

Norwegian Psychomotor Physiotherapy: A scoping review

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Denne **vitenskapelige artikkelen** er fagfellevurdert etter Fysioterapeutens retningslinjer, og ble akseptert 5. desember 2022. Ingen interessekonflikter oppgitt.

Artikkelen ble først publisert på www.fysioterapeuten.no.

Introduction

Long-lasting musculoskeletal pain is characterized by reduced physical function, often linked with anxiety and depression, and with increased risk of developing other health conditions, early retirement, reduced wealth, and social participation, and increased all-cause mortality (1).

Norwegian Psychomotor Physiotherapy (NPMP) is a physiotherapeutic approach applied to patients with long-lasting musculoskeletal pain and complex health complaints (2, 3). The approach emerged from the collaboration between the physiotherapist Aadel Bülow-Hansen and the psychiatrist Trygve Braatøy (1946-1951) (2, 3). Bülow-Hansen and Braatøy collaborated by treating the same patients and discussing experiences and theories. One major interest during their collaboration was how muscular tension, breathing and emotions interdependent and mutually influenced each other (2, 3). As such their approach conceptualized the reciprocal relationship between restrictions and regulations of muscular tension, breathing, movements and emotions (2,3).

Since 1952, the treatment approach has furthered developed being a specialization in physiotherapy. From 1994 the education was a post graduate education at Oslo University College of Applied Sciences, and from 2000 at the Artic University of Norway, Tromsø (UiT) (2). Further, the education was at a level of master's degree at UiT since

2010, at the Western Norway University of Applied Sciences and the Oslo Metropolitan University since 2018 and 2021, respectively.

The research in the field of NPMP is gradually expanding. Hence a review might provide an overview and bring together the research in the field (6). The aim was therefore to 1) conduct a systematic search of the published literature of empirical studies in the field of NPMP, 2) chart the characteristics and methodologies used in the identified studies, 3) and uncover gaps in the research field.

Methods

A scoping review methodology is well suited for mapping the size and scope of research on a topic, synthesizing findings, and identifying gaps in the literature (4). The approach is further appropriated given the expectation of finding papers with diverse methodology (4). We followed the framework for scoping reviews originally described by Arksey and O'Malley (5) and later advanced by Levac et al. (6) and Khalil et al. (7).

Identifying relevant studies

Relevant peer-reviewed articles were identified in the databases: The Cochrane Library, Epistemonikos, PEDro (The Physiotherapy Evidence Database), AMED, Cinahl, Scopus, Medline, Embase, Forskningsdatabasen.dk, Norart,

Abstract

Background: Norwegian Psychomotor Physiotherapy (NPMP) is an established treatment approach mainly applied to patients with long-lasting musculoskeletal pain. The research in the field of NPMP is gradually expanding. The aim of this study was therefore to conduct a systematic search of the published literature for empirical studies in the field, to chart the characteristics and methodologies used and uncover gaps in the research field.

Methods: A scoping review methodology was chosen.

Results: A total of 93 full text research articles were analysed. The analysis identified primarily articles with a quantitative

approach concerning development and standardisation of the NPMP body examination into scales. The qualitative studies concerned different experiences from the body examination and the treatment approach from the patients' and/or the physiotherapists' perspectives.

Conclusion: The literature in the field is limited but has slowly expanded during the last 20 years. More research is generally needed to further develop and expand the treatment approach.

Keywords: Norwegian Psychomotor Physiotherapy, Scoping review, Quantitative methods, Qualitative methods.



Oria, Web of Science, SveMed+, Idunn, Google Scholar. The searches were conducted in March 2020 and in June 2021. The search terms used to identify the relevant studies were psychomotor physiotherapy, psychomotor physical therapy, Psykomotorisk fysioterapi [psychomotor] AND [physiotherapy] (appendix).

No restrictions were placed on the study search to ensure inclusion of the full breadth of the literature.

Study selection

To capture the breadth of the literature, articles were included if it: 1) was peer-reviewed, 2) contained NPMP treatment and or elements from the treatment approach, 3) contained the body-examination in NPMP or elements of the examination. No limitation was set for year of publication. Articles were excluded if they: 1) were not peer-reviewed, 2) not written in English or Scandinavian languages.

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After the identification of the citations in the electronic database search, the first screening focused on the title

Kort sagt

- Hensikten med denne studien var å gjennomføre et systematisk søk av den publiserte litteraturen i norsk psykomotorisk fysioterapi for å kartlegge omfang, metodisk tilnærming og bidra til å avdekke kunnskaps hull i fagfeltet.
- I alt ble 93 artikler analysert. Analysen avdekket primært artikler med en kvantitativ tilnærming som omhandlet utvikling og standardisering av kroppsundersøkelsen i NPMF. De kvalitative studiene omhandlet ulike erfaringer fra kroppsundersøkelsen og behandlingstilnærmingen fra pasientenes og eller fysioterapeutenes perspektiv.
- Publikasjonene har gradvis ekspandert de siste 20 årene. Mer forskning er generelt nødvendig for å videreutvikle behandlingstilnærmingen.

