**Full Title**

**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.**

**Short Title**

ESP decision making and outcomes. A Systematic Review

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**Abstract**

Objective Physiotherapy Extended Scope Practitioner roles are widely utilised in the management of musculoskeletal conditions. This paper reviews the current literature with particular emphasis on the decision making process, patient/clinician interaction and clinical outcomes.

Methods A systematic review of musculoskeletal Extended Scope Practice. The review focused upon the outcome of interventions and the interactions and decision making processes between ESPs and their patients. A wide search strategy was employed through multiple databases, grey literature and experts in the field. Both qualitative and quantitative studies were included and a mixed methods synthesis approach undertaken in analysing the findings of included studies.

Results 476 articles were identified for inclusion with 25 articles (22 quantitative and 3 qualitative) meeting criteria for full quality appraisal and synthesis. It was not possible to conduct a meta analysis due to data heterogeneity. Results show high patient satisfaction with the ESP role, support for ESP staff listing patients for orthopaedic surgery, high positive correlation of decision making between ESPs and orthopaedic surgeons and evidence of positive impact on patient outcome. Qualitative themes reflect the importance of ESP clinical decision making and interpersonal skills and their role in patient education.

Conclusion There is broad support for the physiotherapy ESP role and evidence of favourable outcomes from ESP intervention. Clinical decisions made by ESPs correlate well with medical colleagues, although there is a lack of detail explaining the ESP decision making process itself and the influences and mechanisms by which this occurs.

**Keywords**

Physiotherapy, extended scope, mixed method synthesis, systematic review

**Introduction**

Physiotherapy extended scope practitioner (ESP) posts have been reported in the literature since 1989 (Byles and Ling). There has been significant interest and expansion of these roles over the last 20 years within the NHS and other health economies, particularly Canada and Australia. This expansion has been driven by changes in health policy, legislation, expansion of professional roles and increasing pressure on health services to deliver effective and efficient care to greater numbers of patients (McPherson et al. 2006). Despite the proliferation of ESP roles, robust research evidence to support these service and professional developments is lacking (Kersten et al. 2007). Nevertheless The Five Year Forward View (NHS 2014), a strategy document for the health service in England, aims to improve population health, quality of care and enable the best use of health resources. It sets out a vision for supporting a modern workforce that includes advanced and innovative options for the allied health professional (AHP) workforce. AHPs will be working more with GPs in primary care and with other professionals in multispecialty community provider services, where it is proposed that new roles will reduce waiting times and improve patient experiences.

Notwithstanding the lack of empirical evidence, a number of systematic reviews have been published. McPherson et al (2004), carried out a systematic review across five allied health profession groups, including physiotherapy, aiming to identify extended practice roles and appraise the current evidence. McPherson et al (2006) disseminated the findings from this same study, related to ESP roles, their broad outcomes and the perceptions of ESP clinicians. The findings highlighted quality issues regarding lack of data, small samples and limited reporting of health outcomes. Results were presented as a descriptive synthesis due to the heterogeneity of the literature.

Kersten et al (2007) published a narrative review utilizing the same data (as co-author of McPherson et al 2006), but with a focus on physiotherapy ESP and updating the search. Conclusions regarding methodological quality aligned with the previous review (McPherson et al. 2006) and supported the lack of patient outcome explanation in ESP interventions.

McClellan et al (2010) focused their systematic review on ESP care in UK Emergency Department (ED) settings, targeting clinical effectiveness and cost efficiency. Based on four papers that passed inclusion criteria they concluded ESPs were effective in the ED managing minor injuries. This was based upon patient satisfaction levels being higher for ESP care than other health professionals and comparable clinical outcomes to ED medics and nurse practitioners.

 Stanhope et al (Stanhope et al. 2012a) (Stanhope et al. 2012b) published two reviews with tight inclusion and quality criteria in an attempt to minimize the effects of bias, with only two papers passing these criteria. The overall conclusions showed a lack of reported health outcomes and evidence of effectiveness and identified a need to focus future research on health outcomes and ESP decision making.

