

JYU DISSERTATIONS 1131

Minna Roine

Direct Access Physiotherapy

Educational, Clinical and Experiential Perspectives



JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

JYU DISSERTATIONS 1131

Minna Roine

Direct Access Physiotherapy
Educational, Clinical and Experiential Perspectives

Esitetään Jyväskylän yliopiston liikuntatieteellisen tiedekunnan suostumuksella
julkisesti tarkastettavaksi Musican auditoriossa M103
kesäkuun 12. päivänä 2026 kello 12.

Academic dissertation to be publicly discussed, by permission of
the Faculty of Sport and Health Sciences of the University of Jyväskylä,
in building Musica, auditorium M103, on June 12, 2026, at 12 o'clock noon.



JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

JYVÄSKYLÄ 2026

Editors

Kristiina Ojala

Faculty of Sport and Health Sciences, University of Jyväskylä

Päivi Vuorio

Open Science Centre, University of Jyväskylä

Cover figure, figure 4 and arrows in figure 3: artist Noora Penttinen

Copyright © 2026, by author and University of Jyväskylä

ISBN 978-952-86-1565-1 (PDF)

URN:ISBN:978-952-86-1565-1

ISSN 2489-9003

Permanent link to this publication: <http://urn.fi/URN:ISBN:978-952-86-1565-1>

“After all, training is about the trainer training the trainees and then the trainee has to pass it on to the client, that’s the essential thing. Training is useless if it doesn’t show in client work.” (Educator 7 in Study I)

ABSTRACT

Roine, Minna

Direct access physiotherapy: educational, clinical and experiential perspectives

Musculoskeletal conditions, low back pain in particular, have come to pose a great challenge to health care, on both the system and individual level. Direct access physiotherapy aims to provide timely interventions for musculoskeletal clients with the support of trained and experienced physiotherapists. Direct access is increasingly utilized for managing musculoskeletal conditions, yet its implementation is still not fully integrated into clinical practice. The purpose of this dissertation was to examine the multifaceted perspectives on direct access physiotherapy by exploring the views and experiences of three key stakeholder groups – educators, physiotherapists and clients.

This dissertation consists of three original qualitative studies and a synthesis of their findings. The first study examined educators' perceptions of physiotherapists' competencies and education, using semi-structured interviews and reflexive thematic analysis. The second study examined how physiotherapists perceive their clinical reasoning when they assess their low back pain client, through semi-structured interviews and theory-driven content analysis. The third study explored clients' experiences of self-management, fear of movement and pain during the 12 months after their physiotherapy, through digital questionnaires and data-driven content analysis.

The main finding of the studies is a deeper contextual and educationally applicable framework of direct access that consists of three central perspectives that emerged from the perceptions of the key stakeholder groups: (1) physiotherapists' expertise (educational perspective), (2) clinical reasoning (clinical perspective), and (3) the establishment of meaningful encounters that promote self-care (experiential perspective). This framework positions the client at the centre of the process, as both a receiver of knowledge and an active participant.

The findings indicate that physiotherapists can encourage their clients to actively engage in their self-care by learning and utilizing context-specific direct access competencies. This dissertation provides new insights into client-centred care and supports ongoing professional development within the field of physiotherapy.

Keywords: direct access physiotherapy, clinical reasoning, competence, low back pain, musculoskeletal diseases

TIIVISTELMÄ (ABSTRACT IN FINNISH)

Roine, Minna

Fysioterapeutin suoravastaanotto kouluttajien, fysioterapeuttien ja asiakkaiden näkökulmista

Tuki- ja liikuntaelinvaivat, erityisesti alaselkäkipu, ovat suuri haaste terveydenhuollossa sekä järjestelmä- että yksilötasolla. Fysioterapeutin suoravastaanotolla tavoitellaan oikea-aikaista hoitoa ja ohjausta vaivoihin koulutettujen fysioterapeuttien toimesta. Suoravastaanottoa hyödynnetään yhä enemmän, mutta se ei ole vielä täysin integroitunut osaksi terveydenhuollon käytäntöjä. Tämä väitöskirja tutki suoravastaanottoa kolmen keskeisen sidosryhmän – kouluttajien, fysioterapeuttien ja asiakkaiden – näkökulmista.

Väitöskirja sisältää kolme alkuperäistä laadullista osatutkimusta sekä niiden tulosten synteesin. Ensimmäinen osatutkimus tutki kouluttajien näkemyksiä fysioterapeuttien osaamisesta ja koulutuksesta puolistrukturoitujen haastattelujen ja refleksiivisen temaattisen analyysin avulla. Toinen osatutkimus selvitti fysioterapeuttien näkemyksiä kliinisestä päättelystään arvioidessaan suoravastaanotolla asiakasta, jolla on alaselkäkipu. Aineisto kerättiin puolistrukturoiduilla haastatteluilla ja analysoitiin teorialähtöisesti sisällönanalyysillä. Kolmas osatutkimus tarkasteli asiakkaiden näkemyksiä omahoidosta, liikkumisen pelosta sekä kivusta vuoden seurantajakson aikana fysioterapeutilla käynnin jälkeen. Aineisto kerättiin sähköisillä kyselylomakkeilla ja analysoitiin aineistolähtöisellä sisällönanalyysillä.

Päälöydös on suoravastaanoton syventävä kontekstuaalinen ja koulutuksellisesti soveltuva viitekehys, joka muodostuu keskeisistä sidosryhmien näkemyksistä: (1) fysioterapeutin asiantuntijuus (koulutusnäkökulma), (2) kliininen päättely (kliininen näkökulma), ja (3) merkityksellinen kohtaaminen (kokemuksellinen näkökulma). Viitekehyksessä asiakas on keskiössä, samanaikaisesti tiedon vastaanottajana ja aktiivisena toimijana.

Tulosten perusteella fysioterapeutit voivat tukea asiakkaiden aktiivista toipumista oppimalla ja hyödyntämällä suoravastaanoton kontekstisidonnaista osaamistaan. Väitöskirja tuottaa uutta tietoa asiakaskeskeisen fysioterapian ja ohjauksen jatkuvaan ammatilliseen kehittämiseen.

Avainsanat: suoravastaanotto, kliininen päättely, osaaminen, alaselkäkipu, tuki- ja liikuntaelinten taudit

Author

Minna Roine
Faculty of Sport and Health Sciences
University of Jyväskylä
Finland
mmroine@gmail.com
ORCID: 0000-0003-3388-6592

Supervisors

Senior lecturer Pirjo Vuoskoski, PhD
Faculty of Sport and Health Sciences
University of Jyväskylä
Finland
(since 2nd of November 2022)

Senior lecturer Matti Munukka, PhD
Faculty of Sport and Health Sciences
University of Jyväskylä
(since 2nd of November 2022)

Professor emeritus Ari Heinonen, PhD
Faculty of Sport and Health Sciences
University of Jyväskylä

Senior lecturer Tuulikki Sjögren, PhD, Title of Docent
Faculty of Sport and Health Sciences
University of Jyväskylä
(until 2nd of November 2022)

**Preliminary
Examiners**

Professor emerita Wenche Schrøder Bjorbækmo, PhD
Department of Physiotherapy
Oslo Metropolitan University
Norway

Professor Mari Kangasniemi, PhD
Department of Nursing Science
University of Turku
Finland

Opponent

Professor Mari Lundberg, PhD
Department of Health Promotion
Sophiahemmet University
Sweden

ACKNOWLEDGEMENTS

My interest in physiotherapy research began during my Master of Science Physiotherapy studies in Cambridge UK back in 2013. This interest was reignited when we began implementing direct access physiotherapy at my workplace, a special health care hospital, as a joint project with the municipalities then in 2017. I had the privilege of working closely with our continuing education providers, Eira Karvonen and Markku Paatelma, renowned Finnish pioneers in the field of physiotherapy, who were among the early advocates of the direct access practice in our country in the early 2000s.

At that time, Eira was completing her own PhD studies while I was undertaking their continuing education course, and I was fortunate to have the opportunity to co-author one of her articles. During this period, I also participated in a development project together with the direct access network in Southern Finland collaborative area, which allowed me to connect with direct access physiotherapists and policy makers at a national level. All these encounters highlighted the need to develop a deeper understanding on real-life direct access physiotherapy. Especially meaningful for me was gaining insight into clients' experiences, as well as developing a greater understanding of the competencies of direct access physiotherapists, especially given the national variation in continuing education and practice. It was through these experiences that the ideas for my research plan were formed. My deepest gratitude goes to Eira – you have been my enduring co-author, mentor, and friend throughout this entire journey.

Of course, I wish to thank my supervisors. I am deeply grateful to my principal supervisor Pirjo Vuoskoski, PhD for her expert knowledge and unwavering patience. Thank you Pipsa for opening my eyes to the significance of qualitative research – not only within the field of physiotherapy but also in science and in life. I also thank professor emeritus Ari Heinonen, PhD, for walking this path alongside me from the very beginning and guiding me in the world of quantitative research. Thank you Matti Munukka, PhD, for your expertise, patience, and precision. I also wish to thank Tuulikki Sjögren, PhD for starting this journey with me, and my other co-authors Anna-Maija Jäppinen and Hilikka Korpi for their important contributions to the original publications. I also thank Riku Nikander for providing support and guidance as an external member of this research team.

I am extremely thankful for the official reviewers of this thesis, Professor emerita Wenche Schrøder Bjorbækmo, PhD and Professor Mari Kangasniemi, PhD. Thank you for your time and precision. Your thoughtful critiques and constructive comments were greatly appreciated and contributed significantly to improving this dissertation. I am particularly grateful for Professor Mari Lundberg for serving as my opponent. Additionally, I would like to thank University Lecturer Kristiina Ojala for the scientific editing of my thesis.

I also wish to thank my managers at Helsinki University Hospital (HUS) as well as HUS ethical committee and data services for enabling to conduct this

study. Furthermore, I would like to thank physiotherapy managers Ritva Mönkkönen from Siunsote, and Maarit Vihko-Mäkinen from Keusote at that time. They were actively promoting direct access within their organizations and helped open doors to research opportunities in the real-life physiotherapy settings. Thank you also physiotherapist Maarit Kempas from Siunsote for effective participant recruitment and all the help and support during these years. Of course, thanks to all participants in original studies – your reflections have been invaluable. I also wish to acknowledge my peers within our faculty, and give special thanks to HITU group for discussions and support. I also wish to thank Työsuojelurahasto (the Finnish Work Environment Fund), my employer HUS, especially the former Hyvinkää hospital district area and HUS Nursing Research Center as well as Finnish Association of Physiotherapists for making this PhD possible by funding me.

My heartfelt thanks go to Heidi Riska, PhD, you became my dear friend along this journey and encouraged me every step of the way – we did it! I also wish to thank the most important people in my life: my dear friends and family, especially my sister Nelli, my partner Mikko, and my beloved Dad, Mikko Roine, who unexpectedly passed away before I got to finish this process. Rest in peace Dad.

Helsinki 5.5.2026
Minna Roine

ORIGINAL PUBLICATIONS AND AUTHOR CONTRIBUTION

This doctoral dissertation is based on the following three original publications, which will be referred to by their Roman numerals.

- I Roine, M., Jäppinen, A.-M., Karvonen, E., Munukka, M., & Vuoskoski, P. (2024). Physiotherapy educators' perceptions of physiotherapists' competencies and continuing education in the practice of musculoskeletal physiotherapy direct access. *Physiotherapy Theory and Practice*, 41(5), 1035–1047.
<https://doi.org/10.1080/09593985.2024.2394512>
- II Roine, M., Sjögren, T., Korpi, H., Jäppinen, A.-M., & Karvonen, E. (2023). Physiotherapists' clinical reasoning in examination of clients with low back pain in direct access practice: a theory-driven qualitative content analysis. *European Journal of Physiotherapy*, 26(3), 160–169.
<https://doi.org/10.1080/21679169.2023.2219694>
- III Roine, M., Karvonen, E., Munukka, M., Heinonen A. & Vuoskoski, P. (2026). Self-management, fear of movement, and pain in working adults with low back pain: a qualitative longitudinal study. *Journal of Pain Research*, 19(1-16).
<https://doi.org/10.2147/JPR.S549844>

AUTHOR CONTRIBUTION

As the first author of the original publications considering the comments of my co-authors, I was mainly responsible for all the phases of each original study I, II and III. I drafted the study questions, obtained the ethical approval and research permits, gathered the data and was mainly responsible for the data analyses of each publication, as well as for writing the manuscripts.

FIGURES

FIGURE 1 PRISMA flow chart literature search.....19

FIGURE 2 Study design of dissertation.33

FIGURE 3 Shaping and transferring context-specific competencies from
educators to physiotherapists and then to clients.46

FIGURE 4 Client adopting an active role in their own recovery in direct
access physiotherapy.47

TABLES

TABLE 1 Search strategy for each queried database.18

TABLE 2 Data collection, participants and analysis methods.....34

TABLE 3 Interaction as grounds for meaningful clinical reasoning
(modified from Roine et al., 2024).....42

TABLE 4 Continuing professional development in an expert role
(modified from Roine et al., 2024).....43

ABBREVIATIONS

CPD	Continuing professional development
CR	Clinical reasoning
DA	Direct access
EBP	Evidence-based practice
FOM	Fear of movement
LBP	Low back pain
MSK	Musculoskeletal
QCA	Qualitative content analysis
TA	Therapeutic alliance

STATEMENT ON USING GENERATIVE AI

I have not used generative AI applications in my doctoral dissertation.

CONTENTS

ABSTRACT

TIIVISTELMÄ (ABSTRACT IN FINNISH)

FOREWORD

ORIGINAL PUBLICATIONS AND AUTHOR CONTRIBUTION

FIGURES AND TABLES

ABBREVIATIONS

STATEMENT ON USING GENERATIVE AI

CONTENTS

1	INTRODUCTION	15
2	THEORETICAL PERSPECTIVES ON DIRECT ACCESS PHYSIOTHERAPY	17
2.1	Overview of the literature on direct access physiotherapy	17
2.2	Direct access physiotherapy	20
2.3	Education in direct access physiotherapy	21
2.3.1	Finding the current knowledge base on competencies in direct access physiotherapy	22
2.3.2	Clinical reasoning	23
2.4	Direct access to musculoskeletal physiotherapy	25
2.4.1	Musculoskeletal conditions	26
2.4.2	Low back pain	27
2.5	Summary of the literature	27
3	PURPOSE OF THE STUDY	29
4	METHODOLOGY	30
4.1	Ontological and epistemological starting points	30
4.2	Study design	31
4.3	Participants and data collection	34
4.3.1	Study I	35
4.3.2	Study II	36
4.3.3	Study III	36
4.4	Data analyses	37
4.4.1	Reflexive thematic analysis (Study I)	37
4.4.2	Theory-driven qualitative content analysis (Study II)	39
4.4.3	Data-driven qualitative content analysis (Study III)	40
5	FINDINGS	41
5.1	Educators' perceptions (Study I)	41
5.2	Physiotherapists' perceptions (Study II)	44
5.3	Clients' perceptions (Study III)	44
5.4	Synthesis of the key findings	45

6	DISCUSSION	48
6.1	Theoretical considerations in direct access physiotherapy	48
6.1.1	Direct access physiotherapists' expertise	49
6.1.2	Clinical reasoning in direct access physiotherapy	51
6.1.3	Meaningful encounters that promote self-care.....	53
6.1.4	Insights into developing direct access practice.....	56
6.2	Methodological reflections	58
6.2.1	Trustworthiness.....	58
6.2.2	Researcher positionality	58
6.2.3	Strengths and limitations	59
6.2.4	Ethical issues	60
6.3	Challenges for future research.....	60
7	MAIN FINDINGS AND CONCLUSIONS	62
	YHTEENVETO (SUMMARY IN FINNISH)	64
	REFERENCES.....	66
	APPENDICES.....	87
	Appendix 1. Table of results of scoping literature review.....	87
	ORIGINAL PUBLICATIONS	

1 INTRODUCTION

Musculoskeletal (MSK) conditions are the leading contributor to disability worldwide, with low back pain (LBP) being the greatest (World Health Organization, 2022). As they limit mobility, functioning and participation, and can cause premature retirement from work and lower levels of wellbeing, MSK conditions require rehabilitation (World Health Organization, 2022), and therefore create a global challenge both in the field of physiotherapy and among individuals.

Direct access (DA) physiotherapy is a model of care that aims to address this challenge and is already widely utilized in health care across the world (World Physiotherapy, 2023). In the Finnish health care context, DA refers to a model in which, during a single brief encounter, a physiotherapist assesses the client's condition, provides treatment and offers individually tailored guidance for self-care (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017). This fast-paced model of care requires the physiotherapist to have specific expertise and advanced clinical reasoning (CR) skills from the physiotherapist, and its aim is to further help the client actively engage in self-care.

Physiotherapists are known to assess and treat clients with MSK conditions independently and effectively (Downie et al., 2019; Sayer et al., 2018). Entry-level education usually prepares physiotherapists to work as autonomous practitioners and the primary contact in DA settings (World Physiotherapy, 2023). However, throughout Finland, it is recommended that physiotherapists have two years of work experience with MSK clients and have completed a continuing education course on DA in addition to their entry-level education to ensure that their competencies are in line with the demands of DA practices (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017). As practices and educations vary both globally and nationally, the competencies of DA physiotherapists have remained an understudied area. The unique viewpoint of the educators who train DA physiotherapists has also received limited attention.

Although there is strong evidence supporting the high-value, low-cost rehabilitative approaches that are typically central to DA practice – encouraging physical activity and reducing pain-related fear – low-value and high-cost care (e.g. unnecessary imaging) remain common procedures in health care systems (Corp et al., 2021; Foster et al., 2018; Simula et al., 2024). As DA physiotherapy serves as an early intervention for pain and encourages self-care in the acute phase of MSK conditions, the guidance and treatment provided during these encounters is crucial to help individuals to adopt rehabilitative strategies and take an active role in their own recovery. This is notable also in clinical practice while partaking the continuing DA education as experienced by the author of this dissertation. However, more nuanced knowledge about clients' experiences after they have received physiotherapy is still needed.

The purpose of this dissertation is therefore to examine the multifaceted perspectives on DA physiotherapy by exploring the views and experiences of the three key stakeholder groups – educators, physiotherapists and clients. It also seeks to identify ways in which to further strengthen and develop DA practice.

2 THEORETICAL PERSPECTIVES ON DIRECT ACCESS PHYSIOTHERAPY

This section provides the theoretical background of the main themes of this dissertation. It begins with a review of the literature, which establishes its broader context. It then presents an overview of the DA physiotherapy concept, and a discussion on education within DA practice, which pays particular attention to physiotherapists' essential competencies and the role of CR. This is followed by a brief overview of current clinical practices and the recommended treatment and self-care guidelines for MSK conditions, which focuses specifically on LBP as the most common client group in DA physiotherapy.

2.1 Overview of the literature on direct access physiotherapy

Direct access physiotherapy has been studied from differing viewpoints globally. As there is already a wide base of knowledge on certain aspects of DA, I have compiled the search results of the existing literature as an overview (Appendix 1: Table of results of scoping literature review).

The literature search involved a systematic search of the common CINAHL, MEDLINE (Ovid) and Web of Science databases. The Cochrane, PEDro and Scopus databases, and reference lists of included articles were also hand searched to identify any possibly overlooked studies. The search strategy, which is depicted in detail in Table 1, was to identify all the studies that have examined DA physiotherapy received by adult (aged 18 and over) clients with MSK conditions in primary or occupational health care services or an emergency department.

TABLE 1 Search strategy for each queried database.

Database	Search strategy
CINAHL <i>searched 16.4.2025</i>	• ("direct access" OR "direct-access" OR "self-referral" OR "self referral" OR "self referred" OR "self-referred" OR "primary contact" OR "first contact" OR "first provider" OR "primary assessor") AND ("physiotherap*" OR "physical therap*") • Search limited to title and abstract, English language, peer-reviewed, adult participants, 2014-2025, equivalent subjects not applied
MEDLINE (Ovid) <i>searched 17.4.2025</i>	• ("direct access" OR "direct-access" OR "self-referral" OR "self referral" OR "self referred" OR "self-referred" OR "primary contact" OR "first provider") AND ("physiotherap*" OR "physical therap*") • Search limited to title, English language, 2014-2025
Web of Science <i>searched 22.4.2025</i>	• ("direct access" OR "direct-access" OR "self-referral" OR "self referral" OR "self referred" OR "self-referred" OR "primary contact" OR "first provider" OR "primary assessor") AND ("physiotherap*" OR "physical therap*") • Search limited to title, English language, article or review article document types, 2014-2025

Only peer-reviewed journal articles that had the full text available, that had a Finnish Publication Forum level of 1 to 3 (Publication Forum, 2022), were written in the English or Finnish language and published between January 1, 2014 and April 2025 were included. This timeline was chosen because the first known systematic review on DA, that was published in January 2014. Studies that had participants other than adult MSK clients; study types such as client case reports, study protocols or pilot trials, editorials, commentaries or conference presentations; studies that addressed diagnostic imaging (which is outside of the scope of DA in Finland) and publications linked to this dissertation were excluded. This overview of the literature did not assess the quality of the included studies. Figure 1 presents a PRISMA flowchart of the literature search.

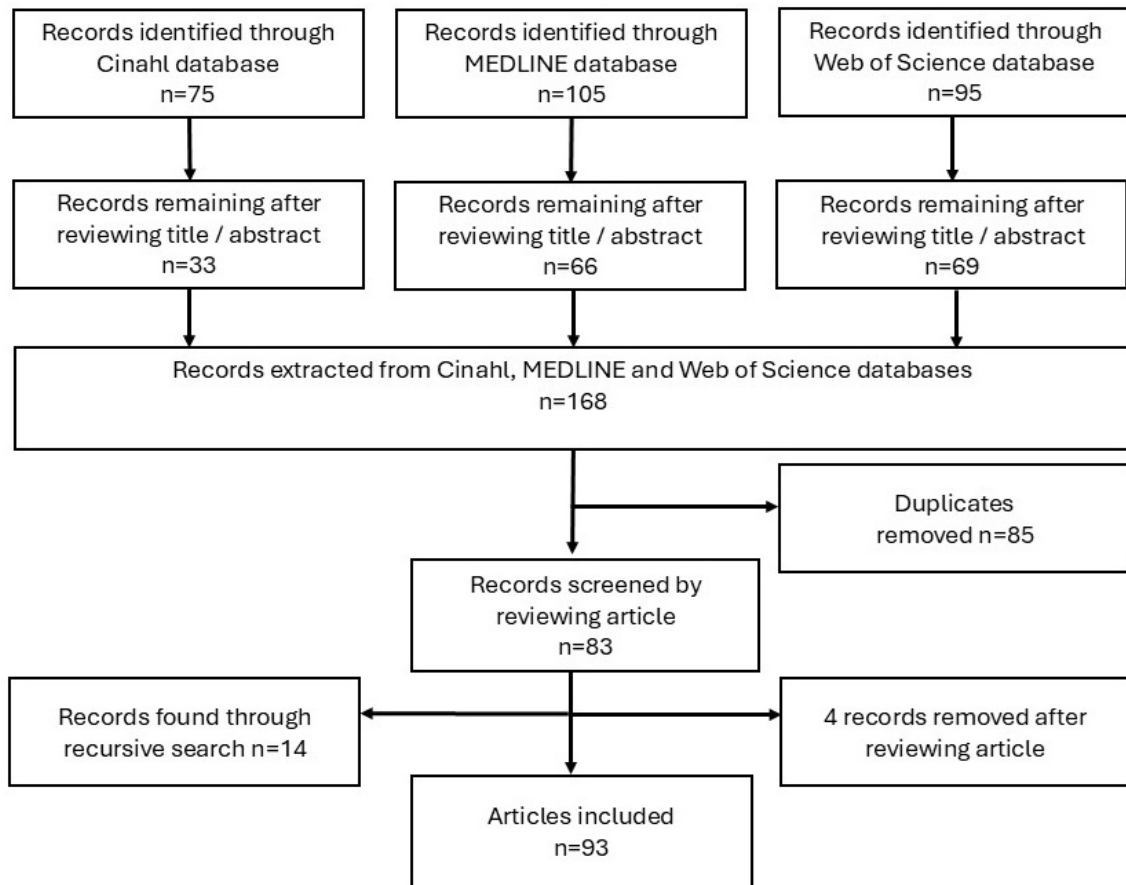


FIGURE 1 PRISMA flow chart literature search.

Appendix 1 presents the results of the search in a comprehensive table (Table of the results of the scoping literature review), in which the current research literature is sectioned as perspectives with respective sub-perspectives, with a brief synthesis of the findings of the studies of each perspective. Of the selected 93 studies, only 25 were qualitative.

The perspectives that the current quantitative literature on DA highlights, are client outcomes and costs. Existing research has primarily focused on comparing DA as an alternative model of care to the traditional medical (physician-first) model. Different forms of DA are increasing, as is the research on the related areas, such as remote DA and utilizing DA services in emergency departments or physiotherapists being primary assessors in cases of specific medical conditions. The perspectives that the current qualitative literature highlights are clients' experiences of DA as a model of care in the health care systems and physiotherapists' perceptions of their professional role.

This comprehensive overview of the existing research demonstrates that qualitative studies of DA physiotherapy are still scarce. In particular, knowledge on the competencies and education of DA physiotherapists and their clinical practice, as well as the experiences of the clients who have received physiotherapy as DA services, is still limited. The role of educators in shaping the clinical practice through continuing education has also received limited

attention. The next section presents an overview of the current perspectives on DA.

2.2 Direct access physiotherapy

Direct access physiotherapy is a globally utilized model of care, and generally means that physiotherapy services are available to clients in health service delivery systems without a referral (World Physiotherapy, 2023). In Finland, DA is supported by legislative frameworks such as the Health Care Act (Finlex, 2010), the Healthcare Professionals Act (Finlex, 1994), and the Occupational Healthcare Act (Finlex, 2021), as well as the national-level recommendations that aim to guide DA education and practice (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017).

The literature contains many terms for DA physiotherapy. DA is known as *patient/client self-referral*, and in DA, the physiotherapist acts as the primary or first point of contact for the client (World Physiotherapy, 2023). Terms such as *physiotherapy-led care*, and *physiotherapist as the primary assessor or first provider* can also be found in the literature (Ho-Henriksson et al., 2022; Severijns et al., 2024). Physiotherapists who work in DA settings are in some countries referred to as *extended scope practitioners* or *advanced-scope practitioners* (Fennelly et al., 2018). DA may also be known as *advanced practice physiotherapy*, in which physiotherapists work beyond entry-to-practice levels (Tawiah et al., 2021).

Education, exercise and physiotherapy constitute the three key components of evidence-based practice (EBP) in the treatment of MSK conditions (Fullen et al., 2023). These approaches are available to clients using DA. Increasing evidence suggests that DA physiotherapy may reduce health care costs (Hon et al., 2021; Riley et al., 2016; Yang et al., 2021), improve functional and work-related client outcomes (Gagnon et al., 2021), and enhance client satisfaction (Henning et al., 2024; Karvonen, Paatelma, & Heinonen, 2017). DA physiotherapy has also shown not to increase harm or risks in comparison to the traditional medical ‘physician-first’ model of care (Downie et al., 2019; Gallotti et al., 2023; Ojha et al., 2014; Piscitelli et al., 2018).

In Finland, DA has been utilized in health care settings since 2000 (Karvonen, Paatelma, Laitinen-Väänänen, et al., 2017). However, according to national tacit knowledge and unpublished studies, implementing and maintaining it as a permanent model of care has been difficult in multidisciplinary clinical settings. For example, according to the DA network in Southern Finland collaborative area, problems have arisen in practice due to the practicalities of assessing the need for treatment, unclear referral criteria, a lack of management commitment and health care staff turnover. Similar challenges have been identified in the UK, where clients’ and other health care professionals’ understanding of the scope of physiotherapy and the DA pathway have shown to be limited (Igawesi-Chidobe et al., 2021). Client awareness of the DA pathways

is also poor, and the public still seems to prefer seeing a physician first (Lamb et al., 2024).

Several years ago, The Lancet published a Low Back Pain Series that advocated for greater use of non-pharmacological options, such as rehabilitation and self-management as high-value low-cost treatment for LBP clients (S. Clark & Horton, 2018). Since then, an update to the series (Buchbinder et al., 2020), in the form of systematic reviews of clinical practice guidelines for MSK pain (Lin et al., 2020) and LBP (Oliveira et al., 2018) has identified similar rehabilitative management recommendations. These entirely non-pharmacological treatments, such as information and education, advice on physical activity, return-to-work interventions and exercise interventions, are strongly recommended for treating LBP throughout Europe (Corp et al., 2021).

Yet, despite these established recommendations, much of contemporary LBP care in real-world clinical settings remains ineffective and consists of high-cost, low-value treatment options such as imaging, opioids and surgery, which causes unnecessary costs for health care systems (Buchbinder et al., 2020). Simula et al. (2024) have further noted that the rehabilitative evidence-informed approaches, such as promoting physical activity and reducing pain-related fear, have not been fully implemented in the delivery of health care in Finland.

The growing understanding of DA supports its use as a high-value, low-cost care model for MSK clients. However, implementing it remains challenging, as does establishing it as a routine component of health care practice in Finland. Although the evidence supporting DA is already robust, it has not been fully translated into clinical practice. Therefore, we need more experiential knowledge to enable us to understand DA more deeply and to facilitate its integration into everyday care.

2.3 Education in direct access physiotherapy

Direct access is an advanced, broad-scoped practice model in which trained physiotherapists hold primary responsibility for the examination and management of MSK clients (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017). In the Finnish health care context, DA represents an expanded practice that incorporates tasks and responsibilities that have traditionally belonged to other health care professionals, and extends beyond the scope of conventional physiotherapy. Consequently, physiotherapists working in DA roles require a wider and more advanced set of competencies than those who practice in conventional physiotherapy settings.

During a DA appointment, the physiotherapist determines the treatment path of the client, starting with an assessment and moving forward to treatment, guidance and onward referral if needed (World Physiotherapy, 2023). In Finland, DA physiotherapists are authorized to write short sick leaves (sick notes) and to recommend over-the-counter medication dosages – tasks that are not typically

within the scope of conventional physiotherapy (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017).

Globally, the scope of practice in DA settings varies across and even within countries (Tawiah et al., 2021). Even though in many countries, entry-level education prepares physiotherapists to work as the primary contact for the clients, in Finland it is recommended that they have at least two years of work experience with MSK clients, and that they complete a DA continuing education course worth a minimum of 15 credits of the European Credit Transfer and Accumulation System (ECTS) (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017; World Physiotherapy, 2023).

The specific competencies of DA physiotherapists have not yet been identified in Finland, but the general core competencies for the physiotherapy profession are pinpointed in a report by the Finnish Association of Physiotherapists: examination and CR; teaching and counselling; therapeutic competence; and competence in technology, ethics, interaction and accessibility (Finnish Association of Physiotherapists, 2016). Continuing education courses on DA aim to specifically enhance the examination and CR competencies (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017).

2.3.1 Finding the current knowledge base on competencies in direct access physiotherapy

This section takes a closer look at the results of the literature search on the current knowledge base of physiotherapists' competencies in DA. As discussed previously, the base of knowledge on DA as a model of care is growing. Yet, the professional competencies, such as CR processes, and other skills of DA physiotherapists, that form the grounds for the practice, have remained as an understudied area until recently. In 2023, an international scoping review identified the core competencies required for first-contact physiotherapists (Vervaeke et al., 2023), and an international competence and capability framework for advanced practice roles was developed (Tawiah et al., 2023; Tawiah et al., 2024), and the competencies required for DA MSK physiotherapy were published in France (Demont et al., 2024; Kechichian, Viain, et al., 2024).

Other competence frameworks are also used to describe the competencies required of physiotherapists working in DA. For example, in the UK, an MSK core capabilities framework is utilized for first point of contact practitioners (Health Education England & NHS, 2018). Australia has a physiotherapy competence framework to guide professional development (Australian Physiotherapy Association, 2023), and in Europe, The European Network of Physiotherapy in Higher Education (ENPHE, 2022) have issued recommendations regarding the competencies required of DA physiotherapists. A scoping review of the literature on first-contact physiotherapists treating adult MSK clients identified 17 competencies, which were categorized under five themes: *Assessment and examination, Management and interventions, Communication,*

Cooperation and collaboration and *Professionalism and leadership* (Vervaeke et al., 2023). A competence framework for advanced practice physiotherapy has also recently been published. This framework is based on existing studies, and consists of 27 competencies that are organized under seven roles: clinical expert practitioner, communicator, collaborator, leader, health advocate, scholar and professional (Tawiah et al., 2024).

Finland currently has no competence framework for MSK DA practice, but has recommendations for continuing education on DA (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017) and core competencies for physiotherapists in general (Finnish Association of Physiotherapists, 2016), as already mentioned. However, the previously presented existing competence frameworks include a variety of skills that seem fitting for the scope of DA MSK physiotherapy in the Finnish context: for example, advanced skills in examining, assessing, reasoning and decision-making; skills in interaction, collaboration and leadership, and skills in providing client-centred care and considering professionalism and professional development.

2.3.2 Clinical reasoning

A key area of competence in DA is CR, as rapid and accurate decision-making is essential in clinical practice. CR refers to the thinking and decision-making processes that underpin professional practice (Higgs & Jones, 2019, 4). It is inherently collaborative and aims to understand the client, their problem and the broader context in which it occurs (Jones, 2018, 5). As a central component of professional autonomy, CR enables the physiotherapist to make informed judgments and to act independently (Higgs & Jones, 2019, 4). It integrates both intuitive and analytical thinking, drawing on first impressions as well as more deliberate thinking. It develops through training and clinical experience, which enhance the physiotherapist's ability to recognize potentially significant cues and to select appropriate actions (Jones, 2018, 4). In physiotherapy, CR underpins expert diagnostic and management decisions (Edwards et al., 2004). Huhn et al (2019) describe CR as "*adaptive, iterative, and collaborative*" with its ultimate aim as being the application of the biopsychosocial approach in client care.

Physiotherapists use different CR strategies in different clinical settings. In MSK practices, the clinical presentations of clients' ailments can be well-defined or highly complex, requiring physiotherapists who work with MSK clients to have a high level of knowledge and skills in a wide range of competencies, such as assessment, management, communication, documentation, and professional, ethical and legal knowhow (Jones, 2018, 5).

Musculoskeletal physiotherapy has four typically used CR models that physiotherapists apply in their practice: the *hypothetico-deductive model*, the *pattern recognition model*, the *narrative model* and the *systematic model*. The hypothetico-deductive model is the most common CR model in physiotherapy, in which the client's initial cues and information lead to a tentative hypothesis that is then tested. It is an ongoing process of forward reasoning, in which the

physiotherapy diagnosis evolves during the examination (Edwards et al., 2004). Using the pattern recognition model, the physiotherapist quickly recognizes features, patterns or symptoms that are specific to certain conditions. The use of this model is more common among experienced physiotherapists (Edwards et al., 2004). The narrative reasoning model aims to enable the physiotherapist to understand the lived experience of the client by letting the clients' narrative guide the examination and management; it is a dialogue and consensus between the client and the physiotherapist. Narrative reasoning can work well in chronic conditions, as understanding the client's beliefs, feelings and health behaviours is helpful in the reasoning process (Edwards et al., 2004). Finally, the systematic CR model involves using a checklist or an examination form for a specific condition and proceeding in the reasoning process systematically toward testing the hypotheses and establishing the physiotherapeutic diagnosis at the end of all the examinations (Baker et al., 2017). It is important to note that CR is a process, a contextual interactive phenomenon rather than a chosen model of practice (Higgs & Jones, 2019, 4,) and physiotherapists use a range of CR strategies in their clinical practice, even with the same client (Edwards et al., 2004).

Western biomedicine, which continues to influence physiotherapy practice, aims to identify the aetiology of a condition by interpreting bodily signs and symptoms in order to determine the biomedical source of pain (Nicholls et al, 2024). EBP in physiotherapy is still typically founded upon positivist paradigm, partially neglecting other philosophical possibilities and use of qualitative data as best practice evidence, even though qualitative perspective is an important dimension of clinical physiotherapy practice (Bjorbækmo and Shaw, 2018). In MSK physiotherapy, CR commonly draws on the International Classification of Functioning, Disability and Health (IFC) model, a holistic framework that encourages physiotherapists to consider contextual and environmental factors in relation to health and functioning (World Health Organization, 2025a; Jones, 2018, 5). However, it has been acknowledged that frameworks such as the ICF may oversimplify client management by breaking down the inherent complexity of clinical processes into discrete, interconnected components (Nicholls et al, 2024). Moreover, EBP should include qualitative evidence – the subjective meanings and experiences – that guide practitioners to understand and interpret personal experiences and behaviours (Lockwood et al, 2015).

In MSK practices the professionals are typically well trained in assessing the physical and environmental factors that contribute to a client's condition, but they are often less proficient in evaluating psychological and social influences (Jones, 2018, 6). Thus, the focus of the CR process may become limited to categorizing the underlying pathology rather than considering the broader set of factors that shape effective management (Jones, 2018, 7). These additional influences include the client beliefs, attitudes, and lived experiences that meaningfully shape their presentation and the client's response to care (Nicholls et al, 2024). Balancing the tension between standardized approaches to EBP and experiential, relational interaction (being-with-another) requires adaptation to each individual client (Bjorbækmo and Shaw, 2018).

The number of research articles that address CR in DA settings is limited. Some studies have focused on decision-making and management decisions (Budtz, Rønn-Smidt, et al., 2021; Keller et al., 2023; Vignaud et al., 2023), but according to my knowledge, the reasoning process has only been examined in two studies (Karvonen, Paatelma, Laitinen-Väänänen, et al., 2017; Langridge et al., 2015). According to these studies, physiotherapists critically justify their reasoning while using the hypothetico-deductive reasoning model, and the processes are influenced by prior thinking, client interaction, formal testing, time, safety and accountability, and external and internal factors (such as policies, and self-perceptions) and 'gut-feelings'.

According to Furze et al. (2022) CR is a fundamental as a competence of physiotherapists and it should be viewed as an explicit domain of competence. Yet, it still does not play a role in physiotherapy education during the career paths from entry level to the post-professional level, and deeper understanding is needed to optimize the best practice for client care (Furze et al., 2022).

2.4 Direct access to musculoskeletal physiotherapy

Although DA has been implemented globally across a range of clinical settings, MSK conditions remain the most commonly managed issues in DA physiotherapy (O.O. Babatunde et al., 2020; Piscitelli et al., 2018). In Finland, care register data in 2024, MSK conditions were mainly managed in the primary care –570 000 visits, and occupational health care –427 000 visits (Finnish Institute for Health and Welfare, 2024). Of the 570 000 primary care visits, 17 000 were made directly to a physiotherapist (Finnish Institute for Health and Welfare, 2024). MSK conditions are also the leading cause for disability pensions among adults over 50 years of age in Finland, and account for one third of all such pensions in this age group (Finnish Centre for Pensions, 2025). Notably, the use of DA services is relatively uncommon among older adults (aged over 65). This underutilization highlights a need to strengthen public health care pathways, as older adults increasingly require timely support for complex comorbidities and age-related needs (Stefane et al., 2022). Given that only a small proportion of MSK clients book physiotherapy appointments, existing DA care pathways appear to be used less frequently than expected in Finland.

Evidence from primary care suggest that an initial physiotherapy assessment, provided through an alternative management pathway, results in health outcomes that are at least as favourable as those achieved through traditional physician-first pathways (Bornhöft et al., 2019). DA has also been adopted in military settings, where rapid treatment for non-surgical MSK conditions is essential. In these contexts, DA has reduced imaging use, days on medical downgrade, care costs, referrals to specialist services, and long-term disability, demonstrating its effectiveness as a care model for MSK clients (Clark et al., 2022; Szymanek et al., 2022).

Direct access has further proven to be a practical pathway for clients with non-traumatic MSK conditions in emergency departments. It has been associated with shorter lengths of stay, a greater likelihood of being discharged (Waller et al., 2025), higher client satisfaction, and safe, expedited care delivery (Truter et al., 2024). Furthermore, primary-contact physiotherapists in emergency departments can safely manage minor MSK trauma cases, including closed fractures (Sutton et al., 2015).

2.4.1 Musculoskeletal conditions

Musculoskeletal conditions, that is, impairments in the muscles, bones, joints and adjacent connective tissues, are the greatest contributor to years lived with disability worldwide and affect people of all ages around the world (World Health Organization, 2022). MSK conditions are typically characterized by pain and limited functioning and participation, and they are also the leading cause of the global need for rehabilitation (Cieza et al., 2020).

In Finland, DA practice targets clients with benign, non-specific MSK conditions, whereas clients who present serious pathologies, commonly named *red flag symptoms*, are referred to a physician (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017). Clients with MSK conditions rarely show serious pathologies, only about two per cent (Budtz, Hansen, et al., 2021). The current evidence implies that physiotherapists are able to identify serious pathologies (Alzahrani et al., 2024) and treat clients with MSK conditions independently and effectively (Downie et al., 2019), and that clients being managed by physiotherapists instead of physicians causes them no harm (Mintken et al., 2015; Moore et al., 2005). Moreover, the recommended DA model of care includes the option of consulting or referring the client to a physician when needed (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017).

Evidence shows that physiotherapy can reduce pain and disabilities, such as sickness-related absences or premature retirement due to disability caused by MSK conditions (Ginnerup-Nielsen et al., 2016; Trulsson Schouenborg et al., 2021). However, physiotherapists may inadequately identify the psychosocial factors that need to be considered, especially in cases of persistent MSK pain (Henning & Smith, 2023), and insufficiently apply the evidence-based guidelines for managing clients (Fourré et al., 2023). As psychosocial factors and pain are associated with physical functioning, they need to be taken into account in physiotherapy, especially in the acute phase, to avoid possible chronicity in the future (Linton & Shaw, 2011). Therefore, it is important that psychosocial flags, known as *yellow flags* (beliefs, fears and avoidance-behaviour), *blue flags* (work-related) and *black flags* (system or contextual) are identified along with the previously discussed clinical red flags (Nicholas et al., 2011).

2.4.2 Low back pain

Low back pain is a global public health issue and the leading cause of disability worldwide (M.L. Ferreira et al., 2023). LBP can affect anyone; most people experience LBP at least once in their lifetime, and it can occur at any age, although most commonly it affects people in their 50s (World Health Organization, 2025b). On average, over 40 percent of adults in Finland suffer from LBP and, according to the latest National FinHealth Study, its prevalence among working age groups has risen to 50 per cent (Koponen et al., 2018). LBP clients also constitute about a half of all DA clients, according to tacit knowledge statistics.

Low back pain is typically classified by duration: acute pain lasting less than six weeks, subacute pain lasting from six to twelve weeks, and chronic pain lasting more than 12 weeks (Jess et al., 2021). Acute LBP is usually a benign condition that typically subsides in the first six weeks, but symptoms might recur and lead to chronic disability, especially among working-age groups (Hartvigsen et al., 2018; Menezes Costa et al., 2012). The prevalence of chronic LBP in Europe has risen significantly, causing high levels of disability and health care usage (Bevan et al., 2009; Sebbag et al., 2019). In Finland, the increasing incidence among working individuals has led to a growing economic burden caused by sickness absences, premature work disability pensions and significant usage of health care resources (Rantonen, 2019). Over half of all LBP clients with persistent pain report moderate pain even one year later (Menezes Costa et al., 2012). Thus, it is essential that clients are offered support for managing their pain in its early phase before it becomes chronic.

