluate the current management strategies in persons with musculoskeletal injuries of the lower extremity. The uncertainty in best practice (due to the limited evidence-based guidelines) and the multiple factors (lack of motivation and money of the patient, limited access to facilities, undereducated physiotherapists, conflicting and different levels of evidence, low value care, age) why physiotherapists don't follow guidelines, may clarify the general variability in the management of the musculoskeletal injuries.

Discussion and conclusion: The lack of evidence-based guidelines and the fact that the existing evidence-based guidelines aren't sufficiently applied in clinical practice may cause disappointing treatment results, since the best practice is not always applied.

Aim of the study: This master thesis will focus on the current management strategies of Flemish physiotherapists after anterior cruciate ligament reconstruction. We will then investigate if these management strategies are in line with the current clinical guidelines, by developing our own survey.

Operationalization: During master thesis part 2, an original study will be conducted where the results of the online survey will be reported.

Keywords: survey, physiotherapy, musculoskeletal injury

2 Introduction

Anterior cruciate ligament (ACL) injuries are serious injuries with disappointing long-term outcomes in terms of return to sports (RTS). Only 55 percent of athletes successfully returns to competitive sports after an anterior cruciate ligament reconstruction (ACLR) (Ardern, Taylor, Feller, & Webster, 2014). The risk of a relapse, i.e. a second ACL injury after clearance to return to sports, is above 20 percent (Wiggins et al., 2016). Furthermore, the incidence of ACL tears is increasing, with females aged over eighteen and playing competition sports most at risk (Quisquater et al., 2013). After an ACLR, patients practice physiotherapy. It is currently not clear whether the latest evidence-based guidelines for rehabilitation after ACLR are effectively applied within clinical practice (D. Adams, D. Logerstedt, A. Hunter-Giordano, M. J. Axe, & L. Snyder-Mackler, 2012; van Melick et al., 2016). This lack of this integration might contribute to the current disappointing outcomes.

A lack of integration of evidence-based guidelines in physiotherapy practice is not uncommon and has been observed in several other musculoskeletal injuries. By using a cross-sectional survey, Lowe et al (2017) investigated the promotion of physical activity in the therapy practice in the UK. This survey concluded that the majority of physiotherapists had knowledge of the existence of the practice rehabilitation guidelines. Yet, only 16% of them answered correctly on Lowe's questions about specific physiotherapy guidelines (Lowe, Littlewood, McLean, & Kilner, 2017). According to this UK survey, physiotherapy content may not always be based on the best evidence. These findings are confirmed by different studies (Bernhardsson, Johansson, Nilsen, Oberg, & Larsson, 2014) (Hendrick, Mani, Bishop, Milosavljevic, & Schneiders, 2013a); which conclude that the majority of physiotherapists underuse evidence-based clinical practise guidelines or recommendations when they rehabilitate patients with musculoskeletal injuries (Bernhardsson et al., 2014) (Hendrick et al., 2013a).

When evidence-based guidelines aren't translated into the clinical practice, clinicians are not giving the best care to their patients. In order to integrate scientific findings into clinical practice, there is a need for a more effective "knowledge translation" (Dault, Lomas & Barer, 2004). Academic journals are rather ineffective for the translation of knowledge in sports medicine and science (Barton & Merolli, 2017). The evolution towards social and multi-media has also been reported (Tunnecliff, Ilic, Morgan, Keating, Gaida, Clearihan et al., 2015). The modernization of social and multi-media is unavoidable and must be embraced for those pursuing to translate knowledge (Barton & Merolli, 2017). Cook et al. (2018) identified some benefits and threats of using social media for offering and applying evidence (Cook et al., 2018). Via social media information can be distributed quickly, many potential end point users can be reached and publications can be criticized. Nonetheless social media doesn't provide an effect on the application of evidence, it can distribute many unqualified publications and it can cause a proliferation of echo chambers (Bury & Littlewood, 2018) and filter bubbles (tendency to follow people with the same convictions, whereby your own opinion is strengthened (Choo et al., 2015; Kind, Patel, Lie, & Chretien, 2014)). Therefore distributors and receivers of information being shared on social media should have a critical view on this circulating information (Cook et al., 2018).

In order to collect information about the current physiotherapeutic practice and to uncover opinions, beliefs, attitudes and feelings of both patients and therapists, well-designed surveys are indispensable (Kellerman & Herold, 2001). Surveys with statistically significant response rates and qualitative data acquisition are essential for scientific interpretations (Kelley, Clark, Brown, & Sitzia, 2003). Several surveys have been reported in the literature. These surveys evaluate present-day management strategies with respect to specific musculoskeletal injuries. Examples are surveys dealing with the rehabilitation of patellofemoral pain (B. E. Smith et al., 2017b) and plantar fasciitis (Grieve & Palmer, 2017). Bury & Littlewood (2018) concludes that the clinical practice has advanced in knowledge translation in comparison to the five years predating the study. This advance is due to the adoption of the recently available scientific evidence and demonstrates a positive case of research rapidly impacting on management practice (Bury & Littlewood, 2018).

To the best of our knowledge, no surveys have been published in which the current management strategies for rehabilitation after ACLR are investigated. Before current management strategies after an ACLR will be investigated, an extensive scientific literature review on previously published surveys on the rehabilitation of musculoskeletal injuries of the lower extremity will be performed. In this systematic review, we address following research questions:

- Which surveys are currently available to evaluate current management strategies in persons with musculoskeletal injuries of the lower extremity?
- What are the potential causes of and/or motivations for any disparities between practice and guidelines for management strategies in persons with musculoskeletal injuries of the lower extremity?

The PICO is as follows:

- P: Musculoskeletal injuries of the lower extremity injuries
- I: Physical therapy
- C: /
- O: Survey

3 Methods

3.1 Research question

The primary aim of this literature search is to find answers to our central research question: "Which surveys are currently available to evaluate current management strategies in persons with musculoskeletal injuries of the lower extremity?" A secondary goal is to investigate what the potential causes of and/or motivations for any disparities between practice and guidelines for management strategies in persons with musculoskeletal injuries of the lower extremity are.

3.2 Literature search

To perform the literature search and find scientific articles, we consulted two databases, namely Pubmed and Web of Science. We used the 'Advanced Search Pubmed Builder' on Pubmed: Survey (title) AND [Physiotherapy (title/Abstract) OR physical therapy (title/Abstract)]. The advanced search strategy used with Web of Science was as follows: TI=(survey) AND TS=(physiotherapy OR physical therapy). We performed a final literature search on the first of April 2018.

3.3 Selection criteria

All 461 articles were carefully screened, one by one, based on a set of selection criteria relevant to our research question. More precisely, our inclusion criteria were as follows:

- Survey
- Musculoskeletal Injury of lower extremity
- Management of physiotherapy
- Studies published in 2008-2018
- Language: English or Dutch

Articles on these topics were excluded:

- Other injuries (musculoskeletal injury of upper extremity or trunk, amputation)
- Patient's perspective (preferences or satisfaction among physiotherapy)
- Children or students
- Details about the surgery of the injury or the opinion of the surgeon
- The occupational therapy among the musculoskeletal injury.

3.4 Quality assessment

The ten included articles underwent a quality assessment by means of a checklist. The checklist was based on a scientific study (Kelley, K., Clark, B., Brown, V. & Sitzia, B. (2003). It contains the following seven components: (1) the survey must describe the purpose or aim of the research, (2) why is the research necessary, (3) how has the research been done, (4) the methods and tests used for data

analysis, (5) the results of the research, (6) the interpretation and discussion of the findings and finally (7) the conclusions and recommendations. This is summarized in table three.

3.5 Data extraction

Population, aim of the study, outcome measures and results were extracted from the included articles (table four).

4 Results

4.1 Results study selection

The search strategy on Pubmed led us to 501 articles. A limitation of the time span to ten years reduced his number of papers to 301. The advanced search strategy on Web of Science gave us 824 results. We then refined the search strategy and specified the time span 2008 to 2018. Moreover, we further specialized our search by specifying “Rehabilitation” in the Web of Science Categories. Doing so, the number of scientific articles was reduced to 160. So, in total, our search provided us with 461 scientific articles. The sets of 301 (Pubmed) and 160 (Web Of Science) scientific articles were screened more precisely. We had enough information based on the title and abstract to include articles for our literature research. We included eight scientific articles and by checking the references of these eight articles we could include two more scientific studies, who met our inclusion criteria. In total, we included an amount of 10 scientific studies who were analyzed in full detail. The details on the (number of) excluded articles are available in the flow charts in Figure 1 and 2 in the appendix. Studies were excluded for the following reasons: other injuries (musculoskeletal injury of the upper extremity or trunk, amputation), patient’s perspective (preferences and/or satisfaction among physiotherapy), children, students, details about the surgery or the opinion of the surgeon of the injury or the occupational therapy among the musculoskeletal injury (table 2).

4.2 Results quality assessment

The checklist described in Kelly et al. (2003) and summarized in section 3.4 was used to evaluate the quality of the included articles. All of the included articles reported the seven parts described above. They clearly identified the goal of the study. They explained the necessity of the research and its relation to earlier work. The research methods and tools are described in significant detail. They justified the techniques applied for the analysis of the data. The results are presented in clear and concise manner. The findings are interpreted and discussed. Finally, conclusions are formulated. This is summarized in table three. Not all of the included articles achieved a similar depth or degree of detail for all of the above items. However, the response to each of the seven checklist items had to be either a “yes” (the item is addressed in the survey) or a “no” (the item is not addressed). As such, all of the included articles obtained a perfect score. According to the checklist those surveys can be considered to be of good quality.

4.3 Results data extraction

Table four summarize the information contained in the articles retrieved from the databases Pubmed and Web Of Science. For each study, bibliographic information, population (the number of therapists/institutions and their country), aim of the study, composition of the survey (number of questions and topics) and a short summary of the principal results of the study is provided.

Each study was targeted solely towards a population of physiotherapists, except for the study by Worner, Thorborg, Moksnes, & Eek (2017). This study involved physiotherapists and surgeons. The

studies were conducted in several parts of the world: Greece, Scandinavia, United Kingdom, Nigeria and Florida. The size of the population involved in each survey ranged from 24 (Artz et al., 2013) up to 306 (T. O. Smith, Chester, Clark, Donell, & Stephenson, 2011). The response rates (reported in column 5 of the table) varied from 58% (Moutzouri, Gleeson, Billis, Tsepis, & Gliatis, 2017) to 100% (Artz et al., 2013). The online survey from Smith et al. (2017) was open until 100 respondents had completed the survey. Hence, it was impossible to ascertain the exact response rate. The same holds for the online survey by Grieve et al. (2017). This study had a total of 285 responses, but only the 257 complete responses were kept for further analysis. The response rate for the survey of Worner et al. (2017) was not mentioned.

The main aim of the studies was to identify the most common rehabilitation approach offered to patients, related to a specific pathology. This aim was quite similar in each of the seven papers. Some studies had secondary aims. For example, the study by Smith et al. (2017) also had a secondary aim, namely to compare the managements strategies between physiotherapists with different levels of interest in patellofemoral pain. Grieve et al. (2017) additionally investigated the diagnostic criteria used by UK physiotherapists for patients with plantar fasciitis. Ayanniyi et al. (2017) also explored whether or not evidence-based medicine is in line with these rehabilitation strategies.

The seven papers had the same outcome measurement: a survey. The questions of the survey were mainly about the different aspects of the rehabilitation. The surveys were web-based (online) or send by post. Two studies also had questions about the physiotherapists' profile. The number of questions ranged from six (Artz et al., 2013) to 27 (Worner et al., 2017).

The article of **Moutzouri et al. (2017)** investigated the perspectives of physiotherapists on the rehabilitation of patients recovering from a total knee replacement (TKR). It is found that there is a good consistency among the consulted physiotherapists with respect to the inpatient phase. There was a wide diversity, however, in rehabilitation programs in the outpatient phase. In spite of the increasing amount of TKR, evidence about the content of physiotherapy remained minor in Greece. Moreover, despite the fact that scientific studies suggested to continue the physiotherapy after three months from total knee replacement, the patients usually stopped here due to financial reasons or lack of motivation.

The article by **Worner et al. (2017)** described the postsurgical rehabilitation strategies among hip arthroscopy (HA) in Scandinavia, and compared the perspectives of these strategies among surgeons and physiotherapists. The current evidence was very limited for post-operative rehabilitation after HA. There is an urgent need to bridge the gap between evidence and clinical practice. It is essential to have a worldwide consensus among rehabilitation guidelines. Consequently, this uncertainty in best practice, clarified that there is a large variability in rehabilitation approaches and that clinical opinions will vary. Both groups of paramedics regarded physiotherapy after hip arthroscopy very important. Most commonly used is a criteria-based or combined criteria- and time-based rehabilitation progression. Also,

it was found that surgeons used more evidence-based self-reported outcomes, while physiotherapists used more evaluated readiness for return to play.

The paper by **B. E. Smith et al. (2017)** surveyed the management strategies of patellofemoral pain (PFP) applied by physiotherapists in the UK, especially referring to exercise prescription and response to pain. Currently there are limitations in evidence for rehabilitation. The researchers concluded that there is no standardised rehabilitation program for PFP in the UK, indicating that there is a wide variability in the management of PFP. Programs varied widely in exercise prescription and dosage, degree of education and advice, physiotherapy appointment frequency and duration.