A more recent systematic review by Desmeules et al, (2012) concluded the evidence provided overall support for ESP care, but as in previous reviews, reported variable study quality and a need for improved outcome measure reporting. A meta analysis was not possible due to continued data heterogeneity.

Some of the reviews have had limited search criteria and many have not included qualitative literature within their scope. The ESP field continues to rapidly expand and new literature is continually being published which requires scrutiny.

Previous reviews have highlighted the need to focus research on improvements in outcome reporting and more detail surrounding ESP decision making (Desmeules et al. 2012, Stanhope et al. 2012b). This review therefore aims to systematically examine more recent literature with a view to fully exploring ESP decisions making and the impact of ESP care upon patient outcomes. The scope of this review includes searches for both quantitative and qualitative evidence and a mixed method synthesis, which has not previously been reported in the ESP literature. As this review is evaluating health care interventions and the experiences and interactions which occur, the value of the results is enhanced by including research across both qualitative and quantitative paradigms (Harden 2010). The aim of this approach is to explore any new insights which can be gleaned from the literature and inform gaps in the research base to influence further study.

Review Questions

What impact do ESPs have on outcomes in patients with musculoskeletal conditions?

How does the decision making process of ESP’s affect outcome in patients with musculoskeletal conditions?

**Methods**

This review has been undertaken within a mixed methods synthesis approach, (Sandelowski et al. 2006) which encompasses the full range of literature within the field of physiotherapy musculoskeletal ESP practice. Methodological diversity and difficulty of assessing heterogeneous literature is acknowledged (Desmeules et al. 2012). By using a mixed method approach the aim was to provide a review, which had the breadth to inform current ESP practice and highlight areas requiring further research (Gough et al. 2012).

Protocol / registration

The systematic review was registered with PROSPERO, the international prospective register for systematic reviews. The review’s registration number is CRD42013005276.

Information sources

A comprehensive search strategy was employed with keywords and MeSH / thesaurus terms within the following electronic databases: MEDLINE, CINAHL, AMED, EMBASE, PsychInfo, PEDRO, Cochrane, CRD and PROSPERO. The database searches took place between August and September 2013.

To ensure the search strategy was thorough and unbiased grey literature sources were included alongside bibliographic databases for unpublished work. These sources included ZETOC conference proceedings and the UK Theses database.

Specialist sources were utilised by contacting the ESP professional network, affiliated to the Chartered Society of Physiotherapy in the UK, to request information regarding unpublished or ongoing work. Secondary searching of eligible paper reference lists took place to identify additional papers not found through the primary search strategy. Full paper retrieval took place at the secondary screening stage to protect against variable abstract content (CRD 2009).

The selection of appropriate keywords was complicated by the extremely diverse descriptions of physiotherapy ESP in the literature. Keywords needed to take this into consideration, to ensure the conducted search was as rigorous as possible. Keywords were based on those used in two previous systematic reviews (Kersten et al. 2007, Desmeules et al. 2012) as they had designed their search terms with the issue of variable ESP descriptions in mind.

The keywords were expanded for this particular review to include more specific aspects in relation to outcome measures, decision making and patient experience. The keywords used in this review are detailed in Appendix 1 and were organised in line with a PICO framework (Pope et al. 2007). Boolean operators were employed to provide structure to the keyword search with the aim of achieving results that would be focused to the research question.

Inclusion Criteria

* Papers relate to physiotherapy
* Extended scope practice –

Criteria from Kersten et al (2007)

Papers describe ‘role substitution’ or ‘role enhancement’ ; which

describes an extended role or taking over a role previously

carried out by a member of the medical profession.

* Patients with musculoskeletal conditions
* All health care settings
* Report outcomes – Specific clinical outcome

Patient related outcome measure (PROM)

Patient related experience measure (PREM)

* Reporting of patient satisfaction or the decision making process
* Quantitative and qualitative papers
* Language – all
* Publication between January 2004-August 2013
* Grey literature

Exclusion Criteria

* Other health professions
* ESP working in specialties outside MSK
* No specific outcomes or data analysis reported
* Systematic or literature reviews
* Audit or service reports

Study selection

Title and abstract screening of the initial 476 articles was undertaken by two reviewers (JT and SY). This was carried out independently against the inclusion and exclusion criteria before meeting to discuss findings. Calculation of inter rater agreement between JT and SY was undertaken after this stage and revealed a Kappa score of K=0.827, indicating a very high level of agreement within the independent reviewing process. The primary screening stage rejected 433 papers, as they did not meet the inclusion criteria.