2.5 Summary of the literature

In summary, compared with the traditional physician-first medical model, DA may lead to better clinical outcomes, higher client satisfaction and shorter waiting times (Demont et al., 2021; Cattrysse et al., 2024). DA also appears to reduce the use of secondary care services, medical imaging, and prescribed medications, which can potentially lower overall health care costs (Hon et al. 2021; Severijns et al., 2024). Despite the expanding evidence base supporting early intervention pathways for MSK conditions, these approaches have not been fully integrated into clinical practice (Simula et al., 2024).

However, more nuanced knowledge of the multifaceted perspectives on DA is still required. Such understanding could help integrate DA into clinical practice and help identify the barriers to its wider adoption. The DA model requires physiotherapists to possess strong competencies in autonomous CR, decision-making and EBP. More information is also needed on how DA physiotherapists bring these competencies into clinical practice, and moreover, how they could help individuals to adopt active self-care strategies. The role of educators in shaping these competencies through continuing education has also received limited attention.

This dissertation addresses these gaps by examining DA from the perspectives of three key stakeholder groups: educators, physiotherapists and clients. It is based on the assumption that gaining more nuanced knowledge of the perspectives on DA physiotherapy could help develop of the knowledge-informed practices and policies in the field.

3 PURPOSE OF THE STUDY

The aim of this dissertation is to examine the multifaceted perspectives on DA physiotherapy by exploring the views and experiences of three key stakeholder groups – physiotherapy educators, physiotherapists and clients. It further seeks to identify ways in which to strengthen and develop DA practice. Through its three interconnected sub-studies, this dissertation provides a comprehensive understanding of these perspectives, and offers insights into DA physiotherapy that can advance knowledge-informed practices and policies that promote client-centred care and professional growth within the field of physiotherapy.

The specific research questions addressed in each sub-study were:

- 1) What are physiotherapy educators' perceptions of the competencies and education of direct access physiotherapists? (Study I)
- 2) How do physiotherapists perceive their clinical reasoning when examining a client with low back pain client in direct access practice? (Study II)
- 3) How do working individuals with low back pain perceive their self-management, fear of movement and pain during the 12 months following their physiotherapy visit? (Study III)

4 METHODOLOGY

The phenomenon of interest in this dissertation is DA physiotherapy, which it examines through the perceptions of three key stakeholder groups: those of educators (Study I), physiotherapists (Study II) and clients (Study III). To explore these perspectives, the sub-studies took a qualitative approach. DA physiotherapy, as conceptualized in this dissertation, also has further perspectives – the broader contextual framework in which physiotherapists operate as autonomous practitioners within multidisciplinary settings.

Given the limited existing knowledge on DA physiotherapists' competencies and clients' experiences, a qualitative approach was deemed appropriate to obtain a deeper understanding of this complex phenomenon and the multifaceted nature of health and human behaviour, both of which are central to physiotherapy practice (Johnson & Waterfield, 2004). My professional experience in DA services, combined with my continuing education on DA competencies, gave me practical insights that informed both my contextual understanding and research design.

4.1 Ontological and epistemological starting points

This dissertation understands the nature of reality – ontology – as being subjective: human activity in knowing contributes to the creation of what is known (Guba & Lincoln, 2005, 203). It views the theory of knowledge – epistemology – as a construct in which the tools of perception greatly influence how phenomena are seen (Guba & Lincoln, 2005, 204). This study is grounded in the interpretivist paradigm, which considers the reality to be subjective, multiple and socially constructed (Lincoln et al., 2023, 81-97). Interpretivism emphasizes understanding phenomena from the individual's perspective by interpreting their subjective perceptions (Lincoln et al., 2023, 81-97). Knowledge is constructed through lived experiences and social interactions (Lincoln et al., 2023, 81-97). The dissertation takes a hermeneutic approach – the art of

interpretation – as it seeks to uncover and interpret the meanings and meaning relations within the study participants' descriptions (Brinkmann, 2018, 75).

Given that the purpose of the dissertation is to reveal the underlying meanings in the accounts of educators, physiotherapists and clients, the concept of meaning must be defined. In this study, meaning is understood as personal and context-dependent, shaped by individuals' experiences, social interactions and the specific situations in which their perceptions arise. It is not regarded as fixed or universal, but rather as fluid and emergent constructed through the interpretive engagement between the participant and the researcher (Dahlberg & Dahlberg, 2019).

Meaning relations refer to how participants connect and interpret their experiences, and form subjective understandings that reflect their experiential realities. These relations are embedded in the ways in which the participants make sense of their world – how they perceive, evaluate, and respond to their experience within the context of DA physiotherapy (Dahlberg & Dahlberg, 2019).

By adopting a hermeneutic and interpretivist stance, this dissertation acknowledges that meaning is co-constructed during the research process and that understanding is born through careful interpretation of participants' accounts. This approach enables for a nuanced exploration of how individuals assign significance to their experiences and how these meanings inform their actions, decisions, and interactions in clinical practice.

The following section presents the study's research methods. They are mutually compatible and align well with the interpretivist paradigm, which is particularly well suited to the real-life clinical physiotherapy context of this dissertation.

4.2 Study design

This qualitative dissertation consists of three sub-studies that explored perspectives on DA physiotherapy by examining the views and experiences of the three key stakeholder groups: educators, physiotherapists and clients. The first sub-study explored physiotherapy educators' perceptions of the competencies and education of DA physiotherapists. The second sub-study examined the CR and decision-making process of DA physiotherapists and how they perceived their examination of their LBP clients in practice. The third sub-study explored the experiences of working individuals with LBP of their self-management, fear of movement (FOM) and pain over a 12-month follow-up period after receiving either DA or conventional physiotherapy.

The studies applied three different qualitative research methods: a reflexive thematic analysis (Study I), a theory-driven qualitative content analysis (Study II) and a data-driven qualitative content analysis (Study III). Figure 2 shows the study design. These methods enabled for a deeper understanding of the underlying meanings and features significant in DA physiotherapy as perceived by educators, physiotherapists and clients.

Reflexive thematic analysis was selected as a method for examining the physiotherapy educators' perceptions of the competencies and education of DA physiotherapists, as it enabled an organic and iterative engagement with the full data set. Theory-driven qualitative content analysis was used to analyse the physiotherapists' perceptions of their CR, as this enabled us to focus and systematically explore the phenomenon in question. Data-driven qualitative content analysis was applied to analyse the clients' accounts of their self-management, fear of movement and pain, to facilitate a participant-centred, and in-depth interpretation of the data. The analytical methods employed in each sub-study are described in greater detail in the following section.



FIGURE 2 Study design of dissertation.

4.3 Participants and data collection

This section describes the participants and data collection. The data for Studies I and II were collected in semi-structured individual interviews of the educators and physiotherapists between 2021 and 2022. The data for Study III were collected from physiotherapy clients between 2021 and 2024, using digital questionnaires with numerical and open-ended questions. The data collection and participants of each study are presented in Table 2. Further details are described below for each original study, and more details can also be found in the original studies. I was primarily responsible for gathering all the data. The interview data (Studies I and II) were transcribed verbatim and pseudonymized, and the data from the questionnaires (Study III) were pseudonymized, and the open-ended question responses were transcribed before the data were analysed.

TABLE 2 Data collection, participants and analysis methods.

Sub-study	Data collection time	Data collection method and participants	Analysis method
Study I	Spring 2022	Semi-structured interviews of educators n=11	Reflexive thematic analysis
Study II	Autumn 2021	Semi-structured interviews of physiotherapists n=10	Theory-driven qualitative content analysis
Study III	August 2021 to December 2024	Clients answered digital questionnaires at baseline and at 3-,6- and 12-month follow ups Baseline n=113 Remaining at 12-month follow up n=15	Data-driven qualitative content analysis

The data in Study I and Study II came from interviews which enabled us to explore the phenomenon from the participants' perspectives and to discover the meanings they attributed to their experiences (Brinkmann & Kvale, 2015, 3). Most of the interviews in these studies (Study I and Study II) were conducted remotely via the Microsoft Teams online platform. Although the use of online interviews in qualitative research has been criticized at times for lacking social context, evidence indicates that they can provide even higher immediacy than in-person interaction (Lobe et al, 2022). Video-based formats, such as the used Microsoft Teams platform used in these studies, are considered the closest equivalent to face-to-face interviews, and they aim to facilitate interaction that engages with the participant's perspectives (Lobe et al, 2022). This was also the objective of the interview process. Remote meetings had also become a normalized mode of communication in health care services at the time of data collection, due to the

global COVID-19 pandemic. Although the participants were given an option of an in-person interview, the majority preferred to be interviewed remotely.

An interview framework, a guide with suggested questions, was utilized to cover the intended topics in both qualitative studies (Brinkmann & Kvale, 2015, 156). Probing and follow-up questions were also used to obtain more detailed descriptions of the phenomena (Brinkmann & Kvale, 2015, 164). The interviewees did not receive the transcripts, nor were they able to make comments on them afterwards in any of the studies.

4.3.1 Study I

Study I was a qualitative study that aimed to explore the competencies and education of DA physiotherapists through the perceptions of DA educators. The participants were recruited purposively from a nationally recognized group of Finnish DA educators with experience in MSK physiotherapy and pedagogy in line with the national-level recommendations (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017). Twelve recognized educators were invited to participate, and 11 consented. The final dataset consisted of the interviews of these DA educators ($n = 11$). The participants' mean age was 49 and their work experience in educating physiotherapists in DA practice varied from 5 to 22 years (mean = 9). Six were women and five were men.

The interview framework (query frame) that was used in all the interviews had been developed in advance by the research team. It comprised open-ended questions on the educators' backgrounds and the foundations of their educational work, and their experiences and views on DA practice, continuing education related to DA and the competencies required for DA practice. The interview framework is described in more detail in the original publication.

I conducted the interviews together with another interviewer, apart from one, which I conducted alone due to time constraints. All 11 interviews were conducted via the secured Microsoft Teams platform in Finnish. The role of the second interviewer was to actively listen, ask follow-up questions when required, and to provide technical help if needed due to possible remote connection issues. Conducting the interviews as a team was meaningful from the point of view of a learner; a valuable lesson on the significance of active listening in terms of enticing the interviewee to elaborate on their answer even further thus facilitating a richer dataset.

The interviews were audio-recorded. Their duration varied from 42 to 91 minutes (mean 64 minutes) and the transcript was 219 pages (Microsoft Word Document; font Times New Roman 12; spacing 1.5; marginals 2.54 cm). The relevant raw data extractions that were used in the study were translated by a professional translator.

4.3.2 Study II

Study II was a qualitative study that aimed to examine how physiotherapists perceived their CR when they examined their LBP clients in DA practice. The participants were recruited through physiotherapy manager preselection from three participating public health care organizations. Of the 12 managers' preselected DA physiotherapists, ten gave their consent to participate. The final dataset consisted of the interviews of the DA physiotherapists ($n = 10$). Six participants were from primary health care centres in Southern Finland and four from primary health care centres in Eastern Finland. Nine were women and one was a man. All the participants had completed a continuing education course on DA and worked weekly with DA clients.

The interview framework (query frame) that was used in all the interviews had been developed in advance by the research team. It comprised open-ended questions on the physiotherapist's professional backgrounds, a client case example, and continuing education. The interview framework is described in more detail in the original publication.

I conducted the interviews together with another interviewer as individual interviews, either face-to-face ($n = 3$) or via the secured Microsoft Teams platform ($n = 7$), in Finnish. The interviews were audio-recorded. Their duration ranged from 40 to 69 minutes (mean 50 minutes) and the transcript was 134 pages (A4; Times New Roman 12; spacing 1.5; marginals 2.54 cm). The authentic citations that were used in the study were translated by a professional translator.

4.3.3 Study III

Study III was a longitudinal qualitative study that examined the perceptions of working individuals over a 12-month period following their treatment in either DA or conventional physiotherapy. The aim of the study was to explore how these working individuals with LBP experienced their self-management, FOM and pain during the 12 months after their physiotherapy visit. Participants were physiotherapy clients recruited by their treating physiotherapists from three of the participating public health care organizations. Clients were eligible if they were working individuals aged 18 years or over and had used either DA physiotherapy or conventional physiotherapy services. Full-time students and individuals in work training were also eligible for inclusion.

Altogether 205 clients gave their consent to participate, of whom 113 replied at baseline. Of these, 81 were DA clients. At the three-month follow up, 45 participants responded to the questionnaires (DA clients $n = 33$, conventional physiotherapy clients $n = 12$); at the six-month follow up, 24 responded (DA clients $n = 18$, conventional physiotherapy clients $n = 6$); and at the 12-month follow up, 18 responded (DA clients $n = 12$, conventional physiotherapy clients $n = 6$). Fifteen ($n = 15$) participants responded to questionnaires at all follow ups (DA clients $n = 10$), and were therefore included in the final qualitative analysis. The final dataset consisted of the open-ended question responses of these 15

participants, of whom 11 were women and 4 were men; 10 were DA clients and 5 were conventional physiotherapy clients.

The data were collected using two digital questionnaires which were linked to the secure Helsinki University Hospital Electronic Case Report Form (HUSECRF) database. The questionnaires were administrated at baseline (i.e. the initial physiotherapy visit) and at the 3-month, 6-month and 12-month follow ups. The first questionnaire was an in-house instrument that consisted of the Numeric Pain Rating Scale (NPRS) and additional items on sickness-related work absences, visits to physicians, use of medication, and open-ended questions. The second questionnaire was the Finnish version of the 13-item Tampa Scale for Kinesiophobia (TSK-13-FIN) (Cordeiro et al., 2013; Dupuis et al., 2023; Eiger et al., 2023; Koho et al., 2015; Neblett et al., 2016). The open-ended questions invited the participants to explain, in writing, the reasons for their selected pain and FOM scores.

I translated the in-house questionnaire into English and Swedish. The English version was revised by a native English-speaker, and the Swedish version was revised by a person whose first language was Swedish and second Finnish. However, the study participants completed only the Finnish-language questionnaires.

The final dataset consisted of the open-ended question responses. The dataset consisted of 67 pages of pseudonymized transcript data (A4; Times New Roman 12; spacing 1.5; margins 2.54 cm).

4.4 Data analyses

Three distinct data analysis methods were used to examine the three datasets of key stakeholder group perspectives. This section describes the utilized analysis methods in more detail.

4.4.1 Reflexive thematic analysis (Study I)

Study I used reflexive thematic analysis. The analytical process followed the phases described by Braun & Clarke (2022). I was primarily responsible for all phases of the analytical process. In reflexive thematic analysis, the researcher examines and interprets patterns across datasets through active and reflexive theme development (Braun & Clarke, 2022, 4). This qualitative research method is suitable to examine and organize information from a rich data set (Braun & Clarke, 2022, 28). The themes it develops '*capture and tell an interpretative story about a patterning of meaning*' (Braun & Clarke, 2023, 386).

Before the analysis process I wrote my preliminary understanding of the phenomenon on paper. It was important to take into consideration my background as a physiotherapist who has completed a continuing education course in DA, and as a manager of DA physiotherapists, as well as my

involvement in the implementing the DA practice in their workplaces, as this could influence the analytical process.

The analytical process followed the guidance of Braun & Clarke (2022). The process of reflexive thematic analysis involves six analytic phases: (1) familiarization with the dataset, (2) data coding, (3) initial theme generation, (4) theme development and review, (5) theme refining, defining and naming, and finally (6) writing of the report (Braun & Clarke, 2022, 6). However, these phases are merely guidelines (Braun & Clarke, 2022, 34). The process is not linear, but iterative and recursive (Braun & Clarke, 2022, 36). The phases can also blur together as the process is flexible, but the researcher must understand the values or underlying procedures and bear them in mind during the process (Braun & Clarke, 2023, 390). Data familiarization means getting to know the data through immersion, data coding means labelling the meaning-relevant segments of the data, and generating the initial themes aim to explore broader patterns of shared meaning by clustering of related codes. After this the data are reviewed and refined into final themes, which are then named. The final analytical phase is writing up the report. Writing takes the analytical process even further because the narrative describes the reasoning process to the reader (Braun & Clarke, 2023, 391-398).

As a method, reflexive thematic analysis allows the researcher to bring subjectivity and reflexivity into the analysis process. However, although the researcher's subjectivity is understood as a valuable resource, their pre-assumptions and actions need to be critically reflected on throughout the process (Braun & Clarke, 2022, 8-12). Subjectivity means that the researcher brings their philosophical assumptions, political and theoretical commitments, craft skills and knowledge to the analysis (Braun & Clarke, 2023, 387).

A reflexive researcher is aware, thoughtful and self-questioning, and both identifies and interrogates their own positioning, choices and values throughout the research process (Braun & Clarke, 2022, 15). As Lincoln et al. (2023, 109) argue, reflexivity entails a form of critical subjectivity, in which we bring all of our 'selves' to the researcher encounter: the research-based self, the brought self (historical, social, personal standpoints) and the situationally created self. Because reflexive thematic analysis is inherently a knowledge-producing activity, acknowledging one's assumptions is essential; doing so enables reflection on how these assumptions may shape the study (Braun & Clarke, 2022, 18).

In my experience, reflexive thematic analysis enables a comprehensive examination of the entire corpus of data, and the scrutiny of the multiple facets of the phenomenon facilitate an in-depth analysis. At the same time the approach requires sustained engagement with the full data set. The researcher must also remain attentive to their own preconceptions and avoid jumping to premature conclusions. Finally, the findings must be context-bound and should be interpreted within the specific setting of the study.

4.4.2 Theory-driven qualitative content analysis (Study II)

In Study II used theory-driven qualitative content analysis (QCA). The analysis process followed the steps outlined by Margrit Schreier (Schreier, 2012). I was primarily responsible for all phases of the analytical process. QCA is a method that aims to describe and interpret meanings within the data in a systematic way (Schreier, 2012, 3). Its focus is on latent meaning (Schreier, 2012, 15). In QCA, meaning is constructed; it is an interpretation of the data through the perception and individual background of the researcher (Schreier, 2012, 2). This dissertation utilized QCA due to its naturalistic and contextual nature (Schreier, 2012, 8) as well as its aptitude to focus on selected aspects of the data (Schreier, 2012, 59). The most distinctive feature of QCA is that it is systematic and always involves the same sequence of steps (Schreier, 2012, 5).

The theory-driven approach means that prior knowledge, such as an existing theory or prior research, is used as the coding frame, which forms the foundation of the analysis (Schreier, 2012, 84). The coding frame is utilized to systematically describe the material under analysis through categories and sub-categories (Schreier, 2012, 58). It is a tool for conceptualizing the data and facilitating the relations between various concepts (Schreier, 2012, 39).

The steps that are common to all research methods are deciding on a research question, selecting the material, and interpreting and presenting the findings. The steps that are specific to QCA are building a coding frame; dividing the material into units of coding; trying out, evaluating and modifying the coding frame; and performing the main analysis with the coding frame (Schreier, 2012, 6).

Study II explored physiotherapists' CR when they examined clients in their DA practice. The theoretical lens for this analysis was based on the existing knowledge of the CR models that physiotherapists use in clinical practice. Four established CR models – the hypothetico-deductive model, pattern recognition, the narrative model and the systematic model – were used as the comparative frameworks against which the physiotherapists' descriptions of their examinations were analysed.

I conducted the analytical process with another researcher. We first completed the analytical steps independently, and then crosschecked our interpretations through discussion. Finally, the research team reviewed and evaluated the findings.

I found that the theory-driven analysis enabled us to focus closely on the phenomenon under scrutiny through the chosen theoretical lens. This approach sharpened the analysis. However, it also meant that some data remained outside the final interpretation, thereby narrowing the analytical scope. Although the theoretical lens provided a useful structure for guiding the analysis, it also intentionally constrained how the data could be handled and thus shaped the final findings. At the same time, the use of theory facilitated a systematic analysis and enabled comparisons with previous studies, thereby strengthening the transferability of the results.

4.4.3 Data-driven qualitative content analysis (Study III)

In Study III, the gathered data were analysed by using data-driven QCA. I was primarily responsible for all the phases of the analytical processes. Data-driven QCA follows the same systematic steps as the theory-driven QCA, but differs from it in that it is inductive, whereas theory-driven QCA is deductive. In a data-driven approach, the analysis is grounded in the data themselves, and the coding frame is developed inductively by generating categories and subcategories from the material (Schreier, 2012, 87).

The qualitative analysis examined how the clients experienced their self-management, FOM and pain after they had received physiotherapy. Data-driven QCA was used to generate subcategories and main categories, which were subsequently developed into typologies (client types) by grouping their shared characteristics. I performed the analysis twice using the data-driven coding frame, with a two-week interval between the rounds, as recommended by Schreier (2012, 167). The coding frame and the resulting interpretations were reviewed and critiqued by another researcher and subsequently by the research team.

The data-driven QCA enabled full use of the collected material. Some responses to the open-ended questions were relatively brief, and this method helped us interpret the meanings of even short contributions, which supported a participant-centred approach to analysis. I found this particularly significant, as the remaining participants had devoted considerable time to providing responses throughout the entire follow-up period.

5 FINDINGS

This section presents the key findings of each sub-study. The purpose of this dissertation was to explore the educational, clinical, and experiential perspectives on DA physiotherapy. The first study examined the educators' perceptions of DA physiotherapists' competencies and education. Building on this, the second study examined how physiotherapists perceived their CR in their clinical practice. The third study then focused on examining clients' experiences of self-management, FOM, and pain during the 12 months after receiving physiotherapy. At the end of this section, I present a synthesis of the findings of the three original studies.

5.1 Educators' perceptions (Study I)

Study I aimed to examine physiotherapy educators' perceptions of the competencies and education of DA physiotherapists. The two main themes were formulated on the basis of the data: (1) Interaction as grounds for meaningful CR and (2) Continuing professional development in an expert role.

The first main theme, **Interaction as grounds for meaningful CR** had two sub-themes: (i) *Meaningful encounter* and (ii) *Rationally and safely locating the core of the client's problem*. Meaningful encounter was categorized into extensions: *Listening*, *Creating a safe environment for open conversation* and *Understandable explanation* (cause of pain, examination and treatment). The Understandable explanation extension had further sub-extensions that were *Lessening the worry* and *Support taking control of their own situation*. Rationally and safely locating the core of the client's problem was also categorized into extensions: *Thinking process based on interaction*, *Clinical examination based on interview/interaction*, *Biopsychosocial approach*, and *Considering the different flags and choosing relevant clinical tests*.

Interaction as grounds for meaningful CR was described by the physiotherapist as determining the cause of the client's problem rationally and

safely, simultaneously ensuring that the encounter and interaction with the client is meaningful (Table 3). In the educators' descriptions, meaningful CR was based on meaningful encounter, which helped the client take more control of their situation.

TABLE 3 Interaction as grounds for meaningful clinical reasoning (modified from Roine et al., 2024).

Theme	Description	Sub-themes	Extension	Sub-extension
Interaction as grounds for meaningful clinical reasoning	Physiotherapist determines the cause of the client's problem rationally and safely simultaneously ensuring that the encounter and interaction with the client is meaningful	Meaningful encounter	Listening	
			Creating a safe environment for open conversation	
			Understandable explanation [cause of pain, examination, and treatment]	Lessening worry
				Helping client take control of their own situation
		Rationally and safely locating the core of the client's problem	Thinking process based on interaction	
			Clinical examination based on interview / interaction	
			Biopsychosocial approach	
			Considering the different flags and choosing relevant clinical tests	

The second main theme **Continuing professional development (CPD) in an expert role**, had four sub-themes: (i) *Continuous learning*, (ii) *Self-Reflection*, (iii) *Deep understanding* and iv) *Taking responsibility for one's own expertise*. The first sub-theme, Continuous learning, was categorized into extensions: *Support and/or feedback from peers* and *Committing to self-development*. The second sub-theme, Self-reflection, was categorized into three extensions: *Developing one's own work*, *Critical thinking* and *Evaluation of one's own expertise and actions*. The third sub-theme, Deep understanding, was categorized into two extensions: *Ability to apply knowledge/theory/new viewpoints* and *"Thinking with one's own brain"*. The fourth and final sub-theme, Taking responsibility for one's own expertise, was

categorized into three extensions: *Updating and maintaining expertise*, *Applying learned information to practice* and *Challenging fixed ways of working*.

CPD in an expert role was described as continuing education that provided the physiotherapist with tools to use in the DA setting. It was also viewed as meaningful that physiotherapists further develop themselves through practice and take responsibility for their roles (Table 4).

TABLE 4 Continuing professional development in an expert role (modified from Roine et al., 2024).

Theme	Description	Subthemes	Extension
Continuing professional development in an expert role	Continuing education provides the physiotherapist tools to practice in DA setting but depends on the will of the physiotherapist to further develop themselves in practice and to take responsibility for their role	Continuous learning	Support and/or feedback from peers
			Committing to self-development
		Self-reflection	Developing one's own work
			Critical thinking
			Evaluation of one's own expertise and actions
		Deep understanding	Ability to apply knowledge/theory/new viewpoints
			"thinking with one's own brain"
		Taking responsibility for one's own expertise	Updating and maintaining expertise
			Applying learned information in practice
			Challenging fixed ways of working

Together, these two main themes – **Interaction as grounds for meaningful CR** and **CPD in an expert role** – portrayed the competencies and educational elements that the DA physiotherapy educators considered meaningful for DA physiotherapists. These findings illustrate what the educators regarded as essential and distinctive in the competencies and education of DA physiotherapists. More detailed, in-depth results are presented in the original publication.

5.2 Physiotherapists' perceptions (Study II)

Study II aimed to gain a deeper understanding of how physiotherapists perceive their CR when they examine LBP clients in DA practice. The DA physiotherapists reported using either the hypothetico-deductive model or the systematic model of CR.

During the examinations, CR manifested as a process enacted through interaction with the client. The DA setting itself was seen as influencing the CR process; the physiotherapists claimed to take both the setting and their role within it into account during clinical examinations.

The DA physiotherapists described their CR as beginning with an interview of the client. They explained that they proceeded in their clinical assessment and decision-making by extracting facts from the interview that were related to symptoms or a potential diagnosis, identifying and ruling out red flags, and recognizing information that they considered important in acute MSK pain. The interviewed DA physiotherapists also stated that after completing their continuing DA education and gaining practice experience, their differential diagnostic skills had improved, they had a broader range of physical assessment techniques, and they made more precise assessments. More detailed, in-depth results are presented in the original publication.

5.3 Clients' perceptions (Study III)

Study III aimed to examine the experiences of working individuals with LBP regarding self-management, FOM, and pain during the 12 months after receiving DA or conventional physiotherapy. The clients' experiences manifested in the data as two aggregate-level client typologies: *pilot* and *passenger*. These typologies were generated by identifying the shared characteristics across the categories that were developed during the analysis.

Two main categories were generated: (1) **Understanding my pain** and (2) **Managing my pain**. The first, **Understanding my pain**, consisted of three sub-categories: *Nature of my pain*, *Daily living with my pain*, and *Knowing the cause of my pain*. The second, **Managing my pain**, also consisted of three sub-categories: *Ownership of my recovery*, *Courage to be active* and *Relieving pain*.

The *pilot* typology reflected clients who adopted an active role in their recovery. They described trusting the physiotherapist and following their guidance. In contrast, the *passenger* typology reflected clients who avoided physical activities that might provoke pain. The *passengers* expressed uncertainty about their ability to influence their pain, perceived the benefits of physiotherapy as limited, and relied more on passive self-care strategies such as taking medication or sick leaves. Across both typologies, receiving an explanation for their pain appeared meaningful. Changes in client roles were also described over

the follow-up period, suggesting that these typologies may fluctuate over time. More detailed, in-depth results are presented in the original publication.

5.4 Synthesis of the key findings

All three sub-studies offer complementary perspectives on DA MSK physiotherapy from the viewpoints of educators, physiotherapists and clients. Together, these findings deepen the understanding of DA by building on existing knowledge about DA physiotherapists' competencies and education, CR in clinical practice, and clients' experiences of their self-care after receiving physiotherapy. The original studies are unified by their shared context and collectively highlight the central purpose of DA: helping clients in adopting a more active role in their own recovery process.

Three central perspectives on DA emerged from the inductive synthesis of the findings across the three sub-studies: (1) the physiotherapist's expertise in DA practice (educational perspective), (2) the physiotherapist's CR in clinical practice (clinical perspective), and (3) the establishment of a meaningful encounter with the client that promotes the client's self-care (experiential perspective). A key unifying finding was the importance of physiotherapists possessing context-specific DA competencies that enable them to assess and encourage clients to take a more active role in their own recovery process after their DA physiotherapy. These competencies were shaped by educators, transferred to physiotherapists through education and training, and subsequently enacted in clinical encounters with clients. Ultimately, the aim was for clients to leave the DA physiotherapy appointment with a personally meaningful understanding of their pain and a tailored plan for managing it (Figure 3).

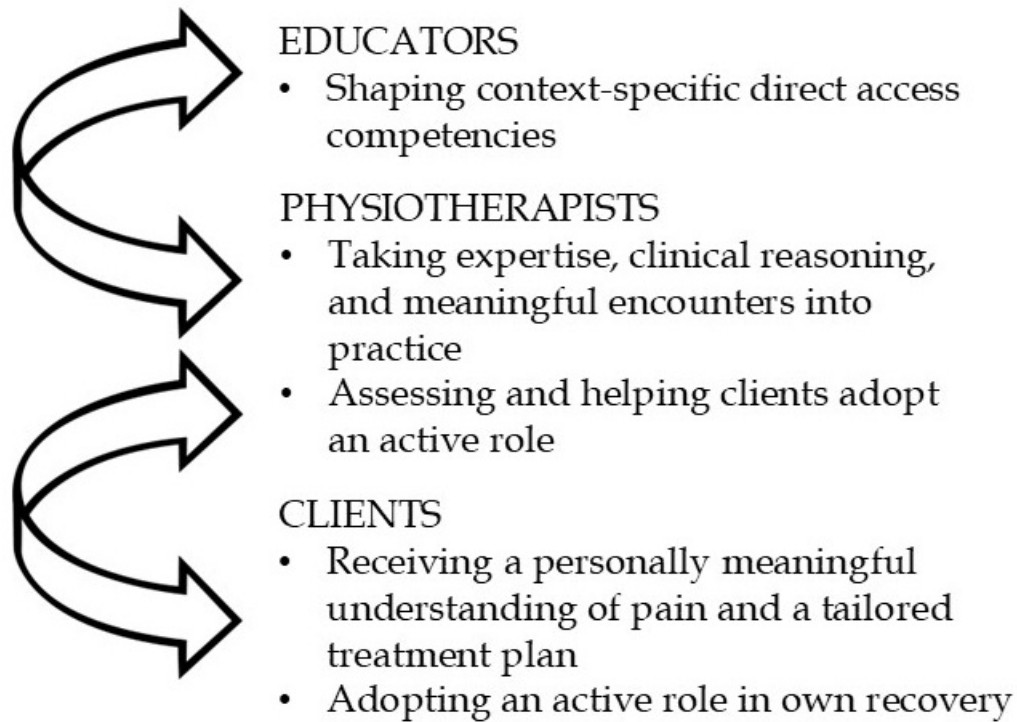


FIGURE 3 Shaping and transferring context-specific competencies from educators to physiotherapists and then to clients.

This synthesis of the central perspectives on DA can be further conceptualized as a deepened contextual framework for MSK physiotherapy in DA: it positions the client as not only as a recipient of the knowledge but as an active agent in their own recovery. When physiotherapists learn and apply the context-specific DA competencies in their clinical practice, the idea of the client as a *pilot* in their rehabilitation journey, navigating with the guidance and support of the physiotherapist's professional expertise can be realized. This deepened contextual framework could also be used as an educational framework in relation to continuous learning in the field of physiotherapy.

This intensified contextual and educationally applicable framework of DA emphasizes the client's central position in the process, simultaneously receiving knowledge from professionals, and acting as an active participant. It illustrates how physiotherapists help clients adopt the active role of a *pilot* in their recovery within the context of DA MSK physiotherapy, as depicted in Figure 4.



FIGURE 4 Client adopting an active role in their own recovery in direct access physiotherapy.

6 DISCUSSION

This section provides a concise overview of the key findings. It then proceeds to examine the deepened contextual framework of DA physiotherapy, focusing on the central perspectives on DA – physiotherapists’ expertise (educational perspective), clinical reasoning (clinical perspective) and the establishment of meaningful encounters to promote self-care (experiential perspective). It then goes on to present insights into developing DA practice. Following this, it discusses the methodological reflections on trustworthiness, researcher positionality, strengths, limitations, and ethical issues of the study are discussed. Finally, the section concludes with reflections on future research challenges and directions.

6.1 Theoretical considerations in direct access physiotherapy

The purpose of this dissertation was to explore the multifaceted perspectives of DA physiotherapy by examining the views and experiences of three key stakeholder groups – educators (Study I), physiotherapists (Study II) and clients (Study III). It also sought insights into developing DA practice. The findings of each original sub-study contribute to a comprehensive understanding of the educational, clinical and experiential perspectives on DA physiotherapy, and help form a holistic picture of the phenomenon.

The perspectives of all three key stakeholder groups further illuminate DA to physiotherapy as a process that positions the client at the centre – not only as a receiver of knowledge but also as an active agent in their own recovery. The findings highlight the significance of the context-specific competencies of DA physiotherapists for helping DA clients to adopt an active role on their rehabilitation journey.

The educators’ perceptions (Study I) emphasized the importance of meaningful client encounters and the physiotherapists taking responsibility for their expert role in the DA context. In clinical practice (Study II), CR during client

examinations manifested as a process that was shaped through interaction between the physiotherapist and the client. The DA setting emerged as a meaningful contextual element in this reasoning process, as the physiotherapist's role and responsibilities within this setting were actively considered.

In the clinical encounters (Study III), clients' experiences revealed two client types: *the pilot* and *the passenger*. The goal of the DA appointment was not necessarily to provide a definitive explanation for the client's pain but to help the client to gain a personally meaningful understanding of their pain and receive a tailored plan to manage it – thus enabling them to adopt a more active, pilot-like role in their own recovery process.

The enhanced understanding of the educational, clinical, and experiential perspectives on DA strengthens the knowledge on DA as a model of care. This deepened contextual and educational framework of DA, which extends from continuing DA education to its application by physiotherapists, and ultimately to clients' self-care, provides insights for developing education and supports ongoing professional development. The central perspectives on DA – (1) physiotherapists' expertise (educational perspective), (2) clinical reasoning (clinical perspective), and (3) the establishment of meaningful encounters that promote self-care (experiential perspective) – are further discussed in relation to the existing literature in the following sections. Insights into developing direct access practice are also presented.

6.1.1 Direct access physiotherapists' expertise

Physiotherapist's expertise in the DA setting is considered a central educational perspective in this dissertation. In the Finnish health care system, continuing DA education, together with work experience with MSK clients, form the grounds for physiotherapists to operate in DA settings. As discussed previously, various competencies are required and physiotherapists must keep up to date with the advances in EBP in the broadly scoped role of DA.

Recent studies have identified a wide range of multifaceted competencies that physiotherapists working in comparable advanced-scope roles should have, which are essential for delivering safe, effective client-centred care (Tawiah et al., 2024; Vervaeke et al., 2023). Study I highlighted the interaction and CR competencies along with the ability to engage in CPD. According to the findings of Study II, the interview and the interaction with the client during the examination, played a significant guiding role in the physical assessment. Having completed their continuing education on DA, the physiotherapists reported improvements in differential diagnostic skills, including the ability to identify and exclude serious pathology, recognize key factors in acute MSK pain, and apply a broader range of physical assessment techniques with greater precision. In addition to these essential clinical competencies, the DA physiotherapists also need co-operation and collaboration skills, as care pathways are typically multiprofessional and physiotherapists often work as a part of a team (Tawiah et al., 2024).

In Study I, the educators perceived continuing education in DA as a means of equipping physiotherapists with tools for transferring knowledge to clients. Yet they emphasized that it is ultimately the physiotherapists' responsibility to apply these learnings in clinical practice. Also, according to the findings of Study I, physiotherapists are expected to further develop themselves through practice and take responsibility for their roles as expert DA practitioners. Keeping up to date with EBP and continuous learning were considered meaningful factors in the expert role in Study I. These can be viewed as parts of DA expertise.

Evidence-based or evidence-informed practice has long been considered a cornerstone of clinical health care, as it aims to integrate the best available research evidence with clinical expertise and client values (Djulbegovic & Guyatt, 2017; Sackett et al., 1996). However, EBP is still not consistently implemented in health care and research on its application in allied health professions remains limited (Goorts et al., 2021). According to Zadro et al. (2019), only half of all physiotherapists use the treatments recommended in clinical practice guidelines.

Several barriers to implementing scientific evidence in physiotherapy practice have been identified, including lack of time, limited skills and restricted access to research (Connolly et al., 2018; Eek et al., 2023; Kulnik et al., 2022; Scurlock-Evans et al., 2014). The educators in Study I also noted that changing established practice is difficult and that adopting new tools and abandoning outdated habits requires courage. Improving the thinking process, embracing the role of a continuous learner and applying critical reflection were seen as essential qualities for DA physiotherapists.

Kulnik et al. (2022) identified connections with research-active colleagues or universities, and opportunities for training and peer support within professional networks as enablers of EBP. Post-professional learning activities – such as attending courses, engaging with colleagues, stepping outside one's comfort zone and having access to trustworthy resources – can enhance physiotherapists' knowledge (Leahy et al., 2020b, 2020a). Moreover, Goorts et al. (2021) found that multifaceted strategies, including educational meetings, talking to local opinion leaders, audits and feedback, promote EBP more effectively.

In addition to applying EBP in DA, the educators viewed CPD as meaningful for the expert role in Study I. CPD is a learner-centred approach to continuous or lifelong learning that supports the delivery of high-quality care while also encouraging professionals to review and reflect upon their skills (Health Education England & NHS, 2018). Peterson et al. (2022) call for expanding the understanding of CPD as entailing not only participation in formal education courses but also engaging in diverse activities that promote awareness of the current best evidence, such as mentorship or staying up to date with scientific literature and applying it in clinical practice.

Lifelong competence cannot be achieved through mandatory continuing education alone, as French and Dowds (2008) concluded some time ago. The findings of Study I support the idea that physiotherapists must take more responsibility for their own development further and actively advance their practice.

As a practical tool for advancing DA physiotherapists' clinical practice, the educators in Study I suggested actively seeking and accepting feedback from peers. Maas et al. (2018) accordingly found that self- and peer-assessment can improve the performance of primary care physiotherapists, although some professionals may be reluctant to expose their work due to insecurities. Moving forward, introducing peer feedback opportunities and fostering openness to reflection, may be possible pathways to enhancing EBP and professional growth in DA physiotherapy.

Study I also identified peer feedback and support, critical thinking, continuous learning and self-reflection as potential means of CPD. Moreover, in the field of nursing, collaborative learning among professionals with diverse experiences and backgrounds has been shown to contribute to improving professional competencies (Mägi et al., 2024).

As a model of care, DA offers benefits to both the profession and the individual practitioners of physiotherapy. Previous studies have shown that first-contact roles represent career advancement and contribute to a sense of professional meaningfulness through increased self-respect and competence development (Greenhalgh et al., 2020; Karvonen et al., 2021; Lewis & Gill, 2023).

Conversely, physiotherapists working in referral-based (physician-first) systems with limited autonomy have reported feelings of frustration and occupational stress, underutilization of their expertise and constraints in applying CR, EBP and client-centred care (Lim et al., 2021). These professionals often express aspirations towards autonomous practice (Lim et al., 2021).

6.1.2 Clinical reasoning in direct access physiotherapy

Clinical reasoning is considered a central clinical perspective in this dissertation. CR is particularly significant in DA to physiotherapy because the physiotherapist must be able to select relevant clinical tests and to give clients a personally meaningful explanation for their pain and a tailored treatment plan during a single, often brief, encounter.

CR is a complex, continuously evolving process, shaped by multiple elements that are meaningful for the physiotherapist's decision-making during their interaction with the client (Holdar et al., 2013). Bjorbækmo and Shaw (2018) suggest that while physiotherapists draw on explicit knowledge as a framework for their thinking about assessment and intervention, but the communicative practice of being-with-another enables them to adapt this knowledge to each individual client. In Study II, the DA physiotherapists described progressing in their reasoning from interview to clinical assessment and then decision-making, by extracting facts related to symptoms or potential diagnoses, identifying and eliminating red flags, recognizing key elements relevant to acute MSK pain, and applying various CR models throughout the process.

According to the findings of Study II, the interview and the interaction with the client during the examination, played a significant guiding role in the physical assessment. Having completed their continuing education on DA, the physiotherapists reported improvements in differential diagnostic skills,

including the ability to identify and exclude serious pathology, recognize key factors in acute MSK pain, and apply a broader range of physical assessment techniques with greater precision.

In Study II, the DA physiotherapists described using either hypothethico-deductive or systematic CR models when examining LBP clients. Over two decades ago, Doody and McAteer (2002) found that both expert and novice physiotherapists used the hypothethico-deductive model. However, experts also have been reported to rely on pattern recognition, whereas novices take more time to conduct physical examinations (Doody & McAteer, 2002). In Study II, work experience (neither expert nor novice) did not appear to be linked to the choice of CR model. Wainwright et al. (2011) reported that experienced physiotherapists tend to reason through interaction whereas novices rely more on external sources such as checklists. Jensen et al. (2018, 74) argue that CR does not develop solely through experience; it requires ongoing critical reflection and continuous development. However, Budtz, Rønn-Smidt, et al. (2021) found that DA physiotherapists perceived work experience as important for developing their diagnostic pattern recognition. Keller et al. (2023) reported heterogeneity in DA physiotherapists' diagnostic skills and decision-making processes, suggesting that greater work experience and higher education levels are associated with more accurate management decisions.

Holdar et al. (2013) identified that situational factors such as culture and organizational context, communication strategies, acquired knowledge, the personalities of both the physiotherapist and client, and negotiation strategies all influence the CR process. Elvén and Dean (2017) emphasized that factors that have the most influence on the CR process are those related to the individual physiotherapist. Widerström et al. (2019) found that self-image and personality can shape decision-making - for example physiotherapists may encourage clients to be as active as they themselves are. Personal constraints, such as perceived lack of competence and feelings of uncertainty were also reported as affecting the CR process (Widerström et al., 2019). Furthermore, Bjorbækmo and Shaw (2018) describe reasoning as a bodily activity, in which knowledge becomes embodied and habitual, an aspect that is particularly important to take into consideration in clinical encounters with clients.

In Study II, the specific factors that influence the choice of CR model remained unclear indicating a need for further research. Notably, the educators in Study I described the checklist approach as potentially problematic as it may lead physiotherapists to follow a rigid set of questions rather than listening to the client's concerns. Consequently, use of the systematic model, poses the risk that interaction will become secondary to the checklist, whereas the hypothethico-deductive model allows the dialogue to guide the clinical examination. Moreover, Naylor et al. (2025) found that clients perceive the checklist approach as impersonal and as 'checklisting', which can undermine their sense of personhood. They therefore recommend avoiding adopting clinical approaches that conflict with individualized client-centred care.