Grieve et al. (2017) analysed the criteria used by UK physiotherapists to diagnose patients with plantar fasciitis. They also inquired about the goals of the rehabilitation and the specific interventions. The most common criteria to diagnose patients with plantar fasciitis were found to be palpation pain and pain in the early morning. These diagnosing criteria were applied following the Orthopaedic Section of the American Physical Therapy Association (APTA) guidelines. The most commonly intervention approaches resembled very closely the aims and recommendations of the NICE CKS (National Institute for Health and Care Excellence (NICE2015) and Clinical Knowledge Summary (CKS)) guidelines. The study noted that physiotherapists did not stick to the outcome measure guidelines or the existing guidelines. Due to a potential response bias and the unknown response rate, there is an uncertainty of the most commonly approach reported in this study reflects the clinical practice in the UK.

The study by **Artz et al. (2013)** involved physiotherapists from 24 high volume medical centres in England and Wales, with more than 500 hip or knee procedures per year. Their goal was to identify the most common rehabilitation approach offered to patients with a total hip (THR) and patients with a total knee replacement (TKR). Current guidance recommended inpatient physiotherapy after a THR of a TKR. The outpatient rehabilitation physiotherapy after THR was a much less standard routine and guidance is minimal. Researchers identified that there is a lack of guidance and undefined evidence about post-discharge physiotherapy, it is necessary for further research to evaluate the current practice.

The paper by **T. O. Smith et al. (2011)** reported a national survey to define how physiotherapists in acute National Health Service hospitals in the UK control patients with a first-time patellar dislocation. An extensive variety of assessment methods and management strategies are applied by physiotherapist for this pathology. Present evidence-based guidelines are limited in size and quality. Previous research among first-time patellar dislocation suggested that there is a variety of diagnostic tests to use, but results of this study indicated that there is a low awareness of these tests. This could be due to the low evidence of these tests or educational or clinical exposure issues. The study concluded that further research on the efficacy of the physiotherapy interventions is necessary to provide the physiotherapists with evidence-based guidelines.

Ayanniyi, Egwu, & Adeniyi (2017) investigated the most common rehabilitation approaches for knee osteoarthritis applied by physiotherapists in Nigeria. They also observed that there is no close correspondence between evidence-based medicine and clinical practice in Nigeria. For example, although the guidelines recommend weight loss, less than half of the therapists do recommend so. This survey also highlighted some differences in practice compared to developed countries.

The study by **Holden et al (2009)** identified the differences in attitudes and beliefs among knee osteoarthritis (OA) between physical therapists within the UK and examined the recent best practice recommendations among OA. The researchers concluded that there is an uncertainty among some aspects of the physiotherapy among OA. For example, only half agreed that knee problems are improved by local strengthening exercise. This was in contrast with the recent exercise recommendations. It is essential to fill the gap between missing literature and clinical practice. The attitudes and beliefs of physiotherapists may help to clarify the differences between current practice and recent exercise recommendations. Some recommendations and guidelines were followed, for example there was a consensus that exercise should be individualized and that therapists should give positive advice about changing their lifestyle.

Cowan et al (2010) illustrated the most common physiotherapy management of hip osteoarthritis (OA) by Australian physiotherapists in private and acute hospital settings. They identified a little difference in overall physiotherapy approach between private and acute hospital settings. There were guidelines for the management of hip OA: the European League against Rheumatism (EULAR) recommendations. However EULAR highlighted the need for further investigations, concluding that the evidence is lacking for the management of hip OA (in contrast to knee OA). Only 38% of the physiotherapists stated that they used standardised outcome measures.

Finally, **Da costa et al (2017)** identified the most common physiotherapy management of knee osteoarthritis by physiotherapist in Florida and whether it was in line with the clinical guidelines. Most of the physiotherapists used therapeutic exercise and education to treat these patients, which was in line with the clinical guidelines. On the other hand, interventions that were limited in scientific evidence, such as electrotherapy and ultrasound, are also still used by the physiotherapists. 88% of the physiotherapists knew that aquatic exercise was an effective treatment for knee osteoarthritis, but only 19% reported this as a used management strategy; this may be explained by limited access to clinics with these facilities. An adaptable therapist was positively associated with the use of interventions supported by scientific evidence. Results indicated that the age of the therapist had also an important influence on how interventions were used for people with knee osteoarthritis. Older physiotherapists applied more interventions which are not supported by evidence.

5 Discussion

5.1 Quality assessment of the included articles

A checklist was used to evaluate the quality of the included articles. Since there are no validated checklists for assessing the quality of surveys, our best option was to use a checklist that was based on a scientific study (Kelley et al., 2003). All of the included articles address the seven items of the checklist and thus, they can be considered to be of good quality. The checklist provided by Kelley (2003) may, however, not be entirely satisfactory. It does not really evaluate the contents of the survey, but rather the structure of the survey and the paper. For example, the checklist does not inquire whether the response rate is given or not in the study. Also, it does not ask about the clarity of the language of the questions. While developing this checklist, the authors did not have the intention to create guidelines, but rather to identify frequent pitfalls that researchers should avoid when making a survey (Kelley et al., 2003). Since we will develop our own survey, we are therefore also interested in alternative checklists that can be used to evaluate, for example, the quality of individual statements in a survey.

5.2 Reflection of the findings in function of the research question

Our literature search revealed ten surveys that are currently available to evaluate the current management strategies in persons with musculoskeletal injuries of the lower extremity. These surveys talk about the current physiotherapy management strategies after a total knee replacement (Moutzouri et al., 2017) (Artz et al., 2013), after hip arthroscopy (Worner et al., 2017), for patellofemoral pain (B. E. Smith et al., 2017a), for plantar fasciitis (Grieve & Palmer, 2017), after total hip replacement (Artz et al., 2013), after first-time patellar dislocation (T. O. Smith et al., 2011), for knee osteoarthritis (Ayanniyi, Egwu, & Adeniyi, 2017; da Costa et al., 2017; M. A. Holden, Nicholls, Young, Hay, & Foster, 2009) and for hip osteoarthritis (Cowan, Blackburn, McMahon, & Bennell, 2010).

Despite the increasing amount of musculoskeletal injuries and scientific studies, evidence about the content of physiotherapy remains minimal. Moutzouri et al. (2017) highlight the need to provide guidelines for the rehabilitation of total knee replacement. Artz et al. (2013) and Worner et al. (2017) conclude that there is lack of evidence and guidance for post-operative rehabilitation after hip arthroscopy and total hip replacement. The latter paper also indicates that it is essential to have worldwide consensus among rehabilitation guidelines. Smith, B. et al. (2007) report about limitations in evidence for the rehabilitation of patellofemoral pain (PFP). However, this situation is somewhat remedied by the more recent study (Barton, Lack, Hemmings, Tufail, & Morrissey, 2015), which presents an evidence-based guideline for rehabilitation of PFP. Evidence based guidelines among management strategies for first-time patellar dislocation are limited in size and quality (Smith, T. et al 2011). Aynini et al. (2017) emphasize that it is absolutely necessary to develop a clinical practice guideline for rehabilitating osteoarthritis in Nigeria.

In some studies, evidence-based guidelines were administered by physiotherapists. Grieve et al. (2007) established that the diagnosing criteria for plantar fasciitis were applied following the Orthopaedic Section of the American Physical Therapy Association guidelines. The most common intervention

approaches resembled very closely the aims and recommendations of the NICE CKS guidelines. There are guidelines for the management of hip osteoarthritis (the European League Against Rheumatism recommendations) (Cowan et al., 2010). Da Costa et al. (2017) conclude that most of the physiotherapists use therapeutic exercise and education to treat patients with osteoarthritis. This is in line with the clinical guidelines (Walsh & Hurley, 2009). On the other hand, interventions that are limited in scientific evidence, such as electrotherapy and ultrasound, are also still used by the physiotherapists (da Costa et al., 2017). A recent study shows the global awareness and the significant increasing evidence among low health care (Traeger, Moynihan, & Maher, 2017). Traeger et al. (2017), indicate that removing low value services from physiotherapy will be very difficult. An increasing understanding of the needless tests and unnecessary treatments will be a good start. The following step is to translate these findings of low value healthcare into wiser selections in practice.

The fact that existing evidence-based guidelines aren't sufficiently applied in clinical practice, can be explained by multiple reasons. Moutzouri et al. (2017) conclude that although scientific studies suggest to continue the physiotherapy after three months from total knee replacement, the physiotherapy often stops due to financial reasons or lack of motivation. Grieve et al. (2017) identify the fact that the physiotherapists approached in their survey didn't follow the outcome measure guidelines. This may be due to the existence of conflicting and different levels of evidence. Another reason why the guidelines aren't always followed, may be due to educational or clinical exposure issues (T.O Smith et al., 2011). Only 38% of the physiotherapists stated that they used standardized outcome measures for hip osteoarthritis. This may be indicating that there is a need to better educate physiotherapists about the most appropriate outcome measures. In Nigeria evidence-based guidelines and clinical practice of knee OA are often not closely related, compared to developed countries such as Australia, the UK, Canada, and USA where evidence-based guidelines are frequent existing and are more used to guide the practice of the rehabilitation of knee OA (Ayanniyi et al., 2017). To manage pain in knee OA, passive electrotherapy and bed rest are frequently applied in Nigeria (Ayanniyi et al., 2017), indicating that there is a concern about the best practice. Holden et al (2009) conclude that there is a large gap between (missing) literature and clinical practice and that this leads to an uncertainty among some aspects of physiotherapy among knee osteoarthritis. Da Costa et al. (2017) show that 88% of the physiotherapists that they consulted, knew that aquatic exercise is an effective treatment for knee osteoarthritis. Yet, only 19% reported this as a used management strategy. The physiotherapists didn't follow the guidelines because of limited access to clinics with these facilities. Worner et al. (2017) explained the large uncertainty in best practice as due to limited evidence. The attitudes and beliefs held by physical therapists, have been demonstrated to correlate with their clinical practice behavior (Bishop, Foster, Thomas, & Hay, 2008). Important differences have been reported between the attitudes and beliefs of UK physiotherapists about what constitutes an adequate treatment and the evidence-based guidelines about exercise and osteoarthritis of the knee (M. A. Holden et al., 2009). Results indicate that the age of the therapist has also an important influence on how some interventions are used for people with knee osteoarthritis (da Costa et al., 2017). Older physiotherapists, apparently, use more ultrasound, electrotherapy, kinesiology tape, and ice, which are not supported by evidence (da Costa et al., 2017).

They may be less interested in new evidence, or they may miss the abilities to integrate new evidence into clinical practice. Also, they are probably less exposed to new and up-to-date evidence than their younger colleagues (Bernhardsson et al., 2014; Jette et al., 2003).

In the previous paragraph, we summarized the reasons that showed up in our literature search why evidence-based guidelines are often insufficiently followed in clinical practice. This lack of adherence to the guidelines, appears to be widespread. For example, in the UK quadriceps exercises in exorotation are more prescribed than quadriceps exercise in endorotation to manage patients following their first-time patellar dislocation, which is contrary to the evidence-based guidelines (T. O. Smith et al., 2011). The uncertainty in best practice (due to the limited evidence-based guidelines) and the multiple factors (lack of motivation and money of the patient, limited access to facilities, undereducated physiotherapists, conflicting and different levels of evidence, age) why physiotherapists don't follow such guidelines, may clarify the general variability in the management of the musculoskeletal injuries. Worner et al. (2017) confirms the large variability in the management following HA. This variability is seen in how physiotherapists treat PFP, leading to the conclusion that there is no standardized rehabilitation approach. Other factors may also contribute to the variability. For example, one may expect less variability in the treatment of post-operative injuries, for which the patho-mechanism is clear, compared to injuries like PFP and plantar fasciitis, for which the mechanism is often less obvious. Unlike knee osteoarthritis, evidence specific to hip osteoarthritis is also surprisingly lacking (Cowan et al., 2010). For the rehabilitation of a first-time patellar dislocation, Smith, T. et al (2011) noted an extensive variety of assessment methods and management strategies applied by physiotherapists. There is a different approach in the management strategies of specific musculoskeletal injuries of the lower extremity in inpatient and outpatient clinics. In the inpatient clinic there's often an accordance between the physiotherapists (Moutzouri et al., 2017; Worner, Thorborg, Moksnes, & Eek, 2017), but in the outpatient clinics the variability of management strategies is severe (Artz et al., 2013; Moutzouri et al., 2017).

5.3 Reflection on the strengths and weaknesses of the literature study

Table five summarizes the strengths and weaknesses of the included articles. This literature study deals with a clear research question. It contains detailed inclusion criteria and exclusion criteria, and a systematic search strategy has been applied using two databases: Pubmed and Web of Science. One of the strengths of our literature study is that all our included articles satisfy the seven topics on the quality assessment checklist by Kelley et al (2003). Hence, according to that checklist, they can be considered to be of good quality. The main limitation of our literature study is that only ten surveys passed the inclusion criteria and remained for further detailed analysis. This small number is due to our rather strict and detailed selection criteria. We couldn't apply a validated checklist for quality assessment, because of the absence of it.

