



**The professional development and career journey into musculoskeletal first contact physiotherapy: a telephone interview study.**

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## **ABSTRACT**

**Background:** Musculoskeletal (MSK) first contact physiotherapy (FCP) is being rolled out in the National Health Service, but limited research exists on career pathways into MSK FCP, or on pre-and-post-registration educational preparation for the knowledge and skills that are required for musculoskeletal first contact physiotherapy. **Objectives:** From the perspectives of existing MSK FCPs, the study sought to understand the pre-and-post-registration professional developmental journey into musculoskeletal first contact physiotherapy. **Methods:** Semi-structured interviews over the telephone were conducted with a self-selected and snowball sample of 15 MSK FCPs from across Britain. Framework analysis was used to analyze the interview transcripts. **Results:** Four overarching themes were identified: (1) Decision to choose a career path as a MSK FCP; (2) Relevancy of pre-registration physiotherapy (PT) education for MSK FCP; (3) Relevancy of post-registration continuing professional development for MSK FCP, and; (4) Improving pre-registration PT education for the foundational knowledge and skills required to work in musculoskeletal first contact physiotherapy. Each overarching theme generated several subthemes. **Conclusion:** The research contributes to understanding the career pathway into the MSK FCP role and showed what relevant knowledge and skills were acquired for this role at pre-and-post registration levels. Findings will inform guidance for pre-registration PT curriculum development.

**Keywords:** Musculoskeletal, First Contact, Professional Development, Career Pathway, Qualitative

## INTRODUCTION

Research data have shown that 10% of patient appointments with a medical general practitioner in the United Kingdom are for a musculoskeletal related condition (NHS England and NHS Improvement, 2019). This represents a significant burden on medical general practitioner resources - and is expected to be further compounded by an increasingly aging population (Murray et al, 2012) and a crisis in the recruitment and retention of medical general practitioners (Hobbs, Bankhead, and Mukhtar, 2016; Roland and Everington, 2016). Musculoskeletal first contact physiotherapy has been proposed as one way to help reduce this increasing strain on the workload of medical general practitioners (Goodwin, Hendrick, Moffatt, and Logan, 2019). In particular, it has been estimated by the Chartered Society of Physiotherapy that MSK FCPs could deal with up to half of patients with MSK conditions (NHS England and NHS Improvement, 2019). This model of direct PT assessment and management of MSK disorders can also be found in emergency departments, as well as medical general practitioner surgeries (Taylor et al, 2011).

Both “The National Health Service Long Term Plan” (2019) and the “Five-Year Framework for GP Contract Reform” (BMA and NHS England, 2019) have committed to an extensive roll out of MSK FCP posts. By 2024, it is planned that each primary care network in England will on average, have access to three musculoskeletal first contact physiotherapists (BMA and NHS England, 2019). The first wave of MSK FCPs have been recruited from the existing advanced practice PT workforce and will have gained significant experience in a specialist musculoskeletal role (Downie, McRitchie, Monteith, and Turner, 2019; Gamlin, Raymer, and Lewis, 2015).

Musculoskeletal first contact physiotherapy can be differentiated from typical direct access to PT in the UK, in that a first contact practitioner is situated at the frontline of the MSK pathway in primary care, rather than in a PT department (NHS England and NHS Improvement, 2019). Furthermore, the role of an MSK FCP is to triage and signpost, rather than to deliver standard PT

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2  
3 treatment (Langridge, 2019). The tasks of a FCP specifically involve: assessment and diagnosis  
4 and the screening for serious pathology; providing information on self-care; enabling behavioral  
5 change; facilitating fitness for work discussions; social prescribing, and; having discussions with  
6 patients about their physical activity and general health (ten Hove, 2019). In addition, an FCP  
7 can request diagnostic investigations - and if suitably qualified, can administer joint and soft  
8 tissue injections and prescribe medicines (ten Hove, 2019). MSK FCPs are also able to refer  
9 patients on to a course of treatment, such as to PT or to a secondary care service (ten Hove,  
10 2019). The capabilities that are required for an MSK FCP role in the United Kingdom are set out  
11 comprehensively in the “Musculoskeletal core capabilities framework for first point of contact  
12 practitioners” (Skills for Health, 2018).

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The vast majority of research on MSK FCP in the United Kingdom have been quantitative studies, which have concentrated on the analysis of outcome measures of first contact physiotherapy (e.g. Bishop et al, 2017; Downie, McRitchie, Monteith, and Turner, 2019; Holdsworth, Webster, McFadyen, and Scottish Physiotherapy Self-Referral Study Group, 2007). For instance, an evaluation of MSK FCP in two medical general practices in the UK, recorded no patient safety concerns, high levels of patient satisfaction, and significant clinical improvements in patients (Goodwin and Hendrick, 2016).

By contrast, there are few published qualitative studies on musculoskeletal first contact physiotherapy in the United Kingdom. Qualitative findings from an early trial of MSK FCP in Scotland suggested that both medical general practitioners and PTs, who were involved in the trial, were broadly supportive of direct access to PT in primary care settings (Holdsworth, Webster, and McFadyen, 2008). The challenges and benefits of implementing FCP services was also studied in a qualitative evaluation of a pilot MSK FCP service in two city-center medical general practices in the United Kingdom (Moffatt, Goodwin, and Hendrick, 2018). Another

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3 qualitative study has more closely examined the skills, knowledge and attributes of the MSK  
4  
5 FCP role (Langridge, 2019).  
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8 The aforementioned qualitative studies provided important insights, but further research which  
9  
10 explores the professional developmental journey into MSK FCP, or more specifically, how the  
11  
12 learning experiences gained at pre-and-post-registration levels can equip MSK FCPs with the  
13  
14 necessary knowledge and skills to perform their role is needed. Filling this knowledge gap is  
15  
16 imperative, given that the “Musculoskeletal core capabilities framework” has recommended that  
17  
18 learning and professional development at pre-and-post-registration should enable students and  
19  
20 qualified practitioners to attain and demonstrate the capabilities expected of a musculoskeletal  
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22 first contact physiotherapist (Skills for Health, 2018). In addition, the authors of the  
23  
24 “Musculoskeletal core capabilities framework”, suggest that it can serve as a structure for career  
25  
26 progression planning. Yet, little is known about the motivations for choosing a career pathway  
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28 into MSK FCP, apart from that existing advanced practice PTs are moving into FCP roles in the  
29  
30 UK (Chartered Society of Physiotherapy, Royal College of General Practitioners, and BMA,  
31  
32 2018). Thus, the present study sought to understand the following research question from the  
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34 perspective of a sample of practicing MSK FCPs in Britain: What is the pre-and-post-  
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36 registration professional developmental journey into musculoskeletal first contact  
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38 physiotherapy?  
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45 Note, that this research question was drawn from a study, which examined other topics related to  
46  
47 the training required to work in an MSK FCP role in Britain. This paper includes findings that  
48  
49 only derive from the above research question. Other findings from the study will be disseminated  
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51 at a further date.  
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## 53 **METHODS**

### 54 Research Strategy

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3 A qualitative research strategy was appropriate, as it fitted with the focus on participants'  
4 reflections about their professional developmental journey into musculoskeletal first contact  
5 physiotherapy (Green and Thorogood, 2018). An interpretivist epistemology and constructionist  
6 ontology informed the qualitative approach of the study (Creswell, 2012; Schwandt, 2000). An  
7 interpretivist epistemology meant that the research sought to derive meaningful understanding  
8 from MSK FCPs' recollections of situations and actions through interpretations and descriptions  
9 of their behaviors (Bassett, 2013). A constructionist ontology assumes that meanings are in an  
10 unending state of continuous change, as they are enacted through social interaction (Crotty,  
11 1998). The framing of the questions for the interview schedule (see Data collection section) used  
12 in this study, drew upon phenomenological and symbolic interactionist approaches. Whilst the  
13 former approach is centered on the lived experience of participants (Finlay, 2011), the latter  
14 approach is concerned with how participants interpret their experience (Crotty, 1998).