Even though MSK DA practice today is strongly grounded in the biomedical model, the need to employ a wider perspective by including an evaluation of psychosocial factors has been recognized (Riska et al, 2025b). The findings of Studies I and III support the idea that clients need to be encountered as individuals, and they need individualized interaction and guidance tailored to their personal situation. Furthermore, Nicholls et al. (2024) state that pain, as condition, embodies personal experiences of the lived life, and thus that experience manifests individually, and cannot be explained through only objective biological clinical findings. This viewpoint is also present in the findings of Study III. Nicholls et al (2024) suggest focusing on making sense of the client's condition by concentrating on the person instead of the patho-anatomical basis of illness.

The significance of CR competence in this dissertation is highlighted as important not only in assessments and decision-making but also as a vital component of interaction with the client. The findings of Study I emphasize the importance of a client-centred approach in which the client feels that their concerns are seen and heard.

6.1.3 Meaningful encounters that promote self-care

Establishing meaningful encounters that promote clients' self-care is considered a central experiential perspective in this dissertation. Due to the nature of DA practice, self-care plays a significant role in the rehabilitation process, as a client might visit the DA physiotherapist only once. This one encounter, during which they gain a personally meaningful understanding of their pain, and a tailored treatment plan, further encourages them to adopt an active role in their own rehabilitation.

Physiotherapy is inherently interactive by nature, and the importance of building a connection and forming a cooperative physiotherapist-client relationship is widely recognized as the foundation of good physiotherapy practice (Chowdhury & Bjorbækmo, 2017). Client-centred (also referred to as person- or patient-centred) care is defined as the carer seeing the client as a person, applying the biopsychosocial perspective, sharing power and responsibility, forming a therapeutic alliance (TA) and expressing empathy to demonstrate understanding of the client's experience (Paul-Savoie et al., 2018). Interaction and communication between the physiotherapist and the client are therefore central to clinical practice and the delivery of individualized client-centred care.

Yet, in clinical practice communication is often led by the physiotherapist, resulting in practitioner-centred interaction that focuses on the condition and its physical aspects rather than on the individual (Hiller et al., 2015). Hutting et al. (2022) note that physiotherapists find it difficult to integrate client-centred care into their clinical practice. To support its implementation, they recommend reflective strategies such as peer review or self-assessment to examine one's own beliefs and practices.

In Study I, interaction was described as the foundation of a meaningful CR process. A meaningful encounter was portrayed as a safe space for the client to share their story, which in turn strengthened their commitment to the rehabilitation process. In Study II, the physiotherapist's interview with the client was a key contributor to both the CR process and the physical examination. In Study III, clients who adopted the *pilot* role trusted in the physiotherapist's examination, explanations, and guidance. As the goal of a DA appointment is that the client gains a personally meaningful understanding of their pain and receives a tailored treatment plan that helps them adopt an active role in their recovery, it is essential that meaningful encounters are established.

Therapeutic alliance, the working relationship or positive social connection between the physiotherapist and the client, is particularly significant in DA physiotherapy due to the nature of the service; during a single brief encounter the client must gain an understanding of their pain and take ownership of their recovery (F. Babatunde et al., 2017). According to the findings of Study III, for the client to adopt the *pilot* role, the physiotherapist must provide an understandable explanation for their pain, help the client in developing active coping strategies, and encourage them to move more confidently and be physically active.

There is evidence that TA positively influences client outcomes in cases of chronic LBP and MSK injuries. It has shown to improve treatment outcomes and predict adherence to home exercise (P. H. Ferreira et al., 2013; Kinney et al., 2020; Wright et al., 2014). However, research on TA remains limited in the context of DA physiotherapy. Riska et al. (2025a) found that psychological distress and lower self-rated physical functioning were associated with a more negatively perceived therapeutic relationship.

The core themes of TA in MSK physiotherapy, along with their most frequently reported aspects have been outlined in a scoping review by F. Babatunde et al. (2017). These themes are: *congruence* (agreement on goals), *connectedness* (friendliness), *communication* (listening skills, clarity of information), *expectations* (therapy and outcome), *individualized therapy*, *influencing factors* (external factors such as structures and processes, therapist prerequisites such as skills and competence, and client prerequisite such as life experiences and willingness to engage), *partnership* (active engagement, mutual understanding), and *roles and responsibilities* (therapist's ability to motivate). These aspects align with the findings of O'Keeffe et al. (2016), who identified that physiotherapists' interpersonal and communication skills, practical competencies, individualized client-centred care, and organizational and environmental factors all influence the quality of interaction. These factors act as either facilitators or barriers in client-physiotherapist interaction. F. Babatunde et al. (2017) suggest that these interpersonal competencies may be considered soft skills that physiotherapists can actively develop and apply in clinical encounters to enhance the therapeutic relationship.

Notably, Saueressig et al. (2024) argue that enhancing contextual effects may not significantly impact the treatment outcomes of chronic MSK pain. Instead, they recommend focusing on shared decision-making and client-centred

care when tailoring treatment plans to individual needs. Hutting et al. (2022) similarly advocate emphasizing a meaningful connection with the client, shared decision-making through self-awareness, goal-oriented approaches, and support for self-management.

The previously discussed competence in CR is important not only for the physiotherapist but also for the client. Doody and McAteer (2002) described the CR process as consisting of cue acquisition, hypothesis generation, cue interpretation, hypothesis evaluation and ultimately, treatment tailored to the individual client. Diagnostic reasoning in turn aims to gather information that guides treatment decisions. In Study III, the clients felt that gaining a personally meaningful understanding of their pain was closely tied to their treatment experience. This aligns with a recent systematic review by Martin et al. (2025), which found that clients with non-specific MSK conditions strongly desired a diagnosis. They perceived a diagnosis as validating their pain and guiding their treatment, even though non-specific labels are less threatening and foster positive views of prognosis.

Clients' needs to understand the cause of their pain or condition was also emphasized in a recent study by Lullo et al. (2025), which found that clients often perceive imaging as a fundamental tool for clarifying their condition and guiding treatment decisions. In Study III, the clients who did not receive a comprehensible explanation for their pain during their physiotherapy, viewed imaging as a means to obtain the clarity they required. Similarly, Martin et al. (2025) found that clear explanations for pain are essential, and that poor diagnostic communication and the use of medical jargon may lead to confusion, increase fear, or prompt clients to seek further examinations. These findings echo those of Study III.

However, Lullo et al. (2025) also noted that although imaging can be reassuring for some, it may be anxiety-inducing and misleading for others. They recommend educating clients about the limitations of imaging and improving communication on alternative pain management strategies. Martin et al. (2025) further emphasize that clinicians can shape clients' beliefs through their choice of language, and that a comprehensible explanation of pain can reassure clients, help them understand their condition and encourage them to actively engage in their treatment.

The importance of validating communication in physiotherapy with LBP clients has been explored by Holopainen et al. (2023), who concluded that such communication may give clients more space to express their views and lead to more accurate ways of communication and meaningful interactions. Thomas et al. (2024) also reported that although clients generally perceive first-contact physiotherapy services as positive – particularly in terms of quick, accurate diagnostics, and targeted advice, there remains room for improvement in communication, especially in ensuring that clients feel heard and addressed as individuals.

André and Lundberg (2022) found that some individuals with FOM managed their pain by carefully controlling how they move, which is similar to

the *passenger* behaviour described in Study III. These individuals may require additional support to engage in movement and exercise. Schütze et al. (2025) argue that helping clients make sense of their condition and helping them to confront their FOM can empower them to self-manage their back pain.

In Study III, the clients who adopted the *pilot* role, applied active strategies in self-management and pain prevention strategies, supported by individualized advice and guidance from their physiotherapist. In contrast, *passenger* clients perceived that the benefit from physiotherapy was limited, and had more passive coping strategies, such as avoidance behaviours or reliance on pain medication.

The findings of Study III suggest that screening for clients who may require additional support due to FOM could be beneficial and help them adopt more active coping strategies. As FOM has been shown to mediate the relationship between pain and disability (Lee et al., 2015), early recognition of the need for support may help prevent the development of chronic pain and maladaptive avoidance behaviours. In Study III, the *passenger* role was associated with avoiding physical activities perceived as potentially painful. It has been found that individuals who hold such negative beliefs are more likely to develop high-intensity pain and/or severe disability over time (Estee et al., 2024).

Furthermore, Davis et al. (2023) found that health care professionals who themselves had been absent from work due to back pain often held negative beliefs about their condition. These included believing that back pain is dangerous, that work is harmful, that the back is uniquely vulnerable, and that little can be done to manage back pain (Davis et al., 2023). These beliefs mirror the findings of Study III, in which the *passenger* clients expressed FOM through avoidance behaviours. However, such beliefs are inconsistent with current evidence-based guidelines for LBP management. The findings of Davis et al. (2023) raise concerns about the implementation of EBP in health care as it is reasonable to expect that health care professionals should be familiar with and apply the current care recommendations to their own health. They therefore recommend that practitioners reflect on how they provide advice and guidance – not only to clients, but also to colleagues – to avoid reinforcing unhelpful beliefs and giving mixed messages.

The physiotherapist's role in promoting physical activity is central to the field and reflects the multifaceted nature of health and human behaviour. In Study III, placing trust in the physiotherapist's examination, explanations for pain, and guidance appeared help clients adopt an active *pilot* role. The guidelines for MSK pain assessment and treatment emphasize promoting physical activity, and considering individual movement behaviour (e.g. sedentary lifestyle, physical activity and exercise), as well as factors that modulate physical activity in individualized treatment planning (Fullen et al., 2023).

6.1.4 Insights into developing direct access practice

One of the overarching aims of this dissertation was to identify ways in which to further strengthen and develop DA practice. The contextual and educationally

applicable framework – the deepened knowledge on educational, clinical and experiential perspectives – can be used to improve physiotherapy education and practice.

Within physiotherapy, DA can be viewed as a form of EBP – as rapid access to a trained physiotherapist has been associated with favourable client outcomes. However, the findings of this study suggest that that current DA practice remains largely grounded in a biomedical model, as reflected in the CR processes of participating physiotherapists. From an EBP perspective, this highlights the potential value of broadening decision-making beyond a narrow focus on ‘what works’ in terms of effectiveness, to also include ‘what matters’ in terms of meaningfulness, as argued by Tomkins and Bristow (2023).

The most effective intervention may not be appropriate in every situation, as physiotherapists are working with individuals whose personal histories, beliefs, and fears shape both their presentation and their engagement to care, a finding evident in the descriptions provided by educators and clients in this study. Accordingly, ‘what matters’ to the individual client should be central to physiotherapy practice. Qualitative forms of evidence, such as interviewing, encountering and interacting with clients with the aim of understanding their lived meanings and experiences, play a crucial role in shaping effective and person-centred physiotherapy delivery.

In addition to developing the competencies and education of physiotherapists, this increased experiential knowledge can be used to develop health care systems on a societal level. A framework developed by Briggs et al. (2021) provides global-level guidance for formulating policies and prioritizing MSK conditions due to their substantial disease burden. At a national level, a need remains for more individually targeted guidance for self-care and pain prevention. Rehabilitative evidence-informed approaches, such as encouraging physical activity and reducing pain-related fear, could offer meaningful solutions (Simula et al., 2024). In optimizing MSK health, Briggs et al. (2021) emphasize early diagnostics, triage and prioritizing high-value care, such as rehabilitation. From the perspective of developing clinical practice, it is essential to offer pathways, such as DA physiotherapy, which enable client-centred and individualized care in the early phase of pain.

Moreover, the findings of Study III support the role of physiotherapy in the early phase of pain, as it appears to encourage clients to adopt more active self-care strategies. Similarly, Deslauriers et al. (2021) recommend timely access to physiotherapy to mitigate negative outcomes such as increased disability and health care utilization, at both the individual and system level.

Thus, in terms of optimizing the potential of physiotherapy for the client’s benefit, professional development, and societal-level advantages (i.e. cost savings and timely access to services), first-contact roles for physiotherapists appear to be essential. Lewis and Gill (2023) note that the role of first-contact physiotherapists is often unclear for clients and multidisciplinary teams and that this ambiguity can lead to efforts being duplicated, as these professionals are sometimes treated as second contact practitioners. Thus, streamlining client

pathways to reduce overlapping workloads and unnecessary referrals could benefit all stakeholders. Taking ownership of the expert role, and serving as advocates of the service pathway, could enhance the awareness of DA in the multiprofessional clinical settings as well as on the client-level.

6.2 Methodological reflections

6.2.1 Trustworthiness

In qualitative research, trustworthiness is often viewed through the classical four criteria of Lincoln and Guba: credibility, transferability, dependability and confirmability (Denzin et al, 2023, 23). The qualitative methods that draw on the interpretivist paradigm used in this dissertation were all well suited to examining the perceptions of each key stakeholder group to gain a deeper understanding of DA.

I aimed to ensure the credibility through reflection, systematic recordings of the steps taken and the changes that took place, and ongoing discussions with my research team during the analysis processes. With each method, I tried to ensure dependability by following the method guidelines and transparently describing the steps I took. I pursued confirmability through ongoing reflexivity, using bracketing and providing authentic quotations and/or examples of the analytical procedures of the sub-studies. The research team was a valuable resource in ensuring trustworthiness throughout the process.

As this dissertation is grounded in the interpretivist paradigm, it is important to be aware that interpretation of subjective perceptions to meanings is never completely objective. As Braun and Clarke (2023, 199) state, interpretation is a sense-making activity that does not occur as fixed or self-evident from stimulus; it is inherently subjective. Denzin et al (2023, 22) also fittingly argue that all research—regardless of its philosophical underpinnings—is interpretative. The interpretative nature of the utilized methodologies also positions the findings of each sub-study, as well as the findings of this synthesis, as interpretative. Findings are one way of understanding the data, but not necessarily the only way.

6.2.2 Researcher positionality

My interest in researching DA arose from my personal experiences in implementing DA practice and treating clients in DA at my workplace in the HUS Hyvinkää hospital. We were implementing DA as a unified care model in the former Hyvinkää Hospital district area together with the Hyvinkää emergency department and primary health care stations of that time. The process began by organizing a joint continuing education course for all physiotherapists in the area who would take on the role of DA physiotherapists. My role was coordinating the continuing education course, and included collaborating closely with the

educators as well as with the managers and physiotherapists. I also completed the course myself.

By experiencing the training myself and treating DA clients in the emergency department, I gained knowledge on the significance of CR as I encountered individuals with similar pathologies, yet completely different experiences of pain and attitudes towards self-care. I also experienced the importance of adopting an advocate role in pursuing new operations.

Implementing this newly developed DA care model required collaboration with the emergency room staff and physiotherapy units to advance the implementation of this newly developed DA care model. As someone highly involved in the implementation of DA and as a member of DA networks in our country, I absorbed tacit knowledge. I paid attention to the barriers that physiotherapy units and individual physiotherapists encountered across the health care systems. I was left wondering why DA, as a cost-saving, well targeted care model in which clients received timely help from trained professionals, was not fully utilized. Gathering and analysing experiential data from key stakeholders who operate in real-life situations seemed important in gaining a deeper understanding of the phenomenon.

6.2.3 Strengths and limitations

The strength of this dissertation lies in its multi-perspective, qualitative, real-life approach which enabled the exploration of DA physiotherapy from the perspectives of the key stakeholder groups in authentic clinical settings. By examining the experiences and perspectives of educators, physiotherapists and clients, this dissertation enables a deeper understanding of DA in practice. The subjective and experiential nature of the data, captured through theory-driven content analysis, data-driven content analysis, and reflexive thematic analysis, can be considered a strength as it enabled a rich exploration of how the phenomenon is perceived and enacted by those directly involved.

The novelty of this dissertation is its real-life approach that synthesizes three distinct perspectives of three key stakeholder groups – educators, physiotherapists and clients – and encompasses also the broader contextual framework in which physiotherapists operate in an expert role, taking responsibility for the clients' treatment pathway.

This dissertation also has several limitations. The research was carried out in the context of one Nordic country, Finland, and the findings are thus related to the context of the Finnish health care system. The methodological choices and thus the results of each sub-study and the synthesis represent only one way of understanding, interpreting, and making sense of the data.

Furthermore, additional participants in each sub-study might have added alternative aspects to the findings. Notably, the chosen recruitment methods limited the number of participants in Studies II and III. In Study III in particular, the high drop-out rate of participants influenced the final study design and prevented the originally intended comparison between DA and conventional physiotherapy outcomes.

Moreover, the phenomenon was not explored through the perspectives of other health care professionals. This dissertation focused on the key stakeholder groups directly involved in physiotherapy, thus leaving unexplored the perceptions of other relevant professionals, such as triage nurses and physicians, who also play a significant role in delivering services to MSK clients. Nevertheless, it is important to recognize the DA setting as a multiprofessional environment in which physiotherapists must adopt an expert role in multiprofessional teams. Exploration of additional perspectives might have provided richer data and enabled an even deeper understanding of the phenomenon.

6.2.4 Ethical issues

This dissertation and its three sub-studies followed research integrity and good ethical principles (Tutkimuseettinen Neuvottelukunta, 2023). Before the research began, ethical approval was obtained from Helsinki University Hospital's ethical committee (HUS/2710/2020) and it was updated accordingly when the study design changed.

Research permits were retrieved from all the organizations that participated in the original studies: Helsinki University Hospital (Hyvinkää Hospital) (§ 10/9.6.2021) and wellbeing services counties Keusote (KEUDno-2020-8154) and Siunote (3369/13.00.01.01/2020, § 39/2021). For the interviews with professionals working in the Sipoo health centre, a permit was obtained from the leading physician via email in accordance with organization's research permit guidelines at that time.

All the participants were informed of the study face to face and were provided with an information sheet and were asked to sign an informed consent form prior to their participation. Participation could be discontinued at any point. The anonymity of the participants was ensured throughout the research process. Only the pseudonymized transcripts were used in the data analysis and codes were assigned to participants in the publications to guarantee anonymity.

The electronic data material are stored on a secure computer at my workplace, and the consent forms are kept in a personal locked closet in a locked room at my workplace. Finally, the original data will be disposed of in accordance with research integrity guidelines.

6.3 Challenges for future research

The findings of this dissertation support the idea that today's clients are increasingly taking charge of their own rehabilitation, thus highlighting the need to receive explanations and advice regarding their pain and condition from professionals. More research on how physiotherapists could help clients adopt an active role is still needed. Increasing knowledge regarding why some clients are more open to active coping strategies than others could also be beneficial and

enhance individualized, client-centred and evidence-based practices. Exploring, for example, how interaction, CR, and forming a strong TA during a brief encounter all influence the clients' self-management strategies could shed light on this.

The CR processes of physiotherapists still need to be better understood. Exploring the CR processes of experienced MSK physiotherapists in DA settings could deepen the understanding of the CR models utilized and justify their application in clinical practice. It would also be interesting to explore how or if the utilized CR model influences the client's experience of TA and their adoption of coping strategies.

This dissertation focused on exploring the perceptions of the key stakeholder groups directly involved in physiotherapy. In the future, the phenomenon could be explored through the perspectives of other relevant health care delivery professionals. The viewpoints of politicians and decision-makers could also be explored to deepen the understanding that DA is a service pathway in the health care system.

7 MAIN FINDINGS AND CONCLUSIONS

The main finding of this dissertation is the deepened contextual and educationally applicable DA framework that constitutes three central perspectives on DA: (1) physiotherapists' expertise (educational perspective), (2) clinical reasoning in clinical practice (clinical perspective), and (3) the establishment of meaningful encounters that promote self-care (experiential perspective). This framework positions the client at the centre of the process, as both a receiver of knowledge from the physiotherapist and an active participant. The ultimate aim is for the client to adopt the role of a *pilot* in their own rehabilitation journey, which they navigate with the guidance and support of physiotherapist's professional expertise.

The educators emphasized the importance of interaction with clients, and the responsibility of physiotherapists for continuous professional development. They viewed continuing education as a valuable source of tools for DA practice, while also stressing that the physiotherapists must take ownership of their own ongoing development and expert roles.

The physiotherapists perceived CR as an interactive process of examination and decision-making, commonly drawing on hypothetico-deductive or systematic CR models. The DA setting itself was described as playing a meaningful role in this reasoning, as the physiotherapists considered their autonomous role and responsibilities in the absence of prior referral.

The clients perceived self-management, FOM and pain as highly personal and evolving experiences. They related the early access to physiotherapy and the guidance they received to active engagement in their own recovery. A personally meaningful explanation for pain and a tailored treatment plan were positively linked to trust and active engagement in self-care. Over the 12-month follow up, the clients reported increased confidence to move and adopt active self-management strategies. However, FOM appeared to be a barrier for some, indicating that early identification and targeted guidance may be significant for promoting active coping. These findings underscore the role of physiotherapy not only in pain management but also in empowering clients to navigate their recovery with greater autonomy.

Collectively, these educational, clinical and experiential perspectives, deepen the understanding of the multifaceted nature of DA physiotherapy. They provide insights that can inform evidence-based practices and policies aiming to promote client-centred care and support ongoing professional development within the field of physiotherapy.

YHTEENVETO (SUMMARY IN FINNISH)

Fysioterapeutin suoravastaanotto kouluttajien, fysioterapeuttien ja asiakkaiden näkökulmista

Tuki- ja liikuntaelämistön (TULE) vaivat, erityisesti alaselkäkipu, ovat merkittävä haaste sekä yksilöille että yhteiskunnalle. Ne voivat aiheuttaa kipuja, rajoittaa yksilön liikkumista, toimintakykyä ja osallistumista sekä lisätä sairauspoissaoloja ja ennenaikaisia eläköitymisiä työikäisessä väestössä, mikä voi johtaa myös kasvaviin terveydenhuollon kustannuksiin. Fysioterapeutin suoravastaanotto on toimintamalli, jossa henkilö, jolla on TULE-oireita, ohjataan suoraan fysioterapeutille ilman erillistä lähetettä. Mallin tavoitteena on viiveetön hoitoonpääsy ja yksilöllinen ohjaus. Vaikka suoravastaanottoa hyödynnetään yhä enemmän, sen käyttö ei ole vielä täysin vakiintunut.

Suoravastaanotolla työskentelee erillisen täydennyskoulutuksen käyneitä jo TULE-vaivoista työkokemusta omaavia fysioterapeutteja. Suomessa suoravastaanoton kansallinen koulutussuositus ohjaa koulutuksen sisältöä ja osaamisvaatimuksia, mutta suoravastaanotolla työskentelevien fysioterapeuttien osaamisesta on vain vähän tutkimustietoa. Lisäksi asiakkaiden kokemuksista ja suoravastaanoton vaikutuksista on rajallisesti tutkimustietoa.

Tämän väitöskirjan tarkoituksena oli tutkia suoravastaanottoa kolmen keskeisen sidosryhmän näkökulmista: kouluttajien, fysioterapeuttien ja asiakkaiden. Kouluttajien näkemyksiä tarkasteltiin fysioterapeuttien osaamisen ja täydennyskoulutuksen osalta, fysioterapeuttien näkemyksiä käytännön kliinisen päättelyn toteutuksen kautta, ja asiakkaiden kokemuksia vuoden seurannan aikana omahoidosta, liikkumisen pelosta ja kivusta. Lisäksi tavoitteena oli tuottaa tietoa suoravastaanottotoiminnan kehittämiseen.

Väitöskirja muodostuu kolmesta laadullisesta osatutkimuksesta ja niiden synteisistä. Kolmen osatutkimuksen tutkimuskysymykset olivat seuraavat: 1) Millaisia näkemyksiä suoravastaanottokouluttajilla on suoravastaanottoa toteuttavien fysioterapeuttien osaamisesta ja täydennyskoulutuksesta? (Osatutkimus I), 2) Miten suoravastaanottoa toteuttavat fysioterapeutit näkevät kliinisen päättelynsä tutkiessaan työikäisen asiakkaansa alaselkäkipua suoravastaanotolla? (Osatutkimus II), ja 3) Miten työikäiset alaselkäkipua kokevat henkilöt näkevät omahoidon, liikkumisen pelon ja kivun 12 kuukauden seurannan aikana fysioterapiakäynnin jälkeen? (Osatutkimus III).

Osatutkimusten I ja II (kouluttajat ja fysioterapeutit) aineisto kerättiin kouluttajien ja fysioterapeuttien haastatteluilla, sekä Osatutkimuksen III (asiakkaat) sähköisillä kyselyillä heti fysioterapiakäynnin jälkeen ja kolmen, kuuden ja 12 kuukauden seurannassa. Haastatteluaineistot analysoitiin refleksiivisellä teemaattisella analyysillä (Osatutkimus I) ja teorialähtöisellä sisällönanalyysillä (Osatutkimus II), ja asiakkaiden kyselyaineisto (Osatutkimus III) analysoitiin aineistolähtöisellä sisällönanalyysillä.

Tulosten perusteella kouluttajien näkemyksissä korostui kaksi kattoteemaa: **Vuorovaikutus merkityksellisen kliinisen päättelyn perustana ja Jatkuva**

ammattillinen kehittyminen asiantuntijaroolissa. Ensimmäinen teema kuvasi loogisen ja turvallisen kliinisen päättelyn etenemistä merkityksellisen vuorovaikutuksen kautta, mikä mahdollisti asiakkaan aktiivisen osallistumisen. Toinen teema korosti fysioterapeutin vastuuta oman osaamisensa kehittämisestä täydennyskoulutuksen jälkeen.

Fysioterapeutit näkivät kliinisen päättelynsä prosessina, joka eteni vuorovaikutuksessa asiakkaan kanssa ja sisälsi haastattelun, oireiden mukaisen tutkimisen, vakavien sairauksien (ns. punaiset liput) poissulkemisen ja akuutin kivun huomioimisen. Kliinisessä päättelyssä hyödynnettiin joko hypoteettis-deduktiivista tai systemaattista kliinisen päättelyn mallia. Täydennyskoulutus ja suoravastaanottokokemus näyttäytyivät merkityksellisinä erotusdiagnostiikan, tutkimusmenetelmien ja arviointitaitojen kehittämisessä.

Asiakkaiden kokemuksissa hahmottuivat kaksi roolia – aktiivinen ‘pilotti’ ja passiivisempi ‘matkustaja’ – sekä merkitykselliset tekijät, kuten kivun ymmärtäminen, yksilöllinen ohjaus ja luottamus fysioterapeuttiin. Selityksen saaminen kivulle koettiin tärkeänä kuntoutumisen omistajuuden ja rohkeuden vahvistamisessa.

Kolmen osatutkimuksen tulosten synteesissä hahmottuivat kolme keskeistä näkökulmaa suoravastaanottoon: (1) suoravastaanottofysioterapeutin asiantuntijuus (koulutusnäkökulma), (2) kliininen päättely (kliininen näkökulma), ja (3) merkityksellisen kohtaamisen luominen asiakkaan kanssa (kokemuksellinen näkökulma). Tulosten perusteella fysioterapeutit, oppimalla ja käyttämällä kontekstisidonnaista osaamistaan suoravastaanotolla, voivat tukea asiakkaiden aktiivista osallistumista toipumisprosessiin. Väitöskirja tarjoaa uusia näkökulmia yksilöllisen, asiakaskeskeisen fysioterapian ja siihen liittyvän asiakkaan ohjauksen sekä fysioterapeuttien ammatillisen osaamisen kehittämiseen.

REFERENCES

- Alkhouri, H., Maka, K., Wong, L., & McCarthy, S. (2020). Impact of the primary contact physiotherapy practitioner role on emergency department care for patients with musculoskeletal injuries in New South Wales. *Emergency Medicine Australasia*, 32(2), 202–209. <https://doi.org/10.1111/1742-6723.13391>
- Alnaqbi, A., Shousha, T., AlKetbi, H., & Hegazy, F. (2021). Physiotherapists' perspectives on barriers to implementation of direct access of physiotherapy services in the United Arab Emirates: a cross-sectional study. *PLOS ONE*, 16(6), e0253155. <https://doi.org/10.1371/journal.pone.0253155>
- Alshareef, N., Cozad, M., Macaуда, M., Ostermann, J., & Thigpen, C. (2023). Patient attitudes and beliefs associated with self-referral to physical therapy for musculoskeletal complaints: a qualitative study. *BMC Health Services Research*, 23(1), 80. <https://doi.org/10.1186/s12913-022-08989-x>
- Alzahrani, A., Alshehri, M. & Alzahrani, H. (2024). Physiotherapists' awareness and use of red flags for the assessment of low back pain in Saudi Arabia. *Journal of Back and Musculoskeletal Rehabilitation*, 37(5), 1333–1343. <https://doi.org/10.3233/BMR-230410>
- Anchors, Z., Jones, B., Thomas, R., Berry, A., & Walsh, N. (2023). The impact of remote consultations on the health and wellbeing of first contact physiotherapists in primary care: a mixed methods study. *Musculoskeletal Care*, 21(3), 655–666. <https://doi.org/10.1002/msc.1737>
- André, M., & Lundberg, M. (2022). Thoughts on pain, physical activity, and body in patients with recurrent low back pain and fear: an interview study. *Physical Therapy*, 102(2), pzab275. <https://doi.org/10.1093/ptj/pzab275>
- Australian Physiotherapy Association. (2023, November 7). Physiotherapy competence framework. https://australian.physio/sites/default/files/APA_COMPETENCE_FRAMEWORK_v7.1_FINAL.pdf
- Babatunde, F., MacDermid, J., & MacIntyre, N. (2017). Characteristics of therapeutic alliance in musculoskeletal physiotherapy and occupational therapy practice: a scoping review of the literature. *BMC Health Services Research*, 17, 375. <https://doi.org/10.1186/s12913-017-2311-3>
- Babatunde, O. O., Bishop, A., Cottrell, E., Jordan, J. L., Corp, N., Humphries, K., Hadley-Barrows, T., Huntley, A. L., & Windt, D. A. van der. (2020). A systematic review and evidence synthesis of non-medical triage, self-referral and direct access services for patients with musculoskeletal pain. *PLOS ONE*, 15(7), e0235364. <https://doi.org/10.1371/journal.pone.0235364>
- Baker, S. E., Painter, E. E., Morgan, B. C., Kaus, A. L., Petersen, E. J., Allen, C. S., Deyle, G. D., & Jensen, G. M. (2017). Systematic clinical reasoning in physical therapy (SCRIPT): tool for the purposeful practice of clinical

- reasoning in orthopedic manual physical therapy. *Physical Therapy*, 97(1), 61–70. <https://doi.org/10.2522/ptj.20150482>
- Bassett, A. M., & Jackson, J. (2020). Challenges and learning opportunities of pre-registration physiotherapy placements in first contact settings: the perspectives of musculoskeletal first contact physiotherapists. *Musculoskeletal Care*, 18(2), 140–149. <https://doi.org/10.1002/msc.1446>
- Bevan, S., Quadrello, T., McGee, R., Mahdon, M., Vavrovsky, A., & Barham, L. (2009, November 7). Fit for work? Musculoskeletal disorders in the European workforce: fit for work Europe. The Work Foundation. https://beswic.be/sites/default/files/public/content/download/files/NL/fit_for_work_pan-european_report_2009.pdf?utm_source=chatgpt.com
- Bicker, G., Hadley-Barrows, T., Saunders, A., Mairs, H., & Stevenson, K. (2024). A narrative synthesis of the effectiveness and acceptability of musculoskeletal first contact physiotherapy practitioner roles in primary care. *Musculoskeletal Care*, 22(2), e1875. <https://doi.org/10.1002/msc.1875>
- Bird, S., Thompson, C., & Williams, K. E. (2016). Primary contact physiotherapy services reduce waiting and treatment times for patients presenting with musculoskeletal conditions in Australian emergency departments: an observational study. *Journal of Physiotherapy*, 62(4), 209–214. <https://doi.org/10.1016/j.jphys.2016.08.005>
- Bishop, A., Chen, Y., Protheroe, J., Ogollah, R. O., Bailey, J., Lewis, M., Jordan, K., & Foster, N. E. (2021). Providing patients with direct access to musculoskeletal physiotherapy: the impact on general practice musculoskeletal workload and resource use. The STEMS-2 study. *Physiotherapy*, 111, 48–56. <https://doi.org/10.1016/j.physio.2020.04.006>
- Bjorbaekmo, W.S. & Shaw, J.A. (2018). In: D.A. Gibson, J. S. Nicholls & K.S. Groven (eds.) (2018). *Manipulating practices – a critical physiotherapy reader*. Cappellen Damm Akademisk/NOASP.
- Black, C., Shanmugam, S., & Gray, H. (2023). Consensus on occupational health competencies for UK first contact physiotherapists. *Physiotherapy*, 121, 58–68. <https://doi.org/10.1016/j.physio.2023.07.004>
- Black, C., Shanmugam, S., & Gray, H. (2025). Challenges for first contact physiotherapists' managing sickness absence: consensus development using the nominal group technique. *Clinical Rehabilitation*, 39(2), 236–248.
- Boissonnault, W. C., & Lovely, K. (2016). Hospital-based outpatient direct access to physical therapist services: current status in Wisconsin. *Physical Therapy*, 96(11), 1695–1704. <https://doi.org/10.2522/ptj.20150540>
- Boonstra, A. M., Stewart, R. E., Köke, A. J. A., Oosterwijk, R. F. A., Swaan, J. L., Schreurs, K. M. G., & Preuper, H. R. S. (2016). Cut-off points for mild, moderate, and severe pain on the numeric rating scale for pain in patients with chronic musculoskeletal pain: variability and influence of sex and catastrophizing. *Frontiers in Psychology*, 7, 1466. <https://doi.org/10.3389/fpsyg.2016.01466>

- Bornhöft, L., Larsson, M. E., Nordeman, L., Eggertsen, R., & Thorn, J. (2019). Health effects of direct triaging to physiotherapists in primary care for patients with musculoskeletal disorders: a pragmatic randomized controlled trial. *Therapeutic Advances in Musculoskeletal Disease*, 11, 1759720X19827504. <https://doi.org/10.1177/1759720X19827504>
- Braun, V., & Clarke, V. (2022). Thematic analysis- a practical guide. London: SAGE Publications.
- Braun, V. & Clarke, V. (2023): Thematic analysis. In: N. K. Denzin, Y. S. Lincoln, M. D. Giardina & G. S. Cannella (eds.). The SAGE Handbook of qualitative research: 6th Edition. London: SAGE Publications, 385-402.
- Briggs, A. M., Schneider, C. H., Slater, H., Jordan, J. E., Parambath, S., Young, J. J., Sharma, S., Kopansky-Giles, D., Mishrra, S., Akesson, K. E., Ali, N., Belton, J., Betteridge, N., Blyth, F. M., Brown, R., Debere, D., Dreinhöfer, K. E., Finucane, L., Foster, H. E., ... March, L. (2021). Health systems strengthening to arrest the global disability burden: empirical development of prioritised components for a global strategy for improving musculoskeletal health. *BMJ Global Health*, 6(6). <https://doi.org/10.1136/bmjgh-2021-006045>
- Brinkmann, S. (2018). Philosophies of qualitative research. Oxford University Press. <https://doi.org/10.1093/oso/9780190247249.001.0001>
- Brinkmann, S., & Kvale, S. (2015). InterViews learning the craft of qualitative research interviewing (3rd Edition). London: SAGE Publications
- Buchbinder, R., Underwood, M., Hartvigsen, J., & Maher, C. G. (2020). The Lancet Series call to action to reduce low value care for low back pain: An update. *Pain*, 161(1), S57. <https://doi.org/10.1097/j.pain.0000000000001869>
- Budtz, C. R., Hansen, R. P., Thomsen, J. N. L., & Christiansen, D. H. (2021). The prevalence of serious pathology in musculoskeletal physiotherapy patients – a nationwide register-based cohort study. *Physiotherapy*, 112, 96–102. <https://doi.org/10.1016/j.physio.2021.03.004>
- Budtz, C. R., Rønn-Smidt, H., Thomsen, J. N. L., Hansen, R. P., & Christiansen, D. H. (2021). Primary care physiotherapists ability to make correct management decisions – is there room for improvement? A mixed method study. *BMC Family Practice*, 22(1), 196. <https://doi.org/10.1186/s12875-021-01546-1>
- Campbell, L., Quicke, J., Stevenson, K., Paskins, Z., Dziedzic, K., & Swaithe, L. (2024). Using Twitter (X) to mobilize knowledge for first contact physiotherapists: qualitative study. *Journal of Medical Internet Research*, 26(1), e55680. <https://doi.org/10.2196/55680>
- Cattrysse, E., Van Den Broeck, J., Petroons, R., Teugels, A., Scafoglieri, A., & Van Trijffel, E. (2024). Impact of direct access on the quality of primary care musculoskeletal physiotherapy: a scoping review from a patient, provider, and societal perspective. *Archives of Physiotherapy*, 20–28. <https://doi.org/10.33393/aop.2024.3023>

- Childs, J. D., Piva, S. R., & Fritz, J. M. (2005). Responsiveness of the numeric pain rating scale in patients with low back pain. *Spine*, 30(11), 1331–1334. <https://doi.org/10.1097/01.brs.0000164099.92112.29>
- Chowdhury, A., & Bjorbaekmo, W. S. (2017). Clinical reasoning – embodied meaning-making in physiotherapy. *Physiotherapy Theory and Practice*, 33(7), 550–559. <https://doi.org/10.1080/09593985.2017.1323360>
- Cieza, A., Causey, K., Kamenov, K., Hanson, S. W., Chatterji, S., & Vos, T. (2020). Global estimates of the need for rehabilitation based on the Global Burden of Disease study 2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*, 396(10267), 2006–2017. [https://doi.org/10.1016/S0140-6736\(20\)32340-0](https://doi.org/10.1016/S0140-6736(20)32340-0)
- Clark, B., Clark, L., Showalter, C., & Stoner, T. (2022). A call to action: direct access to physical therapy is highly successful in the US military. When will professional bodies, legislatures, and payors provide the same advantages to all US civilian physical therapists? *Journal of Manual & Manipulative Therapy*, 30(4), 199–206. <https://doi.org/10.1080/10669817.2022.2099893>
- Clark, S., & Horton, R. (2018). Low back pain: A major global challenge. *The Lancet*, 391(10137), 2302. [https://doi.org/10.1016/S0140-6736\(18\)30725-6](https://doi.org/10.1016/S0140-6736(18)30725-6)
- Connolly, B., Allum, L., Shaw, M., Pattison, N., & Dark, P. (2018). Characterising the research profile of the critical care physiotherapy workforce and engagement with critical care research: a UK national survey. *BMJ Open*, 8(6), e020350. <https://doi.org/10.1136/bmjopen-2017-020350>
- Cordeiro, N., Pezarat-Correia, P., Gil, J., & Cabri, J. (2013). Portuguese language version of the Tampa Scale for Kinesiophobia [13 Items]. *Journal of Musculoskeletal Pain*, 21. <https://doi.org/10.3109/10582452.2012.762966>
- Corp, N., Mansell, G., Stynes, S., Wynne-Jones, G., Morsø, L., Hill, J. C., & van der Windt, D. A. (2021). Evidence-based treatment recommendations for neck and low back pain across Europe: a systematic review of guidelines. *European Journal of Pain*, 25(2), 275–295. <https://doi.org/10.1002/ejp.1679>
- Dahlberg, H., & Dahlberg, K. (2019). The question of meaning – a momentous issue for qualitative research. *International Journal of Qualitative Studies on Health and Well-Being*, 14(1), 1598723. <https://doi.org/10.1080/17482631.2019.1598723>
- Davis, J., Newton, C., Singh, G., Nolan, D., & O’Sullivan, K. (2023). ‘Keep moving, but carefully’: back pain beliefs among NHS staff. *European Journal of Physiotherapy*, 25(3), 168–176. <https://doi.org/10.1080/21679169.2022.2047781>
- De Gruchy, A., Granger, C., & Gorelik, A. (2015). Physical therapists as primary practitioners in the emergency department: six-month prospective practice analysis. *Physical Therapy*, 95(9), 1207–1216. <https://doi.org/10.2522/ptj.20130552>
- Demont, A., Bourmaud, A., Kechichian, A., & Desmeules, F. (2021). The impact of direct access physiotherapy compared to primary care physician led

- usual care for patients with musculoskeletal disorders: a systematic review of the literature. *Disability and Rehabilitation*, 43(12), 1637–1648. <https://doi.org/10.1080/09638288.2019.1674388>
- Demont, A., Vervaeke, R., & Bourmaud, A. (2024). Required competencies for French physiotherapists for direct access to primary care for patients with musculoskeletal disorders: consensus statement based on a Delphi survey. *Physiotherapy Theory and Practice*, 40(12), 2976–2987. <https://doi.org/10.1080/09593985.2023.2301437>
- Denninger, T. R., Cook, C. E., Chapman, C. G., McHenry, T., & Thigpen, C. A. (2018). The influence of patient choice of first provider on costs and outcomes: analysis from a physical therapy patient registry. *Journal of Orthopaedic & Sports Physical Therapy*, 48(2), 63–71. <https://doi.org/10.2519/jospt.2018.7423>
- Denzin, N. K., Lincoln, Y. S., Giardina, M. D., & Cannella, G. S. (2023). Introduction. In: N. K. Denzin, Y. S. Lincoln, M. D. Giardina, & G. S. Cannella (eds). (2023). *The SAGE handbook of qualitative research* (6th Edition). London: SAGE Publications, 1-28.
- Deslauriers, S., Déry, J., Proulx, K., Laliberté, M., Desmeules, F., Feldman, D. E., & Perreault, K. (2021). Effects of waiting for outpatient physiotherapy services in persons with musculoskeletal disorders: a systematic review. *Disability and Rehabilitation*, 43(5), 611–620. <https://doi.org/10.1080/09638288.2019.1639222>
- Djulbegovic, B., & Guyatt, G. H. (2017). Progress in evidence-based medicine: a quarter century on. *The Lancet*, 390(10092), 415–423. [https://doi.org/10.1016/S0140-6736\(16\)31592-6](https://doi.org/10.1016/S0140-6736(16)31592-6)
- Doody, C., & McAteer, M. (2002). Clinical reasoning of expert and novice physiotherapists in an outpatient orthopaedic setting. *Physiotherapy*, 88(5), 258–268. [https://doi.org/10.1016/S0031-9406\(05\)61417-4](https://doi.org/10.1016/S0031-9406(05)61417-4)
- Downie, F., McRitchie, C., Monteith, W., & Turner, H. (2019). Physiotherapist as an alternative to a GP for musculoskeletal conditions: a 2-year service evaluation of UK primary care data. *British Journal of General Practice*, 69(682), e314–e320. <https://doi.org/10.3399/bjgp19X702245>
- Dupuis, F., Cherif, A., Batcho, C., Massé-Alarie, H., & Roy, J.-S. (2023). The Tampa Scale of Kinesiophobia: a systematic review of its psychometric properties in people with musculoskeletal pain. *The Clinical Journal of Pain*, 39(5), 236. <https://doi.org/10.1097/AJP.0000000000001104>
- Edwards, I., Jones, M., Carr, J., Braunack-Mayer, A., & Jensen, G. M. (2004). Clinical reasoning strategies in physical therapy. *Physical Therapy*, 84(4), 312–330; discussion 331–335. <https://doi.org/10.1093/ptj/84.4.312>
- Eek, F., Åsenlöf, P., & Stigmar, K. (2023). Scientific approach and attitudes among clinically working physiotherapists in Sweden -a cross sectional survey. *Archives of Physiotherapy*, 13(1), 20. <https://doi.org/10.1186/s40945-023-00173-6>
- Eiger, B., Errebo, M., Straszek, C. L., & Vaegter, H. B. (2023). Less is more: reliability and measurement error for three versions of the Tampa Scale

- of Kinesiophobia (TSK-11, TSK-13, and TSK-17) in patients with high-impact chronic pain. *Scandinavian Journal of Pain*, 23(1), 217–224.
<https://doi.org/10.1515/sjpain-2021-0200>
- Elvén, M., & Dean, E. (2017). Factors influencing physical therapists' clinical reasoning: qualitative systematic review and meta-synthesis. *Physical Therapy Reviews*, 22(1–2), 60–75.
<https://doi.org/10.1080/10833196.2017.1289647>
- ENPHE (2022). Physiotherapy competencies for autonomous practice recommendations for educational frameworks. European Network of Physiotherapy in Higher Education.
https://www.enphe.org/uploads/resources_files/autonomous_practice_recommendations_education_professional_issues_wg_sept_2022_1.pdf
- Estee, M. M., Wang, Y., Heritier, S., Urquhart, D. M., Cicuttini, F. M., Kotowicz, M. A., Brennan-Olsen, S. L., Pasco, J. A., & Wluka, A. E. (2024). Negative back beliefs are associated with increased odds of low back pain and disability: a 10-year cohort study in men. *Rheumatology (Oxford, England)*, 63(12), 3353–3359. <https://doi.org/10.1093/rheumatology/kead587>
- Fennelly, O., Blake, C., Desmeules, F., Stokes, D., & Cunningham, C. (2018). Patient-reported outcome measures in advanced musculoskeletal physiotherapy practice: a systematic review. *Musculoskeletal Care*, 16(1).
<https://doi.org/10.1002/msc.1200>
- Ferreira, M. L., De Luca, K., Haile, L. M., Steinmetz, J. D., Culbreth, G. T., Cross, M., Kopec, J. A., Ferreira, P. H., Blyth, F. M., Buchbinder, R., Hartvigsen, J., Wu, A.-M., Safiri, S., Woolf, A. D., Collins, G. S., Ong, K. L., Vollset, S. E., Smith, A. E., Cruz, J. A., ... March, L. M. (2023). Global, regional, and national burden of low back pain, 1990–2020, its attributable risk factors, and projections to 2050: a systematic analysis of the Global Burden of Disease Study 2021. *The Lancet Rheumatology*, 5(6), e316–e329.
[https://doi.org/10.1016/S2665-9913\(23\)00098-X](https://doi.org/10.1016/S2665-9913(23)00098-X)
- Ferreira, P. H., Ferreira, M. L., Maher, C. G., Refshauge, K. M., Latimer, J., & Adams, R. D. (2013). The therapeutic alliance between clinicians and patients predicts outcome in chronic low back pain. *Physical Therapy*, 93(4), 470–478. <https://doi.org/10.2522/ptj.20120137>
- Finlex. (1994, November 7). Health care professionals act.
<https://www.finlex.fi/fi/lainsaadanto/saadokaannokset/1994/eng/559>
- Finlex. (2010, November 7). Health care act.
<https://www.finlex.fi/fi/lainsaadanto/2010/1326>
- Finlex. (2021, November 7). Occupational healthcare act.
<https://www.finlex.fi/api/media/statute-foreign-language-translation/688546/mainPdf/main.pdf?timestamp=2001-12-20T22%3A00%3A00.000Z>
- Finnish Association of Physiotherapists. (2016). The core competencies of a physiotherapist (English translation 2018).

