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## Experiences of telehealth e-mentoring within postgraduate musculoskeletal physical therapy education in the United Kingdom and Canada: a protocol for parallel mixed methods studies and cross cultural comparison

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3 1 **TITLE**  
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5 2 **Experiences of telehealth e-mentoring within postgraduate musculoskeletal physical therapy**  
6 **education in the United Kingdom and Canada: a protocol for parallel mixed methods studies and**  
7 **cross cultural comparison**  
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3 27 **ABSTRACT**  
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6 29 **Introduction:**  
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8 30 Mentored clinical practice is central to demonstrating achievement of International Educational  
9 31 Standards in advanced musculoskeletal physical therapy. Mentored clinical practice traditionally  
10 32 delivered face-to-face, offers a unique pedagogy to facilitate critical reflection, deeper learning and  
11 33 enhanced knowledge translation to optimise patient care. Yet access to mentors is often limited by  
12 34 geography or cost, supporting the potential value of telehealth e-mentoring. The aim of this study is  
13 35 to investigate the experiences and outcomes of multiple stakeholders (student-mentees, mentors and  
14 36 patients) engaged in musculoskeletal physical therapy telehealth e-mentoring across two Universities  
15 37 (United Kingdom, Canada).  
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22 38 **Methods and analysis:**

23 39 Using case study design, we will use sequential mixed methods involving qualitative and quantitative  
24 40 components based on existing evidence. To examine the influence of telehealth e-mentoring on  
25 41 health outcomes in patients with musculoskeletal complaints we will use patient reported outcomes  
26 42 for satisfaction, patient empowerment and change in musculoskeletal health. We will conduct semi  
27 43 structured interviews to explore the development of critical thinking, clinical reasoning,  
28 44 communication skills and confidence of students engaged in telehealth e-mentoring. To explore the  
29 45 mentor acceptability and appropriateness of telehealth e-mentoring we will conduct a focus group in  
30 46 each site. Finally, we will include a focus group of participants from each site to allow a cross cultural  
31 47 comparison of findings to inform international stakeholders. Quantitative data will be analysed using  
32 48 descriptive statistics (median and IQR) to describe changes in outcome data and qualitative data will  
33 49 be analysed following the Framework Method.  
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43 50 **Ethics and dissemination:**

44 51 This study has ethical approval (ERN\_20-0695) granted by the University of Birmingham and will  
45 52 have approval at Western University prior to data collection. Findings will be published in a peer  
46 53 reviewed journal and disseminated to key stakeholders in musculoskeletal physical therapy  
47 54 education and practice.  
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53 56 **Keywords**

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55 57 Telehealth; e-mentoring; postgraduate education; musculoskeletal physical therapy  
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3 59 **ARTICLE SUMMARY**  
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6 60 **Strengths and Limitations of this Study**  
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- 8  
9 61 • This is the first study to explore the experiences of multiple stakeholders engaged in  
10 62 mentoring for postgraduate physical therapy using telehealth  
11  
12 63 • The mixed methods case study design enables detailed exploration of experiences and  
13 64 outcomes involving all stakeholders as participants  
14  
15 65 • Cross cultural comparison is enabled through use of multiple study site settings across  
16 66 countries/ continents  
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18 67 • Findings will be specific to physical therapy, the two Universities and their respective  
19 68 countries, thus limiting transferability to other allied health professions, settings and countries  
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**INTRODUCTION**

87 Mentored clinical practice (MCP) is central to demonstrating achievement of the International  
88 Federation of Orthopaedic Manipulative Physical Therapists (IFOMPT) International Educational  
89 Standards; [1] operationalised in the United Kingdom (UK) by the Musculoskeletal Association of  
90 Chartered Physiotherapists (MACP) and in Canada by the Canadian Association of Manipulative  
91 Physical Therapy (CAMPT). Using a framework of clinical reasoning, students as mentees, facilitated  
92 by a mentor, are able to integrate new skills and knowledge (procedural and propositional) acquired  
93 within a University setting into their assessment and management of patients with musculoskeletal  
94 (MSK) complaints in a practice setting. MCP offers a unique pedagogy to facilitate critical reflection,  
95 deeper learning and enhanced knowledge translation [2] to optimise patient care. Improvements in  
96 patient outcomes for those physical therapists who had completed fellowships with a component of  
97 MCP [3] and clinical trial data supporting its clinical effectiveness now exist. [4]