### 30 Recruitment of Participants

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32 Only those PTs in MSK FCP roles were considered for inclusion in this study. This purposive  
33 criterion meant that PTs working in other first contact roles, such as in respiratory care were  
34 excluded from the study (Palys, 2008). Permission was granted (15/06/2019) from the Chartered  
35 Society of Physiotherapy to post a written invitation letter and participant information form on  
36 the "interactive Chartered Society of Physiotherapy" online network for first contact  
37 physiotherapy (<https://www.csp.org.uk/icsp/fcp>). The rationale for choosing this network for the  
38 recruitment of participants was that it remains the largest existing online forum for MSK FCPs in  
39 the United Kingdom, with around 1500 members. As the forum is open to any member of the  
40 Chartered Society of Physiotherapy, members are from a variety of different backgrounds (e.g.  
41 managers, university PT educators and student PTs), as well as musculoskeletal first contact  
42 physiotherapists. In addition, authorization was granted from the Society to publicize the study in  
43 their fortnightly newsletter for first contact physiotherapists. These two methods of recruiting  
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3 participants were based on self-selection, in that potential participants contacted the first author  
4 about their intention to participate. In total, nine participants were recruited through either the  
5  
6 online network for MSK FCPs or the fortnightly bulletin for first contact physiotherapists.  
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9  
10 Snowball sampling was used to recruit an additional six participants (Ellard-Gray, Jeffrey,  
11 Choubak, and Crann, 2015). This method of sampling has been defined as a non-probability  
12 sample, which is predicated on referrals from initially sampled participants to other prospective  
13 participants, who share the same characteristics of interest (Johnson, 2005). In our study,  
14 permission was sought from every participant via a participant information sheet and invitation  
15 letter about the study to any MSK FCP colleagues. As with the other aforementioned methods of  
16 participant recruitment, potential participants contacted the first author about participating in the  
17 study.  
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19

20  
21 Recruitment of participants ceased once a geographical spread of participants across Wales and  
22 Scotland and from the different regions of England was obtained. The defined regions in  
23 England were London, Southeast England, Southwest England, the Midlands, Northeast  
24 England, and Northwest England. It was also noticed by the first author, who conducted the  
25 interviews, that data saturation had been achieved, as no new information was emerging from the  
26 interviews (Fusch and Ness, 2015). This was evident from reading the field notes that were  
27 recorded after each interview and from listening back to the audio-recordings, in order to check  
28 the accuracy of the transcriptions (Bailey, 2008).  
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### 31 Data Collection

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33 Ethical approval for the research was granted (14/06/2019) by the University of Essex, School of  
34 Sport, Rehabilitation and Exercise Sciences, Faculty Ethics Sub-Committee (Reference:  
35 1866.V1). The first author conducted semi-structured interviews with 15 MSK FCPs over the  
36 telephone. Telephone interviews were used, because the sample of MSK FCP participants were  
37 geographically spread. This avoided travel costs and the time that would have been spent on  
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3 travelling to the different sites where the participants were located (Novick, 2008). Semi-  
4 structured interviews allow for dialogue between the interviewer and participant - and are  
5 directed by a flexible interview schedule that is supplemented by the prompts of the researcher  
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10 (Galletta and Cross, 2013).

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12 The interview schedule was constructed by both authors and was partly informed by previous  
13 research on the provision of pre-registration PT education on primary care in Ireland (McMahon,  
14 Cusack, and O'Donoghue, 2014). A draft of the interview schedule was sent for feedback to  
15 several representatives of the Chartered Society of Physiotherapy, who had responsibility for  
16 leading the promotion and development of first contact physiotherapy. As the professional body  
17 for PT in the UK, the Society has been integral to the development of the FCP role. It has been  
18 argued that it is important to seek out accessible expertise and support when designing academic  
19 research (Loera, 2006). The schedule itself, contained four separate sections, but only the  
20 findings from the first section: "reflections on professional development" are included in this  
21 article. The first section of the interview schedule comprised four questions, which were asked in  
22 the telephone interviews (see Figure 1) (insert Figure 1 here). The interview schedule was  
23 refined further through a pilot interview with a participant, who had previously worked in an  
24 MSK FCP role - and who was known by the second author. In particular, the clarity and  
25 meaning of the interview questions were checked in the pilot interview (Kvale, 2007). The data  
26 from the pilot interview were incorporated into the official part of the study - and therefore into  
27 the data analysis.

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Written consent to participate was acquired from all of the participants. In providing written  
consent, the participants understood that the information given in the interviews would be  
included in published outputs from the research. In addition, in signing the consent form, the  
participants were made aware that they would not be identified in any publications, as the  
identity of each participant was fully anonymized. Before the start of each interview, the

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3 participant was asked a series of socio-demographic and background questions (see Figure 2)  
4 (insert Figure 2 here). This provided further contextual information about participants'  
5 professional developmental **journey** into musculoskeletal first contact physiotherapy.  
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8 Telephone interviews were organized and carried out from 15<sup>th</sup> June to 1<sup>st</sup> September (2019).  
9  
10 The first author, who conducted the interviews was experienced in qualitative health professions  
11 research but was not trained in physiotherapy. He was therefore not previously known by any of  
12 the research participants. The average duration of interviews was 35 minutes, with a range from  
13 25-to-45 minutes. Prior to the interviews, written consent was obtained from each participant to  
14 digitally record the interviews. In the event of any participant refusing permission to digitally  
15 record the interview, consent would be sought from the participant to record the interview  
16 through written notes. However, all participants agreed to the digital recording of the interviews.  
17  
18 In order to “remain close to the data”, all of the interviews were transcribed verbatim by the first  
19 author (Bassett, Brosnan, Southgate, and Lempp, 2019, pg. 336). The transcribed interviews  
20 were checked for accuracy by comparing the content of the transcriptions with the digital  
21 recordings (Bailey, 2008).  
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### 37 Data Analysis

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39 The first author uploaded the transcripts into NVivo 12 (QSR International, Melbourne,  
40 Australia) and used framework analysis to analyze the interview data (Ritchie and Spencer,  
41 1994). This analytical approach permits the generation of both a priori and emergent concepts in  
42 the coding of data (Ritchie and Spencer, 1994). Framework analysis was chosen, because of its  
43 capacity to deliver outcomes and recommendations within the prescribed timescale of this  
44 research project, which was seven months from inception to completion of data analysis and  
45 write up of findings (O'Donoghue, Doody, and Cusack, 2011). In addition, this method of  
46 analysis is based on a transparent and systematic five staged process. These stages are: 1)  
47 familiarization; 2) the identification of a thematic framework; 3) indexing; 4) charting; and 5)  
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3 mapping and interpretation (Ritchie and Spencer, 1994). The first author carried out all the stages  
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5 of the framework analysis process.  
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8 The stage of familiarization involved repeated readings of all the transcripts, in order to gain an  
9  
10 in-depth meaningful perspective on the whole dataset. Key ideas and reoccurring themes in the  
11  
12 transcripts were noted. The following phase of the analysis involved the construction of a  
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14 thematic framework, whereby overarching themes were derived deductively from the interview  
15  
16 questions. For example, the overarching theme: “Decision to choose a career path as an MSK  
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18 FCP”, was formulated from the interview question: “What led to your decision to pursue a career  
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20 path as a first contact physiotherapist in primary care”? In contrast, all the subthemes, which  
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22 were arranged under relevant overarching themes, were generated inductively from participants’  
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24 responses to the interview questions. The thematic framework was then used to systematically  
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26 code (indexing) the data. This led to the ‘charting’ stage, where charts were created in Excel for  
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28 each of the overarching themes and their related subthemes. The charts that were associated with  
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30 the research question in this paper included: 1) Decision to choose a career path as an MSK  
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32 FCP; 2) Relevancy of pre-registration PT education for MSK FCP; 3) Relevancy of post-  
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34 registration continuing professional development for MSK FCP; and 4) Improving pre-  
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36 registration PT education for the foundational knowledge and skills to work in musculoskeletal  
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38 first contact physiotherapy.  
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44 Any segment of interview data in NVivo, which was connected to a particular overarching  
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46 theme, subtheme and participant number was succinctly summarized and transferred into the  
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48 relevant cell of the appropriate chart. This process has been described as a thematic approach to  
49  
50 charting (Richie and Spencer, 1994). “Mapping and interpretation” were the last step in the  
51  
52 framework analysis, where the scope and nature of the interview data was examined as a whole.  
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55 The first author gave comprehensive feedback to the second author at the conclusion of each  
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57 stage of the framework analysis. Any differences in opinion between the two authors about the  
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3 interpretation of the interview data were discussed until a consensus was attained. This feedback  
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5 process strengthened the overall validity of the analysis. Both authors crosschecked the themes  
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7 and subthemes, which emerged from the framework analysis at a Chartered Society of  
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9 Physiotherapy, East of England regional network event for musculoskeletal first contact  
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11 physiotherapists (03/09/2019). This constituted a form of member checking by proxy (Bassett,  
12  
13 de Souza, Williams, and Lempp, 2018). As well as MSK FCPs, the event was also attended by  
14  
15 those with an interest in first contact physiotherapy. This included organizational directors and  
16  
17 managers of services, representatives from the Chartered Society of Physiotherapy, and PTs,  
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19 who had an interest in becoming a first contact physiotherapist. None of the themes or subthemes  
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21 were modified after this cross-checking process.  
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## 26 **RESULTS**