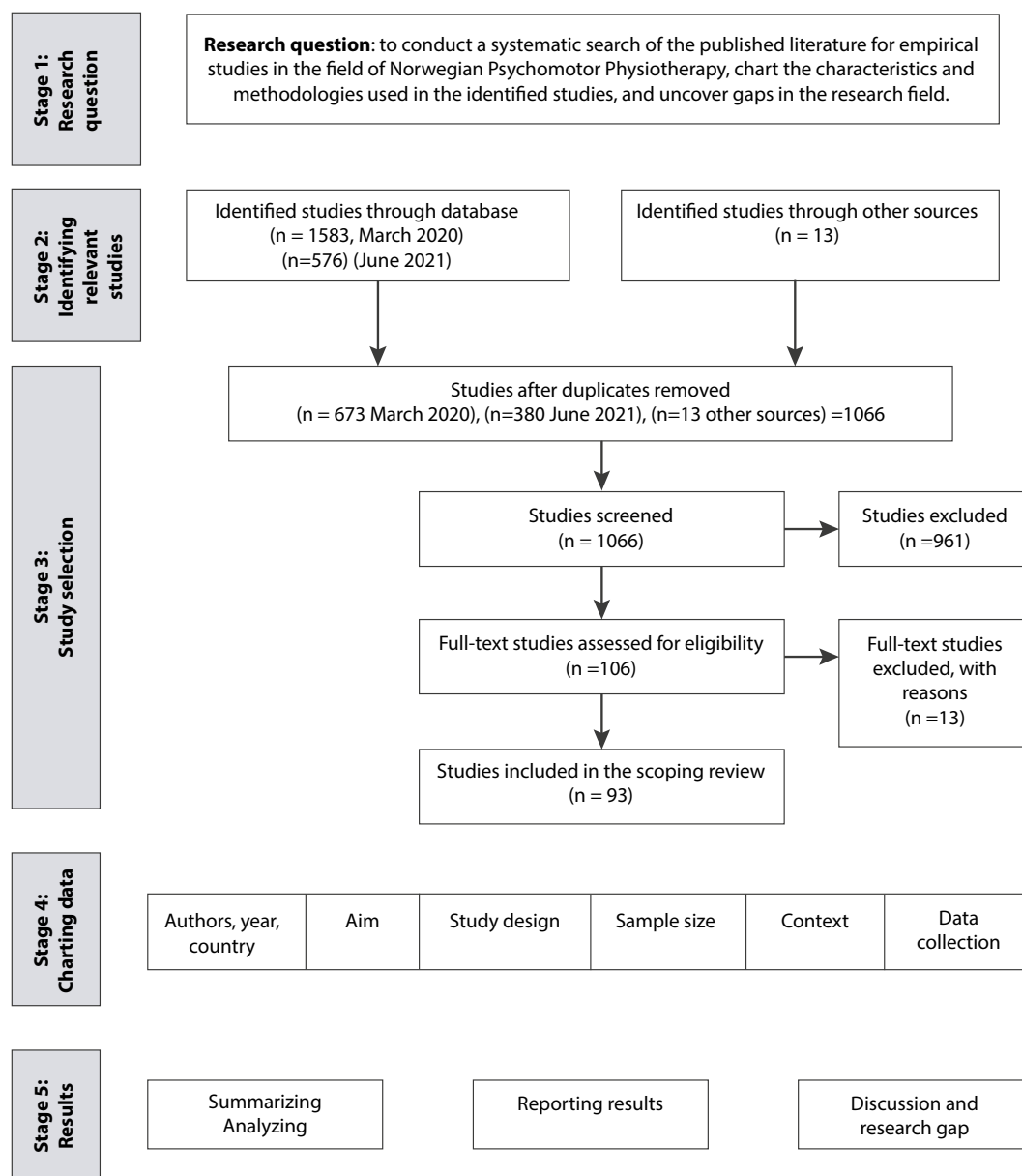


Figure 1 Flow chart. Modified PRISMA chart of the process of selecting articles. The 5 stages representing the stages outlined by Arksey and O'Malley (2005).

and abstract (n=1066). Following this, the authors independently screened the possible articles to be included in the further analysis. A total of 106 articles were chosen to be studied further (Figure 1). The authors then considered these articles and excluded 13 articles because they were not peer-reviewed. Finally, this process ended in including 93 articles (Figure 1).

Charting extraction

Information about the studies is described in table 1 (see after the reference list).

Data synthesis and analysis

The studies were further analysed to gain insight into the results presented in the studies. During this process, the identified studies were re-read to further extract the results. The methodology and perspectives in the studies varied. Consequently, we divided the studies in three groups: quantitative studies, qualitative studies, and studies including both qualitative and quantitative methods. The quantitative studies were thematic divided in, patients receiving NPMP, examination and outcome of the treatment. The qualitative studies were divided in empirical studies from the patients' and the physiotherapists' perspectives, and theoretical articles.

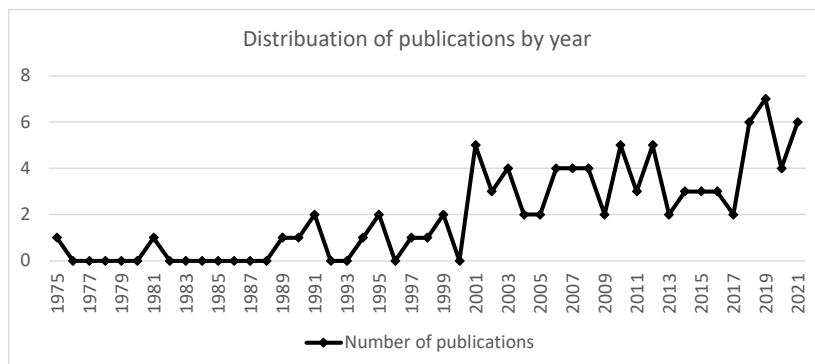


Figure 2 Distribution of publications by year.

Results

Distribution of publications and methodology

The included 93 full text articles were from 1975 to 2021 and most of them were conducted in Norway (n=87) (Figure 1, Table 1). Eighteen of the years had no publications, twenty-one of the years had either one, two or three publications and the years 2001, 2003, 2006, 2007, 2008, 2010, 2012, 2014, 2018, 2019, 2020 and 2021 had 4 or more publications (Figure 2).

A total of 68 studies were written in English and published in international journals. Most of the studies used quantitative approaches (n=51). Among these studies, 21 concerned development and evaluation of psychometric properties of different test scales emerged from the NPMP body examination (8-28). Three studies included development and evaluation of a body awareness questionnaire (29-31). There were five outcome studies of NPMP treatment, including three randomized controlled studies (RCT)(32-36). Among the other quantitative studies, 20 included the use of one of the scales, emerged from the NPMP body examination or elements from the NPMP treatment approach (36,39-57).

One study included both a quantitative and a qualitative approach (58).

Among the qualitative studies, 15 studies (59-73) explored experiences from the physiotherapist's perspective, 10 studies (74-83) from the patients' perspectives and three studies (84-86) from both the physiotherapist and the patients' perspectives. There were two case studies (87, 88) and seven theoretical studies (89-95). The theoretical perspectives in the qualitative studies were, in addition to NPMP, primarily Merleau-Ponty's phenomenology of perception. However, different perspectives for example from social science, psychology and communication theories were also used.

The sample size in the studies varied from 1-416 participants, mainly being patients with musculoskeletal pain or mental health problems. The physiotherapists were specialized in NPMP. Most of the studies were conducted in primary health care or mental health clinics.

Quantitative studies

Patients receiving NPMP

Characteristics of the patients referred to NPMP treatment were described in two studies (32,96). The patients (80-82%) were primarily women, with a mean aged at 42

years. Their main symptoms were long-lasting, local, or general musculoskeletal pain and tension. Two third of the sample presented mixed symptoms, mainly with depression, anxiety, and musculoskeletal pain.