- <https://www.suomenfysioterapeutit.fi/wp-content/uploads/2018/04/CoreCompetencies.pdf>
- Finnish Centre for Pensions. (2025, November 7). Earnings-related pension recipients in Finland. <https://www.etk.fi/en/research-statistics-and-projections/statistics/earnings-related-pension-recipients/>
- Finnish Institute for Health and Welfare. (2024, November 7). Care registers for social welfare and health care. <https://thl.fi/en/statistics-and-data/information-on-statistics/description-of-statistics/primary-health-care>
- Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists. (2017). Suoravastaaanottosuositus2017. <https://www.suomenfysioterapeutit.fi/wp-content/uploads/2018/02/Suoravastaaanottosuositus2017.pdf>
- Forsbrand, M., Grahn, B., Hill, J. C., Petersson, I. F., Sennehed, C. P., & Stigmar, K. (2017). Comparison of the Swedish STarT Back Screening Tool and the Short Form of the Örebro Musculoskeletal Pain Screening Questionnaire in patients with acute or subacute back and neck pain. *BMC Musculoskeletal Disorders*, 18(1), 89. <https://doi.org/10.1186/s12891-017-1449-9>
- Foster, N. E., Anema, J. R., Cherkin, D., Chou, R., Cohen, S. P., Gross, D. P., Ferreira, P. H., Fritz, J. M., Koes, B. W., Peul, W., Turner, J. A., Maher, C. G., Buchbinder, R., Hartvigsen, J., Cherkin, D., Foster, N. E., Maher, C. G., Underwood, M., Tulder, M. van, ... Woolf, A. (2018). Prevention and treatment of low back pain: evidence, challenges, and promising directions. *The Lancet*, 391(10137), 2368–2383. [https://doi.org/10.1016/S0140-6736\(18\)30489-6](https://doi.org/10.1016/S0140-6736(18)30489-6)
- Fourré, A., Vanderstraeten, R., Ris, L., Bastiaens, H., Michielsen, J., Demoulin, C., Darlow, B., & Roussel, N. (2023). Management of low back pain: do physiotherapists know the evidence-based guidelines? *International Journal of Environmental Research and Public Health*, 20(9), Article 9. <https://doi.org/10.3390/ijerph20095611>
- French, H. P., & Dowds, J. (2008). An overview of continuing professional development in physiotherapy. *Physiotherapy*, 94(3), 190–197. <https://doi.org/10.1016/j.physio.2007.09.004>
- Frogner, B. K., Harwood, K., Andrilla, C. H. A., Schwartz, M., & Pines, J. M. (2018). Physical therapy as the first point of care to treat low back pain: an instrumental variables approach to estimate impact on opioid prescription, health care utilization, and costs. *Health Services Research*, 53(6), 4629–4646. <https://doi.org/10.1111/1475-6773.12984>
- Fullen, B. M., Wittink, H., Groef, A. D., Hoegh, M., McVeigh, J. G., Martin, D., & Smart, K. (2023). Musculoskeletal pain: current and future directions of physical therapy practice. *Archives of Rehabilitation Research and Clinical Translation*, 5(1). <https://doi.org/10.1016/j.arrct.2023.100258>
- Furze, J. A., Black, L., McDevitt, A. W., Kobal, K. L., Durning, S. J., & Jensen, G. M. (2022). Clinical reasoning: the missing core competency in physical

- therapist education and practice. *Physical Therapy*, 102(9), pzac093.
<https://doi.org/10.1093/ptj/pzac093>
- Gagnon, R., Perreault, K., Berthelot, S., Matifat, E., Desmeules, F., Achou, B., Laroche, M.-C., Van Neste, C., Tremblay, S., Leblond, J., & Hébert, L. J. (2021). Direct-access physiotherapy to help manage patients with musculoskeletal disorders in an emergency department: results of a randomized controlled trial. *Academic Emergency Medicine*, 28(8), 848–858.
<https://doi.org/10.1111/acem.14237>
- Gallotti, M., Campagnola, B., Cocchieri, A., Mourad, F., Heick, J. D., & Maselli, F. (2023). Effectiveness and consequences of direct access in physiotherapy: a systematic review. *Journal of clinical medicine*, 12(18), 5832. <https://doi.org/10.3390/jcm12185832>
- Garrity, B. M., McDonough, C. M., Ameli, O., Rothendler, J. A., Carey, K. M., Cabral, H. J., Stein, M. D., Saper, R. B., & Kazis, L. E. (2020). Unrestricted direct access to physical therapist services is associated with lower health care utilization and costs in patients with new-onset low back pain. *Physical Therapy*, 100(1), 107–115. <https://doi.org/10.1093/ptj/pzz152>
- Ginnerup-Nielsen, E., Christensen, R., Thorborg, K., Tarp, S., & Henriksen, M. (2016). Physiotherapy for pain: a meta-epidemiological study of randomised trials. *British Journal of Sports Medicine*, 50(16), 965–971.
<https://doi.org/10.1136/bjsports-2015-095741>
- Goodwin, R., Moffatt, F., Hendrick, P., Stynes, S., Bishop, A., & Logan, P. (2021). Evaluation of the first contact physiotherapy (FCP) model of primary care: a qualitative insight. *Physiotherapy*, 113, 209–216.
<https://doi.org/10.1016/j.physio.2021.08.003>
- Goodwin, R., Moffatt, F., Hendrick, P., Timmons, S., Chadborn, N., & Logan, P. (2020). First point of contact physiotherapy; a qualitative study. *Physiotherapy*, 108, 29–36. <https://doi.org/10.1016/j.physio.2020.02.003>
- Goodwin, R. W., & Hendrick, P. A. (2016). Physiotherapy as a first point of contact in general practice: a solution to a growing problem? *Primary Health Care Research & Development*, 17(5), 489–502.
<https://doi.org/10.1017/S1463423616000189>
- Goorts, K., Dizon, J., & Milanese, S. (2021). The effectiveness of implementation strategies for promoting evidence informed interventions in allied healthcare: a systematic review. *BMC Health Services Research*, 21(1), 241.
<https://doi.org/10.1186/s12913-021-06190-0>
- Grant, H., & Skamagki, G. (2024). Clinicians' perspectives on remote patient management: a qualitative exploration of physiotherapists using the DiAL (Direct Access Line) programme. *Musculoskeletal Science and Practice*, 73, 103132. <https://doi.org/10.1016/j.msksp.2024.103132>
- Green, C. E., Pastore, A., Cronley, L., Walker, M. D., Thigpen, C. A., Cook, C. E., & Givens, D. L. (2019). Explanatory multivariate modeling for disability, pain, and claims in patients with spine pain via a physical therapy direct access model of care. *Journal of Back and Musculoskeletal Rehabilitation*, 32(5), 769–777. <https://doi.org/10.3233/BMR-171074>

- Greenhalgh, S., Selfe, J., & Yeowell, G. (2020). A qualitative study to explore the experiences of first contact physiotherapy practitioners in the NHS and their experiences of their first contact role. *Musculoskeletal Science and Practice*, 50, 102267. <https://doi.org/10.1016/j.msksp.2020.102267>
- Guba, E.G., & Lincoln, Y.S. (2005). Paradigmatic Controversies, Contradictions, and Emerging Confluences. In: N. K. Denzin & Y.S. Lincoln (eds.). *The SAGE Handbook of qualitative research*. 3rd Edition. London: SAGE Publications, 191-216.
- Halls, S., Thomas, R., Stott, H., Cupples, M. E., Kersten, P., Cramp, F., Foster, D., & Walsh, N. (2020). Provision of first contact physiotherapy in primary care across the UK: a survey of the service. *Physiotherapy*, 108, 2-9. <https://doi.org/10.1016/j.physio.2020.04.005>
- Hartvigsen, J., Hancock, M. J., Kongsted, A., Louw, Q., Ferreira, M. L., Genevay, S., Hoy, D., Karppinen, J., Pransky, G., Sieper, J., Smeets, R. J., Underwood, M., Buchbinder, R., Hartvigsen, J., Cherkin, D., Foster, N. E., Maher, C. G., Underwood, M., Tulder, M. van, ... Woolf, A. (2018). What low back pain is and why we need to pay attention. *The Lancet*, 391(10137), 2356-2367. [https://doi.org/10.1016/S0140-6736\(18\)30480-X](https://doi.org/10.1016/S0140-6736(18)30480-X)
- Health Education England & NHS. (2018, November 7). Musculoskeletal core capabilities framework for first point of contact practitioners. <https://www.skillsforhealth.org.uk/info-hub/musculoskeletal-2018/>
- Henderson, J., Gallagher, R., Brown, P., Smith, D., & Tang, K. (2020). Emergency department after-hours primary contact physiotherapy service reduces analgesia and orthopaedic referrals while improving treatment times. *Australian Health Review*, 44(3), 485-492. <https://doi.org/10.1071/AH18259>
- Henning, M., Henning, R., & Lynch, G. (2024). First contact physiotherapy: a 4-year service evaluation of UK primary care data. *Musculoskeletal Care*, 22(4), e1961. <https://doi.org/10.1002/msc.1961>
- Henning, M., & Smith, M. (2023). The ability of physiotherapists to identify psychosocial factors in patients with musculoskeletal pain: a scoping review. *Musculoskeletal Care*, 21(2), 502-515. <https://doi.org/10.1002/msc.1725>
- Higgs, J., Jensen, G. M., Loftus, S., & Christensen, N. (2018). *Clinical reasoning in the health professions* (4th Edition). Edinburgh: Elsevier.
- Higgs, J. & Jones, M. A. (2019). Clinical decision making and multiple problem spaces. In: J. Higgs, M. A. Jones, S. Loftus & N. Christensen (eds.). *Clinical reasoning in the health professions*. 3rd Edition. Edinburgh: Elsevier, 4-17.
- Higgs, J., Jones, M. A., Loftus, S., & Christensen, N. (eds). (2008). *Clinical reasoning in the health professions* (3rd edition). Edinburgh: Elsevier.
- Hiller, A., Guillemin, M., & Delany, C. (2015). Exploring healthcare communication models in private physiotherapy practice. *Patient Education and Counseling*, 98(10), 1222-1228. <https://doi.org/10.1016/j.pec.2015.07.029>

- Ho, C.-M., Thorstensson, C. A., & Nordeman, L. (2019). Physiotherapist as primary assessor for patients with suspected knee osteoarthritis in primary care-a randomised controlled pragmatic study. *BMC Musculoskeletal Disorders*, 20(1), 329. <https://doi.org/10.1186/s12891-019-2690-1>
- Ho-Henriksson, C.-M., Svensson, M., Thorstensson, C. A., & Nordeman, L. (2022). Physiotherapist or physician as primary assessor for patients with suspected knee osteoarthritis in primary care – a cost-effectiveness analysis of a pragmatic trial. *BMC Musculoskeletal Disorders*, 23(1), 260. <https://doi.org/10.1186/s12891-022-05201-3>
- Holdar, U., Wallin, L., & Heiwe, S. (2013). Why do we do as we do? Factors influencing clinical reasoning and decision-making among physiotherapists in an acute setting. *Physiotherapy Research International*, 18(4), 220–229. <https://doi.org/10.1002/pri.1551>
- Holopainen, R., Lausmaa, M., Edlund, S., Carstens-Söderstrand, J., Karppinen, J., O'Sullivan, P., & Linton, S. J. (2023). Physiotherapists' validating and invalidating communication before and after participating in brief cognitive functional therapy training. test of concept study. *European Journal of Physiotherapy*, 25(2), 73–79. <https://doi.org/10.1080/21679169.2021.1967446>
- Hon, S., Ritter, R., & Allen, D. D. (2021). Cost-effectiveness and outcomes of direct access to physical therapy for musculoskeletal disorders compared to physician-first access in the United States: systematic review and meta-analysis. *Physical Therapy*, 101(1), pzaa201. <https://doi.org/10.1093/ptj/pzaa201>
- Huhn, K., Gilliland, S. J., Black, L. L., Wainwright, S. F., & Christensen, N. (2019). Clinical reasoning in physical therapy: a concept analysis. *Physical Therapy*, 99(4), 440–456. <https://doi.org/10.1093/ptj/pzy148>
- Hutting, N., Caneiro, J. P., Ong'wen, O. M., Miciak, M., & Roberts, L. (2022). Patient-centered care in musculoskeletal practice: key elements to support clinicians to focus on the person. *Musculoskeletal Science and Practice*, 57, 102434. <https://doi.org/10.1016/j.msksp.2021.102434>
- Igwesi-Chidobe, C. N., Bishop, A., Humphreys, K., Hughes, E., Protheroe, J., Maddison, J., & Bartlam, B. (2021). Implementing patient direct access to musculoskeletal physiotherapy in primary care: views of patients, general practitioners, physiotherapists and clinical commissioners in England. *Physiotherapy*, 111, 31–39. <https://doi.org/10.1016/j.physio.2020.07.002>
- Ingram, S., Stenner, R., & May, S. (2023). The experiences of uncertainty amongst musculoskeletal physiotherapists in first contact practitioner roles within primary care. *Musculoskeletal Care*, 21(3), 644–654. <https://doi.org/10.1002/msc.1735>
- Jensen G., Resnik, L., Haddad, A. (2018). Expertise and clinical reasoning. In: J. Higgs (editor). *Clinical reasoning in the health professions*. 4th edition. Edinburgh: Elsevier, 67–76.

- Jess, M.-A., Hamilton, S., Ryan, C., Wellburn, S., Alexanders, J., Spence, D., & Martin, D. (2021). Exploring the origin of pain subclassification, with emphasis on low back pain: a scoping review. *JBISIR-D-19-00383*, 19(2), 308–340. <https://doi.org/10.11124/JBISIR-D-19-00383>
- Johnson, R., & Waterfield, J. (2004). Making words count: the value of qualitative research. *Physiotherapy Research International*, 9(3), 121–131. <https://doi.org/10.1002/pri.312>
- Jones, M. (2018). Clinical reasoning: Fast and slow thinking in musculoskeletal practice. In: M.A. Jones & D.A. Rivett (eds). *Clinical reasoning in musculoskeletal practice*. 2nd edition. Edinburgh: Elsevier, 2-31.
- Karvonen, E., Laitinen-Väänänen, S., Paatelma, M., Roine, M., & Heinonen, A. (2021). Physiotherapists' experiences of direct access for clients with musculoskeletal pain and dysfunction: a qualitative study. *European Journal of Physiotherapy*, 23(1), 55–62. <https://doi.org/10.1080/21679169.2019.1636133>
- Karvonen, E., Paatelma, M., & Heinonen, A. (2017). Asiakkaan kokemuksia fysioterapeuttin suoravastaanotosta selkäkipujen varhaisvaiheessa: retrospektiivinen kuvaileva kyselytutkimus. *Kuntoutus-Lehti 3-4*, by Kuntoutussäätiö, 3–4. <https://issuu.com/kuntoutussaatio/docs/kuntoutus-3-17-kokolehti/34>
- Karvonen, E., Paatelma, M., Laitinen-Väänänen, S., & Piirainen, A. (2017). Clinical reasoning and critical reflection in physiotherapists' examinations of patients with low back pain in its early phase: a qualitative study from physiotherapists' point of view. *European Journal of Physiotherapy*, 19(4), 185–193. <https://doi.org/10.1080/21679169.2017.1316311>
- Kechichian, A., Desmeules, F., Girard, P., Terrisse, H., Vermorel, C., & Pinsault, N. (2024). Physiotherapists as first-contact practitioners for patients with low back pain in French primary care: a pragmatic cluster randomised controlled trial. *BMC Health Services Research*, 24(1), 1427. <https://doi.org/10.1186/s12913-024-11814-2>
- Kechichian, A., Pommier, D., Druart, L., Lowry, V., Pinsault, N., & Desmeules, F. (2024). "Cooperation between physicians and physios fosters trust you know": a qualitative study exploring patients' experience with first-contact physiotherapy for low back pain in French primary care. *BMC Primary Care*, 25(1), Article 1. <https://doi.org/10.1186/s12875-024-02302-x>
- Kechichian, A., Viain, E., Lathière, T., Desmeules, F., & Pinsault, N. (2024). First-contact physiotherapists' perceived competency in a new model of care for low back pain patients: a mixed methods study. *Archives of Physiotherapy*, 56–64. <https://doi.org/10.33393/aop.2024.3056>
- Keller, F., Allet, L., Meichtry, A., Scascighini, L., Scheermesser, M., Wirz, M., & Nast, I. (2023). Diagnostic and decision-making abilities of Swiss physiotherapists in a simulated direct access setting. *Physiotherapy Theory*

- and Practice, 39(11), 2336–2351.
<https://doi.org/10.1080/09593985.2022.2077269>
- Kinney, M., Seider, J., Beaty, A. F., Coughlin, K., Dyal, M., & Clewley, D. (2020). The impact of therapeutic alliance in physical therapy for chronic musculoskeletal pain: a systematic review of the literature. *Physiotherapy Theory and Practice*, 36(8), 886–898.
<https://doi.org/10.1080/09593985.2018.1516015>
- Koho, P., Borodulin, K., Kautiainen, H., Kujala, U., Pohjolainen, T., & Hurri, H. (2015). Finnish version of the Tampa Scale of Kinesiophobia: reference values in the Finnish general population and associations with leisure-time physical activity. *Journal of Rehabilitation Medicine*, 47(3), 249–255.
<https://doi.org/10.2340/16501977-1927>
- Koponen, P., Borodulin, K., Lundqvist, A., & Sääksjärvi, K. (Eds.) (2018). FinTerveys 2017 -tutkimus.
<https://www.julkari.fi/handle/10024/136223>
- Kulnik, S. T., Latzke, M., Putz, P., Schlegl, C., Sorge, M., & Meriaux-Kratochvila, S. (2022). Experiences and attitudes toward scientific research among physiotherapists in Austria: a cross-sectional online survey. *Physiotherapy Theory and Practice*, 38(9), 1289–1304.
<https://doi.org/10.1080/09593985.2020.1836695>
- Lamb, K., Comer, C., Walsh, N., & McHugh, G. (2023). Access to first contact physiotherapy appointments in primary care: a scoping review. *Musculoskeletal Care*, 21(4), 1182–1194. <https://doi.org/10.1002/msc.1798>
- Lamb, K., Comer, C., Walsh, N., Smith, J., Tang, K., & McHugh, G. (2024). The experiences of patients with musculoskeletal conditions accessing first contact physiotherapy practitioner appointments in general practice in the UK: a qualitative study. *Musculoskeletal Care*, 22(2), e1908.
<https://doi.org/10.1002/msc.1908>
- Langridge, N. (2019). The skills, knowledge and attributes needed as a first-contact physiotherapist in musculoskeletal healthcare. *Musculoskeletal Care*, 17(2), 253–260. <https://doi.org/10.1002/msc.1401>
- Langridge, N., Roberts, L., & Pope, C. (2015). The clinical reasoning processes of extended scope physiotherapists assessing patients with low back pain. *Manual Therapy*, 20(6), 745–750.
<https://doi.org/10.1016/j.math.2015.01.005>
- Lankhorst, N. E., Barten, J. A., Meerhof, R., Bierma-Zeinstra, S. M. A., & Middelkoop, M. van. (2020). Characteristics of patients with knee and ankle symptoms accessing physiotherapy: self-referral vs general practitioner's referral. *Physiotherapy*, 108, 112–119.
<https://doi.org/10.1016/j.physio.2017.03.008>
- Leahy, E., Chipchase, L., Calo, M., & Blackstock, F. C. (2020a). Which learning activities enhance physical therapist practice? Part 1: systematic review and meta-analysis of quantitative studies. *Physical Therapy*, 100(9), 1469–1483. <https://doi.org/10.1093/ptj/pzaa107>

- Leahy, E., Chipchase, L., Calo, M., & Blackstock, F. C. (2020b). Which learning activities enhance physical therapist practice? Part 2: systematic review of qualitative studies and thematic synthesis. *Physical Therapy*, 100(9), 1484–1501. <https://doi.org/10.1093/ptj/pzaa108>
- Lee, H., Hübscher, M., Moseley, G. L., Kamper, S. J., Traeger, A. C., Mansell, G., & McAuley, J. H. (2015). How does pain lead to disability? A systematic review and meta-analysis of mediation studies in people with back and neck pain. *Pain*, 156(6), 988–997. <https://doi.org/10.1097/j.pain.0000000000000146>
- Lewis, M. W., & Gill, P. (2023). Facilitators and barriers regarding the implementation and interprofessional collaboration of a first contact physiotherapy service in primary care in Wales: a qualitative study. *International Journal of Therapy and Rehabilitation*, 30(1), 1–12. <https://doi.org/10.12968/ijtr.2022.0053>
- Lim, W. S., Sharma, S., & Devan, H. (2021). Physiotherapists' attitudes towards and challenges of working in a referral-based practice setting – a systematic scoping review. *European Journal of Physiotherapy*, 23(6), 332–343. <https://doi.org/10.1080/21679169.2020.1739748>
- Lin, I., Wiles, L., Waller, R., Goucke, R., Nagree, Y., Gibberd, M., Straker, L., Maher, C. G., & O'Sullivan, P. P. B. (2020). What does best practice care for musculoskeletal pain look like? Eleven consistent recommendations from high-quality clinical practice guidelines: systematic review. *British Journal of Sports Medicine*, 54(2), 79–86. <https://doi.org/10.1136/bjsports-2018-099878>
- Lincoln, Y.S., Lynham, S.A. & Guba, E.G. (2023). Paradigmatic controversies, contradictions, and emerging confluences, revisited. In: N. K. Denzin, Y. S. Lincoln, M. D. Giardina, & G. S. Cannella (eds.). *The SAGE handbook of qualitative research*. 6th Edition. London: SAGE Publications, 75–112.
- Linton, S. J., & Shaw, W. S. (2011). Impact of psychological factors in the experience of pain. *Physical Therapy*, 91(5), 700–711. <https://doi.org/10.2522/ptj.20100330>
- Lobe, B., Morgan, D. L., & Hoffman, K. (2022). A Systematic comparison of in-person and video-based online interviewing. *International Journal of Qualitative Methods*, 21. <https://doi.org/10.1177/16094069221127068>
- Lockwood, C., Munn, Z., & Porritt, K. (2015). Qualitative research synthesis: methodological guidance for systematic reviewers utilizing meta-aggregation. *International journal of evidence-based healthcare*, 13(3), 179–187. <https://doi.org/10.1097/XEB.0000000000000062>
- Lullo, G., Giannotta, G., Tamborrino, A., Mourad, F., Esposto, M., Giovannico, G., Hoegh, M., & Cioeta, M. (2025). “Do I need an imaging?” Exploring why patients with non-specific chronic low back pain request diagnostic instrumental evaluation: a phenomenological qualitative study. *Musculoskeletal Science and Practice*, 103416. <https://doi.org/10.1016/j.msksp.2025.103416>

- Maas, M. J. M., Driehuis, F., Meerhoff, G. A., Heerkens, Y. F., van der Vleuten, C. P. M., Nijhuis-van der Sanden, M. W. G., & van der Wees, P. J. (2018). Impact of self- and peer assessment on the clinical performance of physiotherapists in primary care: a cohort study. *Physiotherapy Canada*, 70(4), 393–401. <https://doi.org/10.3138/ptc.2017-40.pc>
- Mägi, L., Uibu, E., Moi, A. L., Mortensen, M., Naustdal, K., Pölluste, K., Lember, M., & Kangasniemi, M. (2024). Collaborative learning linking nursing practice and education – interview study with master’s students and teachers. *Nurse Education Today*, 139, 106261. <https://doi.org/10.1016/j.nedt.2024.106261>
- Mallett, R., Bakker, E., & Burton, M. (2014). Is physiotherapy self-referral with telephone triage viable, cost-effective and beneficial to musculoskeletal outpatients in a primary care setting? *Musculoskeletal Care*, 12(4), 251–260. <https://doi.org/10.1002/msc.1075>
- Martin, S., Smith, M., Wilson, D. A., Zadro, J. R., Ferreira, G. E., & O’Keeffe, M. (2025). Non-specific diagnostic labels for musculoskeletal conditions foster positive views about prognosis and non-invasive management but require clear explanation: a systematic review. *Journal of Physiotherapy*, 71(3), 167–178. <https://doi.org/10.1016/j.jphys.2025.06.011>
- McGill, T., Stern, D., Kolber, M., & McGee, J. (2021). Cost outcomes of physical therapist providers compared to primary care providers in the treatment of musculoskeletal patients in a military treatment facility: a retrospective chart review”. *Internet Journal of Allied Health Sciences and Practice*, 19(2). <https://doi.org/10.46743/1540-580X/2021.2000>
- Menezes Costa, L. D. C., Maher, C. G., Hancock, M. J., McAuley, J. H., Herbert, R. D., & Costa, L. O. P. (2012). The prognosis of acute and persistent low-back pain: a meta-analysis. *Canadian Medical Association Journal*, 184(11), E613–E624. <https://doi.org/10.1503/cmaj.111271>
- Michener, L. A., Snyder, A. R., & Leggin, B. G. (2011). Responsiveness of the Numeric Pain Rating Scale in patients with shoulder pain and the effect of surgical status. *Journal of Sport Rehabilitation*, 20(1), 115–128. <https://doi.org/10.1123/jsr.20.1.115>
- Millington, P. M., Snaith, B., Edwards, L., & Carus, C. A. (2024). Factors that influence the quality of the clinical supervision experience in a first contact physiotherapy (FCP) role – the perspectives of supervisors and supervisees – a qualitative analysis. *Musculoskeletal Science and Practice*, 70, 102921. <https://doi.org/10.1016/j.msksp.2024.102921>
- Mintken, P. E., Pascoe, S. C., Barsch, A. K., & Cleland, J. A. (2015). Direct access to physical therapy services is safe in a university student health center setting. *Journal of Allied Health*, 44(3), 164–168. <https://www.proquest.com/scholarly-journals/direct-access-physical-therapy-services-is-safe/docview/1720457111/se-2>
- Moffatt, F., Goodwin, R., & Hendrick, P. (2018). Physiotherapy-as-first-point-of-contact-service for patients with musculoskeletal complaints: understanding the challenges of implementation. *Primary Health Care*

- Research & Development*, 19(02), 121–130.
<https://doi.org/10.1017/S1463423617000615>
- Mohammed, O., Alzahrani, H., Marouf, E., & Shaheen, R. (2025). Physiotherapists' perspectives on the implementation of direct access to physiotherapy services in Saudi Arabia: a cross-sectional study. *BMJ Open*, 15(2), e089601. <https://doi.org/10.1136/bmjopen-2024-089601>
- Moore, J. H., McMillian, D. J., Rosenthal, M. D., & Weishaar, M. D. (2005). Risk determination for patients with direct access to physical therapy in military health care facilities. *Journal of Orthopaedic & Sports Physical Therapy*, 35(10), 674–678. <https://doi.org/10.2519/jospt.2005.35.10.674>
- Moore, L., & Lewis, A. (2025). Self-referral to musculoskeletal physiotherapy in the National Health Service (NHS): a mixed methods, four-domain analysis of 1,000 adult new patients initially assessed via telephone versus face-to-face. *European Journal of Physiotherapy*, 27(1), 48–59. <https://doi.org/10.1080/21679169.2024.2337414>
- Morris, L., Moule, P., Pearson, J., Foster, D., & Walsh, N. (2021). Patient acceptability of the physiotherapy first contact practitioner role in primary care: a realist informed qualitative study. *Musculoskeletal Care*, 19(1), 38–51. <https://doi.org/10.1002/msc.1505>
- Naylor, J., Killingback, C., & Green, A. (2025). The experiences of patients attending the emergency department who were managed by physiotherapists: a person-centred perspective. *Disability and Rehabilitation*, 47(7), 1741–1753. <https://doi.org/10.1080/09638288.2024.2382311>
- Neblett, R., Hartzell, M. M., Mayer, T. G., Bradford, E. M., & Gatchel, R. J. (2016). Establishing clinically meaningful severity levels for the Tampa Scale for Kinesiophobia (TSK-13). *European Journal of Pain (London, England)*, 20(5), 701–710. <https://doi.org/10.1002/ejp.795>
- Nicholas, M. K., Linton, S. J., Watson, P. J., & Main, C. J. (2011). Early identification and management of psychological risk factors (“yellow flags”) in patients with low back pain: a reappraisal. *Physical Therapy*, 91(5), 737–753. <https://doi.org/10.2522/ptj.20100224>
- Nicholls, D. A., Ahlsen, B., Bjorbaekmo, W., Dahl-Michelsen, T., Höppner, H., Rajala, A. I., Richter, R., Hansen, L. S., Sudmann, T., Sviland, R., & Maric, F. (2024). Critical physiotherapy: a ten-year retrospective. *Physiotherapy Theory and Practice*, 40(11), 2617–2629. <https://doi.org/10.1080/09593985.2023.2252524>
- Nozedar, L., & O'Shea, S. (2023). What is the prevalence of burnout amongst first contact physiotherapists working within primary care? *Musculoskeletal Care*, 21(3), 776–785. <https://doi.org/10.1002/msc.1752>
- Ojha, H. A., Snyder, R. S., & Davenport, T. E. (2014). Direct access compared with referred physical therapy episodes of care: a systematic review. *Physical Therapy*, 94(1), 14–30. <https://doi.org/10.2522/ptj.20130096>
- O'Keeffe, M., Cullinane, P., Hurley, J., Leahy, I., Bunzli, S., O'Sullivan, P. B., & O'Sullivan, K. (2016). What influences patient-therapist interactions in

- musculoskeletal physical therapy? Qualitative systematic review and meta-synthesis. *Physical Therapy*, 96(5), 609–622.
<https://doi.org/10.2522/ptj.20150240>
- Oliveira, C. B., Maher, C. G., Pinto, R. Z., Traeger, A. C., Lin, C.-W. C., Chenot, J.-F., van Tulder, M., & Koes, B. W. (2018). Clinical practice guidelines for the management of non-specific low back pain in primary care: an updated overview. *European Spine Journal*, 27(11), 2791–2803.
<https://doi.org/10.1007/s00586-018-5673-2>
- Owens, S. C., Tucker, P., Rainey, Y., Edmunds, B., & Shetty, A. (2014). Student perceived competence in direct access to physical therapy in a doctor of physical therapy program at a historically black university. *Journal of Health Care for the Poor and Underserved*, 25(4), 1966–1981.
<https://doi.org/10.1353/hpu.2014.0192>
- Paris Ferrer, T., Masaracchio, M., Kirker, K., Madi Dewan, B., Manthripragada, M. & and Ojha, H. (2024). Outcomes of direct access telehealth physical therapy for patients with musculoskeletal pain: a single cohort observational retrospective study. *Physiotherapy Theory and Practice*, 40(10), 2233–2240. <https://doi.org/10.1080/09593985.2023.2245032>
- Parselle, M., & May, S. (2025). Experiences of the management of uncertainty amongst musculoskeletal first contact practitioners working in primary care. *Musculoskeletal Care*, 23(1), 1–17, e70062.
<https://doi.org/10.1002/msc.70062>
- Paul-Savoie, E., Bourgault, P., Potvin, S., Gosselin, E., & Lafrenaye, S. (2018). The impact of pain invisibility on patient-centered care and empathetic attitude in chronic pain management. *Pain Research and Management*, 2018(1), 6375713. <https://doi.org/10.1155/2018/6375713>
- Peterson, S., Shepherd, M., Farrell, J., & Rhon, D. I. (2022). The blind men, the elephant, and the continuing education course: why higher standards are needed in physical therapist professional development. *Journal of Orthopaedic & Sports Physical Therapy*, 52(10), 642–646.
<https://doi.org/10.2519/jospt.2022.11377>
- Piscitelli, D., Furmanek, M. P., Meroni, R., De Caro, W., & Pellicciari, L. (2018). Direct access in physical therapy: a systematic review. *La Clinica Terapeutica*, 169(5), e249–e260. <https://doi.org/10.7417/CT.2018.2087>
- Publication Forum. (2022, November 7). Publication Forum.
<https://julkaisufoorumi.fi/en/publication-forum>
- Rantonen, J. (2019). Secondary prevention of low back pain in occupational health services: long-term effectiveness and cost-effectiveness of early interventions. University of Helsinki, Faculty of Medicine, Doctoral Programme in Population Health. Doctoral dissertation.
<https://helda.helsinki.fi/server/api/core/bitstreams/2b7a730d-7c4a-4232-8a3d-932a9f4a099c/content>
- Ranzatto, A. D. da S., Chaves, T. C., Martins, M. N., Motta, D. P., Nogueira, L. C., Meziat-Filho, N., & Reis, F. J. J. (2024). Pain intensity scales: a cross-sectional study on the preferences and knowledge of physiotherapists

- and participants with musculoskeletal pain. *Musculoskeletal Science and Practice*, 73, 103162. <https://doi.org/10.1016/j.msksp.2024.103162>
- Riley, S. P., Tafuto, Vincent, & Brismée, J.-M. (2016). Retrospective analysis of physical therapy utilization by the specificity of the diagnosis and order written on the referral. *Physiotherapy Theory and Practice*, 32(6), 461–467. <https://doi.org/10.3109/09593985.2016.1145310>
- Riska, H. E., Karppinen, J. I., Heikkala, M. E., Nikander, R. P., Villberg, J. J., & Hautala, A. J. (2025a). Association between patient-specific factors and the therapeutic relationship in direct access physiotherapy for higher education students – an observational cross-sectional study. *Physiotherapy Research International*, 30(4), e70112. <https://doi.org/10.1002/pri.70112>
- Riska, H., Karppinen, J., Heikkala, E., Nikander, R., Villberg, J., & Hautala, A. J. (2025b). Psychosocial factors and physical function in higher education students with musculoskeletal pain attending direct access physiotherapy: an observational longitudinal study. *Physiotherapy Theory and Practice*, 41(10), 2055–2066. <https://doi.org/10.1080/09593985.2025.2494113>
- Sackett, D. L., Rosenberg, W. M., Gray, J. A., Haynes, R. B., & Richardson, W. S. (1996). Evidence based medicine: what it is and what it isn't. *BMJ: British Medical Journal*, 312(7023), 71–72. <https://doi.org/10.1136/bmj.312.7023.71>
- Saueressig, T., Owen, P. J., Pedder, H., Arora, N. K., Simons, M., Kaczorowski, S., Miller, C. T., Donath, L., & Belavy, D. L. (2024). Boosting treatment outcomes via the patient-practitioner relationship, treatment beliefs, or therapeutic setting. a systematic review with meta-analysis of contextual effects in chronic musculoskeletal pain. *Journal of Orthopaedic & Sports Physical Therapy*, 54(7), 440–456. <https://doi.org/10.2519/jospt.2024.12259>
- Sayer, J. M., Kinsella, R. M., Cary, B. A., Burge, A. T., Kimmel, L. A., & Harding, P. (2018). Advanced musculoskeletal physiotherapists are effective and safe in managing patients with acute low back pain presenting to emergency departments. *Australian Health Review: A Publication of the Australian Hospital Association*, 42(3), 321–326. <https://doi.org/10.1071/AH16211>
- Scheele, J., Vijfvinkel, F., Rigter, M., Swinkels, I. C. S., Bierman-Zeinstra, S. M. A., Koes, B. W., & Luijsterburg, P. A. J. (2014). Direct access to physical therapy for patients with low back pain in the Netherlands: prevalence and predictors. *Physical Therapy*, 94(3), 363–370. <https://doi.org/10.2522/ptj.20120330>
- Schreier, M. (2012). *Qualitative content analysis in practice* (First Edition). London: SAGE Publications.
- Schütze, R., Liew, B., Caneiro, J. P., O'Sullivan, P., Kent, P., Hancock, M., Hartvigsen, J., O'Sullivan, K., McGregor, A., Campbell, A., Attwell, S., & Smith, A. (2025). Mechanisms of change in cognitive functional therapy:

- a longitudinal mediation analysis of the RESTORE clinical trial for disabling chronic low back pain. *Behaviour Research and Therapy*, 193, 104853. <https://doi.org/10.1016/j.brat.2025.104853>
- Scurlock-Evans, L., Upton, P., & Upton, D. (2014). Evidence-based practice in physiotherapy: a systematic review of barriers, enablers and interventions. *Physiotherapy*, 100(3), 208–219. <https://doi.org/10.1016/j.physio.2014.03.001>
- Sebbag, E., Felten, R., Sagez, F., Sibilia, J., Devilliers, H., & Arnaud, L. (2019). The world-wide burden of musculoskeletal diseases: a systematic analysis of the World Health Organization Burden of Diseases Database. *Annals of the Rheumatic Diseases*, 78(6), 844. <https://doi.org/10.1136/annrheumdis-2019-215142>
- Severijns, P., Goossens, N., Dankaerts, W., Pitance, L., Roussel, N., Denis, C., Fourré, A., Verschueren, P., Timmermans, A., & Janssens, L. (2024). Physiotherapy-led care versus physician-led care for persons with low back pain: a systematic review. *Clinical Rehabilitation*, 38(12), 1571–1589. <https://doi.org/10.1177/02692155241282987>
- Shaw, R., Hiles, D. R., West, K., Holland, C., & Gwyther, H. (2018). From Mixing methods to the logic(s) of inquiry: taking a fresh look at developing mixed design studies. *Health Psychology and Behavioral Medicine*, 6(1), 226–244. <https://doi.org/10.1080/21642850.2018.1515016>
- Simula, A. S., Malmivaara, A., Booth, N., & Karppinen, J. (2024). Effectiveness of a classification-based approach to low back pain in primary care – a benchmarking controlled trial: trust your back. *Journal of Rehabilitation Medicine*, 56, jrm28321. <https://doi.org/10.2340/jrm.v56.28321>
- Steen, E., McCrum, C., & Cairns, M. (2023). A UK survey evaluation of first contact practitioners' and musculoskeletal physiotherapists' confidence, recognition, and referral of suspected axial spondyloarthritis. *Musculoskeletal Care*, 21(2), 380–396. <https://doi.org/10.1002/msc.1706>
- Stefane, P., Teixeira, L., Ribeiro, Ó., & Silva, A. G. (2022). Self-referral to physiotherapy in older adults: findings from the European health interview survey. *European Journal of Physiotherapy*, 24(6), 327–332. <https://doi.org/10.1080/21679169.2021.1874047>
- Stevenson, K., Hadley-Barrows, T., Evans, N., Campbell, L., Southam, J., Chudyk, A., Ellington, D., Jeeves, B., Jenson, C., Kleberg, S., Birkinshaw, H., Mair, F., Dziedzic, K., Peat, G., Jordan, K. P., Yu, D., Bailey, J., Braybooke, A., Mallen, C. D., & Hill, J. C. (2024). The SelfSTarT intervention for low back pain patients presenting to first contact physiotherapists: a mixed methods service evaluation. *Musculoskeletal Care*, 22(1), 1–12, e1876. <https://doi.org/10.1002/msc.1876>
- Stynes, S., Jordan, K. P., Hill, J. C., Wynne-Jones, G., Cottrell, E., Foster, N. E., Goodwin, R., & Bishop, A. (2021). Evaluation of the first contact physiotherapy (FCP) model of primary care: patient characteristics and outcomes. *Physiotherapy*, 113, 199–208. <https://doi.org/10.1016/j.physio.2021.08.002>