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28 There were 15 MSK FCPs in this study. Over half of the sample were female ( $n = 8$ ) – and the  
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30 age range was 25-55 years of age. The number of years since graduation ranged from 4.5 - 38  
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32 years. Length of time working as an MSK FCP ranged from just started at the time of the study  
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34 to 4.8 years. Participants were represented from Scotland ( $n = 1$ ) and Wales ( $n = 3$ ) and from all  
35  
36 regions in England ( $n = 11$ ). As shown in Table 1, thirteen of the participants had some form of  
37  
38 post-registration accredited academic qualification that was applicable to their work in  
39  
40 musculoskeletal first contact physiotherapy, whilst two participants were working towards such a  
41  
42 qualification. The post-registration degree profile of the MSK FCP participants is typical of  
43  
44 advanced practice physiotherapy in the United Kingdom, where advanced practice  
45  
46 physiotherapists are expected to have undertaken postgraduate study, in order to develop their  
47  
48 expertise (Gamlin, Raymer, and Lewis, 2015). In addition, Table 1 shows that six of the  
49  
50 participants held other qualifications, which they described as relevant to their MSK FCP role.  
51  
52 The majority ( $n = 13$ ) of participants worked as an MSK FCP within a medical general practice,  
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54 while two of the participants were MSK FCPs in an emergency department.  
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(insert Table 1 here)

The four overarching themes with their related subthemes are illustrated in Table 2. Furthermore, the frequency ( $n =$ ) with which a particular subtheme was reported across the sample of participants is cited in Table 2. This cannot provide the basis for making statistical inferences to the wider MSK FCP population in Britain but presenting the frequency ( $n =$ ) shows the prevalence of subthemes in the interview data (Seale, 1999). Quotations from the telephone interviews are used to highlight the overarching themes and their subthemes. Each quote is connected to its participant number.

(insert Table 2 here)

### Theme 1: Decision to Choose a Career Path as an MSK FCP

In the telephone interviews, participants were asked about their motivations for choosing a career path into musculoskeletal first contact physiotherapy. For most of the participants, there were several reasons for why they had chosen this particular career trajectory. However, the opportunity to advance career was the most prevalent subtheme under the overarching theme one.

*I had been working as a Band 7 MSK physio for the last twelve years. And I was a clinic lead in one of our satellite sites. So, apart from that, there is no real career progression apart from doing a management role. So, from the pure clinical side, that [MSK FCP] role has actually provided me with a career opportunity to progress on.... I needed a bit of a change in environment, just to keep my interests up. (Participant 4)*

For a third of the participants, a primary reason for choosing a career path into MSK FCP, was that it allowed them to apply a variety of different extended scope skills.

*For me, it was probably more of an interest in developing extended scope practitioner skills... such as doing injection therapy, prescribing and getting more involved in the imaging and radiology... So, there are lots of opportunities to expand and develop in*

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3 *different areas that I may not have been traditionally doing in secondary care.*

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6 *(Participant 10)*

7  
8 Another motivation to become an MSK FCP was to improve patient outcomes at the frontline of  
9  
10 primary care. In the next interview narrative, the participant describes how MSK FCP has a  
11  
12 positive influence on preventing unnecessary patient referrals and can ensure a more efficient  
13  
14 care pathway for patients.  
15

16  
17 *On the basis of research, we [MSK FCPs] need to be in the GP surgery seeing these*  
18  
19 *patients rather than them seeing GPs... and also because the referrals that you can get*  
20  
21 *from GPs, or the referrals from other healthcare professionals are not as good as they*  
22  
23 *could be... So, the first contact role would ensure a smoother [patient care] pathway.*

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26 *(Participant 7)*

## 27 28 Theme 2: Relevancy of Pre-Registration Physiotherapy Education for MSK FCP

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30 One of the interview questions focused on whether the participant's own pre-registration PT  
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32 education had given them the foundational knowledge and skills, which are required to work in  
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34 musculoskeletal first contact physiotherapy. For the majority of participants, their own pre-  
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36 registration education had little relevance to their role as a musculoskeletal first contact  
37  
38 physiotherapist. In the following interview account, a participant, who had graduated as a PT  
39  
40 nine years ago, suggested that when they undertook their pre-registration education, there had  
41  
42 been no focus on PT in primary care.  
43  
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46  
47 *Well, we [students] didn't touch on primary care, as it was all acute hospital based. So, I*  
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49 *don't think it has prepared me for the [MSK] FCP role. It was about looking at hospital-*  
50  
51 *based physiotherapy... I certainly would not have known about primary care being a*  
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53 *place where physiotherapists have had an impact at the time, I was doing my pre-*  
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55 *registration training. (Participant 13)*  
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3 A few participants questioned about whether it was suitable to introduce PT students to the  
4  
5 knowledge and skills of an MSK FCP at pre-registration level.  
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8 *It is difficult to say what I should have had in terms of pre-reg education, because the*  
9  
10 *question is, is that appropriate for that level of training? Or is it something that you*  
11  
12 *would pick up after you graduate? (Participant 11)*  
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14  
15 Despite it being repeatedly mentioned that participants' pre-registration PT education was of  
16  
17 limited relevance to MSK FCP, a few of the participants talked about how their undergraduate  
18  
19 studies had given them some relevant skills for FCP, such as how to conduct a subjective and  
20  
21 objective PT assessment.  
22

23  
24 *The pre-reg teaching gives you a good grounding in assessment generally - and it gives*  
25  
26 *you the basic structure of how to conduct an interview or an assessment subjectively and*  
27  
28 *objectively. So being able to speak to patients - and in how to ask them questions - and*  
29  
30 *how to listen to them actively. It is that gaining of basic information. And then the same*  
31  
32 *for a physical assessment point of view. It gives you the basics of this is how you want to*  
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34 *structure a physical examination... (Participant 1)*  
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38 Some participants stated that their knowledge of anatomy and physiology, which they had  
39  
40 acquired through their pre-registration education was essential for working in a first contact role.  
41

42  
43 *I think it [pre-registration education] was quite a biological and disease based good*  
44  
45 *foundation, with a lot of anatomy and physiology in the first year and that type of thing.*  
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47 *(Participant 6)*  
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### 49 Theme 3: Relevancy of Post-Registration Continuing Professional Development for MSK FCP

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51 The third question in the interview schedule section: "reflections on professional development",  
52  
53 was about participants' post-registration continuing professional development - and how it was  
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55 relevant to their current practice as a musculoskeletal first contact physiotherapist. For most of  
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57 the participants, the undertaking of postgraduate courses was integral to the role of  
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3 musculoskeletal first contact physiotherapy. In particular, through the completion of  
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5 postgraduate courses, participants developed their clinical skills in areas such as diagnostic  
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7 imaging, injection therapy, independent non-medical prescribing and clinical reasoning.  
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12 *So, lots of the master's modules have been really fundamentally helpful, in terms of me*  
13  
14 *doing part of my [MSK FCP] job role at the moment. Particularly, with having skills like*  
15  
16 *injection therapy, which allows me to manage patients without onward referral into*  
17  
18 *secondary care... So, I can manage that in the primary care setting... Also learning*  
19  
20 *about prescribing and pharmacology has provided me with the skills that I need about*  
21  
22 *what advice I should be giving to patients about medication. (Participant 10).*  
23  
24