Examination

Based on the body examination of NPMP, a clinical examination tool was developed (89) to evaluate short-term dynamic psychotherapy (37). The findings indicated that 53.3 % of the patients improved on the scores

on the body examination tool. A positive change on the scores were also strongly correlated with psychological improvement. A similar examination tool was used to examine dental, psychological and bodily ailments in a group of female patients with myofascial pain-dysfunction. The examination revealed that the patients had increased muscular tension and an inadequate respiratory function (38).

Furthermore, two different, test scales: the Global Physiotherapy Examination-52 (GPE-52) and the Comprehensive Body Examination (CBE) are developed. The GPE-52 is developed from Sundsvold's (8, 9) assessment method, and further psychometric evaluated (13, 14, 18-20, 22). The scale includes 52 single tests distributed in the 5 body domains; body posture, respiration, movement, muscle, and skin quality and was found to be reliable and valid for assessing localisation and degree of physical aberrations in patients with long-lasting musculoskeletal pain. The CBE are based on the clinical body examination called Resource Oriented Body Examination (ROBE) and further developed and evaluated in several studies (10-12, 15-17). The CBE also revealed physical aberration in the 5 body domains described above. Later, the two scales, GPE-52 and CBE, are further merged into one scale: the Global Body Examination (GBE) (23-28).

The ROBE is also merged into a shorter scale, the ROBE II, that distinguished bodily characteristics between patients with psychosomatic, musculoskeletal, and schizophrenic disorders (21).

A self-reported questionnaire reflecting the phenomenon of body awareness; the Body Awareness Rating Questionnaire (BARQ) is developed for evaluative purposes (29, 30) and further revised (35). The revised BARQ-R being a unidimensional and feasible measurement for assessing the phenomenon of body awareness in the context of body-mind approaches for patients with musculoskeletal pain problems (31).

The scales of the ROBE (39), the ROBE II (42, 43), the GPE-52 (36, 42, 44, 48, 49, 55,57), the CBE (40,41) and the GBE (50), are used to assess and characterise body ailments of participants in different studies or to evaluate the outcome of a treatment (36,46, 47).

Outcome

Outcomes of NPMP treatment are evaluated in two different one-group studies (32, 46) and one study with a com-

pared group on a waiting-list (33). The studies showed that NPMP has the potential for reducing symptoms like health complaints, depression, anxiety, insomnia, fatigue and improving quality of life.

One randomized controlled study of long-term NPMP in groups, indicated additional improvement of symptoms and a higher rate of return to work (34).

Two studies evaluated individual NPMP treatment, one with a control group on waiting-list (35) and another with a control group receiving Cognitive Patient Education combined with active individualized physiotherapy (COPE-PT) (36, 49). The results from the first study showed that 6-month NPMP increased the patients' experiences of quality of life and self-esteem, and reduced pain. The second study showed that NPMP contributed to improve pain and physical function. However, COPE-PT, targeted towards pain-coping and increasing activity, contributed to somewhat more improvements on some of the outcome measures than NPMP at 6- and 12-month follow-up.

Elements from NPMP approach are also included in different studies including patients suffering from dizziness (54), chronic pain (51) and patients with migration experiences (53, 56).

Qualitative studies

Patients' perspective

Studies from the patients' perspectives included experiences of the NPMP examination (74), and experiences of NPMP massage (75) and of breathing (78,79) after completed NPMP treatment. The body examination had a great impact on the patients' understanding of their own ailments. The NPMP massage enhanced relaxation as well as perception and reflection on own body, while experiences of breathing enabled the patients to better understand the interaction between breathing and well-being.

The patients' embodied experiences of change after NPMP treatment are described to enhance self-perception and self-knowledge. Examples like; being more in touch with and familiar with their body and self, to be better acquainted with bodily reactions and to better interpret bodily symptoms and to connect these reactions to relational dimensions and habitual ways of acting. The relation to and the interaction (verbal and nonverbal) with the physiotherapists during the treatment seemed crucial. The patients valued the physiotherapists' sensitivity, their ability to be trusted and adjust the treatment to their needs. They also appreciated to be given enough time and space to explore how to become more in contact with their bodies. The experiences described above seemed to be prerequisites for the patients' changing process during the treatment (75- 83, 85, 87).

Action research aiming to improving professional practice for counsellors in social work are studied (98, 99) emphasizing that the supervision based on NPMP movements, opened access to personal learning and contributed to increased self-knowledge in professional social work practices.

The patients' experiences from a self-management intervention program including principles and element from NPMP treatment are also explored (52).

Physiotherapists' perspective

From the physiotherapists' perspective, the implicit verbal and non-verbal communication during the NPMP examination are studied (59, 60), as well as the physiotherapists' clinical reasoning process during the examination (61-64,100). The studies showed how practice, and way of thinking could differ among the physiotherapists in different clinical contexts; a NPMP therapist, a manual therapist, and a district physiotherapist. The relationship, context, and actual basis of cooperation were influenced by how the physiotherapists related to the patients' bodies.

The physiotherapists' experiences from demanding treatment processes (68) and the impact of own embodied knowledge in clinical practice (69) underscored the value of being sensitive and self-aware during the treatment. The physiotherapists searched to adjust their therapeutic approaches, depending on the individual patient's specific problems and degree of emotional and bodily strain. They experienced the importance of creating a common ground with the patients, inviting them to involve themselves in the treatment.

In treatment of torture survivors and patients with adverse child abuse, the physiotherapists experienced that tailoring both the examination and the treatment to the individual patient were crucial (67, 88). In an outpatient clinic for mental health, the bodily approach in NPMP seemed to contribute with something different from and complementary to the verbally approaches in the interdisciplinary team treating patients with eating disorders (66). The physiotherapists experienced that the use of touch in treatment of patients with anorexia nervosa were challenging. However, being aware of and adjust the touch to the patient's bodily reactions contributed to give the patients comfort and security (73).

The professional development in the field of NPMP was described as a gradual process, integrating theory and experiences from practice. Clinical experiences and contact with colleagues were the most significant sources of development (65). Reflections about the approach from the perspective of highly experienced NPMP physiotherapists concluded that a complex understanding of body knowledge to meet each patient's compound problems is needed (70).