A full text screen was undertaken by the same reviewers (JT and SY) on the remaining 43 papers. This was again carried out independently before meeting to clarify and agree the results. A further 18 papers were rejected at this stage due to not relating to ESP management, lack of outcome data and being more service description orientated reports. Therefore 25 papers were included in the quality appraisal stage of the review.

Data Quality Assessment

This systematic review includes research from both a quantitative and qualitative perspective and as such requires the use of quality appraisal tools to review research papers across different paradigms. The CASP qualitative appraisal tool (CASP 2006) and the Effective Public Health Practice Project (EPHPP) quality assessment tool for quantitative studies were selected (EPHPP 1998). The tool which originated from the EPHPP at McMaster University in Canada was chosen as it was recommended for use in a systematic review where non randomized trials are to be assessed (Deeks et al. 2003). However the tool could be applied to all quantitative designs and this was an important consideration given the heterogeneity of the ESP literature.

**Results**

Figure 1 details a summary of the review process at each stage.

Figure 1. PRISMA flow diagram

Additional records identified through other sources
(n = 47 )

Records identified through database searching
(n = 1080 )

Records after duplicates removed
(n = 476 )

Records excluded
(n = 433 )

Records screened
(n = 476 )

Full-text articles excluded
(n = 18 )

Full-text articles assessed for eligibility
(n = 43 )

Studies included in quantitative synthesis
(n = 22 )

Studies included in qualitative synthesis
(n = 3 )

Studies included in mixed method synthesis
(n = 25 )