25  
26 *So, the MSK assessment one [a postgraduate module] and the advanced assessment one*  
27  
28 *that I studied have firmed up my reasoning process. Rather, than changing the way that I*  
29  
30 *practice, it is more that it has confirmed my reasoning process for me. (Participant 1)*  
31  
32

33 Many of the participants discussed at length their post-registration work experience and how it  
34  
35 had informed their practice as musculoskeletal first contact physiotherapists. In particular,  
36  
37 previous experience of being mentored by senior healthcare professionals, such as advanced  
38  
39 practice PTs were seen as important to the development of knowledge and skills for  
40  
41 musculoskeletal first contact physiotherapy. In the next interview extract, the participant  
42  
43 reflected on their mentorship by a medical general practitioner.  
44  
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46  
47 *Post-registration for FCP has been mainly on the job learning and training sessions with*  
48  
49 *the GP mentors that I have had.... He [GP] would come in, and he would discuss every*  
50  
51 *case with me after I had seen the patient.... And he would look at my clinical reasoning*  
52  
53 *and he would question me.... I think it is always good to actually be further questioned*  
54  
55 *and to explore your clinical reasoning. (Participant 8)*  
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3 Other aspects of relevant post-registration work experience were rotating PT posts across  
4 different clinical areas (e.g. cardiorespiratory, neurology). As the following interview account  
5  
6 illustrates, the experience of clinical rotations in different core areas of PT were perceived as  
7  
8 vital preparation for dealing with the complexities of patient presentations in musculoskeletal  
9  
10 first contact physiotherapy.  
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14  
15 *For me, it was when I was working in the rotations and doing the core areas of physio.*

16  
17 *The knowledge of all those core areas, means you are not fazed when a patient presents*  
18  
19 *with comorbidities. (Participant 7)*  
20

21 Having worked in chronic pain management was another relevant post-registration work  
22 experience, which informed the role of musculoskeletal first contact physiotherapy. As the next  
23 interview extract highlights, this experience was important for the development of  
24 pharmacological knowledge.  
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30 *I started to pick up this [pharmacological knowledge] when I started to work in the*  
31  
32 *chronic pain management team. So, you might be in a clinic where you will see patients*  
33  
34 *and advise it [medication] to the patients.... it is having that background knowledge*  
35  
36 *about your quantitative indications [dosage] and about how these drugs interact.*  
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39  
40 *(Participant 4)*  
41

42 In some of the interviews, it was reported that self-directed independent learning and  
43 professional development was relevant to the role of musculoskeletal first contact physiotherapy.  
44 This included continuing professional development, which was unconnected to the completion of  
45 accredited academic qualifications. Rather, this subtheme was about participants' motivation to  
46 expand their knowledge base. The following interview quotation exemplified how independent  
47 learning was critical for keeping up to date with the evolving evidence base, such as the  
48 identification of red flags in clinical practice.  
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3 ... I have done quite a lot around spotting red flags through courses and those sorts of  
4 things. So very much assessment, red flags and differential diagnosis being the three key  
5 things, which I have gained information about through doing courses... Some of them  
6 were courses that were offered by experts in the field as it were, or through conferences.  
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12  
13 (Participant 1)

#### 14 Theme 4: Improving Pre-Registration Physiotherapy Education for the Foundational Knowledge 15 and Skills Required to Work in MSK FCP

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18 The final question in the interview schedule section: “reflections on professional development”,  
19 was about how each participant’s own pre-registration PT education could have prepared them  
20 better for the foundational knowledge and skills required for musculoskeletal first contact  
21 physiotherapy. A good many of the participants noted that their own pre-registration PT  
22 education would have informed their current role as MSK FCPs, if there had been more content  
23 in the curriculum on the identification of red flags and masquerading pathologies.  
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32 *I definitely think more teaching on things, such as masquerading pathologies. So MSK*  
33 *pathologies and masquerading pathologies and chronic pain. Probably, more on serious*  
34 *spinal pathology. Again, picking up things like metastasis and cancerous tumors. And*  
35 *about the many different cancers that are likely to metastasize, such as lung, thyroid,*  
36 *kidney and prostate... Having a bit more of an awareness of that I think would be useful,*  
37 *and particularly, if you are looking to do first contact physiotherapy. (Participant 10)*  
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46 Some participants mentioned that their own pre-registration PT education could have prepared  
47 them better for MSK FCP, if it had provided them with a placement in a primary healthcare  
48 setting.  
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52 *I think that it would have been good, if in my own pre-registration physiotherapy*  
53 *education there had been some primary care experience. (Participant 6)*  
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3 participant described how they were denied an opportunity in their undergraduate studies to  
4  
5 experience a primary care placement, because of the traditional emphasis in pre-registration PT  
6  
7 education on providing student placements in secondary care contexts.  
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10 *... there could have been an observational opportunity in this [primary care]*  
11 *environment, because everything that we did [pre-registration education] was pretty*  
12 *much in an acute [hospital] trust. And physiotherapy at the minute is moving towards*  
13 *primary care rather than into secondary care. There was not really anything in primary*  
14 *care when I was there at university. I think it is just exposure to what it [primary care]*  
15 *looks like – and to the different people [healthcare professionals] that you will meet and*  
16 *that. (Participant 14)*  
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26 In the interview account above, the participant suggests that exposure to a primary care  
27  
28 environment would have provided them with invaluable experience of what it was like to work  
29  
30 with other primary healthcare professionals. A focus on clinical reasoning was also brought up  
31  
32 by the participants, as something that was missing from their pre-registration PT education, but  
33  
34 which would have readied them for the complexity of patient presentations seen in primary care  
35  
36 settings.  
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40 *... we had very little around clinical reasoning. You know? It was very much that this is*  
41 *what it is. But there are so many different patient scenarios that present to you in a*  
42 *primary care situation. You have to have the clinical reasoning to make the correct*  
43 *clinical diagnosis. (Participant 9)*  
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49 Several participants felt that their pre-registration PT education would have been more relevant  
50  
51 for the skills and knowledge required for MSK FCP, if there had been educational content on  
52  
53 health promotion and learning behavioral change interventions.  
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56 *I never had [pre-registration education] things like motivational interviewing, which I*  
57 *think is incredibly very important, because we are trying to change people's perceptions*  
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3 *and we are trying to get them to take responsibility for their health and education... So,*  
4 *for me, it is about motivation and communication. Being able to identify people's*  
5 *perceptions and to change those perceptions. (Participant 9)*  
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10 As the next participant acknowledges, their pre-registration PT education was based on a reactive  
11 treatment orientated approach rather than being encouraged to view patients' presenting  
12 problems through a biopsychosocial perspective.  
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17 *There should be lot more of a focus in undergraduate education on health and well-being*  
18 *and looking at patients' general health. But when I did my pre-registration education, we*  
19 *[students] had none of that. It was very treatment focused – and it had less on taking a*  
20 *more holistic view of the patient. (Participant 12)*  
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## 26 **DISCUSSION**

