

# Clinical practice in line with evidence? A survey among primary care physiotherapists in western Sweden

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## Title page

Manuscript title:

**Clinical practice in line with evidence? A survey among primary care physiotherapists in western Sweden.**

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## **Abstract**

**Rationale, aims and objectives** Evidence-based practice is becoming increasingly important in primary care physiotherapy. Clinical practice needs to reflect current best evidence and be concordant with evidence-based clinical guidelines. There is limited knowledge about therapeutic interventions used in primary care physiotherapy in Sweden. The objectives were to examine preferred treatment interventions reported by publicly employed physiotherapists in primary care for 3 common musculoskeletal disorders (low back pain, neck pain and subacromial pain), the extent to which these interventions were supported by evidence, and associations with demographic variables.

**Methods** 419 physiotherapists in primary care in western Sweden were surveyed using a validated web-based questionnaire.

**Results** The survey was completed by 271 respondents (65%). Median number of interventions reported was 7 (range 1–16). The most common treatment interventions across the three conditions were advice on posture (reported by 82%–94%), advice to stay active (86%–92%), and different types of exercise (65%–92%). Most of these interventions were supported by evidence. However, interventions with insufficient evidence, such as advice on posture, TENS and aquatic exercise, were also used by 29%–96%. Modalities such as laser therapy and ultrasound were sparingly used (<5%), which is in line with evidence. For neck pain, use of evidence-based interventions was associated with gender and for subacromial pain, with work experience.

**Conclusions** Advice and exercise therapy were the interventions most frequently reported across the three diagnoses, illustrating an active treatment strategy. While most reported interventions are supported by evidence, interventions with unclear or no evidence of effect were also used to a high extent.

**Keywords** clinical practice, evidence-based practice, physical therapy, evidence, treatment, interventions

## INTRODUCTION

According to the commonly cited definition by Sackett et al in 1996 (1), the practice of evidence-based medicine (EBM) involves “integrating individual clinical expertise with the best available external clinical evidence from systematic research”. In physiotherapy, as in many other health disciplines, much emphasis has been put in recent years on the latter, while clinical expertise is considered inferior by many as a basis for clinical decision making (2). There was a time, however, before the break-through of EBM, when traditional models of physiotherapy practice gave priority to clinical experience as a form of evidence (2).

Clinicians’ expertise is often context-dependent, personal, and partially tacit, making it difficult to share this knowledge with others. Practice-based knowledge is built up from experience and is efficient for solving problems in everyday clinical practice. In contrast, knowledge derived from research is more generalisable, accessible, and explicit, but may not provide tried-and-tested solutions for direct application in practice. Evidence is rarely unequivocal and clinicians must be able to integrate research-based knowledge with their own practice-based knowledge to make sound judgments about what is appropriate in various situations (3). Integration of research-based and practice-based knowledge has been identified as ‘a core challenge’ for implementing EBM in many practice settings (4).

The volume of clinical research investigating effects of various physiotherapy interventions has grown rapidly in the past three decades (5). However, the transfer of research findings into clinical practice can be slow and knowledge is limited about the extent to which interventions used in clinical practice are based on this research. Assessing the reported prevalence of various physiotherapy interventions for common musculoskeletal disorders can provide important knowledge about the extent to which clinical practice is based on evidence.

The most common musculoskeletal complaints for which patients consult primary health care are low back pain (LBP), neck pain, and shoulder pain (6). Of all shoulder complaints subacromial pain accounts for between 50% and 74% (7, 8). Knowledge about treatment interventions used for these conditions is one way to capture clinical expertise. This practice-based knowledge is important to facilitate integration with research-based knowledge, thereby achieving a more balanced mix of the two EBM components.

In Canada, physiotherapists reported using various interventions for LBP, of which vertebral mobilisation, ice and ultrasound were the most frequently used (9). In Ireland, advice, exercise, and mobilisation were the most frequently used treatment types for patients

with chronic LBP (10). The practice patterns described in these studies included interventions supported by strong or moderate evidence as well as interventions not supported by evidence (9, 10). Practice is likely to vary depending on context, since healthcare systems and culture differ across countries. In Sweden, physiotherapists practice autonomously and choose appropriate interventions based on their assessment of the patient.

Physiotherapy practice patterns in Swedish primary care and the extent to which they are supported by evidence are not known. Therefore, the aims of this study were to investigate clinical physiotherapy practice patterns in treating patients with LBP and other common musculoskeletal complaints, and to examine the extent to which reported interventions were supported by research. Associations between demographic variables and interventions reported were explored.