- Sutton, M., Govier, A., Prince, S., & Morphett, M. (2015). Primary-contact physiotherapists manage a minor trauma caseload in the emergency department without misdiagnoses or adverse events: an observational study. *Journal of Physiotherapy*, 61(2), 77–80.
<https://doi.org/10.1016/j.jphys.2015.02.012>
- Swinkels, I. C. S., Kooijman, M. K., Spreeuwenberg, P. M., Bossen, D., Leemrijse, C. J., Van Dijk, C. E., Verheij, R., De Bakker, D. H., & Veenhof, C. (2014). An overview of 5 years of patient self-referral for physical therapy in the Netherlands. *Physical Therapy*, 94(12), 1785–1795.
<https://doi.org/10.2522/ptj.20130309>
- Szymanek, E., Jones, M., Shutt-Hoblet, C., & Halle, R. (2022). Implementation of direct access physical therapy within the military medical system. *Military Medicine*, 187(5–6), e649–e654.
<https://doi.org/10.1093/milmed/usab245>
- Tawiah, A. K., Desmeules, F., Finucane, L., Lewis, J., Wieler, M., Stokes, E., & Woodhouse, L. J. (2021). Advanced practice in physiotherapy: a global survey. *Physiotherapy*, 113, 168–176.
<https://doi.org/10.1016/j.physio.2021.01.001>
- Tawiah, A. K., Stokes, E., Wieler, M., Desmeules, F., Finucane, L., Lewis, J., Warren, J., Lundon, K., Noblet, T., Cunningham, C., & Woodhouse, L. J. (2024). Developing an international competency and capability framework for advanced practice physiotherapy: a scoping review with narrative synthesis. *Physiotherapy*, 122, 3–16.
<https://doi.org/10.1016/j.physio.2023.07.002>
- Tawiah, A.K., Stokes, E., Wieler, M., Desmeules, F., Finucane, L., Lewis, J., Warren, J., Lundon, K., Noblet, T., Cunningham, C., & Woodhouse, L. (2023). Developing a core competency and capability framework for advanced practice physiotherapy: a qualitative study. *Physiotherapy Theory and Practice*, 40, 1–15.
<https://doi.org/10.1080/09593985.2023.2170196>
- Thomas, R., Berry, A., Cramp, F., & Walsh, N. (2024). Patient perspectives of general practice consultation for musculoskeletal disorders: a qualitative study. *Musculoskeletal Care*, 22(2), 1–8, e1904.
<https://doi.org/10.1002/msc.1904>
- Thompson, J. H., Thompson, J., & Bailey, S. (2024). Shared decision-making in advanced physiotherapy and first contact physiotherapy management of adults with musculoskeletal disorders in the United Kingdom: an online cross-sectional survey. *Journal of Evaluation in Clinical Practice*, 30(7), 1297–1308. <https://doi.org/10.1111/jep.14043>
- Trulsson Schouenborg, A., Rivano Fischer, M., Bondesson, E., & Jöud, A. (2021). Physiotherapist-led rehabilitation for patients with chronic musculoskeletal pain: Interventions and promising long-term outcomes. *BMC Musculoskeletal Disorders*, 22(1), 910.
<https://doi.org/10.1186/s12891-021-04780-x>

- Truter, P., Flanagan, P., Waller, R., Richards, K., Makate, M., Johnstone, A., Bongiascia, L., Spilsbury, K., Cavalheri, V., & Lin, I. (2024). Short waits, happy patients and expert care, moving basic musculoskeletal care from the emergency department to a physiotherapist-led diversion pathway. *Emergency Medicine Australasia*, 36(5), 695–702.
<https://doi.org/10.1111/1742-6723.14416>
- Tutkimuseettinen Neuvottelukunta. (2023). Hyvä tieteellinen käytäntö ja sen loukkausepäilyjen käsitteleminen Suomessa.
https://tenk.fi/sites/default/files/2023-03/HTK-ohje_2023.pdf
- Vervaeke, R., Lafrance, S., & Demont, A. (2023). Core competencies for first contact physiotherapists in a direct access model of care for adults with musculoskeletal disorders: a scoping review. *Musculoskeletal Care*, 21(4), 1353–1363. <https://doi.org/10.1002/msc.1813>
- Vignaud, H., Molins, C., Legaux, C., Slusznis, A., Sarhan, F., & Demont, A. (2023). Description of the abilities of physiotherapists in terms of diagnostic hypothesis and management decision for self-referred patients with musculoskeletal disorders in France using clinical vignettes: a cross-sectional survey. *Musculoskeletal Care*, 21(4), 1592–1600.
<https://doi.org/10.1002/msc.1836>
- Wainwright, S. F., Shepard, K. F., Harman, L. B., & Stephens, J. (2011). Factors that influence the clinical decision making of novice and experienced physical therapists. *Physical Therapy*, 91(1), 87–101.
<https://doi.org/10.2522/ptj.20100161>
- Waller, R., McLaughlin, M., King, S., Lai, J., Holt, R., Flanagan, P., Lin, I., Richards, K., & Truter, P. (2025). Managing non-traumatic musculoskeletal conditions presenting to emergency departments: do patient profiles vary between a physiotherapy-led ‘diversion’ pathway and routine care? *Australasian Emergency Care*, 28(1), 24–30.
<https://doi.org/10.1016/j.auec.2024.08.001>
- Walsh, N. E., Halls, S., Thomas, R., Berry, A., Liddiard, C., Cupples, M. E., Gage, H., Jackson, D., Cramp, F., Stott, H., Kersten, P., Jagosh, J., Foster, D., & Williams, P. (2024). First contact physiotherapy: an evaluation of clinical effectiveness and costs. *The British Journal of General Practice: The Journal of the Royal College of General Practitioners*, 74(747), e717–e726.
<https://doi.org/10.3399/BJGP.2023.0560>
- Widerström, B., Rasmussen-Barr, E., & Boström, C. (2019). Aspects influencing clinical reasoning and decision-making when matching treatment to patients with low back pain in primary healthcare. *Musculoskeletal Science and Practice*, 41, 6–14. <https://doi.org/10.1016/j.msksp.2019.02.003>
- Wood, L., Bishop, A., Goodwin, R., & Styne, S. (2022). Patient satisfaction with the first contact physiotherapy service: results from the national evaluation survey. *Musculoskeletal Care*, 20(2), 363–370.
<https://doi.org/10.1002/msc.1599>

- World Health Organization. (2022, November 7). Musculoskeletal health. <https://www.who.int/news-room/fact-sheets/detail/musculoskeletal-conditions>
- World Health Organization. (2025a, November 7). International Classification of Functioning, Disability and Health (ICF). <https://www.who.int/standards/classifications/international-classification-of-functioning-disability-and-health>
- World Health Organization. (2025b, November 7). Low back pain. <https://www.who.int/news-room/fact-sheets/detail/low-back-pain>
- World Physiotherapy. (2023). Policy statement: direct access and patient/client self-referral to physiotherapy. <https://world.physio/policy/ps-direct-access>
- Wright, B. J., Galtieri, N. J., & Fell, M. (2014). Non-adherence to prescribed home rehabilitation exercises for musculoskeletal injuries: the role of the patient-practitioner relationship. *Journal of Rehabilitation Medicine*, 46(2), 153–158. <https://doi.org/10.2340/16501977-1241>
- Yang, M., Bishop, A., Sussex, J., Roland, M., Jowett, S., & Wilson, E. C. F. (2021). Economic evaluation of patient direct access to NHS physiotherapy services. *Physiotherapy*, 111, 40–47. <https://doi.org/10.1016/j.physio.2020.12.005>
- Zadro, J., O’Keeffe, M., & Maher, C. (2019). Do physical therapists follow evidence-based guidelines when managing musculoskeletal conditions? Systematic review. *BMJ Open*, 9(10), e032329. <https://doi.org/10.1136/bmjopen-2019-032329>
- Zouch, J. H., Bhimani, N., Bussi res, A., Ferreira, M. L., Foster, N. E., & Ferreira, P. (2024). Prognostic factors and treatment effect modifiers for physical health, opioid prescription, and health care utilization in patients with musculoskeletal disorders in primary care: exploratory secondary analysis of the STEMS randomized trial of direct access to physical therapist-led care. *PTJ: Physical Therapy & Rehabilitation Journal*, 104(8), 1–10, pzae066. <https://doi.org/10.1093/ptj/pzae066>
- Zouch, J. H., Berg, B., Pripp, A. H., Storheim, K., Ashton-James, C. E., Ferreira, M. L., Grotle, M., & Ferreira, P. H. (2024). Reducing strain on primary healthcare systems through innovative models of care: the impact of direct access physiotherapy for musculoskeletal conditions – an interrupted time series analysis. *Family Medicine and Community Health*, 12(3). <https://doi.org/10.1136/fmch-2024-002998>

APPENDICES

Appendix 1. Table of results of scoping literature review.

Perspective	Sub-perspective	Study, year and country	Brief synthesis of findings within perspective
Reviews of direct access physiotherapy	Systematic reviews (n=5)	Demont et al., 2021 (global) Hon et al., 2024 (USA) Ojha et al., 2014 (global) Piscitelli et al., 2018 (global) Severijns et al., 2024 (global)	In comparison to the traditional medical model, direct access had better clinical outcomes in, for example, functioning and quality of life. Higher client satisfaction. Shorter waiting times. Fewer visits to physiotherapy or physicians and less secondary care. Less medical imaging and fewer prescribed medications. Lower health care costs. No harm.
	Other reviews (n=3)	Bicker et al., 2024 (UK) Cattrysse et al., 2024 (global) Clark et al., 2022 (global)	Current literature supports direct access on basis of patient safety, client satisfaction, access to care, reduced waiting times, and potential cost savings.

(continues)

Perspective	Sub-perspective	Study, year and country	Brief synthesis of findings within perspective
Direct access as a model of care	Characteristics of direct access as a model of care (n=19, of which qualitative n=3)	Bishop et al., 2021 (UK) Boissonault & Lovely, 2016 (USA) Denninger et al., 2018 (USA) Downie et al., 2019 (UK) Green et al., 2019 (USA) Goodwin & Hendrick, 2016 (UK) Goodwin et al., 2020 (UK) <i>qualitative</i> Goodwin et al., 2021 (UK) <i>qualitative</i> Halls et al., 2020 (UK) Henning et al., 2024 (UK) Igwesi-Chidobe et al., 2021 (England) <i>qualitative</i> Kechichian, Desmeules et al., 2024 (France) Mallett et al., 2014 (UK) Scheele et al., 2014 (Netherlands) Stefane et al., 2022 (Europe) Swinkels et al., 2016(Netherlands) Szymanek et al., 2022 (USA) Walsh et al., 2024 (UK) Zouch, Berg et al, 2024 (Norway)	Direct access was not inferior to the traditional medical model. It was reported as safe, clinically effective client management that has potential cost-benefits and improved client satisfaction. Physiotherapists can independently and effectively treat musculoskeletal clients. Lower costs were due to, for example, shorter waiting times, active rather than passive treatment, fewer prescribed medications. less imaging, and fewer other visits. The reported barriers to the implementation and utilization of direct access were a lack of resources and administrator and patient knowledge regarding direct access, a lack of clarity concerning the pathway, and physiotherapists' varying differential diagnosis and medical screening abilities. Client awareness and understanding of direct access and the role of the physiotherapist was limited. Clients tended to view physicians as default first contact practitioners. For example, the rate of self-referral of older adults to physiotherapy was low and asymmetrical in European countries. Findings regarding the impact on physician workload are inconclusive

(continues)

Perspective	Sub-perspective	Study, year and country	Brief synthesis of findings within perspective
Direct access as a model of care	Remote direct access (n=4, of which qualitative n=1)	Anchors et al., 2023 (UK) Grant & Skamagki, 2024 (UK) <i>qualitative</i> Moore and Lewis, 2025 (UK) Paris Ferrer et al., 2024 (USA)	Remote direct access offers clients a treatment choice and an alternative. May be as effective as traditional in-person care without sacrificing employee satisfaction. Results are inconclusive and further research is needed.
	Direct access in emergency department (n=9, of which qualitative n=1)	Alkhouri et al., 2020 (Australia) Bird et al., 2016 (Australia) De Gruchy et al., 2015 (Australia) Gagnon et al., 2021 (Canada) Henderson et al., 2020 (Australia) Naylor et al., 2025 (UK) <i>qualitative</i> Sutton et al., 2015 (Australia) Truter et al., 2024 (Australia) Waller et al., 2025 (Australia)	Physiotherapists could manage most patients in the emergency department independently. Overall, patients had shorter stays in the emergency department and were discharged within the 4-hour target. Higher patient and staff satisfaction. Better patient outcomes. No adverse events. Patients expect validation of their physiotherapy appointment and value the educational aspects that the physiotherapists provide.
	Health care costs (n=6)	Frogner et al., 2018 (USA) Garrity et al., 2020 (USA) Ho-Henriksson et al., 2022 (Sweden) McGill et al., 2021 (USA) Riley et al., 2016 (USA) Yang et al., 2021 (UK)	Direct access/physiotherapy-led care is cost effective. Costs were lower due to less imaging, fewer medications, less health care utilization and lower costs than physician-led care. Physician diagnosis or referral may not be required for direct access, and it may delay access to health care and increase costs.

(continues)

Perspective	Sub-perspective	Study, year and country	Brief synthesis of findings within perspective
Clients' experiences	Client outcomes (n=6)	Bornhöft et al., 2019 (Sweden)	The health effects of physiotherapists' triage for primary assessment in primary care were at least as positive as those of physicians' primary assessment.
		Karvonen, Paatelma, Heinonen et al., 2017 (Finland)	
		Lamb et al., 2023 (UK)	To facilitate direct access physiotherapy, receptionist/triage and digital/online systems are important elements that improve access.
		Lankhorst et al., 2020 (Netherlands)	
		Stynes et al., 2021 (UK)	Direct access clients were younger (e.g., in one study, mean age was 56), more often female, have a higher education level and a shorter duration of symptoms than physician-referred clients.
		Zouch, Bhimani et al., 2024 (UK)	
			Self-referred clients had fewer treatment sessions and their pain and musculoskeletal health status improved. Higher pain self-efficacy scores at baseline were associated with improved physical health scores, fewer opioid prescriptions, and less health care utilization. Greater bodily pain at baseline and having low back pain was associated with poorer physical health scores and more opioid prescriptions.
			Clients were satisfied with direct access physiotherapy and received help for their pain.

(continues)

Perspective	Sub-perspective	Study, year and country	Brief synthesis of findings within perspective
Clients' experiences	Patient-reported outcome measures (n=3)	Fennelly et al., 2018 (global) Forsbrand et al., 2017 (Sweden) Stevenson et al., 2024 (UK)	72 different patient-reported outcome measures were used, which mostly capture Patient Satisfaction, Quality of Life (QoL), Functional Status, and Pain. For QoL the EuroQol five-dimensions questionnaire (EuroQoL-5D) and the 36-Item Short-Form (SF-36), and for pain the Visual Analogue Scale (VAS). No key measure was identified for functional status. The STarT Back Screening Tool and the Örebro Musculoskeletal Pain Screening Questionnaire (ÖMPSQ) were utilized. The correlation between STarT Back and ÖMPSQ-short scores were moderately strong.
	Patient safety (n=1)	Mintken et al., 2015 (USA)	No reported unidentified cases of serious medical pathology or adverse events in 12976 treated individuals over 10 years.
	Clients' experiences of direct access (n=6, of which qualitative n=6)	Alshareef et al., 2023 (USA) <i>qualitative</i> Kechichian, Pommier et al., 2024 (France) <i>qualitative</i> Lamb et al., 2024 (UK) <i>qualitative</i> Morris et al., 2021 (UK) <i>qualitative</i> Thomas et al., 2024 (UK) <i>qualitative</i> Wood et al., 2022 (UK) <i>qualitative</i>	Clients were accepting direct access overall, and their experiences seemed positive. The facilitators appeared to be quick/easy access, and timely, high-quality person-centred care from a specialized physiotherapist. Clients trusted physiotherapy and the system. The advantages seemed to be quick, accurate diagnoses and targeted advice. Barriers appeared to be public perception of needing to initially see a physician and difficulty contacting the service. Awareness of direct access was low, and access routes varied.

(continues)

Perspective	Sub-perspective	Study, year and country	Brief synthesis of findings within perspective
Physiotherapists' experiences	Competencies in direct access (n=9, of which qualitative n=3)	Black et al., 2023 (UK) Campbell et al., 2024 (England) <i>qualitative</i> Demont et al., 2024 (France) Kechichian, Viain et al., 2024 (France) Langridge, 2019 (UK) <i>qualitative</i> Tawiah et al., 2023 (UK, Ireland, Canada, Australia, and New Zealand) <i>qualitative</i> Tawiah et al., 2024 (global) Thompson et al., 2024 (UK) Vervaeke et al., 2023 (global)	Direct access physiotherapists need a variety of competencies, which include assessment and examination skills, management and intervention skills, speed of thought in an uncertain environment, common sense and simplifying skills, communication skills, cooperation and collaboration skills, and professional and leadership skills. First-contact practitioners felt competent in making medical diagnoses, prescribing analgesics and referring onward to physiotherapy. They did not feel competent prescribing non-steroidal anti-inflammatory drugs and issuing sick leave certificates. The factors that influenced perceived competence were experience, training, knowledge, collaboration with physicians, great responsibility and risk management in decision-making. Decisions were usually made together with the client. Posting on social media, such as Twitter (now X), could be a way to share knowledge rapidly and provide networking opportunities, yet many did not feel confident enough to actively do this.

(continues)

Perspective	Sub-perspective	Study, year and country	Brief synthesis of findings within perspective
Physiotherapists' experiences	Clinical reasoning and decision-making (n=8, of which qualitative n=2)	Black et al., 2025 (UK) Budtz et al., 2021 (Denmark) Ho et al., 2019 (Sweden) Karvonen, Paatelma, Laitinen-Väänänen et al., 2017 (Finland) <i>qualitative</i> Keller et al., 2023 (Switzerland) Langridge et al., 2015 (UK) <i>qualitative</i> Steen et al., 2023 (UK) Vignaud et al., 2023 (France)	Physiotherapists made correct diagnostic hypotheses in about 17-55% and correct management decisions in 60-85% of the cases. It seems that physiotherapists are able to detect red flags effectively but not necessarily to arrive at a correct diagnostic hypothesis. Professional experience seemed to be associated with correct decision-making. Correct management decisions were made in cases of musculoskeletal conditions, whereas incorrect decisions were more often chosen for underlying medical conditions. Clinical reasoning processes were influenced by prior thinking, client interaction, formal testing, time, safety and accountability, external and internal factors (such as policies, and self-perceptions) and 'gut-feelings'. Physiotherapists critically analysed and justified their decisions when using the hypothetico-deductive clinical reasoning model. Physiotherapists and physicians in primary care were equally qualified as primary assessors in suspected knee osteoarthritis. Musculoskeletal physiotherapists demonstrated some improved knowledge and awareness of suspected axial spondyloarthritis. Most occupational physiotherapists working as first contact practitioners used sick notes rather than recommending limited work engagement where possible.

(continues)

Perspective	Sub-perspective	Study, year and country	Brief synthesis of findings within perspective
Physiotherapists' experiences	Professional role (n=8, of which qualitative n=7)	Bassett & Jackson, 2022 (UK) Greenhalgh et al., 2020 (UK) <i>qualitative</i> Ingram et al., 2023 (UK) <i>qualitative</i> Karvonen et al., 2021 (Finland) <i>qualitative</i> Lewis & Gill, 2023 (Wales) <i>qualitative</i> Millington et al., 2024 (England) <i>qualitative</i> Nozedar & O'Shea, 2023 (UK) Parselle & May, 2025 (UK) <i>qualitative</i>	Physiotherapists' roles as first-contact practitioners offered positive developments for clients, the physiotherapy profession, primary care providers as well as the physiotherapists themselves. Direct access represented role, career and skill advancements, referred to as professional developmental journeys, which brought meaningfulness, including increased self-respect and improved competence, to the work. Neither clients nor the multidisciplinary team seemed to fully understand the role of direct access physiotherapists. Inappropriate use of services was common due to, for example, lack of specific aims for the service and unclear leadership, with first-contact physiotherapists often acting as second-contact practitioners. Burnout was seen as a risk for physiotherapists working in the extended/advanced roles, particularly for those with less experience. Non-clinical hours were associated with burnout score. Mentorship support, workload, and training and practice standards were viewed as important. How uncertainty was managed in the extended/advanced role was influenced by many factors, including the work environment, clinicians' experience and preparedness for the role, client complexity and wider medical knowledge, concerns about overlooking serious pathology, fear of over-medicalizing clients, communication and consultation styles and having protected non-clinical time.

(continues)

Perspective	Sub-perspective	Study, year and country	Brief synthesis of findings within perspective
Physiotherapists' experiences	Student competence in direct access (n=2, of which qualitative n=1)	Bassett & Jackson, 2020 (UK) <i>qualitative</i> Owens et al., 2014 (USA)	Physiotherapy students reported increased perceived competence in providing physiotherapy through direct access as they progressed through and completed their curriculum and clinical education. Physiotherapy students encountered challenges in direct access clinical education (work placement), such as time-restricted appointment slots, limited supervision, and identifying red flags and complex patient presentations. As a learning opportunity direct access placement enabled them to gain knowledge of extended physiotherapist roles.
	Views on implementation of direct access (n=4, of which qualitative n=1)	Alnaqbi et al., 2021 (UAE) Moffat et al., 2018 (UK) <i>qualitative</i> Mohammed et al., 2025 (Saudi-Arabia) Tawiah et al., 2021 (global)	Physiotherapists were mostly aware of direct access. The barriers to implementation were laws and regulations, limited physician and policy-maker support, client beliefs, entry-level education, low self-confidence, and a limited scope of practice and professional autonomy. The facilitators were research evidence, advocacy by the professional organization, the need to reduce costs and the support from employers. Implementation seems to require a cultural change in patient expectations of physicians being the 'legitimate choice'. Unfounded fears regarding physiotherapists' ability to work autonomously or identify red flags were also common. Formal roles for advanced practice physiotherapists existed in 17% of World Physiotherapy member organizations.

ORIGINAL PUBLICATIONS

I

PHYSIOTHERAPY EDUCATORS' PERCEPTIONS OF PHYSIOTHERAPISTS' COMPETENCIES AND CONTINUING EDUCATION IN THE PRACTICE OF MUSCULOSKELETAL PHYSIOTHERAPY DIRECT ACCESS

by

Roine, M., Jäppinen, A.-M., Karvonen, E., Munukka, M. & Vuoskoski, P. (2024).

Physiotherapy Theory and Practice, 41(5), 1035-1047

<https://doi-org.ezproxy.jyu.fi/10.1080/09593985.2024.2394512>

Reproduced with kind permission by Taylor & Francis.

Physiotherapy educators' perceptions of physiotherapists' competencies and continuing education in the practice of musculoskeletal physiotherapy direct access

Roine Minna^{a*}, Jäppinen Anna-Maija^b, Karvonen Eira^c, Munukka Matti^a and Vuoskoski Pirjo^a

^aFaculty of Sport and Health Sciences, University of Jyväskylä, Jyväskylä, Finland;

^bDepartment of Internal Medicine and Rehabilitation, Helsinki University Hospital, Helsinki, Finland; ^cFysioterapian Konsultointi Paatelma & Karvonen Ky

Correspondence concerning this article should be addressed to Minna Roine to Näyttelijäntie 18 E 55, 00400 Helsinki, Finland, email: mmroine@gmail.com, phone +358451690565.

Roine Minna ORCID: 0000-0003-3388-6592

Jäppinen Anna-Maija ORCID: 0000-0003-3312-159X

Karvonen Eira ORCID: 0000-0001-9772-5777

Munukka Matti ORCID: 0000-0003-3101-466X

Vuoskoski Pirjo ORCID: 0000-0002-0459-4454

Minna Roine is now at Faculty of Sport and Health Sciences, University of Jyväskylä.

We have no known conflict of interest to disclose.

Word count: 7395

Physiotherapy educators' perceptions of physiotherapists' competencies and continuing education in the practice of musculoskeletal physiotherapy direct access

Introduction The aim of direct access (DA) physiotherapy practice in Finland is the treatment of musculoskeletal (MSK) conditions by physiotherapists who have completed continuing DA education. It is difficult to pinpoint the competencies of DA physiotherapists as their roles and scope of practice varies.

Purpose The present study aimed to explore the competencies and education of DA physiotherapists through the perceptions of DA educators.

Methods Data were collected through individual semi-structured interviews of eleven Finnish physiotherapy educators who described their perceptions of DA physiotherapists' competencies and their continuing DA education. The interviews were recorded and transcribed verbatim and then examined using a reflexive thematic analysis.

Results Two main themes were formulated on the basis of the data, conveying the educators' perceptions. The first theme, Interaction as grounds for meaningful clinical reasoning, had two subthemes: Meaningful encounter and Rationally and safely locating the core of the client's problem. The second theme, Continuing professional development in an expert role, had four subthemes: Continuous learning, Self-reflection, Deep understanding and Taking responsibility for one's own expertise.

Conclusion The present study revealed how DA educators perceive the competencies of DA physiotherapists. The findings highlight the perceived significance of the physiotherapists' interaction with the client as a ground for meaningful clinical reasoning, and their responsibility for their own continuing professional self-development.

Keywords: competencies, direct access, physiotherapy, musculoskeletal conditions, clinical reasoning

INTRODUCTION

Musculoskeletal (MSK) conditions are the leading contributor to disability worldwide (World Health Organization, 2022), presenting a global challenge in the field of physiotherapy. The practice of direct access (DA) MSK physiotherapy is a model of care that aims to address this challenge (World Physiotherapy, 2023). Physiotherapists throughout the world are trained to treat MSK conditions as autonomous practitioners, and entry-level education usually prepares them to be clients' primary contact (World Physiotherapy, 2023). In Finland, however, a DA continuing education course is recommended for physiotherapists working in DA MSK physiotherapy settings (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017).

DA is an advanced, broadly scoped practice that does not require a referral or that medical doctors or other professionals transfer tasks to physiotherapists. It is already common in health care services globally (Gallotti et al, 2023; World Physiotherapy, 2023). As a way of organizing the treatment of people with MSK conditions, DA has shown to be a cost-effective safe operational model in different health care environments such as primary, occupational, and private health care and emergency departments worldwide (Gallotti et al, 2023; Hon, Ritter, and Allen, 2021; Moore, McMillan, Rosenthal, and Wieshaar, 2005; Ojha, Snyder, and Davenport, 2014). Physiotherapists have also shown to be independent and effective in the management of people with MSK conditions (Downie, McRitchie, Montheith, and Turner, 2019). During a DA appointment the physiotherapist is responsible for determining the treatment path of the client with MSK conditions; a path which includes assessment, treatment, guidance, and onward referral when needed (World Physiotherapy, 2023). In

Finland, DA MSK physiotherapy practice aims to provide quicker expert physiotherapist treatment, and therefore better treatment outcomes, through preventing the renewal of symptoms (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017).

Several different competence frameworks are used nationally and internationally to describe the competencies needed for this specific scope of practice in physiotherapy (Health Education England and NHS, 2018; Australian Physiotherapy Association, 2023; Finnish Association of Physiotherapists, 2016). For example, a musculoskeletal core capabilities framework has been developed for first point of contact practitioners (Health Education England and NHS, 2018), a physiotherapy competence framework has been designed to guide professional development (Australian Physiotherapy Association, 2023), and a report on the core competencies of Finnish physiotherapists pinpoints the general competencies in the profession (Finnish Association of Physiotherapists, 2016). The European Network of Physiotherapy in Higher Education (ENPHE, 2022) has also issued recommendations regarding the competencies required of DA physiotherapists. These competence frameworks can be beneficial when identifying and evaluating the competencies of physiotherapists in different DA settings. However, they only enable a theoretical understanding of the physiotherapists' competencies.

In the literature, the DA physiotherapists are often described as experts or experienced physiotherapists. More specific terms are used in some countries such as extended scope physiotherapists (ESPs) or advanced practice physiotherapists (APPs) (Fennelly et al, 2018). This type of advanced or extended scope of practice is comparable to Finnish

DA physiotherapy (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017). The ESPs and APPs working in DA have usually completed some kind of continuing education or postgraduate training in addition to their work experience (Fennelly et al, 2018). Evidence also suggests that experienced physiotherapists with postgraduate training tend to make better clinical decisions when treating people with MSK conditions (Vedanayagam, Buzak, Reid, and Saywell, 2021; Hussenbux, Morrissey, Joseph, and McClellan, 2015). In Finland, the aim of DA continuing education courses is to enhance physiotherapists' skills to enable a faster treatment path for MSK clients (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017).

However, despite the existing frameworks for the continuing education courses, work experience and expertise of the DA physiotherapists, the variation in the scope of practice and the challenges identified in DA practices make it difficult to characterize the specific competencies of these expert physiotherapists (Fennelly et al, 2020; Froment et al, 2019; Tawiah et al, 2021; Thompson, Yoward, and Dawson, 2017). A study of Froment et al. (2019) accordingly pinpoints the need to characterize and better understand the advanced scope of practices, such as DA to determine how people with MSK conditions and healthcare systems could benefit from the skills of these expert physiotherapists. Therefore, this study aimed to examine how the competencies and education of DA MSK physiotherapists are understood in the context of one Nordic country.

In Finland, DA physiotherapy practice aims to treat people with MSK conditions in the acute phase. It has been widely utilized in public and private health care environments

across the country for over 20 years (Karvonen, Paatelma, Piirainen, and Laitinen-Väänänen, 2017), and since 2022 also in occupational health services thanks to the change in the Occupational Health Care Act (Finlex, 2021). According to national-level recommendations, physiotherapists who work in DA MSK physiotherapy practice have to complete a DA continuing education course with a minimum of 15 credits in the European Credit Transfer and Accumulation System (ECTS) and must have at least two years of prior experience in treating people with MSK conditions. As the national recommendations also guide the expertise of DA physiotherapy educators, they are meaningfully related to the competencies and expertise of the DA physiotherapists (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017.)

The contents of the DA continuing education courses, which are provided by both public and private sector organizers, include strengthening MSK clinical examination skills with an emphasis on triage and exclusion diagnosis skills, recognizing red flags, and improving clinical reasoning processes. The physiotherapist might meet the client only once, so the decision-making process needs to be quick yet accurate (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017). Evaluating the need for sick leave and offering guidance in over-the-counter medication are introduced as new competencies, as these are not typically part of MSK physiotherapy education at entry level (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017). However, despite the national recommendations, the contents of the DA continuing education courses can vary and thus may address the competencies of the DA physiotherapists in different ways. In a qualitative study by Karvonen, Paatelma,

Piirainen, and Laitinen-Väänänen (2017), which examined the clinical reasoning and critical reflection competencies of physiotherapists who had undergone DA continuing education, the physiotherapists systematically used the hypothetico-deductive clinical reasoning model to examine and justify their decision-making in clinical practice whereas (Roine et al, 2023) found that DA physiotherapists applied different clinical reasoning models in their clinical examinations. The reasons for these variations in DA physiotherapists' clinical reasoning processes are unclear. Therefore, further knowledge of the competencies and education of DA physiotherapists is needed.

The aim of the present qualitative and exploratory study was to examine Finnish physiotherapy educators' perceptions of the competencies and education of DA physiotherapists. The qualitative data collected from the interviews of the DA educators offered a unique viewpoint for gaining a more profound understanding of the phenomenon of interest from the perspective of those who teach DA practice to MSK physiotherapists in Finland. It was assumed that the research phenomenon could be understood by conducting in-depth individual interviews and then examining them using reflexive thematic analysis.

The research question was: What are physiotherapy educators' perceptions of the competencies and education of DA physiotherapists?

METHODS

Participant recruitment

To ensure the richness of data, the participants of this study were purposively recruited from a nationally recognized group of Finnish DA physiotherapy educators from both the public and private sectors. The criteria for recruitment followed the national recommendations (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017), emphasizing expertise in MSK physiotherapy specialty and pedagogy. Twelve recognized DA educators who met the inclusion criteria were invited to participate. Eleven educators with varying experience in DA practice education agreed to participate and were interviewed. The number of participants reflects the limited amount of DA educators in Finland overall.

The participants' mean age was 49 and their work experience in DA practice education for physiotherapists varied from 5 to 22 years (mean=9). Of the eleven participants, five were male and six were female. Ten participants taught the clinical contents of the DA continuing education course for physiotherapists, and one participant taught DA practices to physiotherapists and other health care professionals. All the participants were qualified physiotherapists who were experienced in MSK physiotherapy. Seven of them also had pedagogical qualifications, and five of them had already completed or were working on a PhD.

Ethical permission for the study was received from the Helsinki University Hospital ethical committee (HUS/2710/2020). An initial face-to-face meeting was held with all the participants to explain the aim and reasons for the study and to get their written

informed consent and give them the study information sheet prior to agreeing to participate. Participation was voluntary and could be discontinued at any point during the research. Eleven DA educators agreed to participate in the study and were interviewed.

Data collection

Individual semi-structured interviews were conducted during 2022 to explore each DA educator's perceptions of the competencies and education of DA physiotherapists. The first author was responsible for conducting all the interviews. The second author helped the first author in ten interviews by actively listening and asking follow-up questions if required, and to provide technical help in the case of remote connection problems. One of the interviews was conducted by the first author alone. The follow-up questions were used to obtain more detailed descriptions of the phenomena, for example, by asking the interviewees to clarify or further elaborate their answers (Kvale and Brinkmann, 2009, p.138). All eleven interviews were conducted via secured Microsoft Teams meetings in Finnish. The research team developed the interview frame (Table 1) to ensure that the interview provided insights into the target phenomenon. The query frame included open-ended questions on the competencies and education needed in MSK DA practice (Table 1).

[insert table 1 near here]

All the interviews were recorded and transcribed verbatim. The transcripts were then pseudonymized by assigning the interviewees symbols instead of names, and removing other identifying information, such as names of workplaces, cities, or other people. The interview transcripts were not sent to participants for further comments. The interviews

ranged from 42 to 91 minutes (mean 64 minutes) in length and the pseudonymized transcript was 219 pages (A4; Times New Roman 12; spacing 1,5; marginals 2,54 cm). Only the pseudonymized transcripts were used in the data analysis.

Data analysis

The goal of the analysis was to achieve an understanding of the shared meanings from qualitative interview data on physiotherapy educators' perceptions of MSK DA physiotherapists' competencies and education. An inductive data-driven approach, drawing on the interpretivist paradigm (Denzin and Lincoln, 1994, p.118–137), was adopted to produce findings that only reflected the content of the data from the perspective of the participants. Hence, a reflexive thematic analysis (TA) was applied to examine and interpretate the interview transcripts, which formed a rich data set (c.f. Braun and Clarke, 2022). The six phases of the reflexive TA were followed in iterative circular manner in line with guidance from Braun and Clarke (2022), and this required moving back and forth through the phases and between original data and the analysis. In addition, the researcher's (MR) pre-assumptions and actions at each phase of the analysis were critically reflected throughout the analysis process, through dialogue with the research team.

The first author (MR) performed the analysis independently, and then critically discussed it with the whole research team at different phases of the analysis process. The analysis process began (1) with data familiarization through reading and re-reading the transcripts several times. Initial ideas for coding, from the perspective of the research interest, were also noted at this phase, by identifying relevant data items

regarding the perceptions of the educators and coding them into expressions of meanings. The (2) actual coding phase was performed manually on a computer using a table in a Microsoft Word document, and color-highlighting the relevant items, to keep track of the original data. Printouts of the raw data, initial codes, and original citations were also used together with the Word documents to enable a more detailed examination of the data. Coding was performed altogether four times to achieve the final refined codes for the collated data extracts. (3) The initial themes were generated by re-examining the codes and dividing them into groups of themes that covered similar meanings. These initial themes were then (4) reviewed and refined in relation to the refined codes and the entire original dataset. This was an iterative circular process. As the refined codes started to reach their final form, they were (5) critically re-scrutinized and at this point the final themes, and their informative names were decided on. The final phase of the analysis consisted of (6) writing up the analytic narrative and data extracts on the themes related to the study aim and contextualizing the analysis in relation to the existing literature.

RESULTS

Two main themes were generated on the basis of the data: *Interaction as grounds for meaningful clinical reasoning* and *Continuing professional development in an expert role*. These two main themes act as roof themes that encompass the educators' perceptions of the DA physiotherapists competencies and education. Figure 1 presents the two main themes with their subthemes. Next, the generated themes are discussed in detail and presented with relevant data extracts.

[insert figure 1 near here]

Interaction as grounds for meaningful clinical reasoning

The first main theme, *Interaction as a ground for meaningful clinical reasoning*, has two subthemes: *Meaningful encounters* and *Rationally and safely locating the core of the client's problem*. In their narratives, the educators assessed the DA physiotherapists' competencies on the basis of DA practice, adherence to the national recommendations, and the continuing education courses that they led. The educators stated that because of the nature of DA practice, it is important that the DA physiotherapist rationally and safely determines the cause of the client's problem, but simultaneously makes sure that the encounter and interaction with the client is meaningful, thus ensuring that the clinical examinations and treatment decisions are relevant to the client's problem. The educators thus perceived that profound clinical examinations and differential diagnostic skills were essential in order to proceed rationally and safely in the clinical reasoning process with each individual client (table 2).

First of all, what we go through in the training, is of course terribly important, because it's probably the first contact, with the client, with in terms of the problem, and for the examination to be successful, and that red flags and other warning signs are recognized, that these are preferably not missed, because of this, constantly emphasizing that the more broadly the issue is identified, the easier it is to focus and concentrate on what's relevant...So, the clinical reasoning...slowly, through the interview and examination, it shrinks, and you rule out those things. Because the more, and the more deeply you know and then you can start narrowing it down from there and moving the intervention in

the right direction, then in my opinion this is one of the most relevant things in the training as well.

Educator 10, page 191, line 5897

According to the educators, in DA practice, the cause of the client's pain and the factors that affect their situation must be determined during the first visit. In addition, the client should be advised on suitable ways in which to prevent the prolongation and recurrence of their pain. In the educators' view, interaction with the client must be effective and confidential in DA practice, as must clinical reasoning skills.

*[Starting treatment quickly] diminishes pointless worrying and fear.
[The client] immediately gets answers to their questions and
encouragement and support to keep active, and information. And then if
we think about the preventing the pain from becoming chronic, early
help is important. That the client doesn't spend too long alone with the
problem.*

Educator 5, p. 94, line 2901

The two subthemes encompass the importance of the clinical reasoning performed together with rational and safe clinical examination, treatment, and guidance of the client being a meaningful encounter. Rationality was portrayed as critical thinking and decision-making in the interactive situation with the client when the core of the client's problem was being determined and the relevant clinical tests were being chosen. Safety,

in turn, was portrayed as noting any possible red flags or client's fears or worries and considering whether a medical doctor or other health care professionals needed to be consulted. The interactive process was described as a means for achieving accuracy in each client's clinical examination and clinical reasoning. The first main theme thus manifested as the relevance of the narratives on the time frame of the physiotherapy consultation, the pain and fear of the client, and the reassurance from the physiotherapist, in terms of meaningful clinical reasoning and encountering of the client as perceived by the DA educators.

You [as the physiotherapist at DA practice] have about an hour to find out the patient's problem, do a test treatment and give them instructions, and this takes clinical reasoning and guidance and some tests have to be done quickly, then an analysis... ..because, when their back gets sore for the first time – you can do something about it immediately, the first pain that the person has. You tell them this isn't serious and I can give you tools and if there are any red flags, we physical therapists can pick them out straight away.

Educator 11 p. 204, lines 6307, 6320

Meaningful encounter subtheme portrays the educators' perception that DA physiotherapist is responsible for creating an environment in which the client feels safe enough to share the story of their situation thus for motivating and helping the client to commit to the process. In the educators' narratives, the clients of the DA physiotherapists were portrayed as MSK pain clients. The DA encounter was described

as way in which to build trust through a motivating interview with the client. A meaningful encounter was also perceived as helpful for advancing the clinical examination and treatment process.

Understanding pain behavior, taking a person who is ill and in pain seriously, approaching them through a motivating interview. They are in so much pain [the clients], so your attitude toward them, how you react to them, treat them, it's really important from the first contact with them and throughout the process...how the person commits and is motivated, how they perceive the therapy relationship.

Educator 6, p.116, line 3582

The same subtheme also illuminates the educators' perception of the DA physiotherapist's responsibility to provide the client an understandable explanation for the cause of their pain, a clinical examination and treatment that diminishes the client's worry, and support in taking control of their situation. Early treatment and advice from the physiotherapist was portrayed as a way to prevent the renewal and recurrence of pain and to lessen the client's fear and worry. A meaningful encounter was described as the means of achieving these goals.

It [early treatment during the direct access appointment] reduces pointless worry and fear...at least if someone has really acute back pain for example, they get answers to their questions straight away, and encouragement and reassurance to stay active and – information. And in

terms of stopping the pain becoming chronic, then early treatment is important here too. So that they [client] aren't left alone with it for too long.

Educator 5, p.94, line 2901

Furthermore, the subtheme illuminates the educators' perception of the encounter and interaction between the physiotherapist and the client as the grounds for the whole clinical reasoning process, which further creates guidelines for the physiotherapist to give their client individual treatment and guidance. It was believed that the interactive process with the client laid the grounds for the entire clinical reasoning process, thus helping the physiotherapist choose the relevant clinical tests and make individual treatment decisions on the basis of the individual client's story.

[The physiotherapist] knows how to examine structures but also to take into account work ability and functional capacity and the person's life at that moment, so they know how to get the full picture, as we only have the one direct access appointment, so what is the [patient's] treatment path?

[A skillful physical therapist] knows how to choose the appropriate examination methods and interpret them and it's also skillfulness to be able to immediately choose exactly the right advice and instructions from their toolkit. So, this requires clinical reasoning doesn't it, as well as knowledge of the anatomy...to be able to use the right tests and draw conclusions from them.

Educator 1, p.6, line 156 and p.7, line 178

The educators also perceived that if the interactive situation with the client was poor, the clinical reasoning process might face challenges. This was described by physiotherapists using a list of questions or a certain pattern for proceeding with clients instead of listening to the story of the individual client and letting that story have significance in the clinical reasoning process and decision-making.

What you're aware of is how challenging interaction is compared to clinical reasoning. So, while we're carrying out our clinical reasoning process, then we easily have a list of questions, which logically goes in the same order as we've learnt them at some point, and interaction just doesn't work like that, we need to give the person time to tell us their story. Otherwise, we interrupt and they feel that they're not listened to if we just go on to the next question that's on our list. And organizing this in our heads, that we trust the process and we have a good enough background in clinical reasoning, so that we really pick out the right things when the person tells us them and we remember to ask about the missing pieces, what we need for our clinical reasoning and that we have the patience to wait, let the person tell us, and we don't start drawing conclusions too quickly.

Educator 3, p. 51, line 1574

This finding also collides with the second subtheme, *Rationally and safely locating the core of the client's problem*, as listening to the client's story was described as a way in which the physiotherapist could proceed to the essential examinations more quickly, from the perspective of the DA educators.

Clinically examining the client...at the end of the day is based on....it's clinical reasoning...critical thinking and clinical reasoning in general ...maybe more management and development, and then that it also takes place...in a way that it's based on...the interaction... between the client and therapist, that it's not a reasoning process that the therapist carries out in a therapist-driven way, then it's, if ...the interaction is...good and the client feels they have been listened to, then that's one therapy area that's already basically achieved. And then when the clinical reasoning is rational and logical, then it actually automatically creates guidelines for the advice and guidance and other things.

Educator 7, p.134, line 4141

It was also seen as essential to view the client's situation from their personal viewpoint when planning the treatment. Considering each client's individual motivation and resources was considered meaningful for the entire clinical reasoning and treatment decision-making process. The educators described that several clients may have the same complaint, yet each of them needs an individual approach.

Many different people can have the same complaint, so at the end of the day it's the person first, not the complaint. So, how does this complaint disrupt their life and what will it mean when they get rid of the complaint, it's the important framework for this whole thing, that we put the person first. And this also affects how we handle the client and what we talk to them about and how we ensure that our information is understood properly and how we find out how motivated they are for their treatment and what resources they have.