### 27 **Comparing the Findings from Theme 1 with Previous Literature**

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31 “Opportunity to advance career” was the most prevalent subtheme to emerge under the  
32 overarching theme 1: “Decision to choose a career path as a musculoskeletal first contact  
33 physiotherapist”. A qualitative study of MSK FCPs in two large municipal healthcare  
34 organizations in Finland also indicated that FCP was seen as a career advancement (Karvonen et  
35 al, 2019).  
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42 “An opportunity to extend the scope of physiotherapy practice” was another subtheme, which  
43 was connected to the overarching theme 1: “Decision to choose a career path as a  
44 musculoskeletal first contact physiotherapist”. Not only was the role of MSK FCP an attractive  
45 career option, but it also allowed our participants to apply and develop advanced practice PT  
46 skills (Chartered Society of Physiotherapy, 2016). Similarly, a national online survey of  
47 advanced MSK PTs in Ireland, found that the opportunity to use knowledge and skills, which  
48 were beyond the capacity of a traditional PT role, was viewed as an appealing characteristic of  
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3 accreditation, signaled a sea change in the educational focus of PT education (Chartered Society  
4 of Physiotherapy, 2015a). More specifically, an emphasis was placed on the preparation of  
5 students for the transition in health service provision from acute based PT care to the delivery of  
6 PT services in primary healthcare settings.  
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11 For some of the participants, MSK FCP is an advanced area of practice, with knowledge, -skills  
12 and attributes that can only be mastered through the accumulation of clinical experience and the  
13 completion of appropriate postgraduate qualifications. The capabilities required for MSK FCP  
14 were described in previous research as: a capacity to think quickly in uncertain clinical  
15 environments; a possession of medical assessment and systems knowledge; a comprehensive  
16 understanding of person-centered care and patient management; clinical responsibility and  
17 experience; interpersonal and communication skills, and; an ability to deal with complex patient  
18 presentations in time-restricted appointment slots (Langridge, 2019). However, the  
19 “Musculoskeletal core capabilities framework” recommended that both pre-and-post-registration  
20 educational providers can use the framework to inform curriculum design, such as the framing of  
21 intended learning outcomes (Skills for Health, 2018). Thus, the foundational knowledge and  
22 skills required for MSK FCP can be embedded within pre-registration PT degree programs  
23 (Withers, 2019). It is important to note that the research by Langridge (2019) was a qualitative  
24 study of the MSK FCP clinical role, while the “Musculoskeletal core capabilities framework”  
25 details the development of professional competencies for musculoskeletal first contact  
26 physiotherapy (Skills for Health, 2018).  
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49 “Developed skills in how to conduct a physiotherapy assessment” was the second subtheme  
50 connected to the overarching theme 2: “Relevancy of pre-registration physiotherapy education  
51 for musculoskeletal first contact physiotherapy”. In particular, some of the participants suggested  
52 that their undergraduate education had given them the skills to conduct subjective and objective  
53 PT assessments. Taking a full subjective history of a patient’s symptoms and carrying out a  
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3 physical assessment are expected capabilities of a musculoskeletal first contact physiotherapist  
4  
5 (Skills for Health, 2018). Communication skills are essential for subjective assessments in  
6  
7 primary care, as patients may be in the early stages of the disease process – and these skills  
8  
9 should form an important part of the pre-registration PT curriculum (McMahon et al, 2016a).

10  
11 “Knowledge of anatomy and physiology” was the third subtheme under overarching theme 2.  
12  
13 More specifically, knowledge of anatomy and physiology, which was initially learnt during the  
14  
15 formative years of pre-registration education was regarded by several participants, as  
16  
17 fundamental to their clinical work as musculoskeletal first contact physiotherapists. What is  
18  
19 important, is having the competence to use this theoretical understanding in various areas of  
20  
21 practice, such as in palpitation or in a clinical examination (Duman et al, 2017).

### 22 Comparing the Findings from Theme 3 with Previous Literature

23  
24 Three subthemes emerged for the overarching theme 3: “Relevancy of post-registration  
25  
26 continuing professional development for musculoskeletal first contact physiotherapy”.  
27  
28 “Undertaken postgraduate courses relevant to the role of MSK FCP”, was the most prevalent  
29  
30 subtheme for theme 3. ‘Ad hoc’ work integrated learning, accredited specialized training  
31  
32 courses, and formalized masters’ degree programs and taught postgraduate level modules were  
33  
34 identified in a systematic review, as training strategies that have been developed for extended  
35  
36 scope roles (Saxon, Gray, and Oprescu, 2014). These strategies were reflected variously in the  
37  
38 interview accounts of the MSK FCP participants. Postgraduate qualifications in injection  
39  
40 therapy, independent non-medical prescribing and diagnostic imaging in particular, were  
41  
42 advanced practice PT skills, which the participants had developed through academic study. A  
43  
44 recent survey of 102 MSK FCP services in the UK, showed that the majority of musculoskeletal  
45  
46 first contact physiotherapists in these services could carry out injections (67%) and request  
47  
48 diagnostic imaging (86%) (Walsh, 2019). In addition, 41% of the survey sample were able to  
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50 independently prescribe. The variation in the advanced practice PT qualifications held by the  
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3 MSK FCP participants indicates a clear need for a national accredited training program for  
4 advanced practice PT roles, such as musculoskeletal first contact physiotherapy (Saxon, Gray,  
5 and Oprescu, 2014). Ongoing training and support of existing FCPs should also be a priority  
6 (Saxon, Gray, and Oprescu, 2014)- and moves to create such educational opportunities are being  
7 planned in the United Kingdom (Bassett and Kerry, 2019; Skills for Health, 2018).  
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14 “Post-registration work experience” was the second subtheme connected to the overarching  
15 theme 3: “Relevancy of post-registration continuing professional development for  
16 musculoskeletal first contact physiotherapy”. The MSK FCP participants recalled how the time  
17 spent in rotations in different core areas of PT had benefited their current clinical practice as first  
18 contact physiotherapists. Musculoskeletal first contact physiotherapy is a first contact role that  
19 must necessarily encompass all the core areas of physiotherapy (Langridge, 2019). No pre-  
20 existing research could be found on the importance of core rotations for professional  
21 development into advanced practice PT roles, such as musculoskeletal first contact  
22 physiotherapy. However, Naylor’s (2007) qualitative research on newly qualified PTs, did find  
23 that the experience of core rotations helped to facilitate physiotherapeutic, communication and  
24 time management skills. An understanding of pharmacology - and particularly, of drug  
25 interactions has been highlighted in previous research as a knowledge requirement for MSK FCP  
26 (Langridge, 2019) and for PTs in advanced practice roles more generally (Wiles and Milanese,  
27 2016). Apart from the completion of accredited training in independent non-medical prescribing,  
28 our study showed that the experience of a chronic pain management role helped the cultivation  
29 of pharmacological knowledge. Clinical mentorship by medical general practitioners or  
30 advanced practice PTs was another type of post-registration work experience, which helped  
31 participants develop the relevant knowledge and skills for musculoskeletal first contact  
32 physiotherapy. Similarly, a qualitative study of extended scope PTs in Australia, highlighted that  
33 clinical mentorship programs with medical professionals were important for the continuing  
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3 professional development of extended scope physiotherapists (Wiles and Milanese, 2016).  
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5 However, in our study of MSK FCPs, when mentoring was brought up during the course of an  
6  
7 interview, it seemed to be an ad hoc arrangement, rather than as part of a formalized clinical  
8  
9 mentorship program. Formalized mentorship programs are an established part of medicine,  
10  
11 where they have been shown to help with career development and the attainment of clinical  
12  
13 knowledge and skills (Nimmons, Giny, and Rosenthal, 2019).  
14  
15

16  
17 “Independent learning and professional development” were the third subtheme connected to the  
18  
19 overarching theme 3. The MSK FCP participants were what the Chartered Society of  
20  
21 Physiotherapy has described as autonomous and critical learners (Chartered Society of  
22  
23 Physiotherapy, 2015b). These learners demonstrate this professional behavior by attending  
24  
25 conferences and short courses on topics, such as the clinical assessment of red flags - and  
26  
27 through reading the evolving evidence base for their practice. The “Musculoskeletal core  
28  
29 capabilities framework” has also suggested that first contact practitioners inform their clinical  
30  
31 practice and continuing professional development by remaining up to date with evidence-based  
32  
33 practice from clinical guidelines and academic research (Skills for Health, 2018). In addition,  
34  
35 guidance for advanced practice in PT has emphasized the importance of lifelong learning and the  
36  
37 independent advancement of personal knowledge and skills, in accordance with individual  
38  
39 learning needs (Chartered Society of Physiotherapy, 2016).  
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#### 44 Comparing the Findings from Theme 4 with Previous Literature