*From:*  Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

**Study characteristics**

**Table 1 Quantitative data summary**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Papers | Country | Study design | ESP role/setting | N = | Intervention | Outcome measures | Key findings |
| Aiken et al 2008 | Canada | Correlation | Ortho TKR/THR cases | 38 | ESP and surgeon assessment then discussion of plan | WOMACWaiting list priority toolPatient satisfaction | Kappa 67%All patients satisfied with care from both clinicians |
| Ball et al 2007 | UK | Retrospective case note review | ED  | 164 EDPP 142 ENP 127 SHO 135 M.gd  72 Cons | No as notes review | Chi square Fisher Freeman Halton exact P<0.05 | EDPP recorded more advice and more physiotherapy referrals. SHO more medication |
| Bath et al 2012 | Canada | Retrospective case note review | Spinal triage patients | Up to 1162 | No as notes review | Management recommended and if surgery or not | 16.7% cases sent for surgery review with high 70% conversion rate (v normal 30%) |
| Bath and Janzen 2012 | Canada | Prospective observational cohort | Spinal triage | 108 pts21 referrers | Evaluate satisfaction | satisfaction of patients and referrers | 66% patients very satisfied90.5% referrers very satisfied |
| Bath and Phawa 2012 | Canada | Prospective cohort | Spinal triage | 108 | Triage visit and 4 week review | Pain scaleODISF36v2 | Signif.icant improvement pain scale P=0.007 and physical component subscale P<0.001 of SF36v2 |
| Desmeules et al 2013 | Canada | Prospective cohort | Ortho hip and knee | 120 | Assessment ESP and surgeon. Compare decisions and satisfaction | Diagnostic agreementVSQ-9 | K=0.86 diagnosisK=0.77 surgeryHigher satisfaction score for ESP |
| Griffiths et al 2013 | UK | Questionnaire survey | Primary care ESP | 99 | Review surgery conversion for onward referrals | Secondary care conversion rate | 74% surgery conversion rate |
| Hattam 2004 | UK | Cross section survey | ESP ortho triage | 170 | Review of decision to refer to orthopaedics | Surgeon agreement on referral | 70.6% appropriate |
| Heywood 2005 | UK | Prospective cohort | Military spinal clinic | 235 | ESP assess/management | ODI | ESP managed 184 cases (78%) without further intervention |
| Kennedy et al 2010 | Canada | Cross section | Ortho  | 123 | ESP review post knee/hip replacement | VSQ-9 | High ESP satisfaction  |
| Mackay et al 2012 | Canada | Prospective cohort | Ortho non surgical hip and knees | 87 | Baseline and 6 week follow up after ESP  | Self efficacy Exercise behaviour | All self efficacy scales improved.83% still exercising |
| Mackay et al 2009 | Canada | Cross section cohort | Ortho hip and knee | 62 | Seen by ESP and orthopaedic surgeon. Compare decisions. | Diagnostic accuracySurgical decision | 69% diagnostic agreementK=0.70 for surgery |
| McClellan et al 2012 | UK | RCT | ED | 126 ESP123 ENP123 Dr | ESP v Dr v ENP care of soft tissue injury | DASH / LEFS / SF12v2 / SF6D | ESP / ENP equivalent outcome to Dr care. |
| McClellan et al 2006 | UK | Prospective cohort | ED | 351 | ESP v Dr v ENP care | Patient satisfactionSF36VAS | Higher satisfaction with ESP care.Ankle cases had very poor study FU rate |
| Moloney 2009 | Ireland | Clinic evaluation | Fracture clinic | 60 | Satisfaction ESP care | satisfaction | 98% very good/good |
| Oldmeadow et al 2007 | Australia | Prospective observational | MSK screening  | 52 | ESP review then consultant review and comparison | Diagnostic / mgt agreementSatisfaction | 74% ESP surgeon agreementHigh ESP satisfaction from patients and medics |
| Parfitt et al 2012 | UK | Retrospective review | ESP primary care | 130 | Is surgery listing by ESP correct | Surgeon review of decision | 127 of 130 had surgery |
| Razmjou et al 2013 | Canada | Prospective cohort | ESP shoulder clinic | 100194 | Diagnosis/mgt agreementsatisfaction | VSQ-9 | Diagnosis k=0.63-0.86Surgery k=0.75ESP satisfaction higher |
| Richardson et al 2005 | UK | RCT | ED | 766 | ESP v routine ED care | Return to activityPatient satisfaction | ESP longer activity return p=0.071ESP high satisfaction |
| Robarts et al 2008 | Canada | Descriptive study | orthopaedic | 123 | Patient satisfaction | VSQ-9 | High satisfaction. No significant difference |
| Sephton et al 2010 | UK | Prospective cohort | Primary care  | 217 | Primary care service up to 12 month FU | SF36/EQ5D/VASPatient satisfaction | EQ5D/VAS small significant improvementSF36 small changeHigh satisfaction level |
| Taylor et al 2011 | Australia | Controlled trial | ED | 315 | Primary ESP mgt v routine care | Length stay/treatment time/wait satisfaction | All times reduced for ESP care.Strong satisfaction patients and staff. |

**key**

DASH disabilities of the arm shoulder and hand

ED emergency department

EDPP emergency department physiotherapy practitioners

ENP emergency nurse practitioner

EQ5D EuroQol 5 dimensions

FU follow up

LEFS lower extremity functional scale

M. gd middle grade medic

ODI Oswestry disability index

SF12v2 Short form 12 version 2

SF36 short form 36

SHO senior house officer

THR total hip replacement

TKR total knee replacement

VAS visual analogue scale

VSQ-9 9 item visit specific satisfaction questionnaire

WOMAC Western Ontario and McMaster universities arthritis index

**Table 2 Qualitative data summary**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Papers | Country origin | Study aim | ESP role / setting | Sample/approach | Data collection | Key themes |
| **Coyle and Carpenter 2012** | UK | Impact of ESP on patient experience | ESP in local MSK service | Purposive sample6 patients | In depth interview | Education re ESP role to GP’sPatient information on ESP roleESP to prioritize patient expectations |
| **Dawson and Ghazi 2004** | UK | What is the ESP experience of the role | City and rural ESP service settings | Purposive sample4 ESP staff | Semi structured interviews | medical support / relationships very importantgood support network needed with peers / medicsno formal training process. Local and ad-hoc. Medicolegal implicationsESP emotions of frustration / anxiety / pressure / dissatisfaction. This comes out of role in coping with patient expectations of a cure or explaining no more can be done. Important consequences of making decisions eg surgery (risk) |
| **Reeve and May 2009** | UK | Establish quality dimensions from a patient perspective | Secondary care spinal screening service | Purposive sampling12 patients | semi structured interview | provision informationoutcomesprofessional skillsinterpersonnal skillspatient care pathways |