The closing down during the Covid-19 pandemic impacted the practicing of NPMP (72). The approach was performed in new ways, illuminating how video-consultation in contrast to hands-on, could be offered to the patients.

The communication process during long-term treatment, explored from both the patients' and the physiotherapists' perspective, emphasised that demanding episodes generated a potential for development and improvement of the treatment outcomes. Understanding such episodes as open and dynamic, in contrast to defining the patient as demanding, suggested to be a useful perspective during the treatment (84, 86).

Experiences from a long-term collaboration between a physiotherapist and a psychologist treating the same patients described how reduced body awareness seemed to correspond with fragmented memories of their own life history and how enhanced body awareness became a vital aspect in the therapeutic processes (101).

Theoretical studies

Theoretical aspects of Braatøy's thinking, underpinning the NPMP treatment, were analysed considering Løgstrup's philosophy (90-92). The approach was presented as a bodily-existential process (90). Embodied awareness was discussed with the distinction between awareness in the senses and awareness in understanding (91). The everyday language rooted in sensation, might have possibilities to overcome the gap between body and mind (92).

A theoretical article concerning anorexia nervosa underscored the value of addressing bodily restraints in the treatment approach (93). Another article describing contribution factors and treatment implications of exercised induced laryngeal obstruction (EILO) in athletes, emphasized the physiotherapist skills and competence regarding examining breathing patterns and postural de-alignments in the treatment process (94).

Exploring a narrative approach to long-term NPMP treatment indicated that emergent narratives point to potential moments of change and seem to be a useful supplement in the treatment (95).

Qualitative and quantitative study

One study focused on evaluating the effect of NPMP treatment on exercise-induced laryngeal obstruction in elite athletes (58). The study underscored how a diaphragmatic breathing pattern, a more balanced tension in respiratory muscles, and sound cervical alignment and stability might help to reduce adverse stress on the respiratory system and optimise the function of the larynx during high-intensity exercise.

Discussion

This scoping review identified an informative number of articles, primarily conducted in Norway and with a quantitative approach concerning development and standardisation of the NPMP body examination into test scales. The qualitative studies concerned different experiences from the body examination and the treatment approach from the patients' and/or the physiotherapists' perspectives.

The number of studies concerning development and evaluation of the measurement properties of GPE-52, CBE and GBE were surprising. The scales include examination of the body through 5 body domains. Scores on the different domains are summarized into sub-scores and further into a sum score, reflecting body ailment and resources (10-20,22-28,36,39-50,55,57). Hence the scales seem to have the possibility to reveal in which domain(s) the ailments are localized and how the whole body are functionally influenced by the ailments.

One strength with NPMP is the individually tailoring of the approach according to each patients need (2,3). Using the phenomenological perspective of the body (103), as theoretical perspectives in the included qualitative studies in this review, has contributed to improve the understanding of the phenomenon of long-lasting musculoskeletal pain, as well as the NPMP approach for patients with such pain problems. The patients included in the studies, described their experiences of the verbal and nonverbal interaction with the physiotherapists both during the NPMP examination and treatment. The NPMP examination im-

pacted the patients' understanding of their own ailments. The patients further described how enough time and space to explore and reflect upon body sensations, new ways of moving and acting during the treatment were valuable. Gradually, they described that the treatment process increased body contact and made them more aware how history and life influenced their symptoms and ailments with a need to take better care of themselves during daily life (74-83, 84, 86). As such the treatment seem to contribute to an enhanced self-perception and -understanding. Earlier studies have described how patients with long-lasting musculoskeletal pain for years consult specialists for help to make sense of their illness and to confirm the reality of symptoms (104-106). Thus, living with long-lasting musculoskeletal pain is described as a long and lonely struggle for health care (106). As such NPMP seem to meet requires and needs patients with such pain problem might have.

From the physiotherapists' perspectives, the NPMP treatment of patients with complex health problems, were experienced as challenging with the need to be anchored in themselves and adjust the treatment approach according to the patients' response. These findings seem to correspond with studies from similar therapeutic settings, where the therapist's own body awareness, empathy, trust, and acceptance as well as direction and advances in the therapeutic process are emphasized (107-109).

Within treatment of patients with long-lasting and complex health complaints, a dilemma still exists between experience-based and evidence-based knowledge (110). NPMP is a flexible approach focusing on tuning in to meet the different patients' needs. Hence the approach is difficult to standardize and to find measurements grasping the important changes experienced from the patients' perspectives, as described above. This might be explanations for why there are few quantitative studies evaluating outcome of the treatment approach.

This scoping review identified 93 studies spanned the years 1975 to 2021. Given the 46- year publication span, the number of studies might look sparse. However, the history, development, and academic positioning of the NPMP approach must then be taken into consideration. First, the treatment approach is developed and established in Norway (3). Secondly, the approach was organized to a specialisation within physiotherapy. Consequently, a limited group of physiotherapists are specialists in the approach. Finally, there are few specialists with an academic competence. The education has recently reached the level of clinical master at three Universities. Over time this might have a significant influence on further research in the field which in turn might further develop the treatment approach.

Research gap and further direction

This scoping review revealed that more research is generally required. There is, however, a gap in the following fields:

- *None of the included studies included experiences from children and youngsters, and patients in mental health clinics*
- *None of the studies included gender perspectives*
- *None of the studies explored negative experiences from the treatment*
- *Few studies included immigrant and refugees*

- Few studies explored preventive perspectives
- Few studies explored professional education and development
- Few studies evaluated the outcome of the treatment

Strengths and Limitations

To our knowledge, this is the first study identifying the breadth of literature in the field of NPMP. A rigorous methodological approach has been applied and results are presented systematically to give a transparent review of the literature. Since the research in the field is limited with a long publication span, especially the quality of the oldest literature might vary. However, we found it important to include all the chosen studies to get a good picture of the state of the art.

Conclusion

This scoping review examined a total of 93 studies to map the current state of the research in the field of NPMP treatment. The number of studies is limited but has slowly expanded during the last 20 years. Research gaps are revealed concerning children and youngsters, men, immigrants, refugees, and patients in mental health clinics. However, research exploring negative experiences from the treatment, preventive perspectives of the approach as well as examination of the professional education and development are also needed.

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Table 1 Description of the included studies by authors, year, country, aim, study design, journal, samples size, target group, context and data collection.