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47 Four subthemes were connected to the overarching theme 4: “Improving pre-registration  
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49 physiotherapy education for the foundational knowledge and skills required to work in  
50  
51 musculoskeletal first contact physiotherapy”. “Identifying red flags” was a subtheme to emerge  
52  
53 under theme 4. Red flags have been defined as “prognostic variables for serious pathology”,  
54  
55 which could indicate “benign or malignant tumor, infection, fracture or cauda equine syndrome”  
56  
57 (Greenhalgh and Selfe, 2009, pg. 223). The identification of red flags is intrinsic to the safe  
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3 clinical practice of an MSK FCP, as patients, who present to FCP have not been prescreened for  
4 serious pathology by a medical professional (Langridge, 2019). An evaluation of an MSK FCP  
5 service at a healthcare center in Sweden underlined the significance of red flags for FCPs, in that  
6 serious pathology was found in 6% of the patients referred by PTs to medical general  
7 practitioners for further evaluation (Ludvigsson and Enthoven, 2012). An online questionnaire  
8 study of PTs in the United Kingdom supported our finding that more educational importance  
9 needs to be attached to the identification of red flags (Ferguson, Morison, and Cormac, 2015).  
10 The results of this questionnaire revealed that while red flags were generally defined by PTs, in  
11 accordance with clinical guidelines, there was a lack of agreement about how PTs asked red flag  
12 questions in clinical practice. Given the aforementioned role of PTs as primary assessors of red  
13 flags in first-point-of-contact services (Langridge, 2019), ongoing education on the identification  
14 of masquerading pathologies at pre-and post-registration levels is imperative for patient safety  
15 (Ferguson, Holdsworth, and Rafferty, 2010).

16  
17 Both the Chartered Society of Physiotherapy's "Learning and Development Principles" and its  
18 response to the recently published "National Health Service Long Term Plan" recommended that  
19 the organization of practice-based education should reflect the shift of PT practice into primary  
20 healthcare (Chartered Society of Physiotherapy, 2015a, 2019). "Opportunities to undertake  
21 placements in primary healthcare settings" was another subtheme to emerge under the  
22 overarching theme 4: "Improving pre-registration physiotherapy education for the foundational  
23 knowledge and skills required to work in musculoskeletal first contact physiotherapy". This  
24 finding is supported by McMahon et al. (2016b), who used structured group feedback sessions  
25 with final year PT students across four higher education institutions in Ireland, in order to  
26 explore how well their pre-registration PT education prepared them to work in primary  
27 healthcare. All of the feedback sessions identified a lack of primary care placement provision as  
28 a significant curricular deficit. However, as McMahon et al. (2016b) note, primary care  
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3 placement opportunities are essential for the acquisition of professional and clinical skills, which  
4 are specific to that service setting, such as the ability to work within a multidisciplinary primary  
5 healthcare team. The MSK FCP participants in our study also suggested that there was a  
6 traditional orientation in pre-registration PT education towards the provision of clinical  
7 education in acute secondary care settings. This finding is corroborated by research data from  
8 Australia (Dean et al, 2009) and Ireland (McMahon, Waters, Cusack, and O'Donoghue, 2014),  
9 which have shown that the majority of pre-registration clinical education in these two countries  
10 took place in acute services in large public hospitals. Entrenched barriers to primary care  
11 placement provision may be seen as more difficult to negotiate, where these placements have not  
12 formed part of the institutional culture of PT education (Davies, Hanna, and Cott, 2011). To help  
13 ensure that there is a sustainable supply of primary care placements, will require cooperation  
14 between higher education schools of PT, primary healthcare providers, and those healthcare  
15 professionals, who work in these service settings (Stainsby and Bannigan, 2012).

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33 “A focus on clinical reasoning” was the third subtheme, which arose from theme 4. Clinical  
34 reasoning can be defined as “the thinking and decision-making processes that are used in clinical  
35 practice” (Langridge, Roberts, and Pope, 2015a, pg. 745). In the present study, some of the  
36 participants mentioned that their own pre-registration PT education could have better informed  
37 their role as an FCP, if there had been a focus on skills in clinical reasoning. Clinical reasoning is  
38 the foundation for autonomous and competent practice but is a difficult skill to teach and learn  
39 (Sole, Skinner, Hale, and Golding, 2019). A Delphi study in New Zealand, identified the main  
40 elements, which academic PT teaching staff perceived as important for teaching clinical  
41 reasoning skills at pre-registration level (Sole, Skinner, Hale, and Golding, 2019). The elements  
42 were a patient-centered collaborative approach, the use of “The World Health Organization  
43 International Classification of Function” (2002) in order, to collect and interpret information  
44 from the patient and to plan and carry out management strategies, and an emphasis on  
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3 hypothetico-deductive reasoning. Pattern recognition and professional intuition, which have been  
4  
5 shown to underpin the clinical reasoning processes of FCPs are learnt through increased clinical  
6  
7 exposure (Langridge, 2019; Langridge, Roberts, and Pope, 2015a, b).  
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10 “Educational content on health promotion and behavioral change interventions” was the final  
11  
12 subtheme, which was identified within the overarching theme: “Improving pre-registration  
13  
14 physiotherapy education for the foundational knowledge and skills required to work in MSK  
15  
16 FCP”. Similarly, an international study of PT educators and primary healthcare PTs (McMahon  
17  
18 et al, 2016a) recommended that pre-registration training should prepare students for primary care  
19  
20 roles by introducing them to the “expanded chronic care model” (Barr et al, 2003) and the  
21  
22 facilitation of patient self-management. It has been argued that the knowledge and skills to  
23  
24 promote behavioral change must be recognized as a clinical competency of PT practice  
25  
26 (McGrane, Cusack, O’Donoghue, and Stokes, 2014). To become proficient in behavioral change  
27  
28 strategies, such as motivational interviewing will require training that is informed by evidence-  
29  
30 based practice (McGrane, Cusack, O’Donoghue, and Stokes, 2014).  
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### 35 Suggestions for Further Research

36  
37 The present study was limited to the perspectives of MSK FCPs based in Britain. Therefore, we  
38  
39 suggest that further research should examine and compare the professional developmental  
40  
41 journeys into FCP in other countries. A survey of member organizations of the “World  
42  
43 Confederation for Physical Therapy” within the European Union, found that direct access to PT  
44  
45 in the public sector was permitted in three other countries (Bury and Stokes, 2013). For example,  
46  
47 Sweden has PTs that provide first-point-of contact assessment in primary healthcare for patients  
48  
49 presenting with MSK disorders (Ludvigsson and Enthoven, 2012). In addition, as the FCP model  
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51 is embraced beyond the assessment and management of MSK FCP, such as in first-line advice  
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53 and management of long-term conditions (Cole, 2019), research should explore the professional  
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55 developmental journeys of PTs into these emerging roles.  
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### Methodological Strengths and Limitations

The findings discussed in this paper provide an in-depth and unique insight on the professional developmental journey into MSK FCP - and how pre-registration PT education can equip students with the foundational knowledge and skills that are required to work in this role. The criteria of creditability, dependability and transferability are integral to qualitative research design, as they indicate the overall trustworthiness of a research study (Korstjens and Moser, 2018). We met the criterion of credibility, through the provision of detailed information on methodology, sampling, data collection and analysis. In addition, the technique of member checking by proxy, further strengthened the credibility of the findings (Bassett, de Souza, Williams, and Lempp, 2018).

The dependability of the research was enhanced by the comprehensive feedback process between the first and second authors, which was carried out at each stage of the framework analysis. Findings from this qualitative study cannot be generalized, as they were based on non-probability sampling strategies. However, the contextual depth of the interview accounts should assist MSK FCPs in deciding whether the findings are translatable to their own professional developmental journey into first contact physiotherapy. The sample size of 15 participants was within accepted parameters for qualitative interview research (Creswell, 2012; Morse, 1994) - and no new data needed to be collected after this point, as thematic saturation was reached (Fusch and Ness, 2015).