Some weaknesses about the surveys retrieved in our literature search can be noticed. For example, little is known about the validity and reliability of those surveys. Due to the fact that the surveys are self-reported questionnaires, there's a risk of reporting, response and recall bias. One should be cautious

about the possible risk of participation or non-response bias, and one should also be careful with generalizing the results. In three surveys (Ayanniyi et al., 2017; da Costa et al., 2017; B. E. Smith et al., 2017a), the questionnaire contained, besides a few questions, also an example of a case of a patient to evaluate the clinical practice. As a case example can only give basic information about the patient's condition, it may be that the physiotherapists use different management strategies in practice when additional information of the patient is available. In this case there's also a risk of reporting or response bias. Five out of ten surveys were only available online (Cowan et al., 2010; da Costa et al., 2017; Grieve & Palmer, 2017; B. E. Smith et al., 2017a; Worner et al., 2017), consequently only respondents who use this technology could complete the survey. We should be aware of the risk of coverage bias. Loban et al. (2017) concluded that the participants of his study preferred a postal survey. Nevertheless, when online surveys are complemented with a postal reminder an identical response rate is obtained compared to postal surveys alone. One advantage of online surveys is that they are cost-effective, especially in large studies (Loban, Mandefield, Hind, & Bradburn, 2017). In two surveys (Artz et al., 2013; B. E. Smith et al., 2017a) the sample doesn't contain smaller, private or independent physiotherapeutic units. The management strategies may be different in such units. Hence, the results of those surveys may not be representative for all treatment facilities.

The response rate is an important criterion to consider when evaluating the validity of the outcome of a survey. Specialists vary in their opinions on what constitutes an adequate response rate. The standard for a minimum acceptable response rate should be set at 75% (Fowler FJ, 1993). Mangione (1995) declared that for postal surveys response rates above 85% are "excellent". Response rates in the range of 70-84% are "very good", in the range of 60-69% are "acceptable", in the range of 50-59% are barely acceptable, and a response rate below 50% is considered "unacceptable". The mean response rate among surveys directed in the USA and reported in American medical journals was only 60% (Asch, Jedrziewski, & Christakis, 1997). Asch et al., reported a response rate below 54% for published surveys of physicians. Only one survey in our literature study had the maximum response rate of 100% (Artz et al., 2013). The other surveys reached a range between 57% (Moutzouri et al., 2017) and of 67% (Ayanniyi et al., 2017). One survey had a response rate of only 3% (413/13296) (da Costa et al., 2017). This is the only survey in our literature study that can be viewed as "unacceptable". Two surveys didn't report the exact response rate of the survey (Grieve et al., 2017; B.E. Smith et al., 2017)

5.4 Recommendations for further research

Our literature survey revealed ten surveys that deal with management strategies after musculoskeletal injuries of the lower extremity.

When developing a survey, it is important to pay attention to the phrasing of the survey questions. They should be unambiguous and clear, so that they cannot be miss-interpreted. They should be immediately relevant to the specific purpose of the survey. Moreover, the number of questions should not be too little or too large. The survey should be complete and cover all relevant aspects that one wants to investigate; there will be no opportunity for a "second survey" dealing with the questions that were found

to be missing. The length of the survey should be reasonable, which will help to get a large response rate. In preparation of the survey, it is important to conduct a literature study to identify good practices in constructing surveys. A validated checklist for this purpose would be most welcome.

When developing a survey, it is important to make a combination of open- and closed-ended questions. Closed-ended questions are easy to code and analyze, and there will be a uniformity across responses. Open-ended questions are necessary too, in order to provide the respondents with some freedom in formulating answers. This typically improves the quality and depth of information gained (Moutzouri et al., 2017). The use of open-ended questions also appears an effective strategy for increasing the response rate (Kellerman & Herold, 2001). Researchers creating their own survey must, of course, try to prevent low response rates. McColl et al. (2001) state that a short time cue and follow-up contacts can be effective to reach higher response rates. Besides, short questionnaires (one to two pages) can also improve response rates (Kellerman & Herold, 2001). Respondents can be stimulated to fill out the survey by promising them the results of the survey. These results can be of clinical importance for them. Hence, they may feel motivated to reply. Smith T et al. (2011) report that conducting a pilot study is essential, before sending out the full questionnaires to the entire target group. The anonymous respondents of the pilot can report whether they considered any of the questions to be unclear or ambiguous. Respondents can also indicate whether all potential response options were provided and whether they understood the questionnaire.

Based on our literature study, it has become clear there is a large variability in the management strategies of specific musculoskeletal injuries of the lower extremity. An often-reported argument of this variety, is the limited evidence. The rehabilitation protocols are poorly described. Moutzouri et al. (2017) mention that future research should aim at providing clearer guidelines about a variety of aspects of the physiotherapy, such as timing, type, intensity and optimal dosage of the exercises. Holden et al. (2011) notice that it is essential for further research to fill up the gaps in the literature among the appropriate prescription of the exercise for patients with knee OA.

Barton et al. (Barton, 2017) discuss three hurdles that can obstruct an improvement in knowledge translation: comprehension (not understanding all the information in scientific articles), unengaging content (content is very dry) and time restraints (a lot of time is needed to acquire knowledge from scientific articles). Grindem et al. (2018) specify three important contributors to the under-treatment of musculoskeletal injuries (and ACLR in particular) are specified: the athlete's adherence to the rehabilitation (which may influence the rehabilitation outcomes), economic constraints of the healthcare system (waiting lists and insufficient insurance coverage can hinder clinicians to offer high-quality treatments) and geographic barriers to accessing rehabilitation (high-quality rehabilitation may not be accessible due location and distance). Four suggestions are given: (1) All stakeholders should recognize the importance of restoring function after an ACLR. (2) To improve the evidence-based practice, orthopedic surgeons and rehabilitation clinicians should collaborate. (3) The patient should receive evidence-based education before all surgical or rehabilitation decision-making and also during

the rehabilitation. (4) Orthopaedic surgeons and rehabilitation clinicians must know their roles in creating and maintaining the motivation of athletes for rehabilitation (Grindem, Arundale, & Ardern, 2018)

The use of social and multi-media must be embraced for those pursuing to translate knowledge (Barton & Merolli, 2017). Via social media information can be distributed quickly. Many potential end point users can be reached, and publications can be evaluated and commented upon (Cook et al., 2018). Regardless of the type of knowledge translation used, knowledge and awareness of musculoskeletal guidelines by physiotherapists appears to improve (Berube et al., 2018). Interventions of sufficient length, with practical tools, and the possibility to ask questions and feedback to trainers after using the guidelines appear to favor positive patient outcomes (Berube et al., 2018). It is currently still unclear which evidence-based practice training is most effective in stimulating physiotherapists to use the best evidence (da Costa et al., 2017).

It would definitely be interesting to expand our literature survey and to investigate physiotherapeutic management practices more broadly. Is the lack of evidence-based guidelines more prevalent for musculoskeletal injuries of the lower extremity than for other injuries? If so, why is that the case? Are there any good practices to be learned from other subdomains of physiotherapy?

6 Conclusion

The lack of evidence-based guidelines and the fact that the existing evidence-based guidelines aren't sufficiently applied in clinical practice may cause disappointing treatment results, since the best practice wasn't always applied.

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8 Appendices part 1 – overview of the literature

Table 1: Overview of number of hits for different combinations of search terms

Keywords in the search bar	# hits in Pubmed	# hits in Web of Science
Surveys and Questionnaires + 10 years	480696	83760
Surveys and Questionnaires AND Physical Therapy Modalities + 10 years	5631	50
Surveys and Questionnaires AND Physical Therapy Modalities NOT Upper Extremity + 10 years	5067	48
Surveys and Questionnaires AND Leg Injuries/rehabilitation + 10 years	185	6
Survey AND lower extremity AND physical therapy + 10 years	4	7
Survey AND physiotherapy + 10 years	184	71 (+ category rehabilitation)
Survey OR questionnaire AND Physiotherapy OR physical therapy + 10 years	387	223 (+category rehabilitation)
Survey AND Physiotherapy OR physical therapy	501	461 (+category rehabilitation)
Survey AND physiotherapy OR physical therapy + 10 years	301	160 (+category rehabilitation)

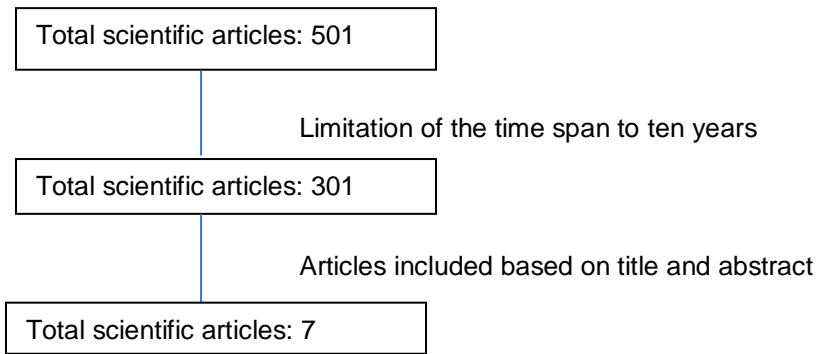
Table 2: overview of the excluded articles of Pubmed and Web of Science

Exclusion reason	Number of studies	Authors, year
Patient's perspective (patient's preferences/satisfaction/perception/experience or impact on the patient)	9	(Tramontano et al., 2017); (Vanti et al., 2013); (Gronhaug, Hagfors, Borch, Osteras, & Hagen, 2015); (Knight, Cheng, & Lee, 2010); (Reilly et al., 2016); (Scholte, Calsbeek, Nijhuis-van der Sanden, & Braspenning, 2014); (French, Keogan, Gilsenan, Waldron, & O'Connell, 2010); (L. C. Carlesso, MacDermid, Santaguida, & Thabane, 2013); (Chambers, Lucht, Reihill, & Hough, 2017).
Surgeons/ surgery	15	(van Erp et al., 2017); (de Beer et al., 2012); (Yang, Lee, Hwang, Kwon, & Lee, 2016); (K. R. Archer, E. J. MacKenzie, M. J. Bosse, A. N. Pollak, & L. H. Riley, 2009); (Whiting et al., 2017); (Conaghan et al., 2015); (Vun et al., 2015); (K. R. Archer, E. J. MacKenzie, M. J. Bosse, A. N. Pollak, & L. H. Riley, 3rd, 2009); (Maciver et al., 2017); (Vogt et al., 2013); (Sheetz et al., 2016); (Kesieme et al., 2016); (Niedermeier, Crouser, Speeckaert, & Goyal, 2018); (Kwaees & Charalambous, 2014); (Dias et al., 2013).
Students/ curriculum	35	(Dean & Levis, 2016); (Carr et al., 2016); (Watt-Watson et al., 2009); (Gorgon, Basco, & Manuel, 2013); (Christensen et al., 2017); (Davis, 2009); (Briggs, Carr, & Whittaker, 2011); (Hoeger Bement & Sluka, 2015); (Onuki & Maruyama, 2009); (V. Bellare, & Jiandani, 2017); (M. S. Khan et al., 2015); (Areskoug-Josefsson, Larsson, Gard, Rolander, & Juuso, 2016); (Larson, Bordenave, & Burch, 2015); (Thomas, Rybski, Apke, Kegelmeyer, & Kloos, 2017); (Brudvig, Macauley, & Segal, 2017); (Sudha, Samuel, & Narkeesh, 2018); (Busse, Kulkarni, Badwall, & Guyatt, 2008); (Hall, Poth, Manns, & Beaupre, 2016); (Dean & Levis, 2016); (Vander Linden & Chapman, 2014); (Effgen & Kaminker, 2014); (Biro, Veres-Balajti, & Kosa, 2016); (Vermeltfoort et al., 2014); (Olsen et al., 2014); (Kaminker & Effgen, 2015); (Thomason & Wilmarth, 2015); (Pitkajarvi, Eriksson, & Pitkala, 2013); (Biro et al., 2016); (Hall et al., 2016); (Memon & Sprunger, 2011); (Scholten-Peeters et al., 2013); (Quattrin et al., 2010); (Atkinson et al., 2009); (Baldwin et al., 2008); (Nakazawa, Sakamoto, & Oidov, 2012).
Occupational therapy	7	(Chiang et al., 2013); (Shi & Howe, 2016); (Parkin, 2014); (Dopp, Steultjens, & Radel, 2012); (L. Williams, Magin, Sultana, & Haracz, 2016); (Langer, Luria, Maeir, & Erez, 2014); (Jahrami, 2009).
Children	17	(Low, McCoy, Beling, & Adams, 2011b); (Gueita-Rodriguez et al., 2017a); (Van Lith, Stallings, & Harris, 2017); (Low, McCoy, Beling, & Adams, 2011a); (Miyahara & Baxter, 2011); (Martin et al., 2013); (Chokshi, Alaparathi, Krishnan, Vaishali, & Zulfeequer, 2013); (McManus, Prosser, & Gannotti, 2016); (Bunning et al., 2014); (Magnusson, Palta, McManus, Benedict, & Durkin, 2016); (Choong et al., 2013); (Atijosan, Simms, Kuper, Rischewski, & Lavy, 2009); (Schieve, Boulet, Boyle, Rasmussen, & Schendel, 2009); (Medina-Mirapeix et al., 2017); (Condon, O'Regan, MacDermott, & Killeen, 2017); (Bull, 2009); (Goncalves, Cabri, & Pinheiro, 2008).
Not about a musculoskeletal lower extremity injury	292	(Corkery, Edgar, & Smith, 2014); (Pisaturo, Deppen, Roachat, Robinson, & Hafen, 2017); (Feldtkeller, Hammel, Brenneis, Song, & Rudwaleit, 2011); (Rushton et al., 2014); (Kier, George, & McCarthy, 2013); (Struyf, De Hertogh, Gulinck, & Nijs, 2012); (Phadke, Makhija, & Singh, 2015); (Phadke et al., 2015); (Kolnick et al., 2014); (Lucado, Taylor, Wendland, & Connors, 2018); (Rashid, Matthews, & Cowgill, 2013); (Mahmoud, Moideen, Kotwal, & Mohanty, 2014); (de Vries, Jorritsma, Dijkstra, Geertzen, & Reneman, 2015); (Ommerborn et al., 2010); (L. C. Carlesso, Gross, MacDermid, Walton, & Santaguida, 2015); (Dewitte et al., 2016); (Walton, Macdermid, Santaguida, Gross, & Carlesso, 2013); (V. Johnston, 2016); (Chiu, Leung, & Lam, 2010); (Domos, Sim, Dunne, & White, 2017); (van Trijffel, Oostendorp, Lindeboom, Bossuyt, & Lucas, 2009); (Artus et al., 2017); (Kingston, Williams, Judd, & Gray, 2015); (Littlewood & Bateman, 2015); (Mollison, Shin, Glogau, & Beavis, 2017); (Bury & Littlewood, 2018);