Author, year, country	Aim	Study design
1975, Sundsvold, Norway	Association between muscle tension and psychiatric condition	Quantitative
1980, Heløe et al, Norway	Dental, psychological and neuromuscular differences between female patients with Myofascial pain dysfunction	Quantitative
1981, Sundsvold et al, Norway	Association between muscle tension and psychiatric condition and gender differences	Quantitative
1989, Mølsted et al, Norway	The physiotherapist's assessment; various bodily postures and their psychological meaning.	Qualitative Theoretical
1990, Thornquist, Norway	Functional assessment and patterns of interaction at first encounters	Qualitative
1991, Aabakken et al, Norway	Evaluation after NPMP treatment	Quantitative One group pre-post test design
1991, Thornquist, Norway	First encounters-with focus on body communication	Qualitative
1994, Thornquist, Norway	Knowledge about the diagnostic process and to identify possible differential frames of reference	Qualitative
1995, Mølsted et al, Norway	Changes in muscular/respiratory characteristics after short term dynamic psychotherapy	Quantitative
1995, Thornquist, Norway	What counts as relevant and valid information in a diagnostic context?	Qualitative
1997, Gyllensten et al, Sweden	Describe psychomotor functioning	Quantitative
1998, Friis et al, Norway	The psychometric properties of body posture items of the Comprehensive Body Examination (CBE)	Quantitative
1999, Stokkenes, Norway	Communication-process in NPMP	Quantitative
1999, Bunkan et al, Norway	Evaluate the psychometric properties of respiration items of the Comprehensive Body Examination (CBE)	Quantitative
2001, Bunkan et al, Norway	Evaluate the psychometric properties of movement items of the Comprehensive Body Examination (CBE)	Quantitative
2001, Monsen and Havik, Norway	Relationships between pain intensity and psychological and bodily indexes	Quantitative
2001, Kvåle et al, Norway	Evaluate relationships between Global Physiotherapeutic Examination and Minnesota Multiphasic Personality Inventory	Quantitative

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Tittel: Norsk psykomotorisk fysioterapi. En scoping review studie

Sammendrag

Hensikt: Norsk psykomotorisk fysioterapi (NPMF) er en etablert behandling tilnærming primært for pasienter med langvarige muskel- og skjelett smerter og sammensatte lidelser. Forskning innen fagfeltet er i utvikling. Hensikten med denne studien var derfor å gjennomføre et systematisk søk av den publiserte litteraturen i fagfeltet for å kartlegge omfang, metodisk tilnærming og å bidra til å avdekke kunnskapshull.

Metode: Scoping review ble valgt som metode.

Resultater: I alt ble 93 artikler analysert. Analysen avdekket primært artikler med en kvantitativ tilnærming som omhandlet utvikling og standardisering av kroppsundersøkelsen i NPMF. De kvalitative studiene omhandlet ulike erfaringer fra kroppsundersøkelsen og behandlingstilnærmingen fra pasientenes og eller fysioterapeutenes perspektiv.

Konklusjon: Litteraturen i fagfeltet er begrenset, men har gradvis ekspandert de siste 20 årene. Mer forskning er generelt nødvendig for å videreutvikle behandlingstilnærmingen.

Nøkkelord: Norsk psykomotorisk fysioterapi, Scoping review, Kvantitative metoder, Kvalitative metoder.

Journal	Sample size, target group	Context	Data collection
International	n=136, 4 groups (n=45, psychotic, n=30, neurotic, n=40 musculoskeletal pain, n= 21 healthy)	Primary health care and psychiatric hospital	Physical examination
International	n=121, female patients with long-lasting musculoskeletal pain	Department of oral surgery at UiO	Physical examination
International	n=157, (91 women and 66 men), 4 group (n=41 psychotic, n=30 neurotic, n= substantial abuse=29, healthy n= 57	Primary health care and psychiatric hospital	Physical examination
Norwegian		Theoretical	
International	n=3, physiotherapists; manual, NPMP and district physiotherapists	Primary health care	Video
Norwegian	n=152 (121 women 31 men) long-lasting musculoskeletal pain	Primary health care	Questionnaires
International	n=3 (1 manual, 1 NPMP, and 1 district physiotherapists)	Primary health care	Video
International	n=3 (1 manual, 1 NPMP, and 1 district physiotherapists)	Primary health care	Video and interviews
International	n=30 (20 women, 10 men) mental health problems	Primary health care	Physical examination and questionnaires
International	n=1, NPMP physiotherapist	Primary health care	Video and interview
International	n=53 (28 women and 25 men) mental health problems	Suicide Research Centre	Physical examination and laboratory tests
International	n=99 (39 men, 60 women), 17 pain syndrome patients 27 psychotic patients, 4 non-psychotic patients, comparison group consisting of 51 students and staff	Primary health care and psychiatric hospital	Physical examination
Norwegian	n=2, patients and one NPMP physiotherapist	Primary health care	Video and interviews
International	n=99, examined (39 men, 60 women) (17 pain syndrome patients, 27 psychotic patients, 4 non-psychotic patients, a comparison group consisting of 51 students and staff	Primary health care and psychiatric hospital	Physical examination
International	n=99, examined (39 men, 60 women) (17 pain syndrome patients, 27 psychotic patients, 4 non-psychotic patients, a comparison group consisting of 51 students and staff	Primary health care and psychiatric hospital	Physical examination
International	n=40, chronic pain patients	Primary health care	Physical examination and questionnaire
International	n=177, patients (114 women, 63 men), sick-listed with long-lasting musculoskeletal pain,	Specialist health care	Physical examination and questionnaires