The advantage of using telephone interviews for this study was that it allowed access to a geographically dispersed sample of MSK FCPs, which would not have been feasible with face-to-face interviews (Novick, 2008). In addition, previous research has shown that participants with a busy schedule were more likely to take part in a telephone interview, as it was more practical to rearrange than a face-to-face interview (Cachia and Millward, 2011). This was an important consideration, as the MSK FCP participants had demanding and heavy clinical

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3 workloads. A limitation of conducting interviews over the telephone was that any visual cues  
4 from the participants were lost (Novick, 2008). However, the focus of the telephone interviews  
5 was on the thematic content of participants' responses.  
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10 The research had some methodological limitations. Firstly, the study was underpinned by the  
11 single data collection method of semi-structured interviews. Gathering data through more than  
12 one method of data collection, which is known as methodological triangulation would have  
13 strengthened the validity of the findings further (Korstjens and Moser, 2018). However, the short  
14 timescale of the study meant that it was not feasible to use more than one method to elicit data  
15 from the participants. Furthermore, the reliance on one means of data collection was mitigated by  
16 the fact that the qualitative method of semi-structured interviews was the most appropriate  
17 method to collect data, given the explorative nature of the research study (Green and Thorogood,  
18 2018). In addition, the semi-structured interviews with the MSK FCPs generated detailed  
19 responses from the participants - and they allowed the interviewer to follow up on comments and  
20 to clarify their meaning (DeJonckheere and Vaughn, 2019). Self-completion questionnaires were  
21 not a suitable method, as it has been reported that respondents tend not to give detailed responses  
22 to open questions in such surveys (Bryman, 2016).  
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40 Secondly, the possibility of bias in the research findings cannot be ruled out, as the sampling  
41 techniques were based on self-selection (Norris, 1997). There was, however, no sampling frame  
42 to select MSK FCP participants from, and our sampling strategies did enable us to include the  
43 perspectives of MSK FCPs from all regions of England and also from the countries of Scotland  
44 and Wales. No MSK FCPs from Northern Ireland volunteered to take part in the study despite  
45 efforts to recruit participants from this location. Thirdly, the interviews were of relatively short  
46 duration considering the breadth of topics covered in the telephone interviews. However, the  
47 timescale of the interviews was explained by the factual and focused nature of the questions in  
48 the interview schedule.  
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## **CONCLUSION**

This is the first research study to our knowledge, which explored the pre-and-post- registration professional developmental journey into musculoskeletal first contact physiotherapy. The “Musculoskeletal core capabilities framework” recommended that the knowledge, skills and capabilities, which are detailed in the framework can be used to inform learning and professional development at pre-and-post-registration (Skills for Health, 2018). However, the framework does not specify exactly how students or practicing PTs can obtain these knowledge, skills and capabilities through their pre-and-post-registration learning and education. Our telephone interviews identified what relevant (or lack of relevant) knowledge and skills were acquired for the role of MSK FCP at pre-and-post-registration levels. In addition, the findings about how the participants’ own pre-registration PT education could have better prepared them for the MSK FCP role will inform guidance for pre-registration PT curriculum development. This will help to ensure that pre-registration education provides the foundation for learning the knowledge and skills required to work in first contact physiotherapy. Existing advanced practice PTs are taking up MSK FCP roles in the United Kingdom, but the present study explains the actual motivations for pursuing a career pathway into musculoskeletal first contact physiotherapy (Chartered Society of Physiotherapy, Royal College of General Practitioners, and BMA, 2018). To expand the findings beyond the British context, it will be necessary to examine and compare the professional developmental journeys into this direct access model of PT that operates in the public sector of several other European countries (Bury and Stokes, 2013).

## **Declaration of Interest**

The authors report no conflict of interest.

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Table 1. Participants' Qualifications

Participant #	Postgraduate Physiotherapy Qualifications	Other Relevant Qualifications for MSK FCP
1	<ul style="list-style-type: none"> <li>Working towards a Master of Science Advanced Clinical Practice</li> </ul>	N/A
2	<ul style="list-style-type: none"> <li>Master of Science (Pre-Registration) Physiotherapy</li> </ul>	<ul style="list-style-type: none"> <li>Fellow of Higher Education Academy</li> </ul>
3	<ul style="list-style-type: none"> <li>Master of Science Musculoskeletal Physiotherapy</li> <li>Postgraduate Diploma Sport and Exercise Injury Management</li> <li>Postgraduate Diploma Musculoskeletal Ultrasound</li> <li>Postgraduate Diploma Injection Therapy</li> </ul>	<ul style="list-style-type: none"> <li>Level 4 Award, Certificate and Diploma in Leadership and Management</li> </ul>
4	<ul style="list-style-type: none"> <li>Master of Science Level Module: Injection Therapy</li> <li>Master of Science Level Module: Advanced MSK Assessment</li> </ul>	<ul style="list-style-type: none"> <li>Chris McCarthy Combined Movement Theory</li> <li>Lumber Spine Muscle Energy Technique</li> <li>Jeremy Lewis The Shoulder Symptom Modification Procedure</li> </ul>
5	<ul style="list-style-type: none"> <li>Master of Science Advanced Clinical Practice</li> <li>Master of Science Trauma and Orthopedics</li> </ul>	N/A
6	<ul style="list-style-type: none"> <li>Master of Science Trauma and Orthopedics</li> <li>Postgraduate Certificate Independent Non-Medical Prescribing</li> </ul>	N/A
7	<ul style="list-style-type: none"> <li>Postgraduate Certificate Independent Non-Medical Prescribing</li> <li>Master of Science Level Module: Management of Complex Patients</li> <li>Master of Science Level Module: Injection Therapy</li> </ul>	N/A
8	<ul style="list-style-type: none"> <li>Master of Science Advanced Clinical Practice</li> <li>Postgraduate Certificate Leadership</li> <li>Master of Science Level Module: Injection Therapy</li> <li>Master of Science Level Module: Independent Non-Medical Prescribing</li> </ul>	N/A
9	<ul style="list-style-type: none"> <li>Master of Science Sports Physiotherapy</li> <li>Postgraduate Certificate Health Services Management</li> <li>Master of Science Level Module: Independent Non-Medical Prescribing</li> <li>Master of Science Level Module: Injection Therapy</li> </ul>	<ul style="list-style-type: none"> <li>Acupuncture Qualification</li> </ul>
10	<ul style="list-style-type: none"> <li>Working towards a Master of Science Advanced Musculoskeletal Examination and Assessment (Imaging)</li> </ul>	N/A
11	<ul style="list-style-type: none"> <li>Postgraduate Diploma Orthopedic Medicine</li> <li>Postgraduate Diploma Injection Therapy</li> </ul>	<ul style="list-style-type: none"> <li>Fellowship in Orthopedic Medicine</li> </ul>
12	<ul style="list-style-type: none"> <li>Master of Science Sports Injury Management</li> </ul>	N/A
13	<ul style="list-style-type: none"> <li>Master of Science Pain Management</li> <li>Postgraduate Diploma Independent Non-Medical Prescribing</li> </ul>	N/A
14	<ul style="list-style-type: none"> <li>Master of Science Level Module: Injection Therapy</li> </ul>	<ul style="list-style-type: none"> <li>Clinical Educators Course</li> </ul>
15	<ul style="list-style-type: none"> <li>Master of Science Musculoskeletal Physiotherapy</li> </ul>	N/A