(Comella & Bhatia, 2015); (Hahn et al., 2014); (L. Carlesso & Rivett, 2011); (Madson & Hollman, 2017); (Ladeira, Cheng, & da Silva, 2017); (Hanchard et al., 2011); (Copeland, Taylor, & Dean, 2008); (Casserley-Feeney, Bury, Daly, & Hurley, 2008b); (Liddle, Baxter, & Gracey, 2009); (Karayannis, Jull, & Hodges, 2012); (A. Y. P. Chan, J. J. Ford, J. M. McMeeken, & V. E. Wilde, 2013); (Hendrick, Mani, Bishop, Milosavljevic, & Schneiders, 2013b); (Madson & Hollman, 2015); (J. Holden, Davidson, & O'Halloran, 2015); (Ladeira, Samuel Cheng, & Hill, 2015); (Valdes et al., 2014); (Parr & May, 2014); (Davies et al., 2014); (Kraal, Visser, Sierevelt, & Beimers, 2016); (Fidvi & May, 2010); (J. Holden et al., 2015); (Hendrick et al., 2013a); (Oppong-Yeboah & May, 2014); (Davies et al., 2014); (Madson & Hollman, 2015); (Bishop, Holden, Ogollah, & Foster, 2016); (Keating et al., 2016); (Koc, Bayar, & Bayar, 2017); (Copeland et al., 2008); (Dolot, Viola, Shi, & Hyland, 2016); (Casserley-Feeney, Bury, Daly, & Hurley, 2008a); (Dewitte et al., 2018); (Lehman, Kang, Lenke, Sucato, & Bevevino, 2015); (Connell, McMahon, Eng, & Watkins, 2014); (Maciejasz, Eschweiler, Gerlach-Hahn, Jansen-Troy, & Leonhardt, 2014); (McConnell, Johnston, & Kerr, 2012); (Sultanpuram, Alaparathi, Krishnakumar, & Ottayil, 2016); (Agostini et al., 2013); (Perriman et al., 2012); (A. Y. Chan, J. J. Ford, J. M. McMeeken, & V. E. Wilde, 2013); (Schwellnus, Roos, & Naidoo, 2017); (Yoward, Doherty, & Boyes, 2008); (Vry et al., 2016); (Pagan et al., 2015); (S. Williams, Singer, & Lamont, 2018); (Stoll, Nieves, Tabby, & Schwartzman, 2012); (Kierkegaard, Harms-Ringdahl, Holmqvist, & Tollback, 2009); (Oreja-Guevara, Gonzalez-Segura, & Vila, 2013); (Donze et al., 2015); (Rasova et al., 2016); (Cavel-Greant, Lehmann-Horn, & Jurkat-Rott, 2012); (Campbell et al., 2017); (Barnes, Kocer, Murie Fernandez, Balcaitiene, & Fheodoroff, 2017); (Hiscock et al., 2014); (Padua et al., 2014); (Davidson, Wilson, Walton, & Brissenden, 2009); (Vincent-Onabajo, Gamawa, Ali, Gujba, & Masta, 2016); (He, Zhang, Liu, & Tang, 2015); (Hartley & Stockley, 2016); (Minen et al., 2016); (Ringelstein et al., 2009); (Baetens, Peersman, & Cambier, 2009); (McClain, Porter, Arnold, & Robards, 2017); (Van Peppen, Maissan, Van Genderen, Van Dolder, & Van Meeteren, 2008); (Lau et al., 2016); (van Wyk, Eksteen, Becker, & Heinze, 2016); (McHugh & Swain, 2014); (Saleh et al., 2008); (Natarajan et al., 2008); (Sarfo & Ovbiagele, 2017); (Ayubi & Safiri, 2017); (Sarfo, Adamu, Awuah, Sarfo-Kantanka, & Ovbiagele, 2017); (M. S. Khan et al., 2015); (Otterman, van der Wees, Bernhardt, & Kwakkel, 2012); (Anderson & Sullivan, 2016); (Lau et al., 2016); (F. R. Khan et al., 2012); (Tyson, Connell, Busse, & Lennon, 2009); (Taffampas, Kilbride, Levin, Lavelle, & Ryan, 2017); (Goodwin et al., 2018); (Abas, Abdelaziem, & Kilany, 2017); (Hirsh, Kratz, Engel, & Jensen, 2011b); (Myrhaug & Ostensjo, 2014); (O'Connor et al., 2016); (Bhat, Chakravarthy, & Rao, 2016); (Allinson, Doyle, Denehy, & Spittle, 2017); (Hirsh, Kratz, Engel, & Jensen, 2011a); (Bhat, Chakravarthy, & Rao, 2014); (Leong & Lesser, 2015); (Swiggum, Hamilton, Gleeson, Roddey, & Mitchell, 2010a); (McMillan, Campbell, & Mah, 2010); (Hartley & Stockley, 2016); (Swiggum, Hamilton, Gleeson, Roddey, & Mitchell, 2010b); (Cavalheri, Jenkins, & Hill, 2013); (Lettner, Kessel, & Combs, 2017); (Shneerson, Taskila, Greenfield, & Gale, 2015); (Lynch et al., 2011); (Rowlands, Lee, Beesley, Webb, & Australian Natl Endometrial, 2014); (James et al., 2015); (Donnelly et al., 2010); (Karki, Anttila, Tasmuth, & Rautakorpi, 2009); (Osadnik, McDonald, & Holland, 2013); (van der Lee, Hill, & Patman, 2017); (Gambazza, Carta, Brivio, & Colombo, 2016); (Westerdahl & Moller, 2010); (Fiore, Chiavegato, Paisani, & Colucci, 2010); (Jingar et al., 2013); (Pisaturo et al., 2017); (Lagowska-Batya, Stachura, Lewicki, Piechota, & Smolen, 2017); (Espiritu et al., 2009); (Overend et al., 2010); (Heick & Farris, 2017); (Balachandran, Lee, Royse, Denehy, & El-Ansary, 2014); (Westerdahl & Olsen, 2011); (Tan, Harrold, & Hill, 2017); (Bonnievie et al., 2015); (Heick & Farris, 2017); (Marhong et al., 2017); (C. L. Johnston, Maxwell, & Alison, 2011); (Abaraogu, Ogaga, Odidika, & Frantz, 2016); (Milne, Choy, Leong, Hughes, & Hing, 2016); (Murano et al., 2014); (Snodgrass et al., 2014); (Soundy et al., 2016); (Wirz et al., 2010); (Beissner & Reid, 2009); (Sluka & Turk, 2009); (Kalnins, Schelle, Jost, Eberl, & Tiede, 2015); (Atun-Einy O PhD & Kafri M PhD, 2018); (Cantu R Pt, 2018); (Grace, Engel, & Jalsion, 2018); (Falvey et al., 2018); (Brooks, Dolphin, & Rufa, 2018); (Miles, Staples, & Lee, 2018); (Smythe et al., 2017); (Hedt, Holland, Lambert, Harris, &

McCulloch, 2018); (Oliveira et al., 2017); (Sy, 2017); (McRae & Hancock, 2017); (Hoderlein, Moseley, & Elkins, 2017); (Walther, Falk, & Deck, 2017); (Stockert & Ohtake, 2017); (Gardner et al., 2017); (Anekwe et al., 2017); (Rommel & Kroll, 2017); (Bhuyan et al., 2017); (Scholte et al., 2016); (Woitha et al., 2017); (Desjardins-Charbonneau, Roy, Thibault, Ciccone, & Desmeules, 2016); (Maas et al., 2016); (Peek, Carey, Sanson-Fisher, & Mackenzie, 2017); (Brand et al., 2016); (Bakhru, McWilliams, Wiebe, Spuhler, & Schweickert, 2016); (Kamdar et al., 2016); (Baidya, Acharya, & Coppieters, 2016); (Weber et al., 2017); (Kururi et al., 2016); (Hagen, Stark, & Dougall, 2016); (Quack et al., 2015); (Chevan, Riddle, & Reed, 2015); (Malone et al., 2015); (Boucher & MacIntyre, 2015); (Palmer, Cramp, Lewis, Muhammad, & Clark, 2015); (Snowdon, Millard, & Taylor, 2015); (Skinner et al., 2015); (Ketels, Schon, van den Bussche, & Barzel, 2015); (J. K. Yeung, Leung, & Papp, 2013); (Hofmann et al., 2014); (Dehail et al., 2014); (Debus et al., 2014); (Hedman et al., 2014); (Stephens et al., 2013); (Anyanwu, Obikili, & Agu, 2014); (Diego et al., 2013); (P. M. Smith, Spadoni, & Proper, 2013); (Bugge, Hagen, & Thakar, 2013); (K. D. Shaw, Taylor, & Brusco, 2013); (McClurg et al., 2013); (Pauls, Fellner, & Davila, 2012); (Gorgon, Barrozo, Mariano, & Rivera, 2013); (Edwards, Stone, & Nielsen, 2012); (Hurkmans, Li, Verhoef, & Vliet Vlieland, 2012); (Bim, Pelloso, & Previdelli, 2011); (Collins, 2011); (Sawka et al., 2010); (O'Toole & Schoo, 2010); (P. M. Smith, Corso, & Cobb, 2010); (Hamdan & Al-Akhras, 2009); (Wiles & Stiller, 2010); (von Guttenberg & Spickett, 2009); (Moseley, Elkins, Herbert, Maher, & Sherrington, 2009); (Reed, Haefner, & Edwards, 2008); (Stange, Amhof, & Moebus, 2008); (Hodgin, Nordon-Craft, McFann, Mealer, & Moss, 2009); (Johnson, White, & Livingstone, 2008); (Bentley, Jovanovic, & Sharma, 2008); (Schleinich, Warren, Nikolaichuk, Kaasa, & Watanabe, 2008); (Landry, Passalent, & Cott, 2008); (Yardley et al., 2008); (Hopewell, Wolfenden, & Clarke, 2008); (Beckmann-Fries, Gubler-Gut, & Niedermann, 2018); (Salsbury, Goertz, Twist, & Lisi, 2018); (Hegewald, Huber, & Niedermann, 2017); (Sundberg, Cramer, Sibbritt, Adams, & Lauche, 2017); (Thoomes-de Graaf, Thoomes, Carlesso, Kerry, & Rushton, 2017); (Forbes, Mandrusiak, Russell, & Smith, 2017); (Peek et al., 2017); (Abaraogu, Ogaga, & Dean, 2017); (Rosenfeldt, Pilkey, & Butler, 2016); (Shiue, 2016); (Alva & Lobo, 2016); (Dolot et al., 2016); (Jun, Kim, Lee, & Yang, 2015); (Gaunaud et al., 2015); (Tapley et al., 2015); (Setchell, Watson, Jones, Gard, & Briffa, 2014); (O'Donoghue, Cunningham, Murphy, Woods, & Aagaard-Hansen, 2014); (Olkowski & Stolfi, 2014); (Gladwell, Pheby, Rodriguez, & Poland, 2014); (Soundy, Stubbs, Jenkins, & Cooper, 2013); (Pinto et al., 2013); (May & Rosedale, 2012); (Peterson, Bertram, McCarthy, & Saathoff, 2011); (Santos, Barros, & Carolino, 2010); (Yamano, Matsunaga, & Akiyama, 2009); (Jia et al., 2016); (Kapreli et al., 2011); (Piva, Gil, Moore, & Fitzgerald, 2009); (Kaech Moll, Escorpizo, Portmann Bergamaschi, & Finger, 2016); (Cabillic et al., 2011); (Kiefhaber & Beyerlein, 2017); (Veras et al., 2012); (G. Williams, Olver, de Graaff, & Singer, 2012); (Singh, 2017); (Ferreira et al., 2012); (Braund & Abbott, 2011); (Green & Norman, 2016); (Seidman et al., 2017); (Harland & Blackledge, 2017); (Cottrell, Hill, O'Leary, Raymer, & Russell, 2017); (A. Shaw, Martin, Haller, & Ter Haar, 2016); (E. Yeung, Balogh, Cole, Jakovic, & Landry, 2011); (Springer, Laufer, & Elboim-Gabyzon, 2015); (Potter, Cairns, & Stokes, 2012a); (Laliberte et al., 2016); (Menzies, Leung, Chandrasekaran, Lausman, & Geary, 2016); (Andrikopoulos, Adamopoulos, Seimenis, & Koutsojannis, 2017); (Potter, Cairns, & Stokes, 2012b); (Louw, Zimney, Cox, O'Hotto, & Wassinger, 2017); (Freene, Cools, & Bissett, 2017); (Lowe et al., 2017); (Arnadottir & Gudjonsdottir, 2016); (Bernhardsson, Oberg, Johansson, Nilsen, & Larsson, 2015); (Zil, Cheema, Wajih Ullah, Ghulam, & Tariq, 2017); (Chau et al., 2012); (Vancini et al., 2012); (Harland & Drew, 2013); (Learman, Showalter, & Cook, 2012); (Yorke, Littleton, & Alsalaheen, 2016a); (Bruderer-Hofstetter, Bechter, Tal, Schamann, & Niedermann, 2017); (Bernhardsson et al., 2014); (Arvinen-Barrow, Hemmings, Becker, & Booth, 2008); (Francis, Madill, Gentilcore-Saulnier, & McLean, 2012); (Yorke, Littleton, & Alsalaheen, 2016b); (Silva, Costa, & Costa, 2015); (Gueita-Rodriguez et al., 2017b); (Furtado et al., 2017).