## **METHODS**

### *Study design, participants and setting*

This study was a cross-sectional survey of primary care physiotherapists in western Sweden. All physiotherapists employed in primary care by the county council Region Västra Götaland were eligible to participate (n=425). This is Sweden's second largest county council, providing health services to approximately 1.6 million inhabitants. E-mail addresses for the potential participants were provided by the information technology department. The authors and the working group that developed the questionnaire with which data were collected (11), also employed by the county council, were excluded (n=6).

### *Data collection*

Outcomes reported in this paper were the self-reported use of interventions for non-specific subacute LBP, non-specific subacute neck pain, and subacromial pain. Because evidence levels differ for non-specific LBP and neck pain depending on duration of symptoms, we specified that the questions pertained to subacute (3-12 weeks) LBP and neck pain, respectively. For subacromial pain, no symptom duration was specified. Data were collected with a web-based questionnaire measuring various aspects of EBP, guidelines, outcome measures and clinical practice (11). Attitudes, knowledge and behaviour related to EBP and guidelines have been reported earlier (12). The three items on interventions were multiple-

choice questions, listing physiotherapy interventions used in primary care for the three conditions. The list of interventions was generated from a combination of literature and clinical experience within the project group who developed the questionnaire. The project group comprised four physiotherapists with an average of 13 years of primary care clinical experience. Two of the project group members also had postgraduate training in EBP skills. The following demographic data were collected: sex, age, highest degree, years of experience in primary care physiotherapy, and specialist accreditation. Validity and reliability of the questionnaire was established and reported in a previous paper (11). The percentage of agreement for the three items reported in this paper were 67%, 90%, and 100%, respectively. The time needed to complete the questionnaire was 10-15 minutes.

Invitation to participate was distributed via e-mail, containing a link to the web-based questionnaire. Participants responded on-line and the survey software (EPiServer CMS 5, EPiServer AB, Stockholm, Sweden) logged the responses and added them to a results database. Three reminder notices were e-mailed at 1-week intervals, again containing a link to the questionnaire and providing a new opportunity to respond.

### *Assessment of evidence*

The literature was searched to evaluate the evidence base for managing the three conditions. Searches were performed in PubMed, Cochrane Database of Systematic Reviews, and PEDro, and were limited to systematic reviews and guidelines published in English between 2001 and 2011. The most recently published systematic reviews and guidelines were selected. When possible, Cochrane reviews were selected because they were assumed to have the lowest risk of bias. Strength of evidence for the various interventions for each condition was extracted based on the assessment performed by the review authors. Evidence was categorised as strong, moderate, limited or insufficient using the GRADE approach (13). Twenty-seven relevant systematic reviews (7, 14-40), three international guidelines (41-43), and one overview of guidelines (44) were selected. Strength of evidence for the various interventions is summarised in Table 1.

**Table 1** Interventions for which there is strong or moderate evidence for subacute low back pain, subacute neck pain and subacromial pain, respectively

<b>Intervention</b>	<b>Strength of evidence</b>
<i>Subacute low back pain</i>	
Information and advice	Strong
Stabilisation exercise	Moderate
McKenzie exercise	Moderate
Heat therapy	Limited
General exercise <sup>a</sup>	Limited
<i>Subacute neck pain</i>	
Cervical manipulation or mobilisation in combination with exercise <sup>b</sup>	Strong
Exercise as sole intervention	Limited
Thoracic manipulation	Limited
Cervical manipulation or mobilisation as sole intervention	Limited
<i>Subacromial pain</i>	
Exercise <sup>c</sup>	Moderate
Mobilisation	Moderate
Acupuncture	Moderate

a) Understood as primarily range of motion and strengthening exercise; b) Primarily range of motion and stabilisation exercise;

c) Primarily range of motion and strengthening exercise

### *Data Analysis*

Descriptive statistics were used to analyse frequencies and distributions. To analyse the multiple-choice items, dummy variables were created; one for each response alternative. Interventions were categorised according to strength of evidence and combined into new variables. Binary logistic regression analyses were performed to examine associations between independent demographic variables and combined interventions as dependent variables. In cases where significant associations were identified, further analyses of associations to individual interventions were performed. An alpha level of 0.05 was considered significant. Missing data were handled with listwise deletion. Statistical analyses were performed using IBM SPSS Statistics 22.0.