Table 2. Overarching Themes and their Subthemes

Overarching Theme	Subthemes ( <i>n</i> =)
1. Decision to choose a career path as an MSK FCP	<ul style="list-style-type: none"> <li>• Opportunity to advance career (<i>n</i> = 9)</li> <li>• An opportunity to extend the scope of physiotherapy practice (<i>n</i> = 5)</li> <li>• To make an impact on patient outcomes at the frontline of physiotherapy care (<i>n</i> = 4)</li> </ul>
2. Relevancy of pre-registration physiotherapy education for MSK FCP	<ul style="list-style-type: none"> <li>• Limited relevance for the knowledge and skills required for MSK FCP (<i>n</i> = 13)</li> <li>• Developed skills in how to conduct a physiotherapy assessment (<i>n</i> = 4)</li> <li>• Knowledge of anatomy and physiology (<i>n</i> = 3)</li> </ul>
3. Relevancy of post-registration continuing professional development for MSK FCP	<ul style="list-style-type: none"> <li>• Undertaken postgraduate courses relevant to the role of MSK FCP (<i>n</i> = 13)</li> <li>• Post-registration work experience (<i>n</i> = 11)</li> <li>• Independent learning and professional development (<i>n</i> = 7)</li> </ul>
4. Improving pre-registration physiotherapy education for the foundational knowledge and skills required to work in MSK FCP	<ul style="list-style-type: none"> <li>• Identifying Red Flags (<i>n</i> = 6)</li> <li>• Opportunities to undertake placements in primary healthcare settings (<i>n</i> = 6)</li> <li>• A focus on clinical reasoning (<i>n</i> = 5)</li> <li>• Educational content on health promotion and behavioral change interventions (<i>n</i> = 4)</li> </ul>

**Figure 1**

1. What led to your decision to pursue a career path as a first contact physiotherapist in primary care?
2. Can you describe how your own pre-registration physiotherapy education has prepared you for working in a MSK first contact physiotherapy role in primary care?
3. Can you describe how your own continuing professional development (CPD) post-registration has prepared you for working in a MSK first contact physiotherapy role in primary care?
4. In what way (if any) could your own pre-registration physiotherapy education had better prepared you for working in a first contact MSK physiotherapy role in primary care?

**Figure 2**

Name .....

**Gender:**

Female

Male

Intersex

Prefer to self-describe.....

Prefer not to say

**Age:**

18-24

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- Please state the postgraduate physiotherapy qualifications that you have completed:.....

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- Please state any other qualifications that you have completed, which are relevant to your role as a MSK First Contact Physiotherapist:.....
- Number of years since you graduated as a physiotherapist:.....
- Number of years you have worked as a MSK First Contact Physiotherapist (if less than a year please state months):.....
- Name/Location of MSK First Contact Physiotherapy Service that you are currently working in:.....
- What year was the MSK First Contact Physiotherapy Service that you currently work for established?.....
- Does your MSK First Contact Physiotherapy Service have a partnership with a higher education pre-registration physiotherapy provider to provide practice education for pre-registration physiotherapy students? Yes/No

If yes, please state the higher education pre-registration physiotherapy provider.....

- Do you have experience of supervising pre-registration physiotherapy students as a MSK First Contact Physiotherapist? Yes/No

If yes, how many students have you supervised?.....

**Figure 1:** Reflections on Professional Development Interview Questions

**Figure 2:** Socio-Demographic and Background Questions

As authors we would like to say thank you to the two referees and the Associate Editor for reviewing our paper. Below we provide our response to each of the points made by referee 1 and 2.

Referee: 1

- Only a couple of grammar typo corrections in the body of the paper which I have attached.

Authors Response

We have made all the grammar and typo corrections, which are highlighted in red in the paper.

Referee: 2

- In this revision, it is unclear to me why Tables 1 and 2 were removed from this revision. For qualitative research, I find that an understanding of the demographics of the study population allows for the reader to more clearly connect and apply the findings to themselves (if appropriate). Although some of the data from these tables is captured on page 12, there is loss of significant understanding of the breadth and depth of variety of training of the participants. I would strongly recommend adding some of the additional demographics back into a table or into the appropriate area of page 12.

Authors Response

We have now included the following additional demographic data in the first paragraph of the Results section:

Participants were represented from Scotland ( $n = 1$ ) and Wales ( $n = 3$ ) and from all regions in England ( $n = 11$ ).

We have added the following table, which provides information about the educational qualifications/training undertaken by the participants that was relevant to their role as musculoskeletal first contact physiotherapists.

**Table 1:** Participants' Qualifications

Participant Number	Postgraduate Physiotherapy Qualifications	Other Relevant Qualifications for MSK FCP
1	<ul style="list-style-type: none"> <li>• Working towards a Master of Science Advanced Clinical Practice</li> </ul>	N/A
2	<ul style="list-style-type: none"> <li>• Master of Science (Pre-Registration) Physiotherapy</li> </ul>	<ul style="list-style-type: none"> <li>• Fellow of Higher Education Academy</li> </ul>
3	<ul style="list-style-type: none"> <li>• Master of Science Musculoskeletal Physiotherapy</li> </ul>	<ul style="list-style-type: none"> <li>• Level 4 Award, Certificate and</li> </ul>

	<ul style="list-style-type: none"> <li>• Postgraduate Diploma Sport and Exercise Injury Management</li> <li>• Postgraduate Diploma Musculoskeletal Ultrasound</li> <li>• Postgraduate Diploma Injection Therapy</li> </ul>	Diploma in Leadership and Management
4	<ul style="list-style-type: none"> <li>• Master of Science Level Module: Injection Therapy</li> <li>• Master of Science Level Module: Advanced MSK Assessment</li> </ul>	<ul style="list-style-type: none"> <li>• Chris McCarthy Combined Movement Theory</li> <li>• Lumber Spine Muscle Energy Technique</li> <li>• Jeremy Lewis The Shoulder Symptom Modification Procedure</li> </ul>
5	<ul style="list-style-type: none"> <li>• Master of Science Advanced Clinical Practice</li> <li>• Master of Science Trauma and Orthopedics</li> </ul>	N/A
6	<ul style="list-style-type: none"> <li>• Master of Science Trauma and Orthopedics</li> <li>• Postgraduate Certificate Independent Non-Medical Prescribing</li> </ul>	N/A
7	<ul style="list-style-type: none"> <li>• Postgraduate Certificate Independent Non-Medical Prescribing</li> <li>• Master of Science Level Module: Management of Complex Patients</li> <li>• Master of Science Level Module: Injection Therapy</li> </ul>	N/A
8	<ul style="list-style-type: none"> <li>• Master of Science Advanced Clinical Practice</li> <li>• Postgraduate Certificate Leadership</li> <li>• Master of Science Level Module: Injection Therapy</li> <li>• Master of Science Level Module: Independent Non-Medical Prescribing</li> </ul>	N/A

9	<ul style="list-style-type: none"> <li>• Master of Science Sports Physiotherapy</li> <li>• Postgraduate Certificate Health Services Management</li> <li>• Master of Science Level Module: Independent Non-Medical Prescribing</li> <li>• Master of Science Level Module: Injection Therapy</li> </ul>	<ul style="list-style-type: none"> <li>• Acupuncture Qualification</li> </ul>
10	<ul style="list-style-type: none"> <li>• Working towards a Master of Science Advanced Musculoskeletal Examination and Assessment (Imaging)</li> </ul>	N/A
11	<ul style="list-style-type: none"> <li>• Postgraduate Diploma Orthopedic Medicine</li> <li>• Postgraduate Diploma Injection Therapy</li> </ul>	<ul style="list-style-type: none"> <li>• Fellowship in Orthopedic Medicine</li> </ul>
12	<ul style="list-style-type: none"> <li>• Master of Science Sports Injury Management</li> </ul>	N/A
13	<ul style="list-style-type: none"> <li>• Master of Science Pain Management</li> <li>• Postgraduate Diploma Independent Non-Medical Prescribing</li> </ul>	N/A
14	<ul style="list-style-type: none"> <li>• Master of Science Level Module: Injection Therapy</li> </ul>	<ul style="list-style-type: none"> <li>• Clinical Educators Course</li> </ul>
15	<ul style="list-style-type: none"> <li>• Master of Science Musculoskeletal Physiotherapy</li> </ul>	N/A

- Although it seems minor, I would appreciate more clearly defined paragraph structure or the use of headers in the discussion.

#### Authors Response

We have now included a further four headings in the discussion, which clearly highlight to the reader what theme is under discussion. Therefore, we have removed the header: Comparisons with Previous Literature, which was in the previously reviewed paper. We also have more clearly defined the paragraph structure in the discussion of the themes and their subthemes in the discussion section.

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- Another editorial suggestion is the removal of "Figure 3" as it does not appear to "add significantly" to an understanding of the methods. (description on page 11 (lines 33-x)).

8 Authors Response

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10 We have now deleted figure 3.  
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