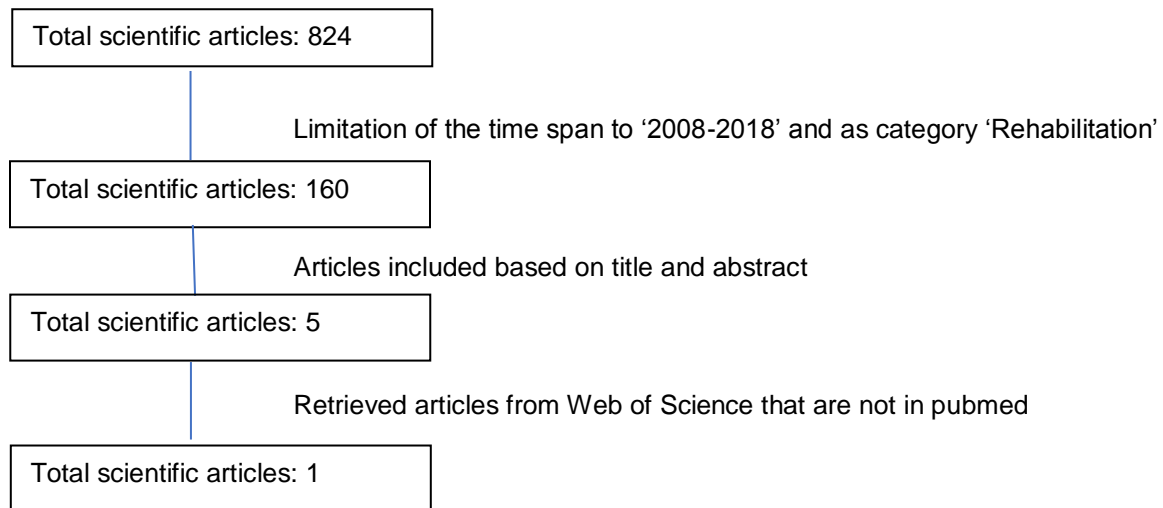
Search strategy: 'Advanced Search Pubmed Builder' on Pubmed: Survey (title) AND [Physiotherapy (title/Abstract) OR physical therapy (title/Abstract)].



(Moutzouri et al., 2017), (Worner et al., 2017),
(B. E. Smith et al., 2017a), (Grieve & Palmer, 2017), (Artz et al., 2013),
(T. O. Smith et al., 2011), (da Costa et al., 2017)

Fig. 1: Flow chart in- and excluded articles of the Pubmed search

Search strategy: TI=(survey) AND TS=(physiotherapy OR physical therapy).



(Ayanniyi et al., 2017)

→ From the initial 461 scientific articles, eight articles satisfied the criteria.

Because the amount of included articles was surprisingly low, we checked the references of these eight articles. Via these references we found two extra articles which met the selection criteria:

- (Cowan et al., 2010) via the references in (Grieve & Palmer, 2017).
- (M. A. Holden et al., 2009) via the references in (B. E. Smith et al., 2017a).

This led to a total of ten included articles.

Fig. 2: Flow chart in- and excluded articles of the Web of Science search

Table 3: Checklist based on the study: good practice in the conduct and reporting of survey research (Kelley et al., 2003)

1. The survey explains the purpose or aim of the research, with the explicit identification of the research question.
2. The survey explains why the research was necessary and places the study in context, drawing upon previous work in relevant fields (the literature review).
3. The survey describes in (proportionate) detail how the research was done:
 - a. states the chosen research method(s) and justifies why this method was chosen.
 - b. describes the research tool.
 - c. describes how the sample was selected and how data were collected.
4. The survey describes and justifies the methods and tests used for data analysis.
5. The survey presents the results of the research. The results section should be clear, factual and concise.
6. The survey interprets and discusses the findings. (It also should provide the author's critical reflection upon both the results and the processes of data collection. The discussion should assess how well the study met the research question, should describe the problems encountered in the research, and should honestly judge the limitations of the work).
7. The survey presents conclusions and recommendations.

Checklist	1. The purpose	2. Relevant and necessary	3a. Research method	3b. Research tool	3c. Sample and data collected	4. Data analysis	5. Results	6. Discussion	7. Conclusion
Moutzouri, M. et al (2016)	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wörner, T. et al (2017)	Y	Y	Y	Y	Y	Y	Y	Y	Y
Smith, B. et al (2017)	Y	Y	Y	Y	Y	Y	Y	Y	Y
Grieve, R. et al (2017)	Y	Y	Y	Y	Y	Y	Y	Y	Y
Artz, N. et al (2012)	Y	Y	Y	Y	Y	Y	Y	Y	Y
Smith, T. et al (2011)	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ayanniyi, O. et al (2016)	Y	Y	Y	Y	Y	Y	Y	Y	Y
Holden, M. et al (2009)	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cowan, S.M. et al (2010)	Y	Y	Y	Y	Y	Y	Y	Y	Y
Da Costa, B.R. et al (2017)	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 4: Overview of the included articles from Pubmed and Web of Science: population, aim, outcome, results

Article	Population	Aim of the study	Outcome	Results
<p>Greek Physiotherapists' Perspectives on Rehabilitation Following Total Knee Replacement: a Descriptive Survey.</p> <p>Moutzouri, M., Gleeson, N., Billis, E., Tsepis, E., & Gliatis, J. (2017).</p>	132 physiotherapists in Greece	To record the perspective of the physiotherapists on the rehabilitation of patients recovering from total knee replacement (TKR).	Survey: 21 questions about the rehabilitation (goal, protocols, outcome measurements and potential setbacks during the different stages) and one question about the therapists' profile.	<ul style="list-style-type: none"> • Response rate: 58%. • In spite of the increasing amount of TKR, evidence about the content of physiotherapy remains minor in Greece. • 57% of the patients are discharged with a home-based exercise program and only 13% are referred to a rehabilitation centre. • The main goals of the inpatient phase are: strengthening, range of motion and functionality. For the inpatient phase, there was consistency in the rehabilitation program. • The main goals of the outpatient phase are: functionality and balance. For the outpatient phase there was a diversity in rehabilitation programs. • A significant fraction of therapists (24%) did not use any outcome measure for assessing the improvement of the patient. • Despite the fact that scientific studies suggest to continue the physiotherapy after three months from TKR, the patients usually stop here due to financial reasons or lack of motivation.
<p>Similar views on rehabilitation following hip arthroscopy among physiotherapists and surgeons in Scandinavia: a specialized care survey.</p>	90 paramedics: 28 surgeons and	To describe the post-surgical rehabilitation strategies among hip arthroscopy in Scandinavia, and to compare the	Survey: 27 questions about different rehabilitation modalities, time frames, improvement	<ul style="list-style-type: none"> • Response rate: not mentioned. • Both groups of paramedics regarded physiotherapy after hip arthroscopy very important.

<p>Worner, T., Thorborg, K., Moksnes, H., & Eek, F. (2017).</p>	<p>62 physiotherapists in Scandinavia</p>	<p>perspectives of these strategies among surgeons and physiotherapists. criteria and outcome measurements.</p>	<ul style="list-style-type: none"> • Most commonly used is criteria-based or combined criteria- and time-based rehabilitation progression. • There was a different view between the two professions about the time on crutches and return to sport. Also, surgeons used more evidence-based self-reported outcomes, while physiotherapists used more evaluated readiness for return to play. • The current evidence is very limited for post-operative rehabilitation after HA. • There is a need to bridge the gap between evidence and clinical practice. This uncertainty in best practice, clarifies that there is a large variability in rehabilitation approaches and that clinical opinions will vary.
<p>Current management strategies for patellofemoral pain: an online survey of 99 practising UK physiotherapists.</p> <p>Smith, B. E., Hendrick, P., Bateman, M., Moffatt, F., Rathleff, M. S., Selfe, J., Smith, T.O., Logan, P. (2017).</p>	<p>99 physiotherapists in the UK</p>	<p>To know the management strategies of patellofemoral pain (PFP) applied by physiotherapists in the UK, especially referring to exercise prescription and response to pain.</p> <p>A secondary aim was to compare the management strategies between physiotherapists with different levels of interest in PFP.</p>	<p>Survey: 14 questions about the assessment, the treatment and the outcome after a first patellofemoral pain.</p> <ul style="list-style-type: none"> • Response rate: the online survey was open until 100 respondents had completed the survey. • There is no standardised rehabilitation program for PFP in the UK. Programs are widely variable in exercise prescription and dosage, degree of education and advice, physiotherapy appointment frequency and duration. • The five most common management strategies are closed chain strengthening exercises (98%), education and advice (96%), open chain strengthening exercises (76%), taping (70%) and stretching (65%). • 55% of the physiotherapists would not instruct painful exercises.

- 31% would discourage patients to continue with sport/leisure activities when they feel pain.
- Currently there are limitations in evidence for rehabilitation

Physiotherapy for plantar fasciitis: a UK-wide survey of current practice.

Grieve, R., & Palmer, S. (2017).

A response of 285 physiotherapists in the UK; 257 filled in the complete survey.

To analyse the criteria used by UK physiotherapists to diagnose patients with plantar fasciitis and how they established and treated plantar fasciitis.

Survey: 20 questions about the characteristics of the patient, the goal and the specific interventions of the rehabilitation, the outcomes and the diagnostic criteria.

- Response rate not known.
- The most common criteria followed by physiotherapists to diagnose patients with plantar fasciitis are: palpation pain and pain in the early morning. These diagnosing criteria were applied following the Orthopaedic Section of the American Physical Therapy Association (APTA) guidelines.
- Physiotherapists did not stick to the outcome measure guidelines.
- Most used management strategies are: advice (92%), education (81%) and general stretching exercises (74%). Orthotics and night splints are rarely used. These strategies resembled very closely the aims and recommendations of the NICE CKS (National Institute for Health and Care Excellence (NICE2015) and Clinical Knowledge Summary (CKS)) guidelines.
- In order to evaluate the rehabilitation of the patient, the physiotherapists used pain assessment, functional tests and the range of motion.