**Synthesis of included studies**

The papers, described in table 1 and 2, meeting the inclusion criteria and screening processes, were subjected to analysis and synthesis as separate groups of quantitative and qualitative papers. The separate syntheses were then combined in a final synthesis, drawing conclusions from all findings. This is based upon the mixed method systematic review approach described by Harden and Thomas (2005) and supported by the Evidence for Policy and Practice Information and Coordinating Centre framework for conducting reviews (EPPI 2010).

Results from the quantitative studies are divided into 3 categories: decision making, outcome and satisfaction.

Decision Making

Six papers report on correlation of ESP decision making, particularly between ESPs and orthopaedic surgeons. Aiken et al (2008) show a kappa of K=0.67 for management plan agreement after assessment in orthopedic hip and knee cases. Mackay et al (2009) again report in relation to orthopaedic hip and knee patients a 69% agreement on diagnosis and a kappa K=0.70 for surgery decisions. Oldmeadow et al (2007) reported ESP and surgeon agreement level of 74% in diagnosis and management decisions in a MSK screening service. Desmeules et al (2013) studied orthopaedic ESP activity with hip and knee patients and found between ESP and surgeons a kappa agreement of k=0.86 for diagnosis and k=0.77 for surgical decisions. In the only report of upper limb orthopaedic cases, it was shown within a shoulder clinic that ESP and surgeon agreement was kappa k=0.63-0.86 for diagnosis and for considering surgery as an outcome k=0.75 (Razmjou et al. 2013). These more recent results compare well with Hattam (2004) who described a 70.6% level of appropriate transfer for orthopaedic opinion by an ESP service.

Outcomes

A number of more recent studies describe outcomes linked to validated outcome scoring tools. Bath and Phawa (2012) showed significant improvement in pain scale and physical component scores of the SF36v2 following assessment of patients seen in a spinal triage service when comparing baseline scores to four weeks follow up.

In orthopaedic non surgical hip and knee patients Mackay et al (2012) reported improvements in all self efficacy scales at six weeks following ESP assessment, advice and provision of exercises. Exercise behaviour showed 83% of patients were still carrying out their exercise programme at six weeks.

Sephton et al (2010) in their study of an ESP led primary care service showed a small significant improvement in EQ5D and VAS scores at up to 12 months follow up. This was alongside a small positive improvement in SF36 scores.

McClellan et al (2012) in a well conducted RCT, used the SF6D, SF12v2, LEFS and DASH outcome tools to report ESP and nurse practitioner staff in an ED had equivalent outcomes to medical care for management of soft tissue injuries with follow up data up to eight weeks after initial assessment and based upon a return to normal levels of function. These results showed a more positive ESP outcome, compared to a previous RCT (Richardson et al. 2005), where patients seen by an ESP had taken a longer period of time to return to normal activity.

Reflecting a more recent development in ESP roles two studies reported on outcomes of patients referred by ESP staff for orthopaedic surgery. The first study (Parfitt et al. 2012) showed that of 130 patients that were directly listed for total hip replacement surgery by ESP staff, 127 patients underwent the procedure. Of the 130 patients listed for surgery, 92 proceeded directly for the operation and 38 deviated from this pathway due to medical, administrative or other reasons.

The second study (Griffiths et al. 2012) describes results of onward referrals from a primary care based ESP service into specialist secondary care services, reporting a 74% surgical conversion rate from those cases referred.