### **Ethics**

All questionnaires were filled out anonymously, and responses could not be traced back to the respondents. A statement in the questionnaire informed the respondents of the purpose of the study and that their response to the survey was assumed to indicate their informed consent. Ethics approval, according to Swedish law and confirmed in an advisory statement by the Regional Ethics Review Board in Gothenburg, was not necessary.

### **RESULTS**

Of the 419 physiotherapists invited to participate, 271 therapists (67 men) responded to the survey; response rate 65%. Internal missing responses ranged from 10 (3.7%) to 12 (4.4%). Three quarters of respondents were women and 60% were over 40 years old (Table 2). A majority (73%) had more than five years' experience in primary care physiotherapy. Two thirds had a bachelor's degree and 5% had a postgraduate education.



**Table 2** Respondents' demographic characteristics (n=271)

Characteristic	N	%
Sex		
Women	204	75.3
Men	67	24.7
Age		
20–29 y	33	12.2
30–39 y	74	27.3
40–49 y	87	32.1
50–59 y	64	23.6
>60 y	13	4.8
Education level/degree		
Lower level degree <sup>a</sup>	76	28.0
Bachelor's degree	181	66.8
Master's degree	8	3.0
PhD student or PhD	6	2.2
Certified specialist	6	2.2
Years of experience in primary care physiotherapy		
<3	40	14.8
3–5	33	12.2
6–10	50	18.5
11–15	44	16.2
16–20	38	14.0
>20	66	24.4

a) Lower level degree: 2.5 years degree, which was the standard physiotherapy degree in Sweden until the profession was academised in 1993.

### *Subacute low back pain*

Figure 1 shows the reported use of interventions for subacute LBP. The median number of interventions reported was 7 (range 1–16). Twenty percent of respondents reported using 1-5 interventions, 64% 6–10 interventions, 16% more than 10 interventions. The most frequently reported interventions were advice on posture (reported by 94%), advice to stay active (92%), and stabilisation exercises (82%). The least frequently reported interventions were laser therapy, ultrasound, and lumbar support (all <5%).

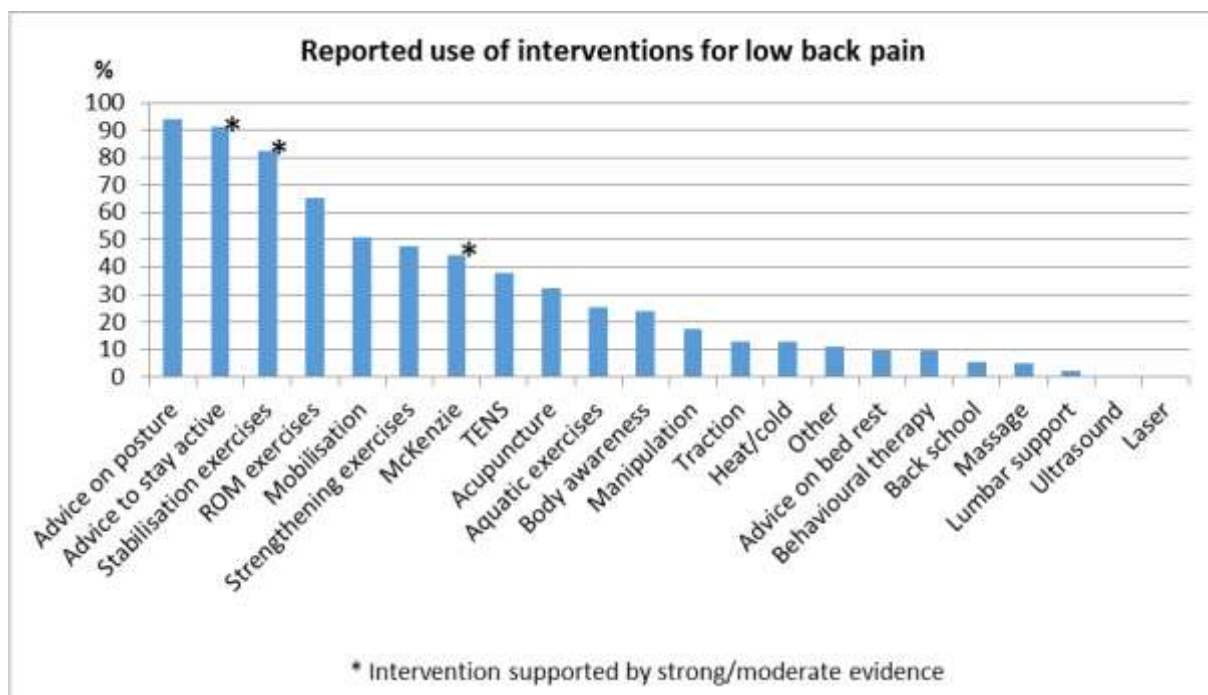


Figure 1. Reported use of interventions for subacute low back pain. N=261.