Physiotherapy provision following discharge after total hip and total knee replacement: a survey of current practice at high-volume

24 high volume centres (500 hip or knee procedures

To identify the most common rehabilitation approach offered to patients with a total hip

Survey: six questions about the routine physiotherapy, the information and education given to the

- Response rate: 100%
- Physiotherapy after total hip replacement (THR): outpatient physiotherapy (including one-to-one

<p>NHS hospitals in England and Wales.</p>	<p>per annum) in Wales and England).</p>	<p>and patients with a total knee replacement.</p>	<p>patients, and the process evaluation.</p>	<p>and group) was not a standard pathway.</p> <ul style="list-style-type: none"> ● Physiotherapy after total knee replacement (TKR): most commonly used are group sessions, followed by one-to-one outpatient rehabilitation. ● The arrangement of rehabilitation with a TKR is a more standard routine than with a THR. ● Researchers identified that there is a lack of guidance and undefined evidence about post-discharge physiotherapy
<p>Artz, N., Dixon, S., Wylde, V., Beswick, A., Blom, A., & Gooberman-Hill, R. (2013).</p>				
<p>A national survey of the physiotherapy management of patients following first-time patellar dislocation.</p>	<p>306 institutions in the UK.</p>	<p>To define how physiotherapists in acute National Health Service hospitals control patients with a first time patellar dislocation.</p>	<p>Survey: 14 questions about the assessment, the treatment, the evaluation tools and the outcome after a first-time patellar dislocation.</p>	<ul style="list-style-type: none"> ● Respons rate: 59% ● Physiotherapists evaluate a first-time patellar dislocation with reduced quadriceps or vastus medialis capacity, gait, patellar tracking and glide and knee effusion. ● The management strategies consist of: reassurance, behaviour modification followed by proprioceptive knee mobility, quadriceps and specific vastus medialis exercises. ● The rehabilitation duration varied between seven weeks and three months. ● More than half of the physiotherapists managed the patients in a one-on-one setting. ● An extensive variety of assessment methods and management strategies are applied by physiotherapist for this pathology. ● Guidelines are limited in size and quality. ● Previous research among first-time patellar dislocation suggested that there is a variety of diagnostic tests to use, but
<p>Smith, T. O., Chester, R., Clark, A., Donell, S. T., & Stephenson, R. (2011).</p>				

<p>Physiotherapy management of knee osteoarthritis in Nigeria-A survey of self-reported treatment preferences.</p> <p>Ayanniyi, O., Egwu, R. F., & Adeniyi, A. F. (2017).</p>	<p>267 physiotherapists in Nigeria</p>	<p>To investigate the most common rehabilitation approach for knee osteoarthritis (OA) in Nigeria and to identify whether or not evidence-based medicine is in line with these rehabilitation strategies.</p>	<p>Survey: a total of 14 questions: socio-demographic questions about the physiotherapist and questions about the rehabilitation preferences and diagnostic criteria.</p>	<p>results of this study indicated that there is a low awareness of these tests.</p> <ul style="list-style-type: none"> • Respons rate: 67%. • The majority of the physiotherapists use thermotherapy, followed by physical therapy modalities. • To diagnose knee OA a review of the RX scan was made. • In Nigeria there is often no close relation between evidence- based medicine and clinical practice, in contrast to the UK, USA, Canada and Australia. Although the guidelines recommend weight loss, less than half of the physiotherapists do recommend so.
<p>UK-Based Physical Therapists' Attitudes and Beliefs Regarding Exercise and Knee Osteoarthritis: Findings From a Mixed-Methods Study.</p> <p>Holden, A., Nicholls, E., Young, J., Hay, E., & Foster, E. (2009).</p>	<p>2000 UK-based licenced physical therapists</p>	<p>To identify the differences in attitudes and beliefs among knee osteoarthritis (OA) between physical therapists within the UK and to examine the recent best practice recommendations among OA.</p>	<p>Survey: 23 statements about attitudes and beliefs regarding exercise and knee OA. The questionnaire also included demographic questions, a measure of physical therapists' illness perceptions and treatment orientations, and a vignette describing of a patient with knee OA and clinical management questions.</p>	<ul style="list-style-type: none"> • Response rate: 58% (n=1152). • Merely 56% agreed that the OA can be improved by local exercise. • Health care systems indicated follow up as a limited opportunity. • There is an uncertainty among some aspects of the physiotherapy • Further research is a demand to identify meaningful shift in physical therapy care in line with the best practice recommendations. • It is essential to fill the gap between missing literature and clinical practice. • The attitudes and beliefs of physiotherapists may help to clarify the differences between current practice and recent exercise recommendations. • An underlying biomedical model that views OA as a progressive degenerative condition may clarify the uncertainty of

physical therapists about the potential benefits of exercise for knee OA and the concerns about safety

<p>Current Australian physiotherapy management of hip osteoarthritis.</p> <p>Cowan SM, Blackburn MS, McMahon K, Bennell KL. (2010).</p>	<p>364 public and private physiotherapists in the state of Victoria.</p>	<p>To illustrate the most common physiotherapy management of hip osteoarthritis by Australian physiotherapists in private and acute hospital settings.</p>	<p>Survey: 7 pages with questions about the characteristics of the physiotherapist, characteristics of the patients, treatments aims for the patient, the used treatment techniques, treatment assessments</p>	<ul style="list-style-type: none"> • Response rate: 66% • A little difference in overall physiotherapy approach between private and acute hospital settings. • There are guidelines for the management of hip OA: the European League against Rheumatism (EULAR) recommendations. EULAR highlighted the need for further investigations, concluding that the evidence is lacking for the management of hip OA (in contrast to knee OA). • Physiotherapists use common: <ul style="list-style-type: none"> ○ Manual therapy: 78% in the private setting and 87% in the public setting. ○ Aquatic therapy: 82% in the private setting and 58% in the public setting. ○ Home exercise programmes: 88% in the private setting and 80% in the public setting. • They use most common strengthening exercises to treat hip osteoarthritis.
<p>How Do Physical Therapists Treat People with Knee Osteoarthritis, and What Drives Their Clinical Decisions? A Population-Based Cross-Sectional Survey</p>	<p>413 physiotherapists of Florida.</p>	<p>To identify the most common physiotherapy management of knee osteoarthritis by physiotherapist in Florida and whether it's in line with the clinical guidelines.</p>	<p>Survey: 12 questions about the global demographic characteristics, clinical experience and clinical expertise of the physiotherapist specific to osteoarthritis; the perceived effectiveness</p>	<ul style="list-style-type: none"> • Response rate: 3% (413/13296) • 88% of the physiotherapists knew that aquatic exercise was an effective treatment for knee osteoarthritis, but only 19% reported this as a used management strategy; this may be explained by limited access to clinics with these facilities.

Conner Colosi, James Rylak,
Travis Wylie, and Susan Armijo-
Olivo, M (2017)

of the interventions for
knee osteoarthritis; the
frequency of use of the
interventions; evidence-
based practice.

- An adaptable therapist is positively associated with the use of interventions supported by scientific evidence.
- Results indicate that the age of the therapist has also an important influence on how frequently interventions are used for people with knee osteoarthritis. Older physiotherapists apply more interventions which are not supported by evidence.
- Physiotherapists use most common exercise therapy (94%) and education (93%) in line with the clinical guidelines and less electrotherapy (28%), wedged insoles (20%) and ultrasound (19%).
- Older physiotherapist use more ultrasound, electrotherapy, kinesiology tape and ice.

Table 5: Reflection on the strengths and weaknesses of the included surveys

Article	Strengths	Weakness
<p>Greek Physiotherapists' Perspectives on Rehabilitation Following Total Knee Replacement: a Descriptive Survey. (Moutzouri et al., 2017)</p>	<ul style="list-style-type: none"> • It includes the seven parts of the checklist. • This study used randomization for the sample and can be generalized for multiple reasons. • It includes experienced and less experienced physiotherapists. • All the participating physiotherapists had been treating annually ten or more patients after a TKR. • A reminder was sent within three weeks. • The survey has been completed by physiotherapists from the primary and private care. • In order to minimize any possible bias, further cross-tabulation analysis was performed to compare physiotherapists treating 10 and those treating greater than 30 TKR patients 	<ul style="list-style-type: none"> • Response rate: <ul style="list-style-type: none"> - 63% (47/75) inpatient clinics - 57% (85/150) outpatient clinics • Few physiotherapists of the hospital-based (26.6%). • Risk of reporting bias.
<p>Similar views on rehabilitation following hip arthroscopy among physiotherapists and surgeons in Scandinavia: a specialized care survey. (Worner et al., 2017)</p>	<ul style="list-style-type: none"> • It includes the seven parts of the checklist. • This is the first study that investigates the current management strategies after hip arthroscopy of the physiotherapist and not only of the surgeons. • Two reminders were sent (after one and three weeks). • The survey has been completed by physiotherapists from the primary and private care. 	<ul style="list-style-type: none"> • It is likely that mostly surgeons who are interested in rehabilitation have completed the survey, this may have led to an overestimation of willingness to apply physiotherapy. • The combination of the small sample size and the population of specialists, may have led to a risk of type two error in the comparison of the professions. • Randomization wasn't applied, so there's a risk of selection bias. • As convenience and snowball sampling took place, so there may be a risk of community bias. • The survey was only available online, so only respondents who use this technology could complete the survey, there may be a risk of coverage bias. • Risk of reporting/response bias.
<p>Current management strategies for patellofemoral pain: an online survey of 99</p>	<ul style="list-style-type: none"> • It includes the seven parts of the checklist. • The survey includes clear questions (no ambiguity). • Anonymity was assured. 	<ul style="list-style-type: none"> • Only 100 physiotherapists could complete the survey. So these results cannot be properly generalized.

<p>practising physiotherapists. (B. E. Smith et al., 2017a)</p>	<p>UK</p> <ul style="list-style-type: none"> • It's a structured survey. • The survey has been completed by physiotherapists from the primary and private care. 	<ul style="list-style-type: none"> • There's also a high risk on voluntary response bias, as only 100 physiotherapists of the UK could complete this survey, it is possible that these are people with strong opinions. • The survey was only available online, so only respondents who use this technology could complete the survey, there may be a risk of coverage bias. • The sample doesn't contain smaller, private or independent units. • Besides a few questions there is also a case example of a patient to evaluate the clinical practice. As a case example can only give basic information of the patient's condition, it may be that the physiotherapists use different management strategies in practice along additional information of the patient. There's a risk of reporting/response bias.
<p>Physiotherapy for plantar fasciitis: a UK-wide survey of current practice. (Grieve & Palmer, 2017)</p>	<ul style="list-style-type: none"> • The survey has been completed by physiotherapists all across the UK. • It included the seven parts of the checklist. • A version of the survey has been commented by five experienced musculoskeletal clinicians. • A reminder was sent after one month. • The survey has been completed by physiotherapists from the primary and private care. 	<ul style="list-style-type: none"> • The survey was only available online, so only respondents who use this technology could complete the survey, there may be a risk of coverage bias. • The exact response rate of this survey is unknown. • Risk of reporting/response bias.
<p>Physiotherapy provision following discharge after total hip and total knee replacement: a survey of current practice at high-volume NHS hospitals in England and wales. (Artz et al., 2013)</p>	<ul style="list-style-type: none"> • High response rate. • It includes the seven parts of the checklist. • The survey includes clear questions (no ambiguity). • It's a structured survey. • The survey has been completed by clinicians of England and Wales. • Orthopaedic centres with more than 500 hip or knee procedures per year were included in this survey. 	<ul style="list-style-type: none"> • The sample doesn't contain smaller, private or independent units. • Risk of reporting/response bias.
<p>A national survey of the physiotherapy management of</p>	<ul style="list-style-type: none"> • It includes the seven parts of the checklist. • A reminder was sent after three weeks. 	<ul style="list-style-type: none"> • The lead physiotherapists of every department for patients with knee disorders or the physiotherapists with the most experience

<p>patients following first-time patellar dislocation.</p> <p>(T. O. Smith et al., 2011)</p>	<ul style="list-style-type: none"> • A pilot study took place to assess the structure of the survey. • It was a national survey study. • The survey has been completed by 306 institutions. 	<p>should've completed the survey. These results should be generalized with caution.</p> <ul style="list-style-type: none"> • Response rate: 59% (180/306). • Risk of reporting/response bias
<p>Physiotherapy management of knee osteoarthritis in Nigeria - A survey of self-reported treatment preferences.</p> <p>(Ayanniyi et al., 2017)</p>	<ul style="list-style-type: none"> • It includes the seven parts of the checklist. • The survey includes clear questions (no ambiguity). • Anonymity was assured. • It's a structured survey. • A maximum of three reminders were sent. • The survey has been completed by physiotherapists from the primary and private care. • The first descriptive survey on physiotherapists management of knee osteoarthritis in Nigeria. 	<ul style="list-style-type: none"> • It wasn't questioned whether the physiotherapists knew the clinical guidelines and whether they applied them in clinical practice. • Besides a few questions there is also a case example of a patient to evaluate the clinical practice. As a case example can only give basic information of the patient's condition, it may be that the physiotherapists use different management strategies in practice along additional information of the patient. There's a risk of reporting/response bias. • Approximately 1/3 of the practicing physiotherapists didn't complete the survey.
<p>UK-Based Physical Therapists' Attitudes and Beliefs Regarding Exercise and Knee Osteoarthritis: Findings From a Mixed-Methods Study. Arthritis & Rheumatism.</p> <p>(M. A. Holden et al., 2009)</p>	<ul style="list-style-type: none"> • It includes the seven parts of the checklist. • This is the first national survey that investigates the attitudes and beliefs of physiotherapists from UK about exercise and osteoarthritis of the knee. • The mixed-methods approach provides a deeper examination than the survey alone 	<ul style="list-style-type: none"> • Response rate: 58% (1152/2000). • Risk of nonresponse bias • The attitudes and beliefs of the physiotherapists may give an idea about their clinical behaviors, but this correlation hasn't been tested yet. • Risk of reporting/response bias.
<p>Current Australian physiotherapy management of hip osteoarthritis. Physiotherapy.</p> <p>(Cowan et al., 2010)</p>	<ul style="list-style-type: none"> • It includes the seven parts of the checklist. • Physiotherapists of private and public settings completed the survey. • This is the first study that investigates the current management of hip osteoarthritis applied by Australian physiotherapists. • A reminder was sent. 	<ul style="list-style-type: none"> • Response rate: 66% (222/337) may be due to the recruitment technique, which may have caused in some physiotherapists receiving the questionnaire twice • 15% of the 222 respondents didn't treat people with hip osteoarthritis, so only 188 out of the 337 physiotherapists were included for the analysis. • The survey was only available online, so only respondents who use this technology could complete the survey, there may be a risk of coverage bias. • Risk of reporting/response bias

How Do Physical Therapists Treat People with Knee Osteoarthritis, and What Drives Their Clinical Decisions? A Population-Based Cross-Sectional Survey.