Satisfaction

Patient satisfaction with ESP care is consistently high across many MSK specialties and service settings. This includes orthopaedic patients with hip and knee symptoms, (Aiken and McColl 2008, Robarts et al. 2008, Kennedy et al. 2010, Desmeules et al. 2013) shoulder problems, (Razmjou et al. 2013) patients within fracture clinics, (Moloney et al. 2009) specialist spinal services, (Bath and Janzen 2012) ED, (Richardson et al. 2005, McClellan et al. 2006, Taylor et al. 2011) and primary care services (Sephton et al. 2010). Patient satisfaction data was often collected through locally developed service questionnaires but four Canadian studies utilized a validated satisfaction questionnaire, the VSQ-9 (Robarts et al. 2008, Kennedy et al. 2010, Desmeules et al. 2013, Razmjou et al. 2013).

The majority of studies compared ESP care to ‘usual’ medical care. In addition one study (Bath and Janzen 2012) reported very high levels of referrer satisfaction from 90% of referrers into a spinal triage service. Taylor et al (2011) also reported that 80% of ED staff were satisfied with an ESP role in that setting.

Taken together these results appear to show evidence to support the clinical knowledge and decision making of ESP staff, particularly with musculoskeletal cases in an orthopaedic setting.

Analysis of the three qualitative papers included within this systematic review yielded 5 themes;

professional skills, education role, interpersonal skills, decision making and involvement in clinical outcome.

Professional skills

Professional skills encapsulate the ESP’s experience, expertise, competence, knowledge and ability to act (Reeve and May 2009). Patients may see this in the context of a physiotherapist’s clinical background and not in relation to a more specialist clinical position. Past experiences of physiotherapy can impact upon the patients acceptance of the level of skill an ESP possesses. Patients are more likely to have a positive reaction toward seeing an ESP and their professional level of skill if they have had a positive previous experience of physiotherapy (Reeve and May 2009).

Education role

It is clear that patient perceptions of the ESP role may be influenced by previous physiotherapy treatment or information from referrers (Coyle and Carpenter 2011). This therefore requires an ESP to have the ability to educate, particularly in terms of explaining their extended clinical role to patients and to referring clinicians, so they are clear what the ESPs scope of practice is and what service they are able to provide. ESP staff need to be able to provide and articulate a wide range of information to patients in regard to their condition, investigation results and management options (Reeve and May 2009, Coyle and Carpenter 2011).

Interpersonal skills

Interpersonal skills are extremely important and involve high level communication skills in terms of listening and explanation. In a study exploring patient quality dimensions in a spinal screening service older patients appear to benefit from extended time being taken by ESP staff to provide explanation of diagnosis, investigations and management options (Reeve and May 2009).

Decision making

The role ESP staff take in decision making with patients appears to have both a positive and negative impact. If patients feel involved in the process they see this as a positive experience, whereas lack of involvement and explanation links to poorer patient satisfaction and impact upon the patients outcome (Coyle and Carpenter 2011).

Dawson and Ghazi (2004) commented upon a perceived element of risk which ESP staff attach to their role. This could relate to the scope of decisions the ESP is making and the possible risks attached to those choices, although this requires further investigation.

Involvement in clinical outcome

The patient’s clinical outcome draws together many of these themes. ESP staff can facilitate a more favourable outcome by understanding patient expectations (Coyle and Carpenter 2011). The patient’s desired outcome from an ESP consultation appears to differ from that of a traditional physiotherapy consultation, where patients would tend to be focused on pain relief or improved function. Patients seeing ESPs seem to see a clear management plan and diagnosis, based on reasoned choices, as more important (Reeve and May 2009).

**Discussion and Synthesis**

The results from this systematic review offer further evidence and a richer understanding of the complex intervention provided by ESP clinicians. The high level of satisfaction with ESP care delivery is consistent with previous systematic reviews (Kersten et al. 2007, McClellan et al. 2010, Desmeules et al. 2012). There is some limited evidence of referrer and associated staff satisfaction but this needs greater scrutiny. The qualitative data suggests limited understanding of the ESP role by GP referrers and patients and a need for ESP staff to undertake education to improve understanding of their roles and facilitate decision making and outcomes. The reasons for the underlying high satisfaction rates are unclear. Coyle and Carpenter (2011) allude to a link between how patients perceive their involvement in assessment and decision making processes and how this affects satisfaction. This may link to the length of ESP appointments, which could facilitate greater clinical discussion and patient involvement, thus fostering patient participation and a more productive clinical relationship.