Ninety-nine percent of the respondents reported using at least one of the interventions for which there is strong or moderate evidence (advice to stay active, stabilisation exercise and the McKenzie approach). Among those, 85% reported using two or more of the interventions, and 33% reported using all three. Ninety-nine percent also reported using at least one intervention for which evidence is insufficient. No significant associations with any demographic variables were found.

### *Subacute neck pain*

Figure 2 shows the reported use of interventions for subacute neck pain. Median number of interventions reported was 7 (range 0–15). Twenty-four percent of respondents reported using 1–5 interventions, 59% 6–10 interventions, 17% more than 10 interventions. The most frequently reported interventions were advice on posture (reported by 96%), advice to stay active (86%), and range-of-motion (ROM) exercises (80%). The least frequently reported interventions were neck collar, ultrasound, and laser therapy (all <5%).

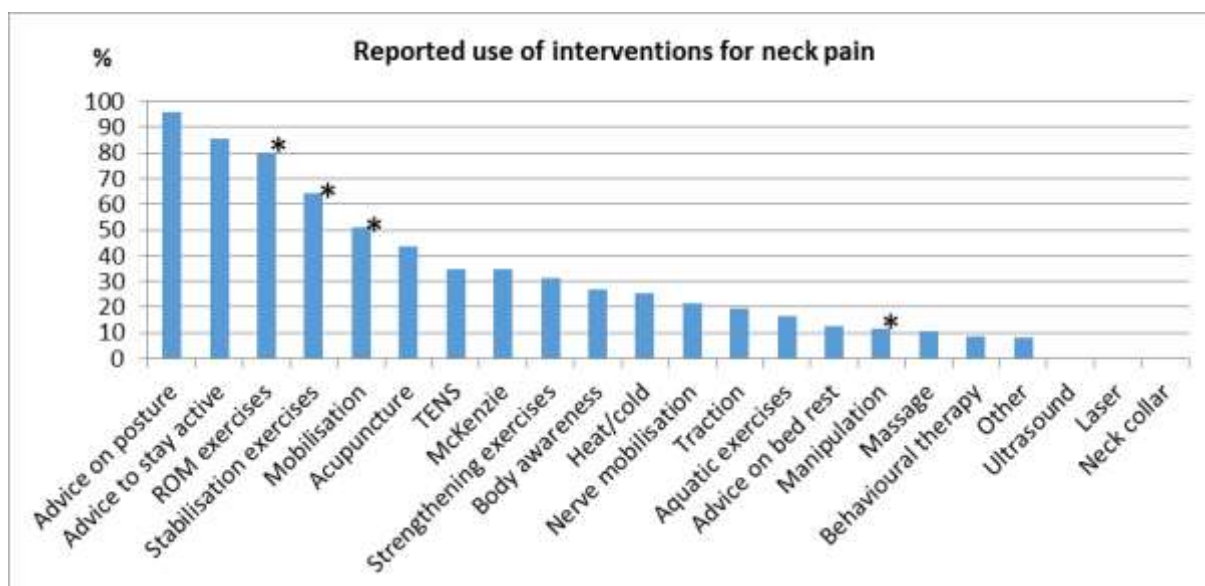


Figure 2. Reported use of interventions for subacute neck pain. N=259.

Ninety-four percent reported using at least one evidence-based intervention. Forty-seven percent reported using either ROM or stabilisation exercise *and* manipulation or mobilisation; a combination of exercise and manual therapy for which there is strong evidence. All respondents reported using at least one intervention for which evidence is insufficient.

Sixty-one percent of male, versus 42% of female respondents, reported using an evidence-based combination of exercise and manipulation/mobilisation (OR 2.18, 95% CI 1.23–3.88;  $p=0.008$ ). Analysis of gender influence on individual interventions revealed that men were almost 10 times more likely to use manipulation (OR 9.77, 95% CI 4.18–22.82;  $p<0.001$ ) and almost 3 times more likely to use mobilisation (OR 2.96, 95% CI 1.61–5.44;  $p<0.001$ ). No other associations with any demographic variables were found.