Educator 2, p.37, line 1135

[insert table 2 near here]

Continuing professional development in an expert role

The second main theme, *Continuing professional development in an expert role* has four subthemes *Continuous learning*, *Self-reflection*, *Deep understanding* and *Taking responsibility for one's own expertise*. The educators described how the continuing education provides the tools that physiotherapists need for practicing DA but that is not enough as such. Hence, the physiotherapists should also have both the interest and the will to develop themselves further in practice and to take the responsibility for their role as an expert DA physiotherapist. The educators explained that their role is to facilitate the physiotherapists' metacognitive and clinical reasoning skills, and that providing education is a way to transfer the knowledge to the clients (table 3).

After all, training is about the trainer training the trainees and then the trainee has to pass it on to the client, that's the essential thing. Training is useless if it doesn't show in client work.

Educator 7, p. 137, line 4229

The continuous learning subtheme portrays the commitment to self-development and, for example, utilizing peer feedback and support for further professional self-development. The educators described how it is important to teach singular skills such as examining reflexes or blood circulation, or performing specific clinical tests related to certain diagnoses, but also stressed that it is the responsibility of the individual physiotherapist to independently advance their work. The educators claimed that their role is to offer tools for DA practice, but that the DA physiotherapists themselves should be willing to commit to continuous learning and self-improvement by asking for and accepting feedback from their peers.

Don't give them fish – teach them to fish for themselves. Skills for reflecting on your own work and developing your own work. They are at the core...because training alone doesn't guarantee skill... ..So, I see it as really important that people learn that in this work it's so very important to get feedback and comments from peers on your work. And in my opinion, people learn that... someone comes to observe them sometimes and they also go and observe others, that's at the core of direct access training.

Educator 3, p. 54, line 1650 and p. 57, line 1739 and p. 62, line 1908

The educators stated that ultimately after undergoing the DA continuing education, the physiotherapists themselves should take responsibility for evaluating and advancing their own skills and applying critical thinking in their practice. In other words, DA educators perceived that assessing one's own competence and applying critical reflection to one's own work were important qualities that must be taken into account after the continuing DA education course. This was formulated as the *Self-reflection* subtheme.

Some will still need to develop certain skill areas even after this training and the real point, to keep developing, it's not as if you now know it all now, and you won't either, and you can't think like that, that now it's all done and dusted. No, you have to keep monitoring your own skills, that critical reflection, that is, evaluating your own competence, it's important, like, I can do this, but I still need to clarify some things and think about how I can clarify them, in what way.

Educator 2, p. 28, line 829

Deep understanding subtheme arose from the DA educators' perception that it is important to teach the physiotherapists to improve their thinking processes.

I'm not trying to teach sticking to a certain model, my intention is more to mix up the thoughts of the participants, so that they themselves start

thinking about their own ways and develop in this way. Not like learning things by heart and then leaving it there.

Educator 8, p.160, line 4943

The *Deep understanding* subtheme highlights how the physiotherapists should take an active role as DA physiotherapist but also as a continuous learner in that role. However, the DA educators perceived that gaining deep understanding is a challenging and demanding effort from the physiotherapist throughout their career.

It's probably that, what we all do, that when our way of doing things changes from one way to another it takes time and effort and active behavior to make the change, be it a change in eating or exercise or the person's own work methods, we're quite stuck in our ways and we notice that in fact we're doing the same thing over and over. Changing our ways of doing things is hard.

Educator 9, p. 179, line 5539

The *Taking responsibility for one's own expertise* subtheme portrayed how it is the physiotherapists' own responsibility to take what they learn and apply it in their practical work and reflect on their growing competence in their client cases.

We can't change people's perceptions and methods through lectures very easily, we have to go right into the practical work... ...if you're able to

reflect, then you're able to apply new knowledge to old cases and use it to analyze your own experience, but it can also be a curse, if you aren't able to reflect...you're stuck in your old ways.

Educator 4, p.85, line 2610

The educators highlighted that training and working with clients but simultaneously trying to find new work methods was meaningful; continuously expanding one's toolbox and reflecting on the clinical reasoning process and how it had changed after undergoing the continuing education.

It's difficult to get rid of old habits and patterns and I've tried to emphasize this, that no matter how you do things now, try to find new ways, other ways that are different to what you've been used to in previous years, try and expand your toolbox, the ways in which you do things and your clinical reasoning, expand them a bit so that it doesn't just go down the same path as before. Sadly, this is true for some, the way they've done things for 10 years, then this direct access hasn't really changed them much. So, this change begins with you yourself, and if you're timid in some way, or unsure of your own change, then... then the direct access system, even a year of it isn't likely to change things much.

Educator 10, p. 191, line 5927

[insert table 3 near here]

DISCUSSION

The aim of this study was to explore physiotherapy educators' perceptions of the competencies and education of physiotherapists working in DA MSK physiotherapy practice. The present study deepened the understanding of the phenomenon of interest by examining the qualitative, semi-structured interviews and through a reflexive thematic analysis and interpretation of the data. The two main themes that constituted as a result of the data analysis, 1) Interaction as grounds for meaningful clinical reasoning and 2) Continuing professional development in an expert role, portrayed the competencies and education that are meaningful for DA physiotherapists, as perceived by DA physiotherapy educators. These findings are compatible with those of previous research, yet they shed more light on what DA educators' perceive as essential and specific in terms of competencies and education.

The research interest was studied in the context of one Nordic country, where the examination and treatment of MSK clients focuses on the acute phase of MSK conditions. The acute phase, in the context of MSK physiotherapy practice, is traditionally viewed as a biomedical condition and treated and examined as such (Pincus et al, 2013). However, adoption of a more holistic biopsychosocial approach to physiotherapy, also in acute clinical settings, has been highlighted, as physiotherapists have started to understand the importance of psychological, social, and lifestyle factors and person-centered care in MSK conditions (Holopainen et al, 2020). In line with this, the findings of this study portrayed DA educators' perceptions of the significance of person-centered interaction and using a more comprehensive approach when examining people with acute MSK conditions. The study's implications for practice emphasize understanding each individual client's needs, selecting relevant clinical tests, and

making individualized treatment decisions during one brief encounter. The DA educators perceived that interaction and a holistic approach can better target individual treatment and guide each client individually.

The DA educators claimed that the physiotherapists should listen and create a safe environment for discussion to lessen the client's worry, and further help them take control of their own situation. These findings suggest the idea of a meaningful encounter setting the foundations for the clinical reasoning process. The musculoskeletal core capabilities framework for first point of contact practitioners recognizes person-centered approaches, communication, and person-centered care as one of the main competence domains (Health Education England and NHS, 2018). This framework describes the physiotherapists engaging communication skills, listening, appropriate use of language, empathy, and respect of individuals' expertise in their own life and condition in guiding the care and treatment. These skills are utilized meaningfully to empower clients to retain control and make choices that support their goals. (Health Education England and NHS, 2018.) The physiotherapist's role as a communicator is also recognized by the physiotherapy competence framework of the Australian Physiotherapy Association (2023). In addition, Wijma and colleagues (2017) discovered in their systematic review that knowing the client as a person is important for individually targeting physiotherapy. In their study, they describe that knowing the client as knowing their history, needs, preferences, personality, beliefs, values, expectations, motivation, and circumstances (Wijma et al, 2017). Actively listening to the client's experience is highlighted, and to achieve shared decision-making and find a common ground with the client, the physiotherapist must understand the client's context (Australian Physiotherapy Association, 2023).

In the present study we discovered that clinical reasoning, from the perspective of the DA educators, ought to be closely linked to interaction between the physiotherapist and the client. In an encounter description of a physiotherapist's clinical reasoning with a client with neck pain by Chowdhury and Bjorbækmo (2017), the physiotherapist aimed to establish a free-speaking environment by encouraging, observing, and palpating. In the case of Chowdhury and Bjorbækmo (2017) these multiple ways of interaction also formed the basis of clinical reasoning and means to offer explanations for the pain and plan the management. Moreover, according to Koufidis et al. (2022), the interactional dimension is one of the three epistemological dimensions of clinical reasoning research in diverse academic disciplines such as medicine and psychology. In addition to the interactional dimension are the closely linked representation and interpretation dimensions. This perspective of Koufidis et al. (2022) is based on the idea that context always affects clinical reasoning; therefore, understanding the meaning of the context also conceptualizes clinical reasoning. In this theory, clinical reasoning happens as Koufidis et al. (2022) describe “on the fly” between the mind and the environment, specific to the particular situation.

Clinical reasoning in physiotherapy is not only a process that happens in the physiotherapist's mind but an interactive process in which the client also finds meaning in and understands physiotherapy (Chowdhury and Bjorbækmo, 2017). The findings of this study support the idea that the thinking-process ought to happen simultaneously while listening to the story of the client, and performing the clinical examination based on their history. The DA educators perceived that a meaningful encounter draws on the significance of a meaningful clinical reasoning process to rationally and safely locate

the core of the client's problem. They also believed that when clinical reasoning happens in interaction with the client, it also speeds up the selection of how to examine the client's mechanical problem.

The findings of this study indicate that continuing professional development throughout one's career, as reported by DA educators, is important for physiotherapists that work in advanced scopes of practice such as DA. Continuing professional development is a learner-centered approach to continuous learning in a professional role. It is a means to assure quality in practice but also to review the required skills (Health Education England and NHS, 2018). According to the findings of an older narrative review by French and Dowds (2008) that is still fitting today, lifelong competence cannot be achieved through mandatory continuing education although advanced roles of physiotherapists require specialization and a formal qualification. In this study the role of the physiotherapist as an active, reflective learner was highlighted. The will to continuously develop one's own practice, and to keep up to date, and apply one's expertise to client care were considered the responsibilities of the DA physiotherapists themselves. In Finland, national recommendations guide the formal process of starting work as a DA physiotherapist and requires the completion of the DA continuing education course. However, a formal process of tracking the physiotherapist's competence after completing the continuing education course is lacking in DA practice in Finland. Although this study reflects upon the competencies required in DA MSK physiotherapy practice, it may still be beneficial to critically scrutinize the requirements for the formal and continuing education of DA physiotherapists on a national level.

The DA educators described reflection and taking on challenges as a means of continuous learning even when in an expert role. These findings are in line with those of Pettersson, Bolander Laksov, and Fjellström (2015). Their study investigated physiotherapists' stories about their professional development, and their descriptions of learning and professional development through facing challenges, contrasting perspectives, drawing on hundreds of educators from which one learns, and building on personal experience (Pettersson, Bolander Laksov, and Fjellström, 2015). Their findings suggest that learning happens throughout the career, as non-formal ways of learning in working life may help physiotherapist develop confidence and learn communications strategies and different treatment approaches. Besides reflection on personal experience and patient encounters, learning and development may be promoted and supported by taking on challenges and changing settings (Pettersson, Bolander Laksov, and Fjellström, 2015).

It is the assumption of this study that a deeper understanding of the competencies of DA physiotherapists enables further examination and development of the advanced MSK physiotherapy practices and the treatment of people with MSK conditions. The barriers to advanced MSK physiotherapy have been reported to be mostly environmental, but the knowledge, skills, availability, motivation, and experience of advanced MSK physiotherapists having a great impact on the implementation of advanced practice (Shaw et al, 2018). Accordingly, it is important to acknowledge the competencies of physiotherapists when planning and developing functional health care services. It could be beneficial, for example, to have defined roles and responsibilities for DA physiotherapists in Finland, as in the UK (Chartered Society of Physiotherapy, 2024) to

ensure the required competencies and quality of care and the provision of service for the MSK clients as suggested by Tawiah et al. (2023).

Strengths and limitations

In this study, physiotherapy DA educators were asked to describe the MSK DA physiotherapists' competencies and education from their subjective and experiential perspectives. The subjective and experiential nature of the data can be considered a strength of the study enabling the exploration of the target phenomenon as perceived by the DA educators. In this study the phenomenon was not explored through the perspectives of other health care professionals or clients. Exploration of perspectives more widely might have provided richer data and even deeper understanding of the phenomena. The data were collected in the context-specific cultural and environmental constraints of one Nordic country. Therefore, the findings may only be transferable to context-similar conditions. However, these findings build on existing knowledge such as the competence frameworks of other studies exploring the competencies in the field of physiotherapy. Overall, the DA educators' narratives about DA physiotherapists' competencies were much in agreement with each other, which might be related to the educators' knowledge about implementation of the national guidelines and their experience of the Finnish physiotherapists' competencies in general. Therefore, future research could examine the different contexts and practices of advanced MSK physiotherapy in different countries for further understanding of competencies.

The data analysis was performed through reflexive TA. Thus, these results represent one way of understanding, interpreting, and making sense of the data. The first author was responsible for preliminary coding and analyzing the data, but all phases were

critically reflected and discussed in the research team. In reflexive TA the subjectivity of the researcher is fundamental (Braun and Clarke, 2022, p.5). To ensure rigor and inductivity, the methodological framework by Braun and Clarke (2022) was followed in each phase. A checklist for good TA by them (Braun and Clarke 2022, p.269) and characteristics for good qualitative research (Yardley, 2000) were also utilized. All the authors are Finnish scholars and physiotherapists with diverse experience on MSK physiotherapy and education sciences, and qualitative research. As a former DA practitioner who had completed a DA continuing education course, and as a current manager of DA physiotherapists, the first author already had some understanding of the phenomenon under investigation. The reflexivity in this study was strengthened by discussions between all the authors and other scholars. In the future, other research methods could also be utilized to gain more profound knowledge on the competencies of physiotherapists.

Remote interviews were used to gather the data. The interviews were conducted via secured Microsoft Teams meetings instead of face-to-face interviews for geographical equality reasons. A semi-structured framework was used to guide the conversations. The way in which the interviews were conducted enabled interviewing participants across the country in a semi-informal manner which produced rich and descriptive discussions and data. However, the formality of the setting and technical aspects of remote interviewing might have influenced the flow of the conversations to some extent. The use of the semi-structured framework might also have restrained the conversations; for example, some of the interview questions were more and some less structured than others. This may have affected the participants' descriptions, their analysis, or even the research findings.

The gained knowledge on competencies highlights understanding the significance and role of physiotherapy in achieving better treatment outcomes for people with MSK conditions worldwide. Despite some limitations in this study, the results could also be utilized in other contexts of physiotherapy to further understand and develop physiotherapists' expertise. A deeper understanding of physiotherapists' competencies and needs for continuing education also facilitates management decision-making and the implementation of new processes in workplaces through, for example, matching competencies, tasks and educational needs. The results may thus be beneficial when planning and developing the contents of entry-level and continuing DA education courses and DA practice in clinical settings.

CONCLUSION

MSK conditions are a major contributor to disability. DA practice is an operational model in which the physiotherapist takes responsibility for the treatment path of the client, aiming for better treatment outcomes. By exploring the competencies and education of DA physiotherapists from the perspective of DA educators, the present study provides further knowledge of the DA educators' understanding of the competencies and education required of MSK physiotherapists in DA practice. The novelty in this study is the added understanding of competencies and education from the unique point of view of DA educators. The findings highlighted the perceived significance of DA physiotherapist's interactions with their clients, and the responsibility of the DA physiotherapist for their own continuing professional self-development. As reported by the physiotherapy DA educators, meaningful clinical reasoning is founded upon meaningful interaction and helps the client take control over

their own situation with less worry. The DA educators also saw that the will of the physiotherapist to develop themselves further in practice and to take the responsibility for their role in turn supports reflective thinking and the ability to apply information to practice.

Funding sources

The first author received partial financial support from the Helsinki University Hospital Nursing Research Center in the form of paid research leave for two months. No funding sources were involved in the research project itself (no involvement in study design, data collection, analysis, or interpretation of data), in the writing of the report nor in the decision to submit the article for publication.

Acknowledgments

The authors sincerely thank all the educators who participated in this study. Their descriptions and reflections on their work were invaluable. The authors also warmly thank Tuulikki Sjögren and Hilikka Korpi from Jyväskylä University for their help in conducting the framework for the interviews. First author Minna Roine would also like to thank the Helsinki University Hospital Nursing Research Center for enabling her to complete this study.

Disclosure statement

The authors have no competing interest to declare. The authors alone are responsible for the content and writing of the article. Data collection was performed by the first and second author, and the initial analysis was performed by the first author. However, all the authors contributed to the analysis at later stages. The manuscript was reviewed and

revised by all the authors together.

REFERENCES

Australian Physiotherapy Association 2023 Physiotherapy competence framework. Version 7.1.

https://australian.physio/sites/default/files/APA_COMPETENCE_FRAMEWORK_v7.1_FINAL.pdf

Braun V, Clarke V 2022 Thematic analysis- a practical guide. London: Sage Publications.

Chartered Society of Physiotherapy 2024 Advanced practice physiotherapy frameworks.

<https://www.csp.org.uk/careers-jobs/advanced-consultant-practice-physiotherapy/advanced-practice-physiotherapists/national>

Chowdhury A, Bjorbækmo WS 2017 Clinical reasoning—embodied meaning-making in physiotherapy. *Physiotherapy Theory and Practice* 33: 550–559.

Denzin NK, Lincoln YS 1994 Handbook of qualitative research. London: Sage Publications.

Downie F, McRitchie C, Monteith W, Turner H 2019 Physiotherapist as an alternative to a GP for musculoskeletal conditions: A 2-year service evaluation of UK primary care data. *British Journal of General Practice* 69: 314–320.

ENPHE 2022 Physiotherapy competencies for autonomous practice recommendations for educational frameworks. European Network of Physiotherapy in Higher Education.

https://www.enphe.org/uploads/resources_files/autonomous_practice_recommendations_education_professional_issues_wg_sept_2022_1.pdf

Fennelly O, Blake C, Desmeules F, Stokes D, Cunningham C 2018 Patient-reported outcome measures in advanced musculoskeletal physiotherapy practice: a systematic review. *Musculoskeletal Care* 16: 188–208.

Fennelly O, Desmeules F, O'Sullivan C, Heneghan N R, Cunningham C 2020 Advanced musculoskeletal physiotherapy practice: Informing education curricula. *Musculoskeletal Science and Practice* 48:102174.

Finlex 2021 Occupational Health Care Act (1383/2001; amendments up to 555/2021 included). https://www.finlex.fi/en/laki/kaannokset/2001/en20011383_20210555.pdf

Finnish Association of Physiotherapists 2016 The core competences of physiotherapists (English translation 2018)

<https://www.suomenfysioterapeutit.com/ydinosaaminen/CoreCompetencies.pdf>

Finnish Society of Physical and Rehabilitation Medicine, Finnish Association of Physiotherapists 2017 Suositus fysioterapeutin tulo-suoravastanottokoulutuksesta.

<https://www.suomenfysioterapeutit.fi/wp-content/uploads/2018/02/Suoravastanottosuositus2017.pdf>

French HP, Dowds J 2008 An overview of Continuing Professional Development in physiotherapy. *Physiotherapy* 94: 190–197.

Froment FP, Olson KA, Hooper TL, Shaffer SM, Sizer PS, Woodhouse LJ, Brismée J-M 2019 Large variability found in musculoskeletal physiotherapy scope of practice throughout WCPT and IFOMPT affiliated countries: an international survey. *Musculoskeletal Science & Practice* 42: 104–119.

Gallotti M, Campagnola B, Cocchieri A, Mourad F, Heick JD, Maselli F 2023 Effectiveness and Consequences of Direct Access in Physiotherapy: A Systematic Review. *Journal of Clinical Medicine* 12: 5832.

Health Education England, NHS 2018 Musculoskeletal core capabilities framework for first point of contact practitioners.

https://www.csp.org.uk/system/files/musculoskeletal_framework2.pdf

Holopainen R, Simpson P, Piirainen A, Karppinen J, Schütze R, Smith A, O'Sullivan P, Kent P 2020 Physiotherapists' perceptions of learning and implementing a biopsychosocial intervention to treat musculoskeletal pain conditions: a systematic review and metasynthesis of qualitative studies. *PAIN* 161: 1150–1168.

Hon S, Ritter R, Allen DD 2021 Cost-Effectiveness and Outcomes of Direct Access to Physical Therapy for Musculoskeletal Disorders Compared to Physician-First Access in the United States: Systematic Review and Meta-Analysis. *Physical Therapy* 101: pzaa201.

Hussenbux A, Morrissey D, Joseph C, McClellan CM 2015 Intermediate Care pathways for musculoskeletal conditions – Are they working? A systematic review. *Physiotherapy* 101: 13–24.

Karvonen E, Paatelma M, Piirainen A, Laitinen-Väänänen S 2017 Clinical reasoning and critical reflection in physiotherapists' examinations of patients with low back pain. *European Journal of Physiotherapy* 19: 185–193.

Koufidis C, Manninen K, Nieminen J, Wohlin M, Silén C 2022 Representation, interaction, interpretation. Making sense of the context in clinical reasoning. *Medical Education* 56: 98–109.

Kvale S and Brinkmann S 2009 *InterViews. Learning the craft of qualitative research interviewing* (2nd ed). California: Sage Publications.

Moore JH, McMillan DJ, Rosenthal MD, Wieshaar MD 2005 Risk determination for patients with direct access to physical therapy in military health care facilities. *Journal of Orthopedic Sports Physical Therapy* 35:674–678.

Ojha HA, Snyder R, Davenport TE 2014 Direct access compared with referred physical therapy episodes of care: a systematic review. *Physical Therapy* 94: 14–30.

Pettersson AF, Bolander Laksov K, Fjellström M 2015 Physiotherapists' stories about professional development. *Physiotherapy Theory and Practice* 31: 396–402.

Pincus T, Kent P, Bronfort G, Loisel P, Pransky, GMD, Hartvigsen J 2013 Twenty-Five Years With the Biopsychosocial Model of Low Back Pain—Is It Time to Celebrate? A Report From the Twelfth International Forum for Primary Care Research on Low Back Pain. *Spine* 38: 2118–2123.

Roine M, Sjögren T, Korpi H, Jäppinen A-M, Karvonen E 2023 Physiotherapists' clinical reasoning in examination of clients with low back pain in direct access practice: a theory-driven qualitative content analysis. *European Journal of Physiotherapy* 26: 160–169.

Shaw BR, Heywood SE, Page CJ, Phan UM, Harding PA, Walter K, Terrill DL, Granger CL 2018 Advanced musculoskeletal physiotherapy: Barriers and enablers to multi-site implementation. *Musculoskeletal Care* 16: 440–449.

Tawiah AK, Desmeules F, Finucane L, Lewis J, Wieler M, Stokes E and Woodhouse LJ 2021 Advanced practice in physiotherapy: a global survey. *Physiotherapy* 113: 168–176.

Tawiah A.K., Stokes E, Wieler M, Desmeules F, Finucane L, Lewis J, Warren J, Lundon K, Noblet T, Cunningham C, et al. 2023 Developing a core competency and capability framework for advanced practice physiotherapy: A qualitative study. *Physiotherapy Theory and Practice* 40: 1477–1491.

Thompson J, Yoward S, Dawson P 2017 The role of physiotherapy extended scope practitioners in musculoskeletal care with focus on decision making and clinical outcomes: a systematic review of quantitative and qualitative research. *Musculoskeletal Care* 15: 91–103.

Vedanayagam M, Buzak M, Reid D, Saywell N 2021 Advanced practice physiotherapists are effective in the management of musculoskeletal disorders: a systematic review of systematic reviews. *Physiotherapy* 113: 116–130

Wijma AJ, Bletterman AN, Clark JR, Vervoort SCJM, Beetsma A, Keizer D, Nijs J, Van Wilgen CP 2017 Patient-centeredness in physiotherapy: What does it entail? A systematic review of qualitative studies, *Physiotherapy Theory and Practice* 33: 825–840.

World Health Organization 2022 Musculoskeletal Health. <https://www.who.int/news-room/fact-sheets/detail/musculoskeletal-conditions#:~:text=Approximately%201.71%20billion%20people%20have,of%20disability%20in%20160%20countries>.

World Physiotherapy 2023 Policy statement: Direct access and patient/client selfreferral to physiotherapy. London, UK: World Physiotherapy. <https://world.physio/policy/ps-direct-access>.

Yardley L 2000 Dilemmas in qualitative health research. *Psychology & Health* 15: 215–228.

Table 1. Interview framework.

Table 2. Interaction as grounds for meaningful clinical reasoning.

Table 3. Continuing professional development in an expert role.

Figure 1. Physiotherapists’ competencies and continuing education in DA practice as perceived by the educators.

Figure 1 Alt text. A large rectangle has two smaller rectangles that contain the two generated themes of Interaction as grounds for meaningful clinical reasoning and Continuing professional development in an expert role. These two theme rectangles further contain smaller rectangles that show the subthemes of each theme. Interaction as grounds for meaningful clinical reasoning contains two smaller rectangles that show the subthemes Meaningful encounter and Rationally and safely locating the core of the client’s problem. Continuing professional development in an expert role contains four smaller rectangles that show the subthemes Continuous learning, Self-reflection, Deeper understanding and Taking responsibility for one’s own expertise.

TABLE 1

Table 1. Interview framework.

1. Background and starting points for educational work • Would you please tell us about your background (work experience, educational experience, meaningful additional education, and work experience in teaching DA practice)? • How did you become a physiotherapy educator? • How did you end up teaching DA practice?
2. Work and expertise in DA practice • How do you think the DA practice corresponds to the treatment of MSK disorders? • Could you tell us about the role of physiotherapy in the treatment of MSK disorders? • Tell us about your thoughts of DA physiotherapy.
3. Continuing DA education • Could you describe how you think that the contents of the continuing DA education correspond to the needs of practical work (what is important to teach, what expertise is meaningful)? • Tell us about your own way of educating. • Could you share your thoughts on the current state of continuing DA education? • How do you think continuing education could be further developed in the future? • What are your thoughts on the importance of continuing education for improving the expertise in DA practice? • What do you think is the most meaningful thing for the physiotherapists undergoing continuing education? • What do you think about the national recommendations for carrying out continuing education and practices in the field? • What else would you like to say about the DA practice or continuing education?

TABLE 2

Table 2. Interaction as grounds for meaningful clinical reasoning.

Theme	Description	Subthemes	Extension	Sub extension
Interaction as grounds for meaningful clinical reasoning	Physiotherapist determines the cause of the client's problem rationally and safely simultaneously ensuring that the encounter and interaction with the client is meaningful	Meaningful encounter	Listening Creating a safe environment for open conversation Understandable explanation [cause of pain, examination, and treatment]	Lessening worry Help taking control of their own situation
		Rationally and safely locating the core of the client's problem	Thinking process based on interaction Clinical examination based on interview / interaction Biopsychosocial approach Considering the different flags and choosing relevant clinical tests	

TABLE 3

Table 3. Continuing professional development in an expert role.

Theme	Description	Subthemes	Extension
Continuing professional development in an expert role	Continuing education provides the physiotherapist tools to practice in DA setting but depends on the will of the physiotherapist to further develop themselves in practice and to take responsibility for their role	Continuous learning Self-reflection Deep understanding Taking responsibility for one's own expertise	Support and/or feedback from peers Committing to self-development Developing one's own work Critical thinking Evaluation of one's own expertise and actions Ability to apply knowledge/theory/new viewpoints "thinking with one's own brain" Updating and maintaining expertise Applying learned information to practice Challenging fixed ways of working

II

PHYSIOTHERAPISTS' CLINICAL REASONING IN EXAMINATION OF CLIENTS WITH LOW BACK PAIN IN DIRECT ACCESS PRACTICE: A THEORY-DRIVEN QUALITATIVE CONTENT ANALYSIS

by

Roine, M., Sjögren, T., Korpi, H., Jäppinen, A.-M. & Karvonen, E. (2023).

European Journal of Physiotherapy, 26(3), 160–169.

<https://doi-org.ezproxy.jyu.fi/10.1080/21679169.2023.2219694>

Reproduced with kind permission by Taylor & Francis.

Physiotherapists' Clinical Reasoning in Examination of clients with Low Back Pain in Direct Access Practice: a theory-driven Qualitative Content Analysis

Roine Minna¹, Sjögren Tuulikki¹, Korpi Hilka^{1,2}, Jäppinen Anna-Maija³ and Karvonen Eira⁴

¹ Faculty of Sport and Health Sciences, University of Jyväskylä, Finland

² Vaasa University of Applied Sciences, Finland

³ Department of Internal Medicine and Rehabilitation, Helsinki University Hospital, Helsinki, Finland

⁴ Fysioterapian Konsultointi Paatelma & Karvonen Ky

Author note

Roine Minna ORCID: 0000-0003-3388-6592

Sjögren Tuulikki ORCID: 0000-0001-6908-4618

Korpi Hilka ORCID: 0000-0001-6590-0542

Jäppinen Anna-Maija ORCID: 0000-0003-3312-159X

Karvonen Eira ORCID: 0000-0001-9772-5777

Minna Roine is now at Faculty of Sport and Health Sciences, University of Jyväskylä.

We have no known conflict of interest to disclose.

Correspondence concerning this article should be addressed to Minna Roine to Näyttelijäntie 18 E 55, 00400 Helsinki, Finland, email: mmroine@gmail.com, phone +358451690565.

Word count: 6206

ABSTRACT

Aim: The aim of this study was to gain deeper understanding of physiotherapists' clinical reasoning in examination of clients with low back pain (LBP) in direct access (DA) practice.

Method: Data were collected through individual semi-structured thematic interviews of ten physiotherapists who described their clinical reasoning in one of their LBP clients in direct access practice. The interviews were recorded and transcribed verbatim and then examined using a theory-driven qualitative content analysis. Four clinical reasoning models, hypothetico-deductive, pattern recognition, narrative and systematic, were used as theoretical frameworks to analyse the descriptions of physiotherapists' clinical reasoning in examination.

Results: In this study clinical reasoning in examination manifested as process where physiotherapist proceeds from interview to clinical assessment and decision-making, simultaneously taking into consideration the DA setting and the specific role of the physiotherapist. As described by the physiotherapists working in DA practice clinical reasoning in examination presented by extracting facts from the interview in relation to symptoms or certain diagnosis, identifying and excluding red flags and identifying the factors that were important to consider in acute musculoskeletal pain in relation to individual client's problem. Physiotherapists described having improved differential diagnostic skills, wider range of physical assessment techniques and more precise assessment. Based on the data, the physiotherapists presented to use either the hypothetico-deductive or the systematic clinical reasoning model when examining an LBP client in DA practice.

Conclusions: Clinical reasoning in examination with LBP clients in direct access practice started with anamnesis and proceeded by using either the hypothetico-deductive or the systematic clinical reasoning model.

KEYWORDS

direct access; physiotherapy; clinical reasoning; decision-making, low back pain, examination

INTRODUCTION

Direct access (DA), client self-referral or a physiotherapist working as the first contact is a common procedure in health care systems around the world especially in the case of musculoskeletal (MSK) conditions (World Confederation for Physical Therapy, 2019). In direct access, the physiotherapist is an independent autonomous practitioner who is responsible for decision-making. (European Region World Physiotherapy, 2020; Finnish Association of Physiotherapists, 2016; Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists 2017.) There is evidence of physiotherapists assessing and managing MSK conditions independently and effectively (Downie et al. 2019), and it is known that skilled clinical reasoning could lead to efficiency and quality client outcomes (Higgs et al. 2019, pp.248). However, little is known about the clinical reasoning in examination of physiotherapists working in direct access although clinical reasoning creates the basis for expert practice. Karvonen et al. (2017) examined the critical reflection and clinical reasoning of physiotherapists encountering clients in the early phase of low back pain (LBP) and found that the physiotherapists critically justified their use of the hypothetico–deductive clinical reasoning model. Yet, most research on clinical reasoning is focused on physiotherapy students or compared novice and expert clinical reasoning processes (Wainwright et al. 2010; Furze et al. 2015; Gilliland & Wainwright 2017). More knowledge on clinical reasoning of physiotherapists working in different settings is still needed (Holdar et al. 2013; Langrigde et al. 2015; Widerström et al. 2019).

Globally, professional entry-level education usually permits physiotherapists to work in direct access (Bury & Stokes, 2013). However, physiotherapists operating in direct access in Finland have usually completed continuing education in addition to professional entry-level education and have minimum of two years of work experience with musculoskeletal clients. Continuing education is typically 15 European Credit Transfer System (ECTS) points including training in physical examination and clinical reasoning concerning MSK clients in theory and in practice and guidance on medication and authorising sick leaves (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists 2017). After completing the continuing education, the physiotherapists start to treat clients in direct access, usually in primary or occupational health care, where their clinical reasoning in examination further develops through practice. Evidence of how the added clinical reasoning know-how gained in continuing direct access education are put into practice is scarce (Karvonen et al. 2017).

Clinical Reasoning (CR) is a thinking process during which the physiotherapist, through interaction with the client, collects information and generates and tests possible hypotheses of the ailment, and finally concludes the physiotherapy diagnosis and performs and guides the treatment individually, based on the information obtained. (Higgs et al. 2019; Jones & Rivett, 2019; Edwards et al. 2004.) There is evidence of physiotherapists assessing and managing MSK conditions independently and effectively (Downie et al. 2019), and it is known that skilled clinical reasoning could lead to efficiency and quality client outcomes (Higgs et al. 2019, pp.248). Thus, if clinical reasoning in examination is successful better treatment outcomes could be achieved (Karvonen, 2020). Through DA practice it is possible to reduce health care costs and increase client satisfaction and possibly achieve less recurrence and prolongation of pain and disability (Hon et al. 2021; Ojha et al. 2014; Piscitelli et al. 2018.) On the other hand, clinical reasoning is not well understood as a process and further understanding of physiotherapists' decision-making processes is still needed (Widerström et al. 2019).

Clinical reasoning in examination

Clinical reasoning is the path to expert physiotherapy diagnosis making and is therefore a crucial competence for the physiotherapist working in direct access in terms of expert practice and client care (Health Education England&NHS, 2018; World Confederation for Physical Therapy, 2019; Finnish Association of Physiotherapists, 2016; Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists, 2017).

Clinical reasoning is needed to make decisions about the examination of the client; examination creates the ground for the clinical reasoning process and for physiotherapy diagnosis making. Clinical examination is conducted to define the client's problem and to develop differential diagnoses that will lead to a management plan. Clinical examination includes anamnesis and interview of the client and then identifying the need for and selecting appropriate investigations and tests that further lead to a physiotherapy diagnosis, a conclusion and management plan for the client. (Finnish Association of Physiotherapists, 2016; Health Education England&NHS 2018; Higgs et al. 2019, pp.253.) Clinical examination is therefore needed to make an appropriate physiotherapy diagnosis through the clinical reasoning process in examination.

Clinical reasoning models

Multiple types of clinical reasoning models are used by physiotherapists in various physiotherapy settings. The choice of the clinical reasoning model depends on the physiotherapist's expertise but also on the client. (Jones et al. 2019.) In MSK physiotherapy practice the four typically used clinical reasoning models are the hypothetico-deductive model, the pattern recognition model, the narrative model (Edwards et al. 2004; Higgs and Jones 2008) and the systematic model (Baker et al. 2017).

The hypothetico-deductive model is the most common model in physiotherapy decision-making. It is known as the progressive line of reasoning, in which the initial clues from the initial hypothesis lead to further assessment and continual hypothesis-making. Hypothetico-deductive reasoning model is an ongoing process, forward reasoning, where the physiotherapists tests hypothesis based on provided clues, and the conclusion of the client's problem evolves during examination. (Jones& Rivett, 2019.) Another model is pattern recognition, in which the physiotherapist instantly recognises certain patterns or symptoms that present in certain conditions (illness scripts) and performs clinical tests that rapidly either negate or confirm the hypothesis. Pattern recognition is more typical for experienced physiotherapists, and the use of pattern recognition is more limited in novice physiotherapists. (Jones& Rivett 2019.) Then there is the narrative model that is based on the dialogue between the client and the physiotherapist. In narrative reasoning the physiotherapist aims to construct meanings in the client's story and allows that narrative to guide the examination and management in consensus with the client. The narrative clinical reasoning model can be more functional with chronic pain clients, whereas the hypothetico-deductive and pattern recognition models are used more with acute pain clients even though the biopsychosocial approach and interaction with the client are always a constant. (Edwards et al. 2004; Jones&Rivett, 2019.) A systematic model is also used, especially by more novice physiotherapists, in which the examination of client is carried out pragmatically by following a checklist or an examination form for a specific condition. With the systematic model more time is spent on the physical examination that is carried out in organised manner and decisions are not made until the end of the examination. (Baker et al. 2017; Edwards et al. 2004). In theory, these four clinical reasoning models (hypothetico-deductive, pattern recognition, narrative and systematic model) could be used by physiotherapists working in DA practice with MSK clients.

AIM OF THE STUDY

The aim of the study was to gain deeper understanding of physiotherapists' clinical reasoning by exploring how the physiotherapists describe their examination of clients with LBP in direct access practice.

The research question was:

How do physiotherapists describe their clinical reasoning in examination of an LBP client in DA practice?

METHODS

Participants

This study was a part of a wider research project within three organisations in different geographical parts of Finland that examines the long-term effects of physiotherapy on LBP clients who have received direct access physiotherapy. The physiotherapists participating in this qualitative research were also recruited from these organisations. The participant recruitment was performed through a manager preselection: the Principal Investigator (MR) contacted the managers of the physiotherapists in each participating outlet in primary health care centres in Southern or Eastern Finland to obtain the contact information of the physiotherapists working regularly in direct access. One of the researchers (M.R) then emailed the physiotherapists to ask for their consent to be interviewed. Of twelve physiotherapists, ten gave their consent.

Out of the ten participants, six were from Southern Finland primary health care centres and four were from Eastern Finland primary health care centres, nine were female and one was male, work experience as a physiotherapist varied between 6.5 and 33 years (mean =20), years working in direct access practice varied between 9 months and 11 years (mean=4 years), time passed since continuing direct access education varied between 1 and 20 years (mean= 6) and the number of clients treated in direct access varied from 1 to 25 per week (mean=10) (table 1).

[insert table 1 near here]

Ethical permission (MR; TS) was received from Helsinki University Hospital's ethical committee (HUS/2710/2020). Research permits were retrieved from all the organisations participating in the study. Participants signed written informed consent forms when they participated in this study. Participation was voluntary and could be discontinued at any point during the research.

Data collection

The interviews of the ten participating physiotherapists were conducted as individual interviews by two members (EK; MR) of the research team either face-to-face (3/10, EK) or via secured Microsoft Teams meetings (7/10, MR). The language of the interviews was Finnish. The research team (MR; EK; HK; TS) created question themes and developed a semi-structured thematic interview frame (Table 2) that was used by both interviewers. Clarifying or additional questions were asked when needed. Prior to the interview the physiotherapists were asked to bring a client case example of their selected LBP client as a printout to the interview event. The printout was only used by the physiotherapist and its purpose was to act as a memory aid for the questions regarding their clinical reasoning in examination of an LBP client they selected as an example to describe their clinical reasoning in that situation. The interviews were recorded, and the recordings were converted into MP3-form and transcribed verbatim. The interviews were then pseudonymised by assigning the interviewees numbers instead of names and removing other identifying information such as names of health centres or other people. Altogether, we had ten interviews of average duration of 50 minutes (40–60 minutes) and 134 pages of pseudonymised transcript (A4; Times New Roman 12; spacing 1.5; marginals 2.54 cm). Only the pseudonymised transcript was used in the data analysis.

[insert table 2 near here]

DATA ANALYSIS

We used qualitative methods to answer our research question. Our method of analysis was qualitative content analysis (QCA) using a theory-driven approach following the steps introduced by Margrit Schreier (2012) (figure 1). QCA is a method that aims to understand meanings and features of the phenomenon by using a coding frame to conceptualise the data in a systematic way (Schreier, 2012, pp.3). This study explored physiotherapists' clinical reasoning in examination in DA practice through their selected LBP client case example that they were asked to describe in the interview event. We chose QCA as our selected method for data analysis as it is well applied with the rich and in-depth data set, and as existing theoretical knowledge about clinical reasoning models used with MSK clients by physiotherapists in different settings are well suited to use as the theoretical lens through which to explore the physiotherapists' clinical reasoning in examination. The four different models of clinical reasoning (hypothetico-deductive, pattern recognition, narrative and systematic model) were used in this theory-driven analysis as a theoretical framework to compare the physiotherapists' descriptions of their clinical reasoning in examination of their LBP client to the models.

The steps in QCA are forming the research question, defining the data, building the coding frame, dividing the data to coding units, testing and shaping the coding frame, performing the analysis and presenting the results (Schreier, 2012, pp.6). Following these steps adapted from Schreier (2012, figure 1), two members of the research team (MR; EK) worked independently and became familiarised with the data set. Then they each underlined and separated the relevant items the descriptions of clinical reasoning in examination from the data set. Next, they met in person to compare the items identified as relevant and found that they had the same items separated. In this theory-driven QCA the four clinical reasoning models (hypothetico-deductive, pattern recognition, narrative and systematic model) were used as coding frames to explore how the physiotherapists described performing their clinical reasoning in examination. This was carried out by comparing the descriptions of the physiotherapists' clinical reasoning in examination to all of the four clinical reasoning models to discover how they performed clinical reasoning and further to find out which of the clinical reasoning model each physiotherapist used. This analysis was performed by the same two separate members of the research team (MR; EK) by making notes on when and how the physiotherapists started to make decisions about the client's symptoms and possible reasons for them, and on making physiotherapy diagnosis, and on how physiotherapists justified their choices and conclusions concerning their examination of the client. Then the two research team members (MR;EK) met in person to crosscheck their findings through mutual discussion. Both had same ideas about how the physiotherapists performed and proceed in their examination and about the used clinical reasoning models. Finally, all the authors reviewed, discussed and critiqued each case to verify the similarities identified by two members of the research team.

[insert figure 1 near here]

RESULTS

Clinical reasoning in examination

Based on the data as perceived by the physiotherapists, clinical reasoning in examination manifested as a process that took place during the interaction with the client in direct access practice. Clinical reasoning performed in examination was described by proceeding from interview to clinical assessment and decision-making, but also simultaneously taking into consideration the DA setting and the role of the physiotherapist in that particular setting. Knowledge of benefits of early encounters and being able to ease the client's situation in a single visit, gained from the continuing direct access education, were seen as added validation to practical work in DA practice.

Clinical reasoning in examination included interviewing their clients and taking the preliminary data into consideration in their examination as stated by the physiotherapists. Specific to DA practice, the physiotherapists described performing clinical reasoning in examination by extracting facts that came up in the interview concerning the client's symptoms or certain diagnoses.

"First the interview part and the client tells me a bit about their symptoms, problems and then we start doing our physiotherapeutic examination based on that and looking at the findings" PT 8 (page 100, line 3332)

"I always use [time] for the anamnesis as I think it is so important that I interview them first and hear how they have been encountered in health care before" PT 1 (page 5, line 129)

"Typically with a low back pain client it is always about the preliminary data...a mother of four, twins born through a C-section, two months ago she had lifted a sofa and had back pain that healed on its own but now six days ago she had lifted her child's moped and the pain had come back and she called [the health center]...and as the client worried during the call, if there was something completely broken [in the spine], I thought it was best to examine the situation [in DA practice]" PT 3 (page 34, line 1095)

After taking part to continuing direct access education and working in direct access practice, physiotherapists experienced having improved differential diagnostic skills, a wider range of physical assessment techniques and more precise assessment.

"Well we can certainly examine things in a lot more detail now, let's say if the pain radiates to the hand, then we can separate it better, what causes it and examine the neck more closely, to see whether there's something in the neck.....then it's not just tension-neck for example and you find something else there, when you know how to examine further" PT 5 (page 69, line 2266 and page 68, line 2238)

"Certain kind of precision, like things what we look at and also when we discover what [the problem] is, then what we do next. So, precision to what you can think that [the findings] could be or not" PT 2 (page 19, line 599) [when asked what was taken to practice from the contents of continuing education]

Physiotherapists also perceived that after taking part to continuing direct access education and working in direct access practice, they were more able to identify and exclude red flags [serious pathology] and the factors that were important to consider in acute MSK pain in relation to individual client's problem.