The themes arising from the qualitative data are interlinked and do not exist in isolation of one another. ESP clinicians are delivering complex interventions and patients need to have a clear understanding of their role in the care pathway, including provision of what could be seen as historically medical roles and the differences from traditional physiotherapy.

There are links between this and interpersonal skills, particularly communication, so the ESP can provide patients with clarification and knowledge to enable them to understand and ‘trust’ the ESP has the skills and scope to provide what they require. Expectations of ESP management may be influenced by previous exposure to physiotherapy treatment and through information from referring clinicians (Coyle and Carpenter 2011). With understanding and the development of a therapeutic relationship, patients can more readily discuss and provide the ESP with their expectations and facilitate a more effective decision making process. All these themes combine to influence the overall outcome of the patient/ESP interaction, as they will hopefully have collaborated to formulate a plan, which is in the best interests of the patient, who feels confident that they have been fully involved.

Reported outcomes see improved use of validated clinical outcome tools in the more recent ESP literature, addressing weaknesses reported in past reviews (Kersten et al. 2007). These outcomes report positive improvements, although methodological shortcomings remain. This is particularly in relation to short follow up timescales (Bath and Pahwa 2012), a lack of specific description of ESP intervention and results which could be difficult to specifically attribute to the intervention of the ESP clinician (Sephton et al. 2010). The study by McClellan et al (2012) in ED, illustrates the use of a robust methodology with results which positively support the outcomes from ESP intervention.

This systematic review has included two studies providing support for ESPs referring for orthopaedic surgical intervention with one study particularly investigating the important role extension of ESP staff directly listing patients for surgery (Parfitt et al. 2012). Though this is very encouraging, further research is required to support this aspect of the role in relation to the decision making process and supporting clinical governance frameworks. A theme arising from Dawson and Ghazi (2004) is that of ESP staff considering the risk involved in their role. This warrants further study, particularly focusing on the surgical referral and direct listing aspects of the ESP position.

A number of papers supported ESP clinical decision making in correlation with medical colleagues. The ability of ESPs to demonstrate this level of clinical judgment illustrates their professional skills and has been highlighted as an important theme (Reeve and May 2009), as have medical support mechanisms and training (Dawson and Ghazi 2004). The development of ESP services and access to investigations to support their roles allows ESP staff to base their recommendations and decisions upon more informed knowledge. This underpins the role ESP staff play in complex situations, supporting patients to make decisions, leading to successful clinical outcomes.

**Limitations**

It is recognized that there remains a degree of heterogeneity of the literature which has been highlighted in previous reviews (McPherson et al. 2006, Desmeules et al. 2012) and it was not possible to complete a meta-analysis of the included papers.

**Conclusions**

This report has presented a critical review of current literature, obtained through a robust systematic review, regarding ESP management of MSK conditions, with particular emphasis on outcomes and decision making.

There appears to be broad support for the ESP role, particularly in relation to patient satisfaction levels, which are consistently high. There remains limited reporting of measurable clinical outcomes but where used results appear favourable. The process of decision making is alluded to but not clearly described. We do not fully understand the mechanisms or interactions underlying the impact that the ESP might have. Further research is required to investigate the mechanisms that lie behind ESP and patient decision making and then the influence this has on subsequent clinical outcomes.

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**Appendix 1**

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| Electronic search strategy  |
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| **population** |
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| physio\* |
| physical therap\* |
|  |
|  |
| **intervention** |
|  |
| advanc\* practi\* |
| consultant therapist\* |
| consultant physio\* |
| enhan\* practice\* |
| enhan\* scope |
| expan\* scope |
|  |
| exten\* scope |
| exten\* practice\* |
| role expan\* |
| role enhan\* |
| role exten\* |
| ortho\* physio\* practitioner\* |
| scope of practice |
| specialist practitioner\* |
| physician assist\* |
| advanc\* physio\* practitioner\* |
| triage |
|  |
| **outcome** |
|  |
| decision making |
| shared decision making |
| outcome |
| clinical reasoning |
| patient satisfact\* |
| patient experience |