### *Subacromial pain*

Figure 3 shows the reported use of interventions for subacromial pain. Median number of interventions reported was 6 (range 0–12). Thirty-six percent of respondents reported using 1–5 interventions, 58% 6–10 interventions, 6% more than 10 interventions. The most frequently reported interventions were ROM exercises (92%), advice on posture (84%), and stabilisation exercises (65%). The least frequently reported interventions were laser/shockwave therapy, ultrasound, and massage (all  $<5\%$ ).

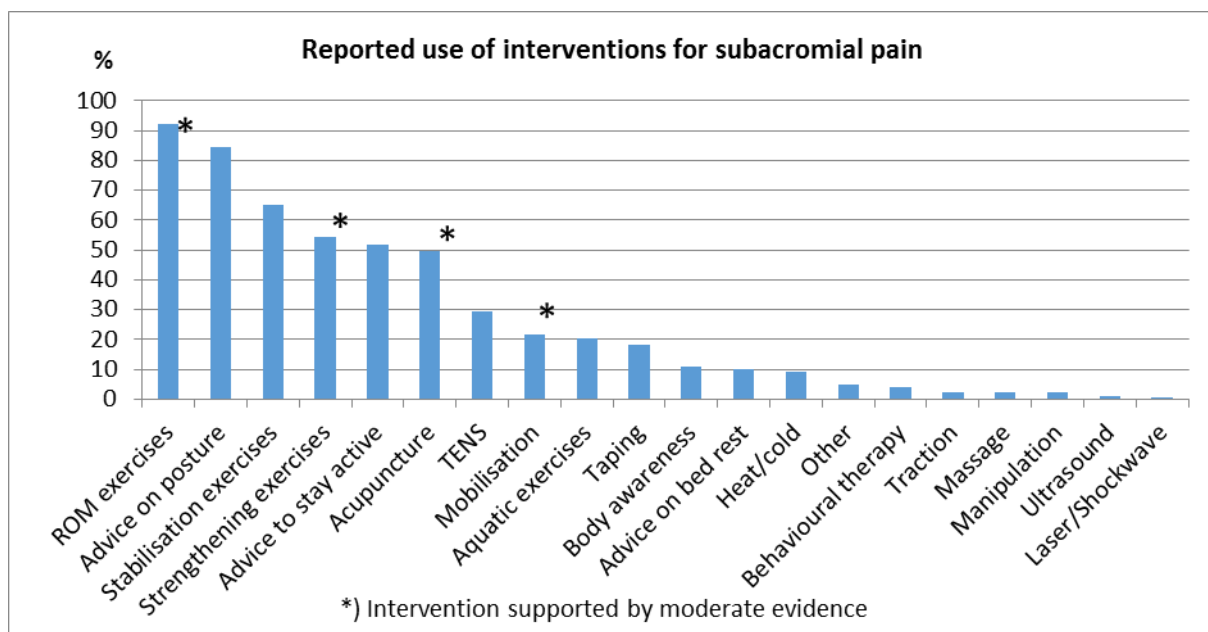


Figure 3. Reported use of interventions for subacromial pain. N=259.

Ninety-seven percent reported using one or more interventions, 71% reported using two or more interventions for which there is moderate evidence (ROM exercise, strengthening exercise, acupuncture, mobilisation). Fifty-seven percent reported using a combination of active and passive strategies; ROM or strengthening exercise *and* acupuncture or mobilisation. Ninety-eight percent reported using one or more interventions for which evidence is insufficient.

Physiotherapists with more than five years' work experience in primary care were more likely than those with five years or less experience to use two or more interventions for which there is moderate evidence (OR 2.35, 95% CI 1.13–4.11,  $p=0.003$ ). No other associations with any demographic variables were found.

## Discussion

This study describes the interventions that are reported to be used most commonly by primary care physiotherapists in western Sweden. The most frequently reported interventions across the three investigated conditions were advice and therapeutic exercises of various types, illustrating an active treatment strategy in line with evidence. Almost all respondents also reported using at least one intervention with insufficient evidence. Most stated that they use

between 6 and 10 different interventions, some as many as 16 interventions. This demonstrates that physiotherapists have a “tool box” of interventions that can be adapted to the individual and the clinical findings, and which constitutes an important basis for clinical decision making.