" We rule out the alarming things and other things and the client gets a like, impression that everything's ok, there's nothing to worry about" PT 9 (page 122, line 4064)

When the physiotherapists were asked if they would do anything differently in retrospect, all the physiotherapists stated to be satisfied with their decision-making process but considered formulating the physiotherapy diagnosis challenging. They described leaving the conclusions as indefinite in the written client report even though they were described orally in the interview event.

"Well, it [conclusion] was difficult to say...Or I have written here that pain is found in SI-joint and lower back. The L4 felt really sliding easily forward and I saw that there was some instability, but SI-joint was also sore." PT 5 (p. 61, line 2005)

"I have written here that difficult decrease in function comes up in examination and that pain is located in presacral and L4-5 gap and radiates to both lower extremities, no strength weaknesses and some difference in lower extremity length" PT 6 (p.75, line 2489)

Clinical reasoning models

The data explored through the theoretical lens of four clinical reasoning models shows that the physiotherapists in this study used evidently either the hypothetico-deductive or the systematic clinical reasoning model to proceed in their clinical reasoning in examination (figure 2). In this study we use the terms type 1 (hypothetico-deductive model) and type 2 (systematic model) to present our findings in more detail.

[insert figure 2 near here]

Type 1: Hypothetico–deductive reasoning model

Based on the data, the descriptions of actions of six physiotherapists (1, 2, 4, 5, 9, 10) presented the use of hypothetico–deductive model in their clinical reasoning. According to the data, the hypothetico–deductive reasoning proceeded from presumptions derived from the interview and anamnesis of the client and to testing these presumptions in their examination. The symptoms led them to consider the possible physiotherapy diagnosis and perform specific clinical tests that matched the symptoms which then either validated or negated the initial diagnosis. Anamnesis was considered to be an important part of the decision-making process and led them to perform the clinical tests that they saw relevant in the presenting condition based on the anamnesis. The type 1 physiotherapists stated to rationalise the clinical tests that they chose to perform.

"And radiation pain, of course I immediately started thinking about that surely it has to be from the spine...then I thought, it must be something in the intervertebral disc, and I got to doing those tests...with changing the position of the spine [forward bend], the client's symptom worsened and even that one spot [L2-L3] was tender, so that led my conclusions there." PT 4 (page 49, line 1604, line 1621)

"I did an initial interview and so identified what sort of symptoms they had...and they had numbness in their foot and pain in their back, so that guided me...the symptomology and then the test results supported each other in a way" PT 10 (page 127, line 4251, page 128, line 4273 and page 129, line 4302)

The physiotherapists that presented to use the hypothetico–deductive model also described trusting their own skills in their decision-making and being confident in their clinical reasoning process.

"My own actions have become more confident....learnt that if the patient's records say that they have come because of back pain...maybe they're not completely...the problem may be somewhere else...so they can very easily change their own way of thinking" PT 5 (page 67, line 2203)

" The longer you've been doing this, the less your try out different tests, so I've tried to train my clinical reasoning skills...when I became more confident about my clinical reasoning skills, then to stop, like, this doesn't affect, for instance, SLR testing so I don't do it to everyone, especially if they have no lower limb symptoms, then I won't test everyone with back symptoms even in the acute pain stage...it's what's relevant in terms of their present situation.. PT 9 (page 115, line 3836)

Type 2: Systematic reasoning model

Based on the data as described, the descriptions of actions of four physiotherapists (3, 6, 7, 8) physiotherapists presented the use of the systematic model in their clinical reasoning. According to the data the use of the systematic model manifested as testing and examining all angles without presumption and making conclusions when all examinations were completed. The type 2 physiotherapists stated to use a clinical test frame with all clients, and all clients were assessed using the same pattern, starting with basic clinical tests and then progressing to more specific clinical tests.

"..We have this certain framework based on which we start examining the issue.. we of course test normal mobility range and forward bending, sideways bending, banding backwards, heel-to-toe walk, the Trendelenburg test and then....well Lasègue's Test and the slump test and straight leg lifts and hip mobility usually too, and of course surface sensation and....in palpation, is there any tenderness to palpation and then reflexes." PT 6 (page 73, line 2429 and page 74, line 2457)

" I have a clear...template...checklist...walking, moving, sitting-to-standing test and how the client sits...then we start basic tests, simply squats, the Trendelenburg, and standing on one leg.. the slump test, SLR. Then sensation, muscle strength and hip mobility, we always examine spine mobility.. reflexes, Babinsky response, feeling the spine and examining the muscles through palpation.." PT 8 (page 101, line 3355)

The physiotherapists who presented to use the systematic model questioned their clinical reasoning competence and worried about their differential diagnostic skills and their ability to recognise serious pathology.

"When the pain is acute then, well, based on that can I separate the issues and determine what the reason behind it could be and the reason for the pain...it feels like there's a need for deeper expertise and skill and understanding" PT 7 (page 85 line 2817 and page 85 line 2821)

DISCUSSION

The findings of this study are in line with those of earlier research but also expand our knowledge of the clinical reasoning in examination of the physiotherapists working in direct access practice. The four different clinical reasoning models were used as a theoretical lens to explore our research data to gain a deeper understanding of physiotherapists' clinical reasoning in examination of an LPB client in DA practice. The physiotherapists' descriptions of their clinical reasoning in examination of their selected LBP case provided knowledge that sheds more light to expertise of physiotherapists working in direct access practice. By exploring the clinical reasoning process from the point of view of examination of the client enabled understanding more about the complex process of clinical reasoning with acute MSK clients in DA setting. Physiotherapists performed clinical reasoning in examination by proceeding from interview to clinical assessment and decision-making by extracting facts from the interview in relation to symptoms or certain diagnosis, identifying and excluding red flags, identifying the facts that were important to consider in acute MSK pain. They also described having improved differential diagnostic skills, wider range of physical assessment techniques as well as more precise assessment after undergoing the continuing direct access education and working in DA practice. However, the way in which clinical reasoning in examination is ~~are~~ put into practice in our study seemed to depend on the individual physiotherapists, as the clinical reasoning models they used varied.

The results of this study differ partly from those of the qualitative study by Karvonen et al. (2017) in which the physiotherapists working in direct access systematically and justifiably used the hypothetico–deductive clinical reasoning model. However, in that study the physiotherapists had just completed their continuing education on the use of hypothetico–deductive reasoning and were at the front line to begin the direct access in their health centres. May et al. (2010) in turn found that although novice physiotherapists also used hypothetico–deductive model to assess shoulder problems, they did not utilise specific signs or symptoms, to guide their decision making. In our study the type 1 physiotherapists followed the cues alongside with the ongoing interactive process of hypothesis-making, and type 2 performed clinical reasoning using a clinical test frame. As the client might visit the physiotherapist in direct access only once, use of the hypothetico–deductive model – following the cues provided by the client and performing the relevant tests – could be a more economical way to make the physiotherapy diagnosis. However, for some physiotherapists, the systematic model seemed to provide safety and a more pragmatic approach to make final decisions. The difficulty in distinguishing the specific signs, relevant cues from irrelevant ones, could be one reason for the use of the systematic model instead of the hypothetico–deductive model.

Holdar et al. (2013) found that physiotherapist' decision-making was influenced by their individual characteristics and knowledge of as well as by client perceptions and contextual factors. The personality of the physiotherapist and the personality of the client were both found to influence the clinical reasoning process (Holdar et al. 2013). Furthermore, a qualitative systematic review and meta-synthesis revealed that the clinical reasoning process was influenced by physiotherapist, client, elements of the reasoning process and context, but that the factors with the most influence were related to the individual physiotherapist (Elvén&Dean, 2017). In addition, according to Widerström et al. (2019), clinical reasoning is influenced by trust in oneself, treatments and personal and work environment-related constraints. Moreover, physiotherapists' self-reflection seemed to play a substantial role in clinical reasoning and its development as a competence (Karvonen et al. 2017; Widerström et al. 2019). Ongoing self-assessment and self-reflection are essential for the development of the clinical reasoning competencies (Higgs et al. 2019). Although this study did not investigate the individual characteristics of the physiotherapists, it is important to note that these factors might influence the decision-making processes of individual physiotherapists.

Jensen et al. (2019, pp.74) state that clinical reasoning is a dynamic process that requires critical reflection and a continuum of development and that expertise in clinical reasoning is not something that comes with work experience. On the other hand, Budtz et al. (2021) point out the importance of work experience as “the ability to recognize diagnostic patterns evolves over time”. The physiotherapists in this study had long careers as physiotherapists and up to eleven years of work experience in direct access. Nonetheless, the preliminary analysis of work experience as a whole or in direct access practice does not seem to be connected to the clinical reasoning model used by the individual physiotherapists in this study.

As the nature of the clinical reasoning process is interactive with the client, it is difficult to analyse the specific factors that influence the physiotherapist’s decision-making. In this study only one LBP client case was used as an example to explore the clinical reasoning process of the physiotherapists working in direct access. Thus, it is difficult to verify whether the clinical reasoning model used in this study is always used by that physiotherapist or whether specific client had some effect on the choice of the used model. Keller et al. (2022) also discovered heterogeneity in correct diagnosis and management decisions among Swiss physiotherapists in a simulated direct access setting. Also, the reasons behind the choices that the physiotherapists made were unclear, as they were not investigated in this study. For example, in terms of the systematic model, the issue of whether neurogenic tests are needed when the client has no neurogenic symptoms, is raised. Nonetheless, according to previous research this may have been related to insecurity in the decision-making process or a learnt habit, as the physiotherapists that used the systematic model described to “always proceed in this manner” (Holdar et al. 2013; Widerström et al. 2019). It could also be questioned how open or ready physiotherapists are to implementing a clinical reasoning model that deviates from their previous or usual practice. This study did not investigate the backgrounds of the participants in terms of the details of the continuing education they underwent or other possible further education they might have completed or how they would usually proceed in their clinical reasoning. More knowledge on the reasons behind the physiotherapists’ clinical reasoning processes is needed to fully understand the justification for using the clinical reasoning models used.

Direct access in Finland is targeted towards acute and subacute MSK problems, but clients might have other symptoms or other issues in the background that need a more extensive investigation of the situation than that required by the current problem (Finnish Association of Physiotherapists, 2016). The usual approach in physiotherapy is to use The International Classification of Functioning, Disability and Health (ICF) model (World Health Organization, 2022) and take into consideration contextual and environmental aspects in relation to health and function. Because clinical reasoning as a process is multifaceted and interactive with the client, it needs to be adaptable and applicable to the biopsychosocial perspective (Elvén&Dean, 2017). Elvén and Dean (2017) suggest that more research should be targeted at how physiotherapists weigh biomedical and psychosocial elements in their clinical reasoning process. This study did not examine how the physiotherapists assessed any possible biopsychosocial issues or how these issues affect client’s perceived pain or disability. In addition, the length and contents of the continuing education provided varies across the country. This study did not explore the differences between the continuing education courses that the physiotherapists had attended. Comparing the clinical reasoning processes of the physiotherapists in relation to the ICF model could be a fruitful research topic for the future.

Most of the research related to clinical reasoning consists of qualitative studies that have not used benchmarks to measure the quality of clinical reasoning as Oostendorp et al. (2020) note in their point of view article. This is also the case in our study. Oostendorp et al. (2020) suggest quantitative measures to improve the quality of clinical reasoning. In many other countries entry-level education provides a foundation to work in direct access (Bury&Stokes, 2013). In comparison the contents of the continuing education courses are guided by recommendations which also aims to harmonise the expertise of the physiotherapists and the service that clients

receive across the country (Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists 2017). However, there are currently no nationally co-ordinated means to monitor quality of service in direct access or other physiotherapy settings. It could be argued that skilful clinical reasoning in direct access leads to quality in service through expert direct access practice. Coordinated quantitative means to monitor clinical reasoning could help provide equal services for the clients. For example, Budtz et al. (2021) recommend a quality audit as it associates with correct management decisions and could systematise clinical reasoning processes and workflow. The use of quality control could also help justify the clinical reasoning models used, as discussed before.

The findings of this study could be beneficial in developing the contents of entry-level and continuing education courses to target the educational goals accordingly. Oostendorp et al. (2020) believe that increased knowledge on physiotherapists' clinical reasoning can positively impact on physiotherapy through the development in education and practice, by making it more transparent and more consistent, and that progressive increase in research on physiotherapists' clinical reasoning and a deeper understanding of the clinical reasoning processes could increase the quality of not only direct access but the whole field of physiotherapy. In clinical settings knowledge on different ways to work in practice provides tools for management decisions and for implementing new processes accordingly. The results may also be beneficial in the development of physiotherapists' expertise. From the point of view of education and clinical practice, the findings of our study show that clinical reasoning skills can be improved by working but not only work experience improves clinical reasoning. For example, individual guidance and mentoring, practicing and reflecting competencies with peers and regular update of knowledge based on scientific evidence could be suggested to support the clinical reasoning process.

STRENGTHS AND LIMITATIONS

The strength of this study is the achieved deeper understanding of physiotherapists clinical reasoning in examination. Moreover, having participants from both Southern and Eastern Finland provided heterogeneity in terms of, for example, continuing education the physiotherapists underwent, the varying practices in different hospital districts and possibly other factors that might influence the decision-making processes of the individual physiotherapists. However, the physiotherapists were predominantly female. It could be that additional participants might have added alternative aspects to our findings.

Theory-driven qualitative content analysis was a functional way to analyse such rich data. The clinical reasoning models as theoretical frameworks were used to explore how clinical reasoning in examination is performed and further to identify what clinical reasoning models physiotherapists used. The use of the known clinical reasoning models in this qualitative content analysis also adds reliability to this study by enabling a systematic approach to analysing the data and allowing the analysis to be replicated at any time point or by other researchers.

This study also has several limitations. The participating physiotherapists were selected through a preselection process with the help of physiotherapy managers. The nature of the sample was therefore limited by the chosen sampling technique. The risk of bias due to the manager's decision on whose information to forward to the Principal Investigator might also be higher. However, the managers had specific information on who was currently working in direct access making the sample reliable for the purpose of this study by ensuring that the participants were experts in direct access. This study did not examine the influence of the differences between the backgrounds of the participants or the possible updates of the continuing direct access education courses or work experience. Examination of these differences could have enabled even deeper understanding of clinical reasoning

processes of individual physiotherapists. Examining the backgrounds in more detail in relation to the clinical reasoning processes would be an interesting research target for the future.

A semi-structured thematic interview frame with open-ended questions was used to explore the clinical reasoning in examination. Focusing more on the specifics of the studied topic might have produced more material for the analysis. However, the interview data gained from this study that were not utilised here could be used in a wider research project in the future.

Another limitation was that the printout of the client record was only used by the physiotherapist as their memory-aid and the clinical reasoning in examination was freely described. For some of the physiotherapists, more time had passed since the client situation of their choosing, and they took more time to recall the client than the others which might have influenced the content of the description. It is also debatable how reliable the information gathered in the purpose of this study is, as only the physiotherapists had the printout of their client case at hand during the interview because of patient register restrictions. In the future it might be beneficial to also analyse the written client report more deeply together with the oral description of the client case or video tape the examination and explore it together with the physiotherapist.

CONCLUSION

Based on the data as described by the physiotherapists, clinical reasoning in examination was performed through interview, clinical assessment and decision-making in interaction with their LBP client in DA practice. By having worked in DA practice, the physiotherapists described performing clinical reasoning in examination by extracting facts from the interview in relation to symptoms or certain diagnosis identifying and excluding red flags, identifying the factors that were important to consider in acute MSK pain in relation to client's problem. They also stated having improved differential diagnostic skills, wider range of physical assessment techniques as well as more precise assessment by undergoing the continuing direct access education and having worked in DA practice. In this study, the physiotherapists' clinical reasoning in examination was presented by their use of either hypothetico-deductive or systematic clinical reasoning model.

FUNDING SOURCES

Minna Roine has received a grant of 1200 euros from the Finnish Physiotherapy Association as an individual and her employee HUS Helsinki University Hospital granted her four weeks of paid leave of absence in 2022 to conduct her research. No funding sources were involved in the research project itself (no involvement in study design, data collection, analysis, or interpretation of data), in the writing of the report nor in the decision to submit the article for publication.

ACKNOWLEDGEMENTS

The authors sincerely thank all the physiotherapists who participated in this study and their managers for the preselection of the participants and for making it possible for the physiotherapists to attend the interviews. The physiotherapists descriptions and reflections on their work were invaluable. The authors also sincerely thank the funding sources for enabling this research.

DISCLOSURE STATEMENT

The authors report there are no competing interests to declare. The authors alone are responsible for the content and writing of the article.

REFERENCES

- Baker, S. E., Painter, E. E., Morgan, B. C., Kaus, A. L., Petersen, E. J., Allen, C. S., Deyle, G. D., & Jensen, G. M. (2017). Systematic Clinical Reasoning in Physical Therapy (SCRIPT): Tool for the Purposeful Practice of Clinical Reasoning in Orthopedic Manual Physical Therapy. *Physical therapy*, 97(1), 61–70. doi: <https://doi.org/10.2522/ptj.20150482>
- Budtz, C.R., Rønn-Smidt, H., Thomsen, J.N.L. et al. (2021). Primary care physiotherapists ability to make correct management decisions – is there room for improvement? A mixed method study. *BMC Family Practice* 22 (196). doi: <https://doi.org/10.1186/s12875-021-01546-1>
- Bury Tracy J. & Stokes Emma K. (2013). A Global View of Direct Access and Patient Self-Referral to Physical Therapy: Implications for the Profession, *Physical Therapy* 93 (4), 449–459. doi: <https://doi.org/10.2522/ptj.20120060>
- Downie F, McRitchie C, Monteith W & Turner H (2019). Physiotherapist as an alternative to a GP for musculoskeletal conditions: A 2-year service evaluation of UK primary care data. *British Journal of General Practice* 69, 314–320. doi: 10.3399/bjgp19X702245
- Edwards Ian, Jones Mark, Carr Judi, Braunack-Mayer Annette & Jensen Gail M (2004). Clinical Reasoning Strategies in Physical Therapy. *Physical Therapy* 84 (4), 312-330. doi: <https://doi.org/10.1093/ptj/84.4.312>
- Elvén Maria & Dean Elizabeth (2017). Factors influencing physical therapists' clinical reasoning: qualitative systematic review and meta-synthesis, *Physical Therapy Reviews* 22 (1-2), 60-75. doi: 10.1080/10833196.2017.1289647
- European Region World Physiotherapy (2020). Expected Minimum Competencies for an Entry Level Physiotherapist in the Europe Region World Physiotherapy Guidance Document. [online] < https://www.erwcpt.eu/education/expected_minimum_competencies_for_entry_level > [cited 7th of February 2023]
- Finnish Association of Physiotherapists (2016). The core competencies of a physiotherapist. [online] Available: <<http://www.suomenfysioterapeutit.com/ydinosaaminen/CoreCompetencies.pdf>> [cited 7th of February 2023]
- Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists (2017). Suositus fysioterapeutin tule-suoravastaanottokoulutuksesta. [online] Available: < <https://www.suomenfysioterapeutit.fi/wp-content/uploads/2018/02/Suoravastaanotto-suositus2017.pdf> > [cited 7th of February 2023]
- Finnish Association of Physiotherapists (2018). Fysioterapeuttien suoravastaanottoiminnan nykytila Suomessa. [online] Available: < <https://www.suomenfysioterapeutit.fi/wp-content/uploads/2018/12/Suoravastaanotto2018.pdf> > [cited 7th of February 2023]
- Furze J, Black L, Hoffman J, Barr J, Cochran TM & Jensen GM (2015). Exploration of students' clinical reasoning development in professional physical therapy education. *Journal of Physical Therapy Education* 29, 22-33. doi: 10.1097/00001416-201529030-00005
- Gilliland S & Wainwright SF (2017). Patterns of clinical reasoning in physical therapist students. *Physical Therapy* 97, 499–511. doi: 10.1093/ptj/pzx028

Health Education England & NHS (2018). Musculoskeletal core capabilities framework for first point of contact practitioners. [online] Available: < https://www.csp.org.uk/system/files/musculoskeletal_framework2.pdf > [cited 7th of February 2023]

Holdar Ulrika, Wallin Lars & Heiwe Susanne (2013). Why Do We Do As We Do? Factors Influencing Clinical Reasoning and Decision-Making among Physiotherapists in an Acute Setting. *Physiotherapy research international : the journal for researchers and clinicians in physical therapy* 18 (4), 220-229. doi: <https://doi.org/10.1002/pri.1551>

Hon Sandra, Ritter Richard & Allen Diane D (2021). Cost-Effectiveness and Outcomes of Direct Access to Physical Therapy for Musculoskeletal Disorders Compared to Physician-First Access in the United States: Systematic Review and Meta-Analysis. *Physical Therapy* 101 (1), doi: <https://doi.org/10.1093/ptj/pzaa201>

Jensen Gail M, Resnik Linda & Haddad Amy M (2019). Expertise and clinical reasoning. In: Higgs Joy, Jensen Gail M, Loftus Stephen & Christensen Nicole 2019. *Clinical reasoning in the health professions*. Fourth Edition. Elsevier, 67-76.

Jones Mark & Rivett Daniel (2019). *Clinical reasoning in musculoskeletal practice*. 2nd Edition. Elsevier.

Jones Mark, Ian Edwards and Jensen Gail (2019). Clinical reasoning in physiotherapy. In: Higgs Joy, Jensen Gail M, Loftus Stephen & Christensen Nicole 2019. *Clinical reasoning in the health professions*. Fourth Edition. Elsevier, 247-260.

Jones Mark, Jensen Gail & Edwards Ian (2008). Clinical reasoning in physiotherapy. In: Higgs, Jones, Loftus and Christensen, 2008. *Clinical Reasoning in the Health Professions*. Third Edition. Elsevier, 245-256

Karvonen Eira (2020). Visiting a Physiotherapist is Useful in the Early Phase of Low Back Pain. *Ann Physiother Occup Ther* 2020, 3(2): 000157.

Karvonen Eira, Paatelma Markku, Laitinen-Väänänen Sirpa & Piirainen Arja (2017). Clinical reasoning and critical reflection in physiotherapists' examinations of patients with low back pain in its early phase: a qualitative study from physiotherapists' point of view. *European Journal of Physiotherapy* 19 (4), 185-193. doi: [10.1080/21679169.2017.1316311](https://doi.org/10.1080/21679169.2017.1316311)

Keller Fabienne, Allet Lara, Meichtry André, Scascighini Luca, Scheermesser Mandy, Wirz Markus & Nast Irina (2022). Diagnostic and decision-making abilities of Swiss physiotherapists in a simulated direct access setting. *Physiotherapy Theory and Practice* 1-16. Advance online publication. DOI: [10.1080/09593985.2022.2077269](https://doi.org/10.1080/09593985.2022.2077269)

Langan SM, Cook C & Benchimol El (2016). Improving the reporting of studies using routinely collected health data in physical therapy. *The Journal of orthopaedic and sports physical therapy* 46, 126–127. doi: <https://doi.org/10.2519/jospt.2016.0103>

Langridge Neil, Roberts Lisa & Pope Catherine (2015). The clinical reasoning processes of extended scope physiotherapists assessing patients with low back pain. *Manual Therapy* 20 (6), 745-750. doi: <https://doi.org/10.1016/j.math.2015.01.005>

May Stephen, Withers Sarah, Reeve Sarah & Greasley Alison (2010). Limited clinical reasoning skills used by novice physiotherapists when involved in the assessment and management of patients with shoulder problems: a qualitative study. *Journal of Manual and Manipulative Therapy* 18 (2), 84-88. doi: <https://doi.org/10.1179/106698110X12640740712770>

Ojha H.A., Snyder R & Davenport T.E. (2014). Direct access compared with referred physical therapy episodes of care: a systematic review. *Physical Therapy* 94 (1): 14-30. doi: <https://doi.org/10.2522/ptj.20130096>

Oosterdorp Rob A, Elvers J W & van Trijffel E, 2020. Concept Analysis of Clinical Reasoning in Physical Therapist Practice. *Journal of American Physical Therapy Association* 100 (8), 1353–1356. doi: <https://doi.org/10.1093/ptj/pzaa065>

Piscitelli D, Furmanek MP, Meroni R, De Caro W & Pellicciari L. (2018). Direct access in physical therapy: a systematic review. *La Clinica terapeutica* 169 (5), 249-260. doi: 10.7417/CT.2018.2087

Schreier Margrit 2012. *A qualitative content analysis in practice*. Thousand Oaks, California: Sage Publications.

Wainwright SF, Shepard KF, Harman LB & Stephens J. (2010). Novice and experienced physical therapist clinicians: a comparison of how reflection is used to inform the clinical decision-making process. *Physical Therapy* 90, 75–88. doi: <https://doi.org/10.2522/ptj.20090077>

Widerström Birgitta, Rasmussen-Barra Eva & Boström Carina (2019). Aspects influencing clinical reasoning and decision-making when matching treatment to patients with low back pain in primary healthcare. *Musculoskeletal Science and Practice* 41, 6-14. doi: <https://doi.org/10.1016/j.msksp.2019.02.003>

World Confederation for Physical Therapy (2019). Direct access and patient/client self-referral to physical therapy. Policy statement. [online] Available: < <https://world.physio/sites/default/files/2020-04/PS-2019-Direct-access.pdf> > [cited 7th of February]

World Health Organization, 2022. International Classification of Functioning, Disability and Health (ICF). [online] Available: < <https://www.who.int/standards/classifications/international-classification-of-functioning-disability-and-health> > [cited 7th of February 2023]

TABLE 1

Table 1. Characteristics of participants.

Physio-therapist (PT)	Work experience as physio-therapist (years)	Work experience in direct access (years)	Time passed since continuing direct access education (physiotherapist's estimation in years)	Number of clients treated in direct access per week (physiotherapist's estimation of number of clients)	Most common client group treated by physiotherapist in direct access
1	10–20	2–5	2	5 or less	Back and shoulder pain
2	> 20	2–5	3	15–25	Varied, all MSK clients
3	< 10	2–5	2	5–15	Varied, all MSK clients
4	10–20	1 or less	1	5 or less	Shoulder and back pain
5	> 20	5–10	9	5 or less	Back pain
6	> 20	2–5	4	5–15	Shoulder and back pain
7	> 20	2–5	20	15–25	Varied, all MSK clients
8	> 20	> 10	10	5 or less	Back pain
9	< 10	5–10	6	5 or less	Back pain
10	< 10	1 or less	3	5 or less	Back pain

TABLE 2

Table 2. Interview frame.

Background information • Could you first talk about your work history in physiotherapy and in direct access practice? • When have you participated in the continuing direct access education and started working in DA practice? • Do you work in DA full or part-time and how many clients per week do you have in DA? • What kind of clients do you treat in DA and what would say is the most common client group for you? • Could you talk about how you ended up working in DA practice?
Client case example • You have a printed client case with you as we asked. Could you talk about the reasons why you chose this client? • Could you talk about the client situation and what guided your actions with this client? • Could you describe in a bit more detail why you chose to proceed with the way that you described? • Could you talk about how you ended up with your conclusion with this client? • Could you describe on what basis you made your conclusion? • How justified do you see your reasoning with this client? • Could you ponder out loud in retrospect if there was any other way to proceed with this client? Would you do anything differently now? • Is there something more that you would like to talk about the client case?
Continuing direct access education • Could you describe the continuing direct access education that you underwent? How was it? • How did you personally experience the continuing education? • If you think about the continuing education that you underwent now afterwards, how do you feel that the content of that corresponds to the needs of the practical work? • Do you have some ideas how the continuing education could be developed? • Do you have some ideas how the practice in your workplace could be developed? • Is there something more that you would like to talk about?

FIGURE 1.

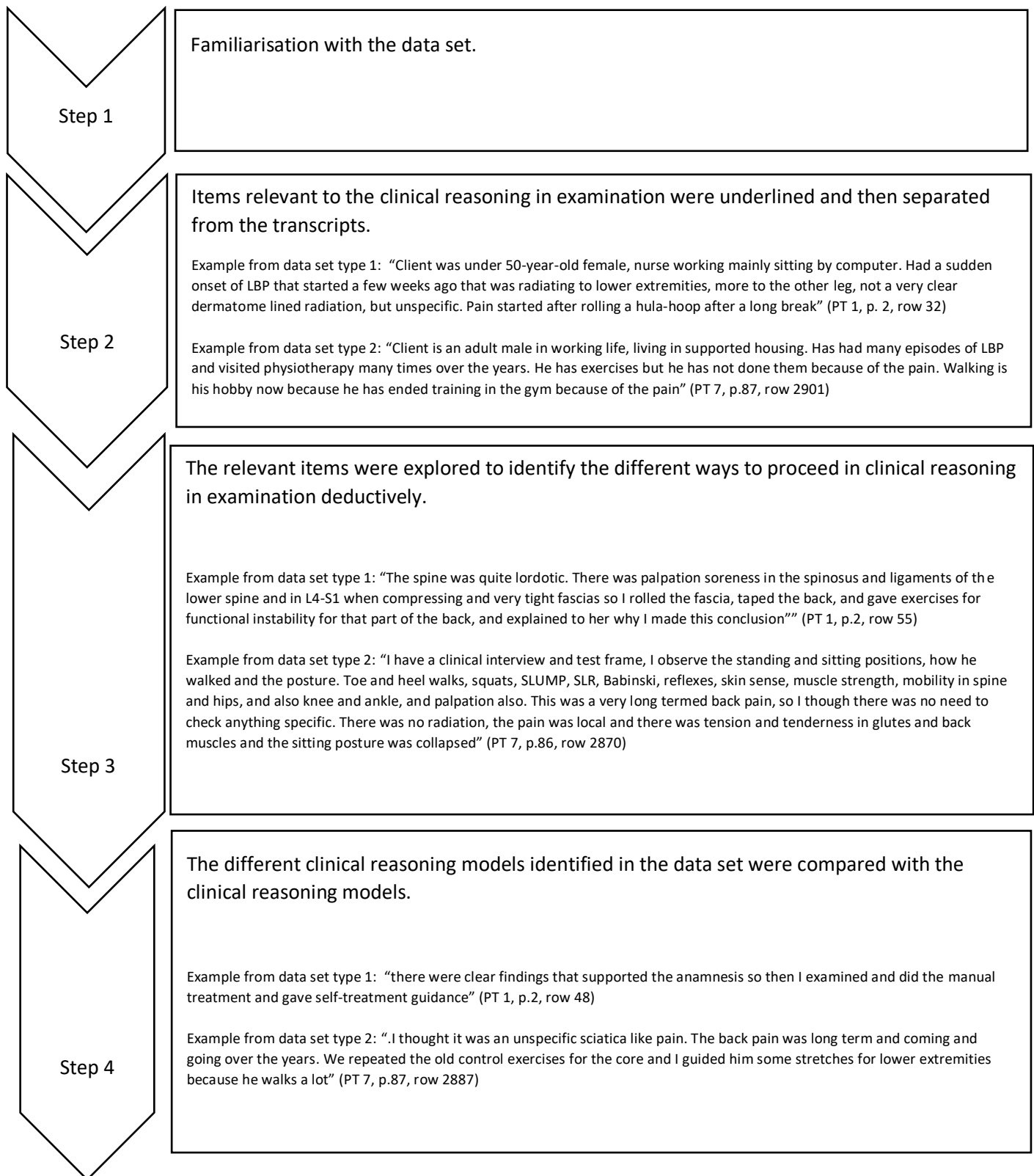


FIGURE 2.

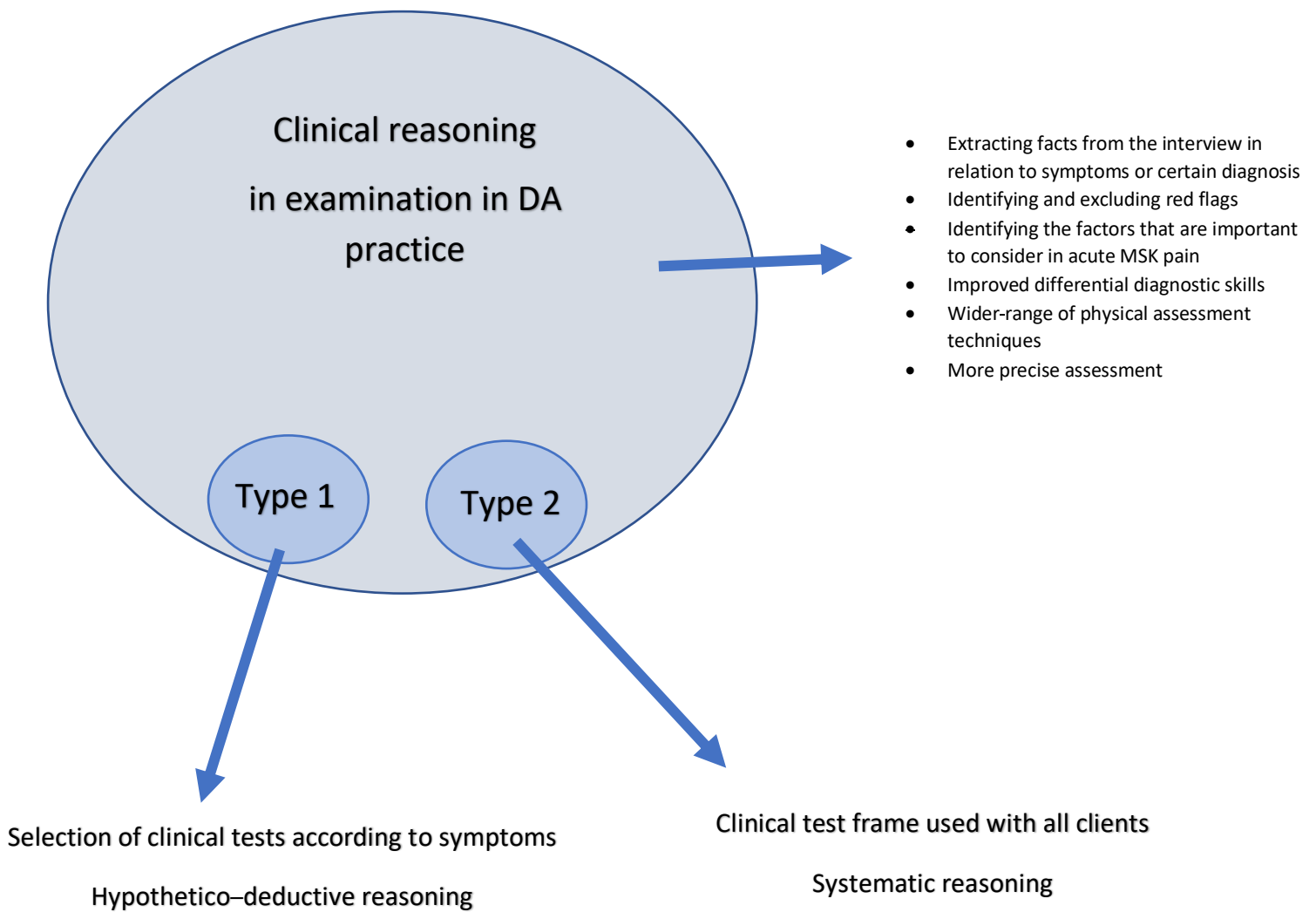


FIGURE CAPTIONS.

Figure 1. Four steps and actions of qualitative content analysis adapted from Schreier (2012).

Figure 1 Alt text. Four arrows are pointing downwards in a line, and each arrow describes a stage of the performed data analysis starting from familiarisation with data, followed by separating relevant items, placing items in coding frame and finally comparing the findings to clinical reasoning models.

Figure 2. Clinical reasoning in examination of low back pain clients after completing continuing education in direct access practice.

Figure 2 Alt text. Clinical reasoning in examination presented as a circle with arrows pointing out of the circle naming the two identified hypothetico-deductive and systematic reasoning types. The circle also has an arrow pointing out of it presenting the manifestation of clinical reasoning in examination in DA practice according to physiotherapists' descriptions.

III

SELF-MANAGEMENT, FEAR OF MOVEMENT, AND PAIN IN WORKING ADULTS WITH LOW BACK PAIN: A QUALITATIVE LONGITUDINAL STUDY

by

Roine, M., Karvonen, E., Munukka, M., Heinonen A. & Vuoskoski, P. (2025).

Journal of Pain Research, 19(1-16).

<https://doi-org.ezproxy.jyu.fi/10.2147/JPR.S549844>

Reproduced with kind permission by Dove Medical Press Ltd.

Self-Management, Fear of Movement, and Pain in Working Adults with Low Back Pain: A Qualitative Longitudinal Study

Minna Roine¹⁻³, Eira Karvonen⁴, Matti Munukka¹, Ari Heinonen¹, Pirjo Vuoskoski¹

¹Faculty of Sport and Health Sciences, University of Jyväskylä, Jyväskylä, Finland; ²Nursing Research Center, University of Helsinki and Helsinki University Hospital, Helsinki, Finland; ³Internal Medicine and Rehabilitation, University of Helsinki and Helsinki University Hospital, Helsinki, Finland; ⁴Physiotherapy Consulting Paatelma & Karvonen Ky, Helsinki, Finland

Correspondence: Minna Roine, Email roinmi@student.jyu.fi

Purpose: The present study explored the experiences of working individuals with low back pain regarding self-management, fear of movement and pain during a 12-month follow-up period after receiving either direct access (DA) or conventional physical therapy.

Patients and Methods: Data were collected through electronic questionnaires containing open-ended questions on physical therapy, fear of movement and pain. These were administered at baseline (after the initial physical therapy visit) and at 3-, 6-, and 12-month follow-ups. Participants were clients from real-life clinical settings in primary care or emergency departments. Fifteen participants completed all follow-ups; ten from DA and five from conventional physical therapy.

Results: Two distinct client types emerged: the *pilot*, who actively engaged in recovery with support from the physical therapist, and the *passenger*, who adopted a more passive approach by avoiding pain-inducing activities. These types were reflected in two main categories: 1) “Understanding my pain”, with three subcategories: Nature of my pain, Daily living with my pain, and Knowing the cause of my pain, and 2) “Managing my pain”, with three subcategories: Ownership of my recovery, Courage to be active, and Relieving pain.

Conclusion: The findings underscore the individualized nature of self-management, fear of movement and pain experiences over 12 months follow-up. While personal strategies varied, guidance from physical therapist appeared instrumental in supporting the adoption of an active pilot-like role in recovery.

Keywords: direct access, qualitative content analysis, physical activity, rehabilitation, musculoskeletal

Introduction

Low back pain (LBP) is the leading cause of disability worldwide and contributing to a growing burden of disability and rising health-related costs.¹ Although acute LBP is typically a benign condition, symptoms can recur and progress to chronic disability particularly among individuals of working age.² The increasing incidence of LBP in the working population has led to substantial economic consequences including sickness-related absences, early retirement due to disability and high utilization of health care resources.¹

Despite its high prevalence and impact, LBP is a condition for which rehabilitation can benefit a large number of individuals.¹ Buchbinder et al³ point out a persistent gap between evidence and clinical practice in LBP management. They advocate a reassessment of clinical practices, noting that procedures such as unnecessary imaging, opioid prescriptions, spinal injections and surgery are high-cost and low-value interventions. Simula et al⁴ further emphasize the evidence-based low-cost rehabilitative approaches, such as promoting physical activity and reducing pain-related fear, are not fully integrated into practice in Finland. Direct access (DA) which allows individuals to receive physical therapy without a physician's referral, has been increasingly utilized to manage musculoskeletal (MSK) conditions such as LBP more effectively.⁵ DA is considered a safe and cost-effective model compared to the traditional medical pathway

which typically leads to referral-based access to physical therapy. Studies have shown that DA could lead to improved work and health outcomes.^{6–9}

In Finland, DA services are available to adults (aged 18 or over) experiencing benign MSK conditions in the early phase of pain (less than 12 weeks in duration). Physical therapists providing DA are trained and experienced physical therapists who are authorized to assess the need for sick leave and prescribe over-the-counter medication, tasks that fall outside the scope of conventional physical therapy.¹⁰ DA typically involves a single visit focused on clinical reasoning, physiotherapeutic diagnosis and self-management guidance whereas conventional physical therapy often includes of three to five sessions of therapeutic exercise.

More than half of individuals with persistent LBP report moderate pain even one year after while acute pain tends to resolve in the first six weeks.¹¹ Fear of movement (FOM) can emerge after the acute phase of pain and may lead to maladaptive beliefs or avoidance behaviors that impair function.^{12,13} FOM has been shown to mediate the relationship between pain and disability¹⁴ and is a known predictor of both disability and return-to-work outcomes in LBP clients.^{15,16} A systematic review by Deslauriers et al¹⁷ suggests that delays in accessing physical therapy may lead to worsened outcomes including increased pain, disability and psychological symptoms, and health-care costs. Therefore, rapid access to physical therapy, for example through DA, may help prevent chronic disability in working individuals by providing timely and personalized rehabilitation.^{15,18,19} Additionally, the psychological predictors at the beginning of pain, such as high pain intensity, depression and fear of movement seem to predict trajectories of disability in LBP.²⁰ Yet, the quantitatively-derived trajectory pain patterns of LBP may not reflect the population-based averages as LBP

Box 1 Open-Ended Questions in in-House Questionnaire

Questions to explore the anamnesis of the participants
• Profession and description of work (eg, office work or physical work) • State of health. Describe your state of health more specifically if you wish. • Other illnesses. If you answered “yes” describe the illnesses below if you wish. • Is this the first time you have experienced the current pain / ailment? Tell more about the start of the current symptoms if you wish. • Have you ever visited a medical doctor or a physiotherapist because of low back pain before the current course of treatment? Describe your previous treatment for your low back pain if you wish. • Describe where in your body you feel pain and how does it feel – pulsating, aching, tingling, numbing, or something else in your own words? • If your low back pain has continued or renewed, what do you think is the reason? Describe in your own words. [asked at 3, 6, and 12 months]
Questions to explore the challenges in daily life due to low back pain
• Which factors cause pain / ailment the most? • What eases the pain / ailment? • Identify one important activity in your life that you are unable to do or have difficulty performing because of the low back pain problem. • If the same low back pain has renewed, was the previous guidance from the physiotherapist useful in treating the renewed pain?
Questions to explore the meaningfulness of physiotherapy visit
• Did the visit to the physiotherapist help you in your low back pain? Describe in more detail if you wish. • If you experienced fear due to low back pain did the visit to the physiotherapist decrease this fear? Describe in more detail if you wish. • Have you been able to perform the exercises that the physiotherapist gave you? Describe in more detail if you wish. • Was the physiotherapy you received adequate? Describe in more detail if you wish.
Questions to explore the follow-up treatment plans
• Are you now on sick leave because of the same low back pain? Describe in more detail if you wish. • Have you asked to be treated by a physiotherapist again because of the same low back pain? Describe in more detail if you wish. • Have you asked to be treated by a medical doctor because of the same low back pain? If you answered “yes” describe in more detail why you asked to be treated by a medical doctor.

experiences vary between individuals.²¹ As such, understanding the role of FOM in recovery is essential, particularly for working individuals.¹⁶

Although extensive research exists on LBP management^{2,22–24} and the DA model,^{8,9,25–27} there is limited knowledge about long term client outcomes and experiences following DA visits. Gallotti et al⁸ found improvement in various work and health outcomes across different DA settings. In Finland Karvonen¹⁹ reported reduced fear of pain and increased physical activity among clients three months after a DA visit. However, deeper insights into clients' perceptions of self-management, FOM and pain are still needed.