2001, Thornquist, Part 1, Norway	Major findings of the author's doctoral dissertation on physiotherapeutic practice	Qualitative
2001, Thornquist, Part 2, Norway	Knowledge about the diagnostic process, the basic assumptions, classificatory schemes and explanatory models underlying it	Qualitative
2002, Kvåle et al, Norway	Evaluate the reliability and validity of the domain Respiration	Quantitative
2002, Friis et al, Norway	Define if psychometrically sound sub-scales can contribute to a more specific evaluation, by Comprehensive Body Examination	Quantitative
2002, Bunkan et al, Norway	Examine the inter-rater reliability of the Comprehensive Body Examination	Quantitative
2003, Bunkan et al, Norway	Evaluating the psychometric properties of a palpatory examination of muscles.	Quantitative
2003, Kvåle et al, Norway	Investigate inter-tester reliability and validity related to movement	Quantitative
2003, Kvåle et al, Norway	Investigate reliability and validity of the Global Physiotherapeutic Muscle Examination	Quantitative
2003, Kvåle et al, Norway	Evaluate the discriminative ability of Global Physiotherapeutic Muscle Examination	Quantitative
2004, Ekerholt and Bergland, Norway	Elucidate patients' experiences of the examination in Norwegian Psychomotor Physiotherapy.	Qualitative
2004, Meurle-Hallberg et al, Sweden	The psychometric properties of Resource Oriented Body Examination (ROBE I) and reduced ROBE I into a shorter version, ROBE II.	Quantitative
2005, Kvåle et al, Norway	The sensitivity to change and the responsiveness of the Global Physiotherapy Examination	Quantitative
2005, Thörnberg et al, Sweden	Construct validity of Visual Analogue Scale quality of life in relation to the: Body Awareness Scale Health and its Interview Scale for Body Ego Eating Disturbances Scale, Body Attitude Test and Comprehensive Body Examination	Quantitative
2006, Østerås et al, Norway	Prevalence of neck, shoulder and upper back pain, and possible associations between such symptoms and physical activity, self-efficacy and relaxation	Quantitative
2006, Ekerholt and Bergland, Norway	Massage as interaction and a source of information in NPMP	Qualitative
2006, Thornquist, Norway	How do professionals constitute "the body"—and what are the connections between professionals' views of the body, their approaches	Qualitative
2006, Meurle-Hallberg et al, Sweden	How do patients with stress-related behaviour and somatoform disorders assess symptoms and self-image compared to healthy individuals	Qualitative
2007, Sviland et al, Norway	Elaborate on the theoretical basis for Norwegian psychomotor physiotherapy	Qualitative Theoretical
2007, Starrin and Lässbo, Sweden	If Young women with long-lasting tension-type headache differed concerning Global Physiotherapy Examination compared to a group healthy young woman	Quantitative
2007, Øien et al, Norway	Explore patients' narratives of embodied experiences through Norwegian psychomotor physiotherapy	Qualitative
2007, Anderson et al, Norway	Whether NPMP group training cause a greater effect and promote more patients to return to work	Quantitative RCT
2008, Breivte et al, Norway	Describe patients seeking NPMP with validated psychometrically sound instruments	Quantitative
2008, Dragesund and Råheim, Norway	Explore the experience of body awareness in patients with long-lasting musculoskeletal pain as well as possible changes in this phenomenon	Qualitative
2008, Kvåle et al, Norway	Investigate localization and physical dysfunctions in patients with long-lasting dizziness and physical change, after a vestibular rehabilitation	Quantitative
2008, Ekerholt and Bergland, Norway	Clarify patients' experiences of breathing during NPMP	Qualitative
2009, Sviland et al, Norway	Trygve Braatøy's thoughts interpreted in the light of Løgstrup's sense philosophy	Qualitative Theoretical

	International	n=3 (1 manual, 1 NPMP, and 1 district physiotherapists)	Primary health care	Video and interviews
	International	n=3 (1 manual, 1 NPMP, and 1 district physiotherapists)	Primary health care	Video and interviews
	International	n=247, patients (159 women, 88 men) with long-lasting musculoskeletal pain and 104 healthy subjects. Inter-rater reliability was examined by three physiotherapists examining	Specialist health care	Physical examination
	International	n=99, examined: 17 pain syndrome patients 27 psychotic patients, 4 non-psychotic patients, and a comparison group consisting of 51 students and staff	Primary health care and psychiatric hospital	Physical examination
	International	n=25, individuals (23 patients and two students). 17 personality disorder patients, 3 psychotic patients, 3 chronic pain patients	Primary health care	Physical examination
	International	n=51, nonpatients ,17 Patients with Pain Syndromes, 27 Patients with Psychosis [PP group] and 4 patients with nonpsychotic mental disorders	Primary health care	Physical examination
	International	n=247, patients (159 women, 88 men) with long-lasting musculoskeletal pain, 104 healthy	Specialist health care	Physical examination
	International	n=247, patients (159 women, 88 men) with long-lasting musculoskeletal pain and 104 healthy subjects	Specialist health care	Physical examination
	International	247 patients (159 women, 88 men) with musculoskeletal pain 104 healthy persons (64 women, 40 men)	Specialist health care	Physical examination
	International	n=10, (9 women and 1 man) with long-lasting musculoskeletal pain	Primary health care	interviews
	International	n=198 (52 men, 146 women), 4 groups, n=22 healthy, n=81 psychosomatic patients, n=78 pain patients, n=17 schizophrenic patients	Specialist health care	Physical examination
	International	247 patients (159 women, 88 men) with musculoskeletal pain	Specialist health care	Physical examination
	International	n=87 (84 women, 3 men) n=26 patients with anorexia nervosa n=20 patients with bulimia nervosa n= 41 patients with eating disorders	Department of eating disorder Uddevalla hospital	Physical examination and questionnaire
	International	n=416, students (265 females and 151 males)	University	Physical examination and questionnaire
	International	n=10 (9 women and 1 man)	Primary health care	Interviews
	International	n=2, first physiotherapist encounters in physiotherapy, where patients' musculoskeletal disorders are assessed	Primary health care	Video
	International	n=31 (20 women, 11 men) patients with psychosomatic problems	Specialist health care	Physical examination and questionnaires
	Norwegian			
	Norwegian	n=29, women with headache and n=28 healthy women from upper secondary schools	Primary health care	Body examination and questionnaire
	International	n=2, patients with chronic back pain participated courses. One NPMP physiotherapist	Primary health care	Video, interviews and reflective notes
	International	n=52, patients (49 women 3, men) with chronic widespread pain	Specialist health care	Physical examination and questionnaires
	Norwegian	Patients (n=60). None-help-seeking persons (n=66) with similar gender and age distribution	Primary health care	Questionnaires
	International	n=13 (5 men, 8 women) with long-lasting musculoskeletal pain	Primary health care	Four focus group interviews
	International	n=32 (20 women, 12 men) patients with long-lasting dizziness	Primary health care	Physical examination and questionnaire
	International	n=10 (nine women and 1 man) with long-lasting musculoskeletal pain	Primary health care	Interview
	Norwegian			