*For subacute LBP*, the most frequently reported interventions were advice on posture, advice to stay active, and exercise; predominantly stabilisation exercise. The use of advice and exercise is in line with evidence-based treatments recommended in most national guidelines (44). Many guidelines, as well as most systematic reviews of interventions for subacute LBP, put forth that there is strong evidence for the effect of information and advice to stay active on pain and other outcomes (10, 14, 44). Advice on posture is less researched and its widespread use in clinical practice seems primarily experience-based. Several systematic reviews have concluded that there is moderate evidence for the effect of exercise interventions, in particular stabilisation exercises (17-19) and the McKenzie method (15, 16), for patients with LBP.

Several of the interventions used by the participants in this study, however, are not in line with evidence. Acupuncture and electrotherapy (transcutaneous electric nerve stimulation, TENS), for instance, were used by about one third of the respondents. Acupuncture is not supported by evidence of effect for subacute LBP, according to two systematic reviews (20, 45). Although one systematic review has reported some evidence for TENS and lumbar support in the subacute phase (27), included studies were small and of low quality; the total body of evidence for these modalities is therefore insufficient. Both European and North American guidelines conclude that evidence is lacking for the use of TENS, traction, massage and ultrasound (41, 42). Other systematic reviews on massage therapy (22), traction (23), cold therapy (24), back school (25), and behavioural therapy (26) have all concluded that evidence is insufficient for these interventions.

The practice pattern reported in this study is consistent with two other surveys on clinical physiotherapy practice. Liddle et al (10) found that advice and exercise were the two most frequently reported interventions for the management of LBP by physiotherapists in Ireland, and Stevenson et al (46) found postural advice, home exercise and manual therapy to be the most popular interventions used by a sample of British physiotherapists. However, two Canadian surveys reported somewhat different practice patterns. Li et al (47) reported that exercise and work modification were the preferred interventions for subacute LBP in their sample of physiotherapists in Canada, and that there was also a trend of using

electrotherapeutic and thermal modalities. Mikhail et al (9) reported in their 2003 survey that mobilisation, ice, and ultrasound therapy were the most commonly reported interventions used by Canadian physiotherapists. In that study, 68% reported using methods for LBP with strong or moderate evidence, but 90% also used methods with no or insufficient evidence. In our sample, virtually all respondents reported using methods with strong/moderate as well as insufficient evidence. The increase in the use of strong evidence interventions is most likely attributable to the growth of EBP in the years since the Canadian study was performed (9). Another sign of the success of the EBP movement is that methods for which evidence clearly is lacking, such as lumbar support, massage, back school, ultrasound and laser therapy, were reported to be used by fewer than 5% in our study.

*For subacute neck pain*, the most frequently used interventions were advice and ROM exercise. Unlike for LBP, providing advice to stay active is not supported by evidence of effect for neck pain (28, 29). Exercise, particularly ROM, coordination, and endurance exercise, is supported by strong evidence according to current guidelines (43), and has been shown, particularly when combined with manual therapy, to yield significant effects on pain, function, range of motion, strength, and patient satisfaction (29, 30). However, manual therapy as sole treatment is only supported by limited evidence for short term pain relief (31, 32, 43). Furthermore, cervical manipulation remains controversial due to the risk of adverse events (31). Similar to LBP, modalities such as acupuncture and TENS, used by 44% and 35% of the respondents, respectively, are not supported by evidence for neck pain (33, 34).

Neck pain is a less researched condition than LBP, and we found only one study to which we can compare our findings. The predominant use of exercise reported in our study is consistent with a recent survey by Carlesso et al (48), in which 90–97% of physiotherapists internationally reported using different types of exercise. However, manual therapies were used to a greater extent by the physiotherapists in that survey than the approximately half of the respondents in our study. A more cautious approach in using manual techniques in Sweden might be related to the risk involved with manual techniques in the cervical region, and a strong tradition of exercise interventions. Most of those who reported using manual techniques in our study used mobilisation rather than manipulation, a practice pattern that is consistent with that reported in a study among Irish manipulative physiotherapists (49).

The gender difference in the likelihood to treat neck patients with manipulation or mobilisation was quite appalling. This finding is supported by Carlesso et al (50) who also reported higher use of cervical manipulation by male than by female manipulative

physiotherapists in Canada. The underlying reasons for this gender difference are not known and require further research.