(da Costa et al., 2017)

- It includes the seven parts of the checklist.
- This is the first study that investigates the correlation between the characteristics of the physiotherapists and their way of making clinical decisions in treatment of knee osteoarthritis.
- This is also the first study that describes how a sample of physiotherapists of the US treat individuals with osteoarthritis of the knee.
- It's a structured survey.
- Response rate: 3% (413/13296)
- The questions might have been not specific enough, for example which interventions belong to electrotherapy and what's the exact frequency of sometimes and rarely?
- The survey was only available online, so only respondents who use this technology could complete the survey, there may be a risk of coverage bias.
- Besides a few questions there is also a case example of a patient to evaluate the clinical practice. As a case example can only give basic information of the patient's condition, it may be that the physiotherapists use different management strategies in practice along additional information of the patient. There's a risk of reporting/response bias.

PART 2: PROTOCOL

1 Introduction

In Part 1, we performed an extensive scientific literature search and identified a number of published surveys on the rehabilitation of musculoskeletal injuries of the lower extremity. This allowed us to conclude that there is a clear lack of integration of evidence-based guidelines into clinical practice. This limitation has been observed for several musculoskeletal injuries. Lowe et al. (2017) observed in their study that the majority of physiotherapists had knowledge of the existence of such practice guidelines. Yet, only 16% of them were able to answer correctly on Lowe's three questions about specific physiotherapy guidelines. We found several surveys about a variety of musculoskeletal injuries. However, it became apparent that no surveys have been published that investigate current management strategies after an anterior cruciate ligament reconstruction (ACLR).

An ACL injury can be caused in both contact and non-contact ways. The prevalence of non-contact ACL injuries seems to be the highest in female athletes aged between 15 and 40, who participate in pivoting sports (van Melick et al., 2016). The main goals of the rehabilitation after an ACLR are to improve functional stability, to attain the best possible functional level, and to minimise the risk for re-injury (Kvist, 2004). Athletes who suffered ACL injury, and want to continue sports, often opt for ACL reconstruction. Most of these athletes (94%) expect (or hope for) a full return to sports at the pre-injury level after ACLR (Gokeler, Dingenen, Mouton, & Seil, 2017). Unfortunately, the success rates are way lower than hoped for and/or recovery takes significantly longer than expected. Research demonstrates that in the first 5 years after ACLR about 3-22% of athletes rerupture the reconstructed ligament and 3-24% rupture the contralateral ACL (van Melick et al., 2016). Indeed, recent research confirms that 35% of athletes after ACLR do not return to preinjury sport level within 2 years (Ardern, Webster, Taylor, & Feller, 2011). Less than 50% of the patients returned to play sports at the pre-injury level (Ardern, Taylor, Feller, & Webster, 2012).

After the ACLR, the post-operative rehabilitation can be split into three phases. The first phase is called the early post-operative phase. The second phase is termed the intermediate phase. The final stage is sport-specific (van Melick et al., 2016), (D. Adams, D. S. Logerstedt, A. Hunter-Giordano, M. J. Axe, & L. Snyder-Mackler, 2012). Gokeler et al. (2017) describe in their review that pre-operative rehabilitation is absolutely necessary to maximise functional outcomes after ACLR. Preoperative quadriceps muscle strength deficits (more than 20% of the uninjured limb) have significant adverse consequences for the long-term functional outcome after ACLR (Eitzen, Holm, & Risberg, 2009).

Rehabilitation programmes for knee ligament-injured patients have changed strongly in the past several years. In former times, physiotherapists were more conservative in their rehabilitation aspirations. Then, the goal was to return to sports after 9-12 months (Kvist, 2004). The latter also concluded that current rehabilitation programmes are more ambitious and consist of accelerated protocols with immediate training of the range of motion of the knee and weight bearing. The aim is a return to sports

already within 4-6 months. A successful return to sports at pre-injury level without a relapse of the ACL is considered a clear sign of a successful and completed rehabilitation (Kvist, 2004).

However, the lack of scientific consensus on the RTS criteria, makes it rather difficult to decide when the patient can return to sports. Moreover, current RTS criteria may fail to recognise remaining biological, functional, and psychological deficits (Nagelli & Hewett, 2017). As such, the present-day practice for allowing athletes to return to sports after ACLR may have the adverse effect of contributing to higher risk levels for secondary ACL injury (Dingenen & Gokeler, 2017). Since there is no benchmark for evaluating RTS readiness after ACLR, the study by Gokeler et al. (2017) recommended using a multi-factorial test battery, including physical and psychological elements. These authors also highlighted the necessity for more extensive validation of the criteria- and evidence-based rehabilitation programmes following ACLR.

The rehabilitation of the ACLR is a long and tedious process. Notwithstanding the availability of multiple, structured practice guidelines, the selection and carrying out of the rehabilitation approach remains a challenge for physiotherapists and often it does not lead to the desired long-term results or full recovery. The low value healthcare and the question whether the latest evidence-based guidelines for rehabilitation after ACLR are effectively applied within the clinical practice might contribute to these disappointing outcomes.

In our study will have a detailed look at the specific, current management strategies of Flemish physiotherapists after ACLR. Our goal is to investigate if these management strategies are in line with the current clinical guidelines. For that purpose, we will develop our own online survey.

2 Aim of the study

This master thesis will focus on the current management strategies of Flemish physiotherapists after anterior cruciate ligament reconstruction. We will investigate if these management strategies are in line with the current clinical guidelines, by developing our own online survey.

2.1 Research question

The research question related to the thesis is the following: 'Which are the current management strategies applied by Flemish physiotherapists in the rehabilitation after anterior cruciate ligament reconstruction and are these in line with current clinical guidelines?'

2.2 Hypotheses

We formulated two hypotheses:

H0: Management strategies are in line with the current clinical guidelines (Flemish physiotherapists apply the clinical guidelines of the rehabilitation after anterior cruciate ligament reconstruction)

H1: Management strategies are not in line with the current clinical guidelines (Flemish physiotherapists do not apply the clinical guidelines of the rehabilitation after anterior cruciate ligament reconstruction)

3 Methods

3.1 Research design

We are going to use a descriptive design to answer our research question.

3.2 Participants

Our participants consist of Flemish working physiotherapists (hospitals, rehabilitation centres or private settings), who rehabilitate patients after anterior cruciate ligament reconstruction.

3.2.1 Inclusion criteria

The inclusion criteria are the following:

- Living in Flanders
- Practicing in Flanders
- Physiotherapist certificate
- Above 22 years of age

3.2.2 Exclusion criteria

The exclusion criteria are the following:

- Not understanding Dutch

3.2.3 Recruitment

We will recruit these physiotherapist through different methods: online advertising, social media and local physiotherapists professional groups.

3.3 Medical ethics

Approval for this study will be obtained in the summer of 2018.

3.4 Intervention

To be able to answer our research question, we made our own online survey about the rehabilitation after an anterior cruciate ligament reconstruction. The survey consists of 38 questions. The participants are questioned among multiple aspects of the rehabilitation process. Besides questions about the rehabilitation approach, there are also questions about the characteristics of the physiotherapist and the patient population. The survey is a combination of open and closed questions.

3.5 Outcomes measurements

3.5.1 Primary outcome measurements

The outcomes are the answers of the questions of the survey.

3.5.2 Secondary outcome measurements

There are no secondary outcome measurements.

3.6 Data analyse

We will create an inventory of the answers to make our data analysis.

4 Time planning

The survey will be distributed after the approval of our study and will be distributed from September 2018-January 2019.

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6 Appendix

Vragenlijst: Kinesitherapeutische revalidatie na een voorste kruisband reconstructie

Beste kinesitherapeut(e),

Dit is een online vragenlijst waarmee we willen onderzoeken welke huidige behandelingsstrategieën door Vlaamse kinesitherapeuten worden toegepast bij de revalidatie na reconstructie van de voorste kruisband.

- Gelieve geen vraag over te slaan (tenzij anders wordt vermeld) en geen informatie op te zoeken tijdens het invullen van deze vragenlijst.
- Gelieve bij meerkeuzevragen telkens 1 antwoord aan te duiden (tenzij anders wordt vermeld).

Er bestaan geen goede of slechte antwoorden, dit is slechts een inventarisatie. Uw antwoorden blijven anoniem.

Alvast hartelijk bedankt voor uw deelname.

Laurence Guilliams & Yasmine Vandewalle
(studentes revalidatiewetenschappen- en kinesitherapie aan de UHasselt)

Promotor: dr. Bart DINGENEN
Copromotor: dr. Liesbet DE BAETS

Deel 1

1) Gelieve uw leeftijdscategorie aan te duiden.

- a) 22-30 jaar
- b) 31-40 jaar
- c) 41-50 jaar
- d) 51-60 jaar
- e) 60+ jaar

2) Gelieve uw geslacht aan te duiden.

- a) Man
- b) Vrouw

3) Hoeveel jaren ervaring heeft u als kinesitherapeut?

- a) 0-5 jaren
- b) 6-10 jaren
- c) 11-20 jaren
- d) 21-30 jaren
- e) 30-40 jaren
- f) 40+ jaren

4) In welke setting werkt u? Indien u in meerdere settings werkt, gelieve aan te duiden waar u het merendeel van de revalidaties van patiënten met een voorste kruisband reconstructie uitvoert.

- a) Ziekenhuis
- b) Privépraktijk

- c) Sportclub
- d) Andere:.....

5) Hoeveel patiënten na een voorste kruisband reconstructie behandelt u jaarlijks?

- a) 0-5 patiënten
- b) 6-10 patiënten
- c) 11-15 patiënten
- d) 16-20 patiënten
- e) 21-25 patiënten
- f) 26-30 patiënten
- g) 30+ patiënten

6) De populatie patiënten na een voorste kruisband reconstructie die u behandelt bestaat uit: Gelieve het percentage in te vullen per categorie. Let op, de som moet 100% vormen.

- Amateursporters: %
- Professionele sporters: %
- Niet-sportieve mensen: %

7) De populatie patiënten na een voorste kruisband reconstructie die u behandelt behoren tot de leeftijdscategorie:

Gelieve het percentage in te vullen per categorie. Let op de som moet 100% vormen.

- 10-19 jaar:%
- 20-29 jaar: %
- 30-39 jaar: %
- 40+ jaar: %

8) De populatie patiënten na een voorste kruisband reconstructie die u behandelde, kregen volgende soort greffe:

Gelieve het percentage in per categorie. Let op de som moet 100% vormen.

- Autogrefe hamstringpezen: %
- Autogrefe patellapees: %
- Autogrefe quadricepspees:%
- Allogrefe (hamstringpezen, patellapees, quadricepspees):%
- Kunstmatig: %
- Andere:: %

9) Heeft u bijscholingen en/of lezingen gevolgd in de voorbije 5 jaar met betrekking tot de revalidatie na een voorste kruisband reconstructie?

- a) Nee
- b) Ja:

Gelieve te specificeren welke (naam docent + jaar):

.....
.....
.....

10) Hoe verkrijgt u nieuwe informatie met betrekking tot de revalidatie na een voorste kruisband reconstructie? Er is meer dan 1 antwoord mogelijk.

- a) Via online presentaties.

- b) Via databanken van wetenschappelijke studies.
- c) Via Facebook
- d) Via Twitter
- e) Via podcasts
- f) Via blogs
- g) Via infographics
- h) Via video's (bv. op YouTube)
- i) Info-overdracht via collega's
- j) Andere:

11) Welke bron van nieuwe informatie met betrekking tot de revalidatie na een voorste kruisband reconstructie verkiest u? Meer dan 1 antwoord mogelijk.

- a) Fysieke bijscholingen en/of lezingen
- b) Online presentaties
- c) Databanken van wetenschappelijke studies.
- d) Facebook
- e) Twitter
- f) Podcasts
- g) Blogs
- h) Infographics
- i) Video's (bv. op YouTube)
- j) Info-overdracht via collega's
- k) Andere:

Deel 2

12) Gelieve uw mening aan te duiden. Elke patiënt met een voorste kruisbandletsel moet een voorste kruisband reconstructie ondergaan om succesvol terug te keren tot sport.

- a) Akkoord, indien het gaat om multi-directionele sporten.
- b) Akkoord, indien het gaat over elke vorm van sport.
- c) Niet akkoord.

13) Wat schat u in? Na een voorste kruisband reconstructie keren sporters terug naar het competitieve niveau na gemiddeld:

- a) 3 maanden
- b) 6 maanden
- c) 9 maanden
- d) 12 maanden

14) Wat schat u in? Het percentage patiënten na een voorste kruisband reconstructie die terugkeren naar competitieve sport bedraagt ongeveer:

- a) 45%
- b) 55%
- c) 65%
- d) 75%
- e) 85%
- f) 95%

15) Wat schat u in? Het risico dat patiënten onder de 25 jaar die terugkeren tot sport na een voorste kruisband reconstructie opnieuw een voorste kruisband letsel krijgen bedraagt:

- a) 0-5%
- b) 6-10%
- c) 11-15%
- d) 16-20%
- e) 20+%

16) Wat schat u in? Het risico op posttraumatische tibiofemorale osteoarthrose 10-15 jaar na een voorste kruisbandletsel, ongeacht welke behandeling, bedraagt ongeveer:

- a) 0-20%
- b) 21-40%
- c) 41-60%
- d) 61-80%
- e) 81-100% (culvenor 90%)

Deel 3

17) Welk percentage van uw patiënten die een voorste kruisband reconstructie ondergaan behandelt u reeds pre-operatief?