2009, Øien et al, Norway	Explore change and perception of change related to patients with chronic back and/or neck pain through NPMP	Qualitative
2010 Kvåle et al, Norway	To compare, the Global Physiotherapy Examination-52) and the Comprehensive Body Examination. To examine discriminate ability	Quantitative
2010, Sviland et al, Norway	Braatøy's thoughts on language in the light of Løgstrup's perspectives	Qualitative Theoretical
2010, Breivte et al, Norway	Examine the effect of NPMP on subjective health complaints and psychological symptoms	Quantitative Pre-post-test design
2010, Dragesund et al, Norway	Develop a self-administered questionnaire for patients with long-lasting musculoskeletal pain capturing experience of body awareness	Quantitative
2010, Kvåle et al, Norway	Develop a new Posture domain based on items from the Global Physiotherapy Examination-52 and Comprehensive Body Examination and discriminate ability	Quantitative
2011, Øien et al, Norway	Describe communicative patterns about change in demanding physiotherapy treatment situations	Qualitative
2011, Ekerholt, Norway	Clarify former patients' experience while undergoing therapeutic treatment in NPMP	Qualitative
2011, Alstad et al, Norway	Changes in pain intensity, flexibility, relaxation and function of transverses abdominis	Quantitative One group pre-post-test design
2012, Dragesund et al, Norway	To investigate important measurement properties of the Body Awareness Rating Questionnaire	Quantitative
2012, Kvåle et al, Norway	Develop a new Movement domain, from the Global Physiotherapy Examination-52 and Comprehensive Body Examination. Examine discriminate ability	Qualitative
2012, Friis et al, Norway	Develop a method for examination of visible respiratory movements, by extracting from two examinations. Examine discriminate ability	Qualitative
2012, Kolnes, Norway	Describe common bodily symptoms and experiences of anorexia nervosa patients and accompanying physical and emotional impact, and present physiotherapeutic approaches	Qualitative Theoretical
2012, Sviland et al, Norway	Elaborate on the underpinning of Norwegian psychomotor physiotherapy	Qualitative Case study
2013, Kvåle et al, Norway	Develop new scales from Global Physiotherapy Examination and Comprehensive Body Examination, and discriminate ability.	Quantitative
2013, Øien, Norway	Explores how narrative knowledge can facilitate change based on a study of long-term NPMP for patients with chronic muscular pain	Qualitative Theoretical
2014, Solheim and Øien, Norway	Explore how awareness of own bodily reactions may facilitate critical reflection	Qualitative
2014, Wilhelmsen and Kvåle, Norway	Address the examination and treatment of musculoskeletal dysfunction in patients with unilateral vestibular hypofunction.	Quantitative
2014 Sviland et al, Norway	Elaborates on narrative resources emerging in the treatment of long-lasting musculoskeletal and psychosomatic disorders in NPMP.	Qualitative
2015 Nyre and Steinsvik, Norway	Establish knowledge of the professional development physiotherapists specializing NPMP undergo	Qualitative
2015, Ask et al, Norway	Describe self-reported and physically tested function in health care workers with musculoskeletal disorders and how function was associated with work participation	Quantitative
2015, Øien and Solheim, Norway	Explore influence of supervision, encompassing experiences and reflections on bodily exercises, reflection on challenging professional experiences	Qualitative
2016, Dragesund and Kvåle, Norway	Protocol for a pragmatic, single blinded RCT	Quantitative Protocol-RCT
2016, Kvåle et al, Norway	Examine if the Global Body Examination, and its' discriminate ability	Quantitative
2016, Feilberg and Thornquist, Norway	Experiences from treating torture survivors	Qualitative Case study
2017, Børsum and Råheim, Norway	Experiences of treatment of patients with an eating disorder	Qualitative

	International	n=12, patients (2 men, 10 women) and 6 physiotherapists (1 man, 5 women) with long-lasting musculoskeletal pain	Primary health care	Video, interviews and reflect notes
	International	n=132, persons (34 healthy, 32 with localized pain, 32 with widespread pain, 34 with psychoses)	Primary health care and psychiatric hospital	Physical examination
	Norwegian			
	International	n=40, treatment group (31 women, 9 men) long-lasting musculoskeletal pain n=22, control group (18 women, 4 men) long-lasting musculoskeletal pain	Primary health care	Questionnaire
	International	n=300, patients with long-lasting musculoskeletal pain and healthy persons (231 women, 69 men)	Primary health care	Interviews and questionnaire
	International	n=132, persons (89 women, 43 men) 34 healthy, 32 with localized pain, 32 with widespread pain, 34 with psychoses	Primary health care and psychiatric hospital	Body examination
	International	n=6, NPMP physiotherapists (one male, 5 female) n=11, patients with chronic pain (1 male, 10 female)	Primary health Care	Video, individual- and focus-group interviews, personal notes
	International	n=10, (9 women, 1 men) with long-lasting musculoskeletal pain	Primary health care	Individual interviews
	Norwegian	n=12 (10 women and 2 men) with significant unspecific LBP	Primary health care	Physical examination and questionnaire
	International	n=50, patients with long-lasting musculoskeletal pain (38 women 12 men) n=50, gender and age-matched healthy persons	Primary health care	Questionnaire
	International	n=132, individuals (89 women, 43) 34 healthy, 32 with localized pain, 32 with generalized pain, and 34 with psychoses	Primary health care and psychiatric hospital	Physical examination
	International	n=132, individuals (89 women, 43) (34 healthy persons, 32 with localized pain, 32 with widespread pain and 34 with psychoses)	Primary health care and psychiatric hospital	Physical examination
	International			
	International	A woman suffering from muscular tensions and pain, depression, anxiety, and anorexia,		based on the journal written
	International	n=132, persons (89 women, 43) 34 healthy, 32 with localized pain, 32 with widespread pain, and 34 with psychoses	Primary health care and psychiatric hospital	Body examination
	Norwegian			
	Norwegian	n=7 (6 women, 1 man) social workers	Workplace	Field notes, reflective notes and focus-group interviews
	International	N=4 (2 women, 2 men) patients with symptoms of dizziness	Primary health care	Physical examination and questionnaires
	International	n=14, patients (14 women, 3 men) long-lasting musculoskeletal pain	Primary health care	Focus group interviews
	Norwegian	n=3, experienced NPMP physiotherapists	Primary health care	Interviews
	International	n=250 (230 women, 20 men) health care workers musculoskeletal pain	Primary health care	Physical examination and questionnaires
	International	n=7 (6 women, 1 man) social workers	Workplace	Video, focus group interviews and reflection notes,
	International	n=126, with long-lasting musculoskeletal pain	Primary health care	Physical examination and questionnaire
	International	n=132, persons (89 women, 43) 34 healthy, 32 with localized pain, 32 with widespread pain, and 34 with psychoses	Primary health care and psychiatric hospital	Physical examination
	Norwegian	n=2, treatment progressions from NPMP physiotherapist perspective	Specialist health care	Journal and reflective notes
	Norwegian	Team: NPMP physiotherapist, psychologist, psychiatrist and specialist nurse.	Specialist health care	Interviews