Heat/cold therapy and orthoses, modalities for which there is only limited or contradictory evidence (29), were used less in our sample than by the therapists surveyed by Carlesso et al (48). Discrepancies may be explained by different measurement methods or other influences, e.g. patient preferences or differing awareness of, access to, and interpretation of evidence. Initial training, practice-related courses and experience of prior treatment effects are also known influencers on choice of intervention (51).

*For subacromial pain*, the most frequently used interventions were advice on posture and exercise, predominantly ROM exercises. According to two systematic reviews, there is moderate evidence for the effect of exercise on pain and function in patients with subacromial pain (35, 36). As with neck pain, exercise seems to be more effective when combined with manual therapy (37). In our study, manual therapy was only used by approximately one fifth of the respondents, indicating that this treatment is not typically the first choice for this patient group and that the decision to use manual therapy may be a pragmatic choice based on clinical findings of reduced joint mobility needing to be addressed with mobilisation.

Similarly to back and neck pain, advice on posture, given by a majority of the respondents, appears to be under-researched and its use is therefore based on clinical expertise. Although research is lacking, providing this type of advice to patients is typically part of standard physiotherapy management and builds on the physiotherapist's knowledge of anatomy, biomechanics and movement.

The use of acupuncture, reported by approximately half of the respondents, is supported by moderate evidence. Several well-conducted randomised controlled trial have shown significant effects of acupuncture as treatment of subacromial pain (52-54). Other passive modalities, i.e. laser therapy, shockwave therapy and ultrasound, are not supported by evidence (7, 38-40) and were very little used by the physiotherapists in this study.

The practice pattern for subacromial pain described in our study is in line with an earlier Swedish study (55), in which the physiotherapists reported using primarily movement exercises and ergonomic advice for patients with subacromial pain. A Belgian study (56) reported an equally high frequency of exercise therapy, but also a very high rate of use of manual mobilisation as treatment for subacromial impingement syndrome. The higher use of mobilisation is likely due to the fact than many of the respondents were manual therapists.

Other common interventions in that study were postural training (86%) and stretching (76%).

The use of evidence-based interventions for subacromial pain was positively associated with primary care work experience. Those with more than five years' experience were more likely to use evidence-based methods. This finding can likely be attributed to the fact that two of the methods in question, acupuncture and manual therapy, require additional courses that are rarely offered to recent graduates.

Using several treatment methods is a common strategy in physiotherapy. Especially the combination of exercise and manual therapy is supported by strong evidence for short term relief of neck pain (30) and is also recommended in physiotherapy practice guidelines (43). One reason why interventions underpinned by evidence, such as the combination of exercise and manual therapy for neck pain, were not used to a larger extent could be that a fairly large proportion of the surveyed physiotherapists reported low awareness and access to clinical guidelines (12). Only about half of the responding physiotherapists reported that they use guidelines frequently or very frequently, suggesting a need for better implementation of research evidence and guidelines.

Many of the results must be interpreted with caution, particularly the findings regarding the various types of exercise. The systematic reviews, as well as the primary studies they report, are not always clear about which type of exercise that has been evaluated, and exercise types are often mixed in a study intervention. Sometimes they are just described as 'exercise' without further elaboration on type. The exercise types that we defined are rather broad categories, and there is also variation within these types. For example, neck strengthening exercises often also involve stabilisation and coordination, whereas those exercise types were kept apart in our survey. Furthermore, the issue of exercise frequency, dosage, and duration muddies the water even more.

The high prevalence of use of interventions that are not supported by evidence is not necessarily reflective of a non-evidence-based practice pattern. The use of advice on posture, for which no evidence has been established in any of the three conditions, is the main contributor to this high prevalence. Even if interventions addressing posture are poorly evaluated, pain in the back, neck and shoulder is commonly believed to be associated with poor posture (26, 29, 36), and advising patients about posture is an intuitive and deeply engrained physiotherapy behaviour. Posture training is one of several types of exercise that have been shown effective for neck pain (32), but the actual 'advice on posture' has not been evaluated as an intervention by itself. This is a good example of 'lack of evidence of effect



does not equal evidence of lack of effect'. Furthermore, advice on posture is part of the McKenzie concept, and often included in this intervention. Had advice on posture not been included in our analysis, the proportion of respondents using methods with insufficient evidence would be in the 50-60% range, for all 3 conditions.