This qualitative explorative study examined the experiences of working individuals with LBP over a 12-month period following either DA or conventional physical therapy visit. The research question was: How do working individuals with LBP experience self-management, fear of movement and pain after their physical therapy visit?

Materials and Methods

Ethics

This study involved a 12-month follow-up of working individuals who sought physical therapy services for LBP in primary health care or emergency departments in the wellbeing services counties in Southern or Eastern Finland. This study was conducted according to the declaration of Helsinki and ethical approval was granted by Helsinki University Hospital Regional Committee on Medical Research Ethics (HUS/2710/2020). Research permits were obtained from all participating organizations: Helsinki University Hospital (Hyvinkää Hospital) (§ 10/9.6.2021) and the wellbeing services counties Keusote (KEUDno-2020-8154) and Siunote (3369/13.00.01.01/2020, § 39/2021). Potential participants were informed about the study in person by their treating physical therapist. Those who agreed to participate received an information sheet and were asked to sign an informed consent form including permission for publication of anonymized responses. Participation was voluntary and individuals could withdraw from the study at any time.

Data Collection

Data were collected using two digital questionnaires which were linked to the secure Helsinki University Hospital Electronic Case Report Form (HUSecRF) database. These were administrated at baseline (that is initial physical therapy visit) and at 3-month, 6-month and 12-month follow-up points.

The first questionnaire was an in-house instrument that included the Numeric Pain Rating Scale (NPRS), – a valid, reliable and widely used measure of pain intensity^{28–30} – as well as additional items about sickness-related work absences, visits to physicians, medication use, and open-ended questions. The open-ended questions (see [Box 1](#)) invited participants to explain in writing the reasons behind their selected pain scores. The second questionnaire was the Finnish version of the 13-item Tampa Scale for Kinesiophobia (TSK-13-FIN), a validated tool for assessing FOM.^{31–35}

The time between the initial physical therapy visit and the baseline questionnaire response ranged from 1 to 49 days, with a mean delay of 12 days. Participants received reminder notifications on the day after the questionnaires were sent and on two subsequent occasions if no response was received.

Participant Recruitment

The participants were working individuals aged 18 years or over. Full-time students and individuals in job training were also eligible for inclusion. Recruitment took place between fall 2021 and December 2023. In total, 205 physical therapy clients provided consent in the study. 113 participants completed the baseline questionnaire, resulting in a response rate of 55% (n = 113). Fifteen (n = 15) participants completed all follow-up questionnaires at 3-month, 6-month and 12-month follow-up points, and were therefore included in the final qualitative analysis.

Data Analysis

A qualitative approach drawing on the interpretivist paradigm³⁶ was employed to gain deeper understanding of clients' experiences of self-management, FOM and pain. This approach allowed for the exploration of variations in participants'

descriptions over the 12-month follow-up. The dataset comprised 67 pages of pseudonymized transcript data (A4; Times New Roman 12; spacing 1.5; margins 2.54 cm).

An inductive, data-driven qualitative content analysis (QCA) was conducted to construct typologies of clients' experiences. The analysis followed the framework outlined by Margrit Schreier, which emphasizes the systematic reduction of data and the development of a coding frame to conceptualize the underlying meanings.³⁷ In this study, meaning was understood as personal and context-dependent, reflecting participants' real-life perceptions of the phenomena.³⁸

The QCA process began with reading and re-reading the entire dataset several times. The data were then segmented into coding units, a coding frame was developed and tested and the analysis was carried out.³⁷ Initial coding was performed using Microsoft Word. Thematic segmentation was used to identify coding units, which were then collaboratively reduced to shared meaning relations³⁷ by two researchers (MR, PV). These meaning relations were further scrutinized and condensed into subcategories and main categories.³⁷ From these categories client typologies, referred to as "client types" in this study, were developed by grouping common features and characteristics.³⁷ This iterative circular process enabled abstractions across individual cases and supported the construction of higher-level interpretations.³⁷ Each step of the analysis was critically reviewed through discussions with the research team to ensure rigor and reflexivity.

In addition to qualitative data, the questionnaires included numeric data on FOM and pain, which were used as descriptive background information to contextualize the QCA findings. The descriptive statistics (means and standard deviations) were calculated for FOM (TSK-13-FIN) and pain (NPRS) using Python's statistical functions. Drop-out statistical analyses were performed with IBM SPSS Statistics version 29.0.1.0 (see [Supplementary material](#)). Integrating the quantitative data set alongside the qualitative data enabled a more nuanced and multifaceted understanding of the phenomena under investigation.³⁹

Results

Of the 15 participants included in the QCA, ten were clients who received physical therapy in DA and five received conventional physical therapy. Eleven participants were women and four were men. They were between the ages of 20 and 65 (mean age = 51). Participants represented a variety of occupations: seven described their work as office-based work, two as a combination of office-based and physical work, five as primarily physical work, and one as seated work. Eleven participants reported experiencing chronic LBP while four were encountering LBP for the first time. During the 12-month follow-up period, four participants (Identification Number (ID)97, ID110, ID117, ID162) described recovery from their LBP, three (ID115, ID177, ID192) underwent back surgery, and two (ID123, ID192) retired. Five participants (ID25, ID105, ID138, ID171, ID196) reported no significant change in their condition, one (ID126) experienced recurrence of pain, and one (ID103) reported shoulder pain instead of LBP at the end of the follow-up. See [Table 1](#) for demographic details of the participants included in the QCA.

Additionally, participant demographics of all participants at each time-point are presented in detail in [Table 2](#). These data provide the contextual background for interpreting the results of the QCA.

Analysis of the client experiences revealed two distinct client types: the "pilot" and the "passenger". These types were constructed by identifying shared features and characteristics across two main categories and their respective subcategories which emerged from the QCA. The first main category, "Understanding my pain", includes three subcategories: Nature of my pain, Daily living with my pain, and Knowing the cause of my pain. The second main category, "Managing my pain", comprises the subcategories: Ownership of my recovery, Courage to be active, and Relieving pain. [Table 3](#) presents the main categories and subcategories with data reduction and representative narratives.

The following sections further explore the two client types and how they are reflected in the generated categories.

Client Types and Their Manifestation in the Categories

Two aggregate-level client types, the "pilot" and the "passenger", were derived from the data. The *pilot* typology reflects clients who adopt an active role in their recovery, placing trust in the physical therapist's examination, explanations, and guidance. In contrast the *passenger* typology represents clients who tend to avoid physical activities that might provoke

Table 1 Participant Demographics of Clients in Qualitative Analysis

ID	Age (years)	Sex	DA or Other Referral Method	Acute/ Chronic Pain	Job Description	Self-Evaluated Health Status (0–10), Other Illnesses and Voluntary Description at Baseline	TSK-13-FIN				NPRS				Client Type
							bl	3mo	6mo	12mo	bl	3mo	6mo	12mo	
25	54	Female	DA	Chronic	Nurse manager, mainly office work for 4 years	7, joint and back pain almost daily but at the moment a little better	22	24	22	23	3	4	3	4	Passenger/ pilot
97	29	Male	DA	Acute	System specialist, office work	8, some muscle stiffness in the lower back still 7 days after visiting the physiotherapist.	19	16	14	15	7	0	1	0	Pilot
103	51	Male	Other	Chronic	Supervisor, mainly office work	8, sleep apnea	28	25	24	21	4	1	6	1	Passenger
105	59	Male	DA	Chronic	Shutter installer, physical work	5, today my back got sore at work, hypertension	23	15	20	15	8	2	2	5	Passenger/ pilot
110	20	Female	DA	Acute	Student in open university with a goal of getting an official study place	10, I think my health is good at the moment. I am healthy in every way, and I do not have lower back pain or any other injury. The worst lower back pain lasted approx. 2 weeks, still a little stiff in my back, but I can already do normal things.	25	27	19	20	3	3	0	0	Pilot
115	61	Female	DA	Chronic	Practical nurse, office and physical work	7, Back pains that have plagued me for years, at times the symptoms have remained under control. Now worsened over a few months. Hypertension, sleep apnea	24	26	27	19	8	6	6	1	Passenger/ pilot

(Continued)

Table I (Continued).

ID	Age (years)	Sex	DA or Other Referral Method	Acute/ Chronic Pain	Job Description	Self-Evaluated Health Status (0–10), Other Illnesses and Voluntary Description at Baseline	TSK-13-FIN				NPRS				Client Type
							bl	3mo	6mo	12mo	bl	3mo	6mo	12mo	
117	48	Female	Other	Chronic	Bachelor of Social Services, counsellor in the rehabilitation unit of child protection. Office work, sitting on the sofa and in the kitchen, everyday messing around with young people, driving.	7, blood pressure medication, significant overweight, poor general condition, no physical activities.	43	27	25	26	9	0	0	1	Pilot
123	63	Female	DA	Chronic	School secretary, office work, a lot of work with computer	7, Generally speaking, good, but every day something is going against the grain. It depends on the age. My back hurts from time to time if I even do things that put a strain on my back. Asthma under control at the moment. Asthma and irritable bowel syndrome requiring continuous medication. The umbilical hernia has already been treated.	21	25	24	22	1	4	5	1	Pilot
126	43	Female	Unknown	Acute	Practical nurse, I work in a kindergarten in a group of children under 3 years old.	8, I am an active exerciser in my spare time. I have rarely needed to see a doctor.	33	25	25	31	2	2	4	7	Passenger

138	57	Female	DA	Chronic	Graphic designer / office work, on the computer	7, the lower back has been a “crank” for years, [pain] has now started to get more difficult and the legs sometimes go under. Weight increased, exercise decreased, not terribly good condition. Arrhythmias, high blood sugar, hypertension, osteoarthritis, fibromyalgia (maybe), irritable bowel syndrome.	26	27	31	27	2	6	3	2	Passenger/ pilot
162	61	Female	DA	Chronic	Metal worker. Assembly work, physical work.	7, lower extremity pains	33	26	18	22	5	3	2	3	Pilot
171	59	Male	DA	Chronic	Taxi driver	6, I’m tired.	46	43	45	46	7	7	5	2	Passenger
177	47	Female	Other	Chronic	Quality controller, physical, mostly standing work.	8, my health is otherwise, apart from back pain, very good at the moment. As other diseases, asthma, anxiety disorder.	25	31	29	18	10	7	7	0	Passenger
192	65	Female	DA	Chronic	Kindergarten manager / early education teacher, the work is physical, working in a large group of children 100%	10, healthy. No other illnesses.	29	28	29	27	8	4	4	8	Passenger/ pilot
196	43	Female	Other	Acute	Office work	8. Other illnesses yes [no more information available]	30	33	30	33	9	4	4	3	Passenger

Abbreviations: ID, Identification Number; DA, direct access; TSK-13-FIN, the Tampa Scale for Kinesiophobia 13 items in Finnish language; NPRS, the Numeric Pain Rating Scale; bl, baseline; mo, months.

Table 2 Numeric Participant Demographics of All Participants at All Time-Points

	Total Sample (N=113)	Direct Access Physical Therapy				Conventional Physical Therapy			
		Baseline (N=81)	3mo (N=33)	6mo (N=18)	12mo (N=12)	Baseline (N=32)	3mo (N=12)	6mo (N=6)	12mo (N=6)
Age years (mean, min-max)	43 (20–65)	43 (20–65)	45 (20–65)	48 (20–65)	52 (20–65)	44 (20–61)	47 (20–60)	49 (43–59)	49 (43–59)
Gender									
Female	82	56	26	14	9	26	8	4	4
Male	31	25	7	4	3	6	4	2	2
First time LBP	29	20	6	4	3	9	5	3	3
Geographic location									
Eastern Finland	83	61	27	15	10	22	7	4	4
Southern Finland	30	20	6	3	2	10	5	2	2
Physiotherapy outlet									
Emergency room	38	32	14	9	7	6	4	3	3
Outpatient clinic	75	49	19	9	5	26	8	3	3
TSK-13-FIN (mean; Wald 95% CI)		26.4 [24.8 to 28.0]	26.2 [24.5 to 27.8]	23.7 [22.1 to 25.2]	24.5 [22.7 to 26.3]	27.4 [24.8 to 30.0]	26.2 [23.9 to 27.6]	23.7 [24.2 to 26.8]	24.5 [21.4 to 26.6]
NPRS (mean; Wald 95% CI)		5.2 [4.6 to 5.8]	3.6 [3.1 to 4.2]	2.6 [2.2 to 3.0]	2.4 [1.9 to 3.0]	6.1 [5.2 to 7.1]	2.8 [1.8 to 3.7]	3.8 [2.9 to 4.8]	2.8 [1.9 to 3.8]
Currently on sick leave due to same LBP		13	n/a	n/a	n/a	8	2	1	1
Visit to medical doctor due to same LBP		n/a	4	1	1	n/a	9	3	3
Use of medication due to LBP		70	17	6	5	32	6	4	4

Abbreviations: n/a, not available; NPRS, Numeric Pain Rating Scale; TSK-13-FIN, Tampa Scale for Kinesiophobia 13 items in Finnish language; LBP, low back pain; bl, baseline; mo, months.

Table 3 Categories of Qualitative Content Analysis

Main Category	Subcategory	Data Reduction	Representative Narratives Within Data
1) Understanding my pain	Nature of my pain	Onset of pain	
		Pain duration	Long-standing Previous First time
		Quality of pain	Persistent Intermittent Reduction of symptoms
	Daily living with my pain	Living with pain Influences of pain Recurrence or prolonging of the pain Pain in activities/positions that cause pain	Individually experienced
	Knowing the cause of my pain	Explanation for pain	Reassurance on non-threatening nature of pain
		Reason for pain from medical explanations	Imaging
2) Managing my pain	Ownership of my recovery	Adopting active coping strategies to support the recovery	Examination Explaining pain Guidance in function / positions / exercises Making follow-up plans Assistive devices
	Courage to be active	Adopting active coping strategies to support braver use of back	Promoting physical activity Trust in physiotherapist
		Physical activity	Doing normal things despite the pain
	Relieving pain	Adopting active coping strategies for pain relief	(see Ownership of my recovery above)
		Getting along with the pain	Avoiding functions that cause pain
		Pain relief from medical explanations	Pain medication, sick leaves, surgery

pain and attribute their condition to external or pathological causes. For these individuals, the potential to influence their pain through active self-management appears uncertain. Changes in client roles over the follow-up period were also described suggesting that these typologies may be fluid rather than fixed. The metaphors, *pilot* and *passenger*, were chosen to illustrate the roles the clients assume in managing their LBP and the possible associated FOM. These client types and their manifestation across the main categories are illustrated in Figure 1.

In the data, five clients (ID97, ID110, ID117, ID123, ID162) were identified as pilots. Out of the five, four reported recovery during the follow-up period, and one client (ID123) described successfully managing chronic pain through active self-strategies. Notably four of the pilots (ID97, ID110, ID123, ID162) were DA clients.

You have to dare to keep moving your back, despite the slight pain, staying still is the worst thing for your back. (ID123 at baseline)

Five clients (ID103, ID126, ID171, ID177, ID196) were identified as passengers. One (ID177) underwent back surgery and recovered during the follow-up. Another (ID103) reported reduced FOM and pain during the follow-up, but no change in physical activity. One client (ID126) reported a recurrence of LBP due to their physically demanding work in childcare. Another client (ID171) reported persistent FOM throughout the follow-up despite a notable decrease in pain.

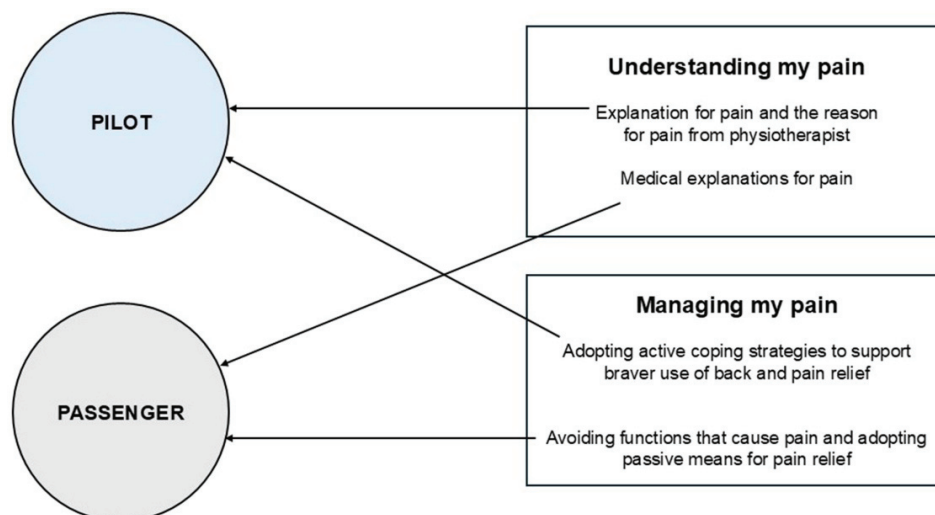


Figure 1 The client types and their manifestation in the main categories.

One client (ID196) reported a notable decrease in pain but reported remaining on sick leave due to difficulties in sitting or standing at work. Only one of the passengers was a DA client (ID171).

An old ailment that won't go away. A wrong movement or improper posture can cause the condition to worsen. You have to be careful. (ID171 at 12-month follow-up point)

Five clients (ID25, ID105, ID115, ID138, ID192) demonstrated characteristics of both identified client types at different time-points during the follow-up period, alternating between active and passive roles in their recovery. An example of this fluctuation is illustrated below.

I suppose it's good advice, but it just doesn't help with my problem. Need to examine further to see what the problem is... (ID138 at 3-month follow-up point)

I suspect that in addition to the SI joint, it might also be osteoarthritis or something else in the lower back. The exercise and the support belt help, but they haven't completely eliminated the problem. (ID138 at 6-month follow-up point)

Across both client types experiences of pain were expressed through individual narratives describing the nature of pain, daily functioning with pain, and the significance of understanding the cause of the pain. These themes are captured in the main category, "Understanding my pain", where the differences between pilots and passengers are particularly evident in the subcategory Knowing the cause of my pain. This category and its subcategories will be discussed next, supported by illustrative quotations from the data.

The subcategory Nature of my pain encompassed participants' descriptions of the onset, duration and quality of their pain. Both pilots and passengers linked the onset of pain to external factors such as slip-and-fall incidents, muscle stiffness, or specific activities like raking or farming chores.

The condition is caused by an accident at a young age which resulted in a vertebrae moving. (ID123 at 6-month follow-up point)

The data revealed varied experiences of pain duration including long-standing or chronic pain, recurrent episodes, and first-time LBP. Over the follow-up period, the quality of pain was described in three distinct ways: as a persistent companion to which one had become accustomed; as intermittent, with clients either waiting for the pain to subside or anticipating its return; and as a gradual reduction in disabling symptoms, in some cases leading to full recovery.

The subcategory Daily living with my pain reflected how LBP was experienced affecting participants' everyday functioning. Both pilots and passengers described how LBP interfered with daily tasks, such as gardening, standing, or increased movement throughout the day. Specific triggers included prolonged bending, sneezing, and structural issues. Participants attributed recurring or prolonged symptoms to factors such as insufficient exercise, muscle weakness, occupational strain, age-related changes or underlying pathologies.

The subcategory Knowing the cause of my pain emerged as a meaningful theme across the data. Understanding the origin of the pain was closely tied to the treatment experience. For some, uncertainty of the cause was linked to a lack of clarity with treatment, particularly among the passengers.

Neither cause nor treatment is known. (ID196 at 6-month follow-up point)

Conversely, having an explanation for the pain appeared to empower clients enabling them to take control of their recovery and adopt a more active pilot role. This understanding provided practical tools for self-management and increased confidence in recovery.

It alleviated the fear, because now I know what causes the pain and how to prevent it. (ID110 at 12-month follow-up point)

Uncertainty about the cause of pain was associated with physician consultations. Passengers in particular sought further explanations from physicians if pain persisted and its origin remained unclear after physical therapy. They also contacted physicians if medication was experienced ineffective, symptoms worsened, or they felt the needed imaging or sick leave. Some clients reported themselves requesting MRI scan to gain clarity or confirm the benign nature of their symptoms even when they acknowledged that imaging findings may not correlate with pain severity or duration.

Well, there's no actual fear in my opinion, so going to a physical therapist doesn't alleviate it in any way. For me, knowing that the MRI scans show that there shouldn't be any major "risk factor", such as something requiring surgery, has more of a dispelling effect on uncertainty and tension. (ID25 at baseline)

An MRI was done, and it showed some small changes, which I think explains the symptoms. So, it's some kind of nerve irritation. There's probably nothing much I can do about the changes anyway, so I'm just taking my medication and trying to keep myself moving. (ID25 at 12-month follow-up point)

As a result of the analysis, the second main category, "Managing my pain", was generated. This category was expressed through active strategies adopted by clients often related to the physical therapist's guidance or through passive approaches such as self-initiated avoidance behaviors or reliance on pain medication. The pilot clients were represented in the subcategories Ownership to own recovery and Courage to be active, while the passenger clients were characterized by "getting along with the pain" and adopting more passive means for pain relief. This second main category, and the manifestations of clients' experiences within its subcategories, are discussed next, supported by illustrative quotations from the data.

The perceived role of physical therapy in the recovery process of clients was linked to the physical therapist's examination and explanation of possible causes of pain. Individual advice and guidance were also described meaningful, particularly in relation to self-management and pain prevention. These included instructions for pain relief, ergonomic advice, strategies to improve functional capacity and flexibility, and home exercise programs. Such interventions were associated with pilot clients who described taking ownership of their recovery by actively following the physical therapist's instructions. The significance of physical therapy was also reflected in how clients valued follow-up planning and referral when necessary. Clients who received assistive devices as part of the treatment noted that these tools were meaningful in supporting recovery and daily functioning.

The physical therapist checked whether it was muscle related or something else and then asked the nurse to give me a relaxant. The relaxant didn't exactly give me relief, but I was able to stand a little straighter than before. They [the physical therapist] also gave me a back brace, which was very helpful during workdays. (ID97 at baseline)

In the data, FOM did not always manifest as literal fear, but rather as a frustration, irritation, or uncertainty about the ongoing condition. Moreover, FOM was expressed through avoidance behaviors, particularly among the passenger clients who described the significance of avoiding movements or positions perceived as potentially painful. For these clients, managing persistent LBP involved anticipating and avoiding “wrong” movements, as preparing for pain episodes in advance.

In contrast pilot clients often reported a reduction in FOM as a result in physical therapy. This was linked to trust in physical therapists’ expertise and the belief that movement, even when painful, was beneficial. Clients described physical therapist’s explanations, encouragement to remain active and guidance in exercise to be meaningful in helping them to manage pain and regain confidence in movement. This trust and increased activity were captured in the subcategory *Courage to be active*, a defining feature of the pilot client type.

The expertise of the physical therapist was reassuring and encouraging. I was convinced that moving within the limits of the pain was good for me and I acted accordingly. Between the visits, the physical activity was even better than before. (ID117 at baseline)

For passenger clients, meaningful pain management strategies included medications, injections, or support from other healthcare professionals such as osteopaths or massage therapists. These clients expressed a sense of limited benefit of physical therapy for LBP that was evident in the experience of receiving no pain relief from physical therapy or reporting little or no relief in the exercises or interventions. Those who underwent back surgery during the follow-up period often viewed surgery as their only viable path to recovery.

I’m on the waiting list for surgery for my condition, so exercise won’t be enough to fix it. (ID115 at the 6-month follow-up point)

Discussion

The aim of this study was to explore the experiences of working individuals with low back pain regarding self-management, FOM, and pain over a 12-month follow-up period after receiving DA or conventional physical therapy. By analyzing responses to open-ended questions of real-life physical therapy clients, this study deepened the understanding how working individuals perceive and manage their pain, fear and recovery. The two client types, pilot and passenger, identified along with the main categories of “Understanding my pain” and “Managing my pain” captured the diverse and individualized experiences of self-management, FOM, and LBP.

These findings align with previous research on fear of movement and chronicity,^{11–16} while offering new insights into complexity and individuality of these phenomena. The pilot client type was characterized by trust in the physical therapist’s examinations and explanations and by an active role in the recovery. In contrast the passenger client type was marked by preference of medical explanations, such as imaging, avoidance of pain-inducing activities, and reliance on passive pain relief strategies. Alternation between these roles during the follow-up period further underscores LBP as a fluctuating and individually experienced condition. Furthermore, Alt and Luomajoki⁴⁰ explored adherence to physical therapy by categorizing LBP patient types based on personality traits, activity level and locus of control suggesting that increased awareness of such typologies may support adherence and improve treatment outcomes. Even though reasons for alteration remain unclear in this study, the identified client types shed light on individual coping strategies adopted after a physical therapy visit. This study reinforces the understanding that LBP is a deeply personal experience and that self-management and FOM should be addressed individually in clinical settings.

Our findings support the idea that early-phase physical therapy may encourage clients to adopt more active recovery behaviors. Deslauriers et al¹⁷ similarly found that rapid access to physical therapy can mitigate negative outcomes at both individual and health system levels. Additionally, Andersen et al²⁰ suggest focusing treatment on restoring function instead of pain management. This supports the implementation of early intervention models that target the individual needs of clients, such as DA, which may help reduce work absences and long-term disability. Karvonen¹⁹ also emphasized the benefits of early physical therapy intervention in improving client outcomes.

Our findings are consistent with prior studies that highlight the importance of identifying FOM. Recognizing clients at risk allows physical therapists to address fear early in the treatment process potentially preventing the development of chronic pain and fear avoidance behaviors. For example, Chen et al⁴¹ found that higher pain intensity, perceived consequences, longer pain duration, and passive coping strategies along with lower social class predicted the course of LBP. Lee et al¹⁴ identified fear, psychological distress and self-efficacy as key mediators in the relationship between pain and disability. These findings underscore the importance of understanding FOM as both individually experienced and objectively measurable phenomenon, and of providing targeted education when needed.

In this study, most participants, particularly the DA clients, received only a single physical therapy session. While this approach may be sufficient for many individuals with benign MSK conditions, some individuals may require additional support. Our findings indicate that clients with persistent FOM or passive coping strategies may benefit from more frequent follow-up. André and Lundberg¹² similarly found that individuals with high levels of FOM required additional support to engage in movement and exercise, often managing their pain by carefully choosing how to move. These findings align with our observation that some clients remained in the passenger role throughout the follow-up period.

The importance of understanding the cause of the pain was emphasized by participants. However, as the origin of pain is not always identifiable, fostering awareness of one's own behavior in relation to FOM and pain may help clients adopt a more active role in self-management. Additional support from physical therapists may facilitate this shift helping clients to take ownership of their recovery and transition into the pilot role.

Future research could explore whether FOM decreases in physical therapy interventions that specifically address the meaning and mechanisms of fear avoidance behavior. It could also be valuable to investigate whether added support helps individuals adopt a pilot-like role in their recovery.

Strengths and Limitations

A key strength of this study lies in its 12-month follow-up of real-life physical therapy clients offering a rare longitudinal perspective on self-management, FOM, and pain in authentic physical therapy settings. This extended follow-up allowed for a deeper understanding of how working individuals experience and manage LBP over time. The study highlights the meaningfulness of individually targeted treatment and suggests that early physical therapy intervention along with screening for clients who may require additional support could be beneficial. Another strength is the ethical and methodological use of the full data set. By integrating the numeric data to contextualize the qualitative content analysis (QCA), the study honored the participants commitment to the research process and maximized the value of their contributions over the extended follow-up period. The findings reinforce the view that self-management, FOM, and pain are complex individually experienced phenomena that should be carefully considered in clinical practice. This understanding can inform the development of more personalized treatment approaches and risk screening tools.

However, this study also has several limitations. Due to a high drop-out rate and uneven participation between client groups, the originally intended comparison between DA and conventional physical therapy could not be pursued. The focus shifted to a qualitative exploration of those who remained engaged throughout the study. The perspectives of disengaged clients remain absent, which may limit the diversity of viewpoints represented. Additionally, delays between the initial physical therapy visit and the baseline response may have influenced participants' recollections and responses.

Participant recruitment was also affected by external factors including the global COVID-19 pandemic and the staff turnover at participating physical therapy sites. Furthermore, legislative change in 2022 expanded DA services in occupational health care potentially diverting eligible participants from public health care settings.⁴² The research team responded by organizing multiple orientation and update meetings with physical therapists and their supervisors which provided valuable insights into the recruitment challenges. Despite several extensions to the recruitment period, only fifteen participants completed all follow-ups. While this number provided sufficient depth for qualitative analysis, the findings should be interpreted as reflective of this specific group and context. Some participants who consented to the study did not respond at baseline and the reasons for non-response remain unknown. A higher initial response rate might have improved the robustness and reduced attrition. Nevertheless, the QCA was successfully conducted with the 15 participants who engaged throughout the study.

Although DA in Finland is intended for the early-stage MSK conditions, the study found that clients with chronic LBP were also treated in DA settings. This highlights the complexity of clinical realities and supports earlier findings on the importance of identifying biopsychosocial risk factors that may predict chronicity.⁴³ Riska et al⁴⁴ similarly emphasize the need to screen for psychosocial factors which are already prevalent among Finnish higher education students who experience MSK pain.

The specific content and delivery of physical therapy in both DA and conventional settings were not standardized or fully documented, which limits the ability to describe treatment processes in detail. Although national guidelines exist for DA practice in Finland,¹⁰ variation in clinical reasoning and practices among physical therapists is likely. Roine et al⁴⁵ for example, found individual-level differences in clinical reasoning. Tailoring the clinical examination to the client's needs through participatory interaction may lead to better outcomes.⁴⁶

Our findings suggest that physical therapists play a crucial role in promoting physical activity and reassuring clients about the non-threatening nature of pain. However, the results also highlight the need to educate clients about the limited value of high-cost, low-value interventions, such as imaging. Instead, meaningful recovery may be better supported through clinical examinations conducted in collaboration with the client. As Simula et al⁴ argue, current LBP care guidelines in Finland should be updated to emphasize clinical assessment and individual treatment approaches.

Conclusion

This study explored the experiences of working individuals with low back pain (LBP) over a 12-month period following either direct access or conventional physical therapy. The findings offer interpretative insights into self-management, fear of movement (FOM) and pain as individually experienced phenomena. The findings highlight the highly personal and evolving nature of these experiences and suggest that physical therapy may support individuals in engaging more actively in their recovery, as illustrated in the *pilot* typology.

Given the exploratory and longitudinal nature of the study, and the high attrition rate, the findings should be viewed as context-bound and reflective of those individuals who remained engaged throughout the follow-up. The *pilot* and *passenger* roles appeared to shift over time, suggesting that these typologies are fluid rather than fixed.

To further explore how individuals navigate everyday life with LBP, future research could focus on developing supportive approaches for those who tend to adopt a more passive stance in recovery. Such approaches might include tailored information or structured follow-ups in clinical settings to foster active engagement. Overall, this study contributes to a deeper understanding of the lived and dynamic nature of recovery from LBP and highlights the importance of individualized support in physical therapy contexts.

Acknowledgments

The authors sincerely thank all participants in this study. Special thanks to Tuulikki Sjögren, PhD, for her contribution to the original study design and Petteri Koho, PhD, for his valuable assistance with TSK-13-FIN.

Funding

This study was supported by the Finnish Work Environment Fund (grant number 240377), awarded to Minna Roine for her doctoral research. Additional financial support was provided to Minna Roine in the form of three months of paid research leave during 2024 from Helsinki University Hospital Nursing Research Center, and €500 grant from the Finnish Association of Physiotherapists. No funding sources were involved in the execution of the research project itself.

Disclosure

The authors report no conflicts of interest in this work.

References

1. Ferreira ML, De Luca K, Haile LM, et al. Global, regional, and national burden of low back pain, 1990–2020, its attributable risk factors, and projections to 2050: a systematic analysis of the Global Burden of Disease Study 2021. *Lancet Rheumatol.* 2023;5(6):e316–e329. doi:10.1016/S2665-9913(23)00098-X

2. Hartvigsen J, Hancock MJ, Kongsted A, et al. What low back pain is and why we need to pay attention. *Lancet*. 2018;391(10137):2356–2367. doi:10.1016/S0140-6736(18)30480-X
3. Buchbinder R, Underwood M, Hartvigsen J, Maher CG. The Lancet Series call to action to reduce low value care for low back pain: an update. *Pain*. 2020;161(1):S57. doi:10.1097/j.pain.0000000000001869
4. Simula AS, Malmivaara A, Booth N, Karppinen J. Effectiveness of a classification-based approach to low back pain in primary care – a benchmarking controlled trial: trust your back. *J Rehabil Med*. 2024;56:jrm28321. doi:10.2340/jrm.v56.28321
5. World Physiotherapy. Direct access and patient/client self-referral to physical therapy. 2019. Available from: <https://world.physio/sites/default/files/2020-04/PS-2019-Direct-access.pdf>. Accessed June 17, 2025.
6. Cattrysse E, Van Den Broeck J, Petroons R, Teugels A, Scafoglieri A, Van Trijffel E. Impact of direct access on the quality of primary care musculoskeletal physiotherapy: a scoping review from a patient, provider, and societal perspective. *Arch Physiother*. 2024;14:20–28. doi:10.33393/aop.2024.3023
7. Demont A, Bormaud A, Kechichian A, Desmeules F. The impact of direct access physiotherapy compared to primary care physician led usual care for patients with musculoskeletal disorders: a systematic review of the literature. *Disabil Rehabil*. 2021;43(12):1637–1648. doi:10.1080/09638288.2019.1674388
8. Gallotti M, Campagnola B, Cocchieri A, Mourad F, Heick JD, Maselli F. Effectiveness and consequences of direct access in physiotherapy: a systematic review. *J Clin Med*. 2023;12(18):5832. doi:10.3390/jcm12185832
9. Ojha HA, Snyder RS, Davenport TE. Direct access compared with referred physical therapy episodes of care: a systematic review. *Phys Ther*. 2014;94(1):14–30. doi:10.2522/ptj.20130096
10. Finnish Society of Physical and Rehabilitation Medicine and Finnish Association of Physiotherapists. Suositus fysioterapeuttile-suoravastaaottokoulutuksesta. 2017. Finnish. Available from: <https://www.suomenfysioterapeutit.fi/wp-content/uploads/2018/02/Suoravastaaottosuositus2017.pdf>. Accessed June 17, 2025.
11. Menezes Costa LDC, Maher CG, Hancock MJ, McAuley JH, Herbert RD, Costa LOP. The prognosis of acute and persistent low-back pain: a meta-analysis. *CMAJ*. 2012;184(11):E613–E624. doi:10.1503/cmaj.111271
12. André M, Lundberg M. Thoughts on pain, physical activity, and body in patients with recurrent low back pain and fear: an interview study. *Phys Ther*. 2022;102(2). doi:10.1093/ptj/pzab275
13. Linton S, Shaw W. Impact of psychological factors in the experience of pain. *Phys Ther*. 2011;91(5):700–711. doi:10.2522/ptj.20100330
14. Lee H, Hübscher M, Moseley GL, et al. How does pain lead to disability? A systematic review and meta-analysis of mediation studies in people with back and neck pain. *Pain*. 2015;156(6):988–997. doi:10.1097/j.pain.000000000000146
15. Wertli MM, Rasmussen-Barr E, Weiser S, Bachmann LM, Brunner F. The role of fear avoidance beliefs as a prognostic factor for outcome in patients with nonspecific low back pain: a systematic review. *Spine J*. 2014;14(5):816–836.e4. doi:10.1016/j.spinee.2013.09.036
16. Iles RA, Davidson M, Taylor NF. Psychosocial predictors of failure to return to work in non-chronic non-specific low back pain: a systematic review. *Occup Environ Med*. 2008;65:507–517.
17. Deslauriers S, Déry J, Proulx K, et al. Effects of waiting for outpatient physiotherapy services in persons with musculoskeletal disorders: a systematic review. *Disabil Rehabil*. 2021;43(5):611–620. doi:10.1080/09638288.2019.1639222
18. Babatunde OO, Bishop A, Cottrell E, et al. A systematic review and evidence synthesis of non-medical triage, self-referral and direct access services for patients with musculoskeletal pain. *PLoS One*. 2020;15(7):e0235364. doi:10.1371/journal.pone.0235364
19. Karvonen E. Visiting a physiotherapist is useful in the early phase of low back pain. *Ann Physiother Occup Ther*. 2020;3(2). doi:10.23880/aphot-16000157
20. Andersen T, Karstoft K-I, Lauridsen H, Manniche C. Trajectories of disability in low back pain. *Pain Rep*. 2022;7(1):e985. doi:10.1097/PR9.0000000000000985
21. Kongsted A, Kent P, Axen I, Downie A, Dunn K. What have we learned from ten years of trajectory research in low back pain? *BMC Musculoskelet Disord*. 2016;17(1):220. doi:10.1186/s12891-016-1071-2
22. Buchbinder R, van Tulder M, Öberg B, et al. Low back pain: a call for action. *Lancet*. 2018;391(10137):2384–2388. doi:10.1016/S0140-6736(18)30488-4
23. Clark S, Horton R. Low back pain: a major global challenge. *Lancet*. 2018;391(10137):2302. doi:10.1016/S0140-6736(18)30725-6
24. Foster NE, Anema JR, Cherkin D, et al. Prevention and treatment of low back pain: evidence, challenges, and promising directions. *Lancet*. 2018;391(10137):2368–2383. doi:10.1016/S0140-6736(18)30489-6
25. Bury TJ, Stokes EK. Direct access and patient/client self-referral to physiotherapy: a review of contemporary practice within the European Union. *Physiotherapy*. 2013;99(4):285–291. doi:10.1016/j.physio.2012.12.011
26. Hon S, Ritter R, Allen DD. Cost-effectiveness and outcomes of direct access to physical therapy for musculoskeletal disorders compared to physician-first access in the United States: systematic review and meta-analysis. *Phys Ther*. 2021;101(1):pzaa201. doi:10.1093/ptj/pzaa201
27. Piano L, Maselli F, Viceconti A, Gianola S, Ciuro A. Direct access to physical therapy for the patient with musculoskeletal disorders, a literature review. *J Phys Ther Sci*. 2017;29(8):1463–1471. doi:10.1589/jpts.29.1463
28. Boonstra A, Stewart R, Köke A, et al. Cut-off points for mild, moderate, and severe pain on the numeric rating scale for pain in patients with chronic musculoskeletal pain: variability and influence of sex and catastrophizing. *Front Psychol*. 2016;7(1466). doi:10.3389/fpsyg.2016.01466
29. Childs JD, Piva SR, Fritz JM. Responsiveness of the numeric pain rating scale in patients with low back pain. *Spine*. 2005;30(11):1331–1334. doi:10.1097/01.brs.0000164099.92112.29
30. Ranzatto AD, Chaves TC, Martins MN, et al. Pain intensity scales: a cross-sectional study on the preferences and knowledge of physiotherapists and participants with musculoskeletal pain. *Musculoskelet Sci Pract*. 2024;73(103162). doi:10.1016/j.msksp.2024.103162
31. Cordeiro N, Pezarat-Correia P, Gil J, Cabri J. Portuguese language version of the Tampa Scale for Kinesiophobia [13 Items]. *J Musculoskelet Pain*. 2013;21. doi:10.3109/10582452.2012.762966
32. Dupuis F, Cherif A, Batcho C, Massé-Alarie H, Roy JS. The Tampa Scale of Kinesiophobia: a systematic review of its psychometric properties in people with musculoskeletal pain. *Clin J Pain*. 2023;39(5):236. doi:10.1097/AJP.0000000000001104
33. Eiger B, Errebo M, Straszek CL, Vaegter HB. Less is more: reliability and measurement error for three versions of the Tampa Scale of Kinesiophobia (TSK-11, TSK-13, and TSK-17) in patients with high-impact chronic pain. *Scand J Pain*. 2023;23(1):217–224. doi:10.1515/sjpain-2021-0200

34. Koho P, Borodulin K, Kautiainen H, Kujala U, Pohjolainen T, Hurri H. Finnish version of the Tampa Scale of Kinesiophobia: reference values in the Finnish general population and associations with leisure-time physical activity. *J Rehabil Med*. 2015;47(3):249–255. doi:10.2340/16501977-1927
35. Neblett R, Hartzell MM, Mayer TG, Bradford EM, Gatchel RJ. Establishing clinically meaningful severity levels for the Tampa Scale for Kinesiophobia (TSK-13). *Eur J Pain*. 2016;20(5):701–710. doi:10.1002/ejp.795
36. Lincoln Y, Lynham S, Guba E. Paradigmatic controversies, contradictions, and emerging confluences revisited. In: Denzin NK, Lincoln YS, Giardina MD, Cannella GS, editors. *The SAGE Handbook of Qualitative Research*. 6th ed. London: Sage Publications; 2023:75–112.
37. Schreier M. *Qualitative Content Analysis in Practice*. 1st ed. London: Sage Publications; 2012.
38. Dahlberg H, Dahlberg K. The question of meaning—A momentous issue for qualitative research. *Int J Qual Stud Health Well-Being*. 2019;14(1):1598723. doi:10.1080/17482631.2019.1598723
39. Shaw R, Hiles DR, West K, Holland C, Gwyther H. From Mixing methods to the logic(s) of inquiry: taking a fresh look at developing mixed design studies. *Health Psychol Behav Med*. 2018;6(1):226–244. doi:10.1080/21642850.2018.1515016
40. Alt A, Luomajoki H. Does adherence to physiotherapy depend on the typologies of patients with back pain and their physiotherapists? A qualitative typology study. *J Bodyw Mov Ther*. 2024;40:1224–1230. doi:10.1016/j.jbmt.2024.07.039
41. Chen Y, Campbell P, Strauss VY, Foster NE, Jordan KP, Dunn KM. Trajectories and predictors of the long-term course of low back pain: cohort study with 5-year follow-up. *Pain*. 2018;159(2):252. doi:10.1097/j.pain.0000000000001097
42. Finlex. Occupational Healthcare Act. 2021. (1383/2001; amendments up to 555/2021 included). Available from: <https://www.finlex.fi/en/laki/kaannokset/2001/en20011383.pdf>. Assessed June 17, 2025.
43. Tanguay-Sabourin C, Fillingim M, Guglietti GV, et al. A prognostic risk score for development and spread of chronic pain. *Nat Med*. 2023;29(7):1821–1831. doi:10.1038/s41591-023-02430-4
44. Riska H, Karppinen J, Heikkala E, et al. Gender-stratified analysis of psychosocial factors and physical function in higher education students with musculoskeletal pain. *Eur J Physiother*. 2024;1–7. doi:10.1080/21679169.2024.2386358
45. Roine M, Sjögren T, Korpi H, Jäppinen A-M, Karvonen E. Physiotherapists' clinical reasoning in examination of clients with low back pain in direct access practice: a theory-driven qualitative content analysis. *Eur J Physiother*. 2023;26(3):160–169. doi:10.1080/21679169.2023.2219694
46. Roine M, Jäppinen A-M, Karvonen E, Munukka M, Vuoskoski P. Physiotherapy educators' perceptions of physiotherapists' competencies and continuing education in the practice of musculoskeletal physiotherapy direct access. *Physiother Theory Pract*. 2024;1–13. doi:10.1080/09593985.2024.2394512