2017, Kolnes, Norway	Potential role of in the treatment of anorexia nervosa	Qualitative
2018, Kulsum et al, India	Relationship of GBE Global Body Examination with SGRQ in COPD patients.	Quantitative
2018, Dragesund et al, Norway	Developing a unidimensional scale collected for the BARQ using Rasch analysis. Investigate test-retest reliability	Quantitative
2018 Bergland et al, Norway	Assess the effect of intervention of NPMP on HRQOL and on pain, coping, social support, and self-esteem	Quantitative RCT
2018, Sviland et al, Norway	Portrays a young woman's life experiences and therapy process	Qualitative
2018, Nøst et al, Norway	Effects after 12 months outcomes on persons with chronic pain of a chronic pain self-management course with element of NPMP in the treatment	Quantitative
2018, Grønning et al, Norway	Explore the participants' experiences with a self-management intervention, including element of NPMP in the treatment	Qualitative
2019 Hasha et al, Norway	Protocol for RCT study of two different interventions, the Physiotherapy Activity and Awareness Intervention and Teaching Recovery Techniques	Quantitative Protocol RCT
2019 Kristiansen et al, Norway	Feasibility of integrating vestibular rehabilitation and cognitive behaviour therapy for people with persistent dizziness in primary care	Quantitative
2019, Løken and Riise, Norway	Explore psychomotor physiotherapists experiences of NPMP of patients with traumatic and complex symptoms	Qualitative
2019, Dragesund and Øien, Norway	Explore demanding treatment processes in NPMP	Qualitative
2019, Kolnes and Stensrud, Norway	Novel way of understanding and managing EILO by	Qualitative Theoretical
2019, Kolnes et al, Norway	Examine NPM combined with elements of cognitive behavioural therapy can reduce laryngeal distress in athletes with EILO.	Quantitative and qualitative
2019 Ekerholt and Bergland, Norway	Explore if the NPMP therapists experience the phenomenon "listening to the body" as a useful	Qualitative RCT
2020 Dragesund and Øien, Norway	Explore changes patients experience from NPMP and further transfer into daily life context.	Quantitative
2020, Teigen et al, Norway	Discuss the implicit view of body and knowledge in Bulow Hansen's practice	Qualitative
2020, Knapstad et al, Norway	Describe the clinical symptoms and physical findings in patients with concurrent neck pain and dizziness and examine whether they differ from patients with dizziness alone.	Quantitative
2020, Hasha et al, Norway	Effect of physiotherapy group intervention in reducing pain and mental health symptoms among syrian refugees	Quantitative RCT
2021, Dragesund and Øien, Norway	Grasp patients' experiences of social burdens influence on muscle pain, and how relationship with the therapist influenced change during NPMP	Qualitative
2021, Dragesund et al, Norway	Comparing treatment of NPMP and COPE	Quantitative RCT
2021, Ekerholt and Bergland, Norway	Elucidate NPMP specialists' clinical experiences in treatment of patients suffering from SHCs.	Qualitative
2021, Groven et al, Norway	Explore how the closing down of society has impacted psychomotor physiotherapy.	Qualitative
2021, Forsmo and Holmesland, Norway	Shed light on NPMP in patients eating disorders, therapist's experiences with the use of touch in treatment	Qualitative
2021, Buhaug et al, Norway	Evaluated prevalence and musculoskeletal dysfunction among workers exposed to bullying.	Quantitative

	International		Theoretical	Reflective notes
	International	n=22, COPD male patients	Specialist health care	Physical examination and questionnaire
	International	n=125, patients with long-lasting musculoskeletal pain (73 women, 52 men), n=48 (45 women, 3 men) long-lasting musculoskeletal pain	Primary health care	Questionnaires
	International	n=105, patients with long-lasting musculoskeletal pain (95 women, 10 men),	Primary health care	Questionnaires
	International	n=1, with long-lasting musculoskeletal pain	Primary health care	Reflective notes
	International	n=121, (106 women, 15 men) long-lasting musculoskeletal pain	Healthy Life Centre and primary health care	Questionnaires
	International	N=7, (6 females and one male) long-lasting musculoskeletal pain	Healthy life Centre.	Interviews
	International	Syrian adults with either pain disorders or post-traumatic symptoms	Specialist health care	Questionnaires
	International	n=7 (aged 18–70) with acute onset of dizziness	Primary health care	Physical examination and questionnaires
	Norwegian	n=6, female NPMP physiotherapists	Primary health care	Interviews
	International	n=5, experienced physiotherapists (4 women, 1 man)	Primary health care	Multi-stage focus-group interview
	International			
	International	n=4, athletes (3 women, 1 man) with EILO	Primary health care	Physical examination, questionnaires, and interviews
	International	n=12, NPMP physiotherapist (11 women, 1 man)	Primary health care	Interviews
	International	n=11, patients with long-lasting musculoskeletal pain (10 women, 1 man)	Primary health care	Focus-group interviews
	Norwegian	n=23, female NPMP nestors	Primary health care	Video and interviews
	International	n=100, patients with dizziness, primary complaint, neck pain as secondary n=138, patients n=55, patients with neck pain patients, neck pain primary complaint additional dizziness	Specialist health care	Physical examination and questionnaire
	International	n=101, refugees	Primary health care	Questionnaires
	International	n=11, patients with long-lasting musculoskeletal pain (10 women, 1 man)	Primary health care	Focus-group interviews
	International	n=128, participants with long-lasting widespread musculoskeletal pain (9 men, 119 women)	Primary health care	Physical examination and questionnaires
	International	n=12, NPMP specialists were interviewed (11 women, 1 man)	Primary health care	Interviews
	Norwegian	One female NPMP physiotherapist	Primary health care	Interviews
	Norwegian	n=5, female NPMP physiotherapists working at in clinic for patients with eating disorders	Mental health care.	Interviews
	International	n=144, patients (81 women, 53 men) long-lasting musculoskeletal pain	Outpatient clinic at the Department of Occupational Medicine, HUS	Physical examination and questionnaires