Most physiotherapists have positive attitudes towards evidence-based practice and consider research important in their work setting (12, 57, 58). Yet, physiotherapists' professional skills and personal values, attitudes, and preferences are also likely to be strong influencers on choice of treatment (59). The influence of colleagues and own perceptions of successful treatments and satisfied patients are probably equally important in the choice of treatment methods. Finding a balance between this practice-based knowledge and research-based knowledge is a challenge, so that these personal attributes do not cause unnecessary practice variations and unequal patient management. Instead this practice-based knowledge needs to be integrated with research-based knowledge, such as that underpinning evidence-based clinical practice guidelines or other types of evidence summaries.

### *Strengths and limitations*

The study has several limitations. Data were self-reported, and may not fully reflect actual behaviour. Measuring clinical practice behaviour is highly complex and evidence for the accuracy of clinician self-reported behaviour is inconclusive (60). The survey was limited to publicly employed physiotherapists. Private practitioners, who also provide outpatient services at the primary care level, may display a different pattern. As with all self-report questionnaires, there is a risk of social desirability bias (61). Respondents were assured anonymity in an attempt to minimise this bias. Symptom duration in the included systematic reviews was often unclear or mixed. Furthermore, the types of exercise examined (ROM, stabilization, etc.) were generic and provide incomplete information about actual exercises used, which typically target the pathomechanics of the musculoskeletal condition and are tailored to the individual dysfunction.

Strengths of the study include the use of a validated and reliable questionnaire, a homogenous population, a fairly high response rate, and the measurement of treatment of the three most common musculoskeletal conditions treated in primary care.

### *Generalisability*

The survey was conducted in the second largest county council in Sweden. The surveyed sample is likely to be broadly similar, in terms of gender distribution and other demographics, to the national population of physiotherapists. The majority of respondents had more than ten years of clinical experience, suggesting that our sampling frame was adequate to elucidate the breadth of current treatment interventions used by physiotherapists in Sweden. Thus, we believe that our results can be applicable to physiotherapists working in other county councils in Sweden, and possibly to other countries with similar healthcare systems.

### *Implications for practice*

The findings should be of interest to both practicing physiotherapists and to managers/decision makers. Knowledge about practice patterns, which physiotherapy interventions that are preferred by practicing clinicians and the extent to which these interventions are supported by evidence of effectiveness helps understanding the impact of evidence on practice and can identify where greater efforts in evidence dissemination and implementation are needed. This type of practice-based knowledge can be of value for clinicians as supplement to research-based knowledge and to guide and support clinical decision making. This can in turn facilitate EBP, as well as increase awareness regarding whether their treatment choice is based on practice pattern or scientific evidence, or a combination of both. Differences in treatment preferences between different amounts of experience may provide guidance concerning appropriate timing for continued education.

The findings also imply a need for clinical practice guidelines, to decrease variation in practice and further support the profession in clinical decisions by providing summaries of evidence and recommendations for practice. Development and implementation of guidelines should therefore be a high priority. Nevertheless, the practice-based knowledge elucidated by the description of preferred interventions is also of relevance for achieving a more evidence-based physiotherapy practice.

### *Suggestions for further research*

Further research is warranted to investigate the effectiveness of interventions that are used in practice, but for which evidence is limited or conflicting. This might be particularly important for interventions for neck pain in view of the varied practice pattern identified and uncertainty

of evidence for some interventions, and for subacute symptom durations for the 3 conditions. It is also relevant for the physiotherapy profession that studies are conducted to improve understanding of factors associated with a more evidence-based physiotherapy practice, as well as the drivers behind the continued use of non-evidence-based interventions. Lastly, an under-investigated area is patients' preferences for physiotherapy treatment. Patient values and preferences are also an important component of EBP (1), and further knowledge about similarities and differences between patients' and clinicians' treatment preferences is important.

### *Conclusions*

This study shows that advice and exercise therapy are the two most frequently reported physiotherapy interventions across the three conditions, illustrating a primarily active treatment strategy among physiotherapists in Sweden. Few associations between demographic characteristics and interventions used were found. Most frequently used interventions were supported by evidence, but interventions with unclear or no evidence for effect were also used to a high extent. This supports the need for future clinical research within physiotherapy. It also raises the question about best use of physiotherapy resources and suggests that the clinical decision making and choice of intervention is influenced by more than research evidence.

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