- a) 0%
- b) 1-20%
- c) 21-40%
- d) 41-60%
- e) 61-80%
- f) 81-100%

Indien u geen pre-operatieve behandeling toepast bij een voorste kruisbandletsel, mag u naar vraag 21 gaan.

18) Hoeveel weken duurt een pre-operatieve revalidatieperiode gemiddeld?

- a) 0-2 weken
- b) 3-4 weken
- c) 5-6 weken
- d) 7-8 weken
- e) 9-10 weken
- f) Meer dan 10 weken

19) Hoeveel sessies kinesitherapie voert u pre-operatief gemiddeld uit?

- a) 0-5
- b) 5-10
- c) 10-15
- d) 15-20
- e) 20-25
- f) Meer dan 25

20) Beschrijf uw top 3 criteria die pre-operatief moeten voldaan zijn om een voorste kruisband reconstructie te kunnen ondergaan?

1.
.....
.....
2.
.....
.....
3.
.....
.....

21) Hoeveel dagen na de voorste kruisband reconstructie start u gemiddeld met de revalidatie?

- a) 0-5 dagen
- b) 6-10 dagen
- c) 11-15 dagen
- d) 16-20 dagen
- e) 21-25 dagen
- f) Meer dan 25 dagen

22) Hoeveel behandeling sessies ziet u uw patiënt na een voorste kruisband reconstructie gemiddeld gezien?

.....

Over welke periode spreidt u deze behandeling sessies? Gelieve te antwoorden in het aantal maanden.

.....

23) Hoe behandelt u patiënten na een voorste kruisband reconstructie?

- a) Individueel
- b) In groep
- c) Beiden

24) Past u open keten quadriceps oefeningen tegen weerstand toe?

- a) Nee → ga naar vraag 26
- b) Ja
 - i) Vanaf hoeveel weken post-operatief past u deze toe?

.....
.....

25) Indien u open keten quadriceps oefeningen opstart tegen weerstand, in welke positie van de knie (in graden) past u deze toe?

- a) 90-45°
- b) 45-25°
- c) 25-0°

26) Over het algemeen weten we dat mensen na een voorste kruisband reconstructie onderbelast worden op vlak van krachttraining. Indien u dit spiegelt op de eigen klinische praktijk, denkt u dat dat bij u ook het geval kan zijn?

- a) Ja

b) Neen

27) Gelieve uw mening aan te duiden:

- a) Een onmiddellijke gewichtsbelasting is positief in functie van het herstel na een geïsoleerd voorste kruisband reconstructie ongeacht het optreden van pijn, effusie of toename van de temperatuur.
- b) In de eerste week post-operatief mag men geen isometrische quadricepsoefeningen starten om de quadriceps-spiere te reactiveren.
- c) Elektrostimulatie is een toegevoegde waarde voor isometrische training van de quadriceps tijdens de eerste post-operatieve weken.

28) Wat zijn voor u de top 3 voorwaarden om terug te mogen springen na een voorste kruisband reconstructie?

- 1.
- 2.
- 3.

29) Wat zijn voor u de top 3 voorwaarden om terug te mogen lopen na een voorste kruisband reconstructie?

- 1.
- 2.
- 3.

30) Past u een sport-specifieke fase toe na de voorste kruisband reconstructie?

- a) Neen
- b) Ja:

Wanneer start deze fase? Gelieve te antwoorden in het aantal maanden na de reconstructie.
.....

Hoelang duurt deze fase? Gelieve te antwoorden in het aantal maanden na de reconstructie.
.....

Hoelang moet men sport-specifiek trainen vooraleer men het oorspronkelijk sportniveau hervat? Gelieve te antwoorden in het aantal maanden na de reconstructie.
.....

31) Beschrijf uw top 3 criteria die moeten voldaan zijn om na een voorste kruisband reconstructie de sport volledig te hervatten?

1.
.....
2.
.....
3.
.....

32) Na hoeveel maanden laat u een sporter na een voorste kruisband reconstructie gemiddeld terugkeren naar zijn oorspronkelijk sportniveau?

- a) 3 maanden
- b) 6 maanden
- c) 9 maanden
- d) 12 maanden
- e) 12+ maanden

33) Worden er vragenlijsten afgenomen tijdens de revalidatie van een patiënt na een voorste kruisband reconstructie?

- a) Neen
- b) Ja:

Welke vragenlijst(en) worden er afgenomen?
.....
.....
.....
.....

34) Wie neemt de beslissing bij het merendeel van uw patiënten na een voorste kruisband reconstructie of ze mogen terugkeren naar hun oorspronkelijk sportniveau?

.....

35) Ziet u uw patiënt terug na terugkeer naar zijn oorspronkelijk sportniveau voor verdere opvolging?

- a) Neen
- b) Ja:

Hoelang volgt u uw patiënt gemiddeld op na zijn terugkeer naar zijn oorspronkelijk sportniveau?
.....

36) Heeft u contact met de chirurg van uw patiënt na een voorste kruisband reconstructie doorheen de revalidatie?

- a) Neen
- b) Ja:

Hoe frequent hebt u contact met de chirurg?

.....
Hoe tevreden bent u van deze communicatie op een schaal van 0 (helemaal niet tevreden)
tot en met 10 (volledig tevreden)?

0 1 2 3 4 5 6 7 8 9 10

37) In welke mate heeft u zelfvertrouwen in het therapeutische handelen van deze patiëntengroep op een schaal van 0 (geen zelfvertrouwen) tot en met 10 (heel zelfvertrouwen)?

0 1 2 3 4 5 6 7 8 9 10

38) Hoe succesvol acht u zichzelf in het behandelen van patiënten na een voorste kruisband reconstructie op een schaal van 0 (niet succesvol) tot en met 10 (heel succesvol)?

0 1 2 3 4 5 6 7 8 9 10

BEOORDELING VAN DE WETENSCHAPPELIJKE STAGE-DEEL 1

Wetenschappelijke stage deel 1 (Masterproef deel 1- MP1) van de Master of Science in de revalidatiewetenschappen en de kinesithérapie bestaat uit **twee delen**:

- 1) De literatuurstudie volgens een welomschreven methodiek.
- 2) Het opstellen van het onderzoeksprotocol ter voorbereiding van masterproef deel 2.

Omschrijving van de **evaluatie**:

- 1) 80% van het eindcijfer wordt door de promotor in samenspraak met de copromotor gegeven op grond het product en van het proces dat de student doorliep om de MP1 te realiseren, met name het zelfstandig uitvoeren van de literatuurstudie en het zelfstandig opstellen van het onderzoeksprotocol, alsook de kwaliteit van academisch schrijven.
- 2) 20% van het eindcijfer wordt door de interne jury gegeven op grond van het ingeleverde product en de mondelinge presentatie waarin de student zijn/haar proces toelicht.

In de beoordeling dient onderscheid gemaakt te worden tussen studenten die, in samenspraak met de promotor, een nieuw onderzoek uitwerkten en studenten die instapten in een lopend onderzoek of zich baseren op voorgaande masterproeven of onderzoeksprojecten. Van deze laatste worden bijkomende inspanningen verwacht zoals bv. het bijsturen van de eerder geformuleerde onderzoeksvraag, de kritische reflectie over het onderzoeksdesign, het uitvoeren van een pilotexperiment.

Beoordelingskader:

Beoordelingskader: criteria op 20	
18-20	Excellente modelmasterproef
16-17	Uitmuntende masterproef
14-15	Zeer goede masterproef die zich onderscheidt van de andere masterproeven
12-13	Goede masterproef
10-11	Voldoende masterproef die op een aantal vlakken zwak scoort
8-9	Onvoldoende masterproef die niet aan de minimumnormen voldoet
6-7	Ernstig onvoldoende masterproef of een masterproef die slechts één van beide bevat
≤ 5	Ernstig onvoldoende en onvolledige masterproef

ZELFEVALUATIERAPPORT

Onderstaand zelfevaluatie rapport is een hulpmiddel om je wetenschappelijke stage -deel 1 zelfstandig te organiseren. Bepaal zelf je deadlines, evalueer en reflecteer over je werkwijze en over de diepgang van je werk. Check de deadlines regelmatig. Toets ze eventueel af bij je (co)promotor. Succes!

Prof. M. Vanvuchelen, coördinerende verantwoordelijke wetenschappelijke stages

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KNOWLEDGE IN ACTION

ZELFEVALUATIERAPPORT

WETENSCHAPPELIJKE STAGE - DEEL 1

RWK

Naam & Voornaam STUDENT: Laurence Guilliams & Yasmine Vandewalle

Naam & Voornaam (CO)PROMOTOR & PROMOTOR: Promotor Bart Dingenen, copromotor Liesbet De Baets

TITEL masterproef (Nederlandstalig of Engels): Current management strategies applied by Flemish physiotherapists in the rehabilitation of anterior cruciate ligament reconstruction: an online survey

LITERATUURSTUDIE	Gestelde deadline	Behaald op	Reflectie
De belangrijkste concepten en conceptuele kaders van het onderzoeksdomein uitdiepen en verwerken	Eind januari	Eind januari	Behaald
De belangrijkste informatie opzoeken als inleiding op de onderzoeksvraag van de literatuurstudie	Eind januari	Eind januari	Behaald
De opzoekbare onderzoeksvraag identificeren en helder formuleren in functie van de literatuurstudie	Eind januari	Eind januari	Behaald
De zoekstrategie op systematische wijze uitvoeren in relevante databanken	Eind januari	Eind januari	Behaald
De kwaliteitsbeoordeling van de artikels diepgaand uitvoeren	Eind januari	Eind januari	Behaald
De data-extractie grondig uitvoeren	Eind januari	Eind januari	Behaald
De bevindingen integreren tot een synthese	Eind januari	Eind januari	Behaald

ONDERZOEKSPROTOCOL	Gestelde deadline	Behaald op	Reflectie
De onderzoeksvraag in functie van het onderzoeksprotocol identificeren	Eind Mei	Eind mei	Behaald
Het onderzoeksdesign bepalen en/of kritisch reflecteren over bestaande onderzoeksdesign	Eind mei	Eind mei	Behaald
De methodesectie (participanten, interventie, uitkomstmaten, data-analyse) uitwerken	Eind mei	Eind mei	Behaald

ACADEMISCHE SCHRIJVEN	Gestelde deadline	Behaald op	Reflectie
Het abstract tot he point schrijven	Eind mei	Eind mei	Behaald
De inleiding van de literatuurstudie logisch opbouwen	Eind januari	Eind januari	Behaald
De methodesectie van de literatuurstudie transparant weergegeven	Eind januari	Eind januari	Behaald
De resultatensectie afstemmen op de onderzoeksvragen	April	April	Behaald
In de discussiesectie de bekomen resultaten in een wetenschappelijke tekst integreren en synthetiseren	April-Mei	April-Mei	Behaald
Het onderzoeksprotocol deskundig technisch uitschrijven	Eind mei	Eind mei	Behaald
Referenties correct en volledig weergeven	Mei	Mei	Behaald

ZELFSTUREND EN WETENSCHAPPELIJK DENLEN EN HANDELEN	Aanvangsfase	Tussentijdse fase	Eindfase
Een realistische planning opmaken, deadlines stellen en opvolgen	G	ZG	ZG
Initiatief en verantwoordelijkheid opnemen ten aanzien van de realisatie van de wetenschappelijke stage	G	ZG	ZG
Kritisch wetenschappelijk denken	G	G	ZG

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De contacten met de promotor voorbereiden en efficiënt benutten	G	ZG	ZG
De richtlijnen van de wetenschappelijke stage autonoom opvolgen en toepassen	G	ZG	ZG
De communicatie met de medestudent helder en transparant voeren	G	G	G
De communicatie met de promotor/copromotor helder en transparant voeren	ZG	ZG	ZG
Andere verdiensten:	/	/	/



VOORTGANGSFORMULIER WETENSCHAPPELIJKE STAGE DEEL 1

DATUM	INHOUD OVERLEG	HANDTEKENINGEN
25/10/17	Ondertekenen Contract.	Promotor: Copromotor: Student(e): Student(e):
31/10/17	Opstart + deadlines	Promotor: Copromotor: Student(e): Student(e):
5/1/18	Overleg inleiding	Promotor: Copromotor: Student(e): Student(e):
11/1/18	Overleg zoekstrategie	Promotor: Copromotor: Student(e): Student(e):
29/1/18	Bespreking inleiding + geïnccludeerde artikels + checklist.	Promotor: Copromotor: Student(e): Student(e):
9/4/18	Bespreking protocol (vragenlijst)	Promotor: Copromotor: Student(e): Student(e):
12/4/18	Bespreking protocol vervolg (vragenlijst)	Promotor: Copromotor: Student(e): Student(e):
19/4/18	Bespreking protocol vervolg (alle onderdelen)	Promotor: Copromotor: Student(e): Student(e):
24/5/18	Bespreking verbeterde discussie & resultaten	Promotor: Copromotor: Student(e): Student(e):
		Promotor: Copromotor: Student(e): Student(e):