98 MCP is highly dependent on specialist input and suitably qualified MSK physical therapy mentors.  
99 Access to these mentors has become increasingly difficult in the UK with many of these highly trained  
100 mentors often working at an advanced practice level or in consultant practitioner roles; therefore  
101 being involved in managing or leading large physical therapy services with no capacity for mentorship.  
102 Additionally, in Canada the geography of the country makes access to mentors challenging and limits  
103 opportunities for mentees to access mentors based on location. This often results in professional  
104 isolation for physical therapists practising in rural areas.[2] Likewise, students report increasing  
105 difficulties when negotiating time away from work (costs, access, impact on service etc.) to complete  
106 the MCP component of IFOMPT approved programmes. The COVID-19 pandemic has further  
107 compounded these issues forcing us to rethink how we approach healthcare delivery and mentorship.  
108 This has resulted in a shift of all initial contact MSK physical therapy being delivered as telehealth via  
109 remote digital consultation (telephone consultation and/or video consultation) and a stepped

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3 110 rationale for escalation to face to face consultation. [5]In light of these changes, alternative MCP  
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5 111 approaches are urgently required to fulfil student and IFOMPT approved programme' needs.  
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8 112 Telehealth, which encompasses 'telemedicine', 'telecare', 'telerehabilitation' 'teleconsult' and 'e-  
9  
10 113 health' [6] delivers healthcare using virtual technology and online communication platforms and can  
11  
12 114 move beyond traditional practice settings, [5, 7] to overcome barriers to accessing healthcare such as  
13  
14 115 time, geography and costs of specialist services. [6, 8] Considerable evidence exists to support its  
15  
16 116 effectiveness (clinical and cost) and acceptability for improving health outcomes for patients, including  
17  
18 117 reducing hospital admissions. [5, 6, 9]. Patient satisfaction with telehealth in MSK physical therapy is  
19  
20 118 widely reported as high [5] and in fact recent trials reported higher levels than face to face care. [5,  
21  
22 119 10] Yet, widespread adoption of telehealth within physical therapy has been slow [5] and to the  
23  
24 120 author's knowledge has not yet been used as a medium to support postgraduate professional  
25  
26 121 development in MSK physical therapy. Whilst a high level of psychomotor skills are deemed a core  
27  
28 122 construct of MSK advanced practice, [11] a considerable number of other core constructs (e.g. high  
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30 123 levels of clinical reasoning, background knowledge and self-analysis as well as patient-centred  
31  
32 124 approach, critical approach to practice etc.) could be achieved via telehealth. [10-12] With evidence  
33  
34 125 of good concurrent validity for a range of outcomes (pain, swelling, joint mobility, muscle strength  
35  
36 126 etc.) [13] and a range of studies within medicine supporting that 75-83% of diagnoses are derived from  
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38 127 the patient history data alone, [14, 15] learning outcomes could arguably be achieved through  
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40 128 telehealth e-mentoring.  
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47 129 By drawing on a myriad of approaches (face to face, e-mentoring and telehealth) to enable fulfilment  
48  
49 130 of the requirements of a specialist educational programme, we have the potential to offer the next  
50  
51 131 generation of advanced MSK physical therapists a novel and adjunctive mechanism for professional  
52  
53 132 growth and development, whilst optimising patient care within a biopsychosocial framework of care;  
54  
55 133 allowing for both synchronous and asynchronous communication to occur, which is not limited by  
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57 134 geography, cost or time. A unique opportunity currently exists to explore the use of telehealth e-  
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3 135 mentoring as a means of fulfilling the requirements of IFOMPT Educational Standards for advanced  
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5 136 MSK physical therapy practice. Moreover, telehealth e-mentoring could be an adjunct to conventional  
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7 137 face-to-face MCP approaches beyond Covid-19, to better prepare students through novel approaches  
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9  
10 138 to delivery of specialist MSK physical therapy; using remote and digital consultation as part of clinical  
11  
12 139 triage in outpatient healthcare consultations. [16-18]

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15 140 Where telehealth e-mentoring has been introduced in light of Covid-19 we urgently need to evaluate  
16  
17 141 its acceptability, appropriateness, satisfaction from the stakeholder perspectives of patients, mentors  
18  
19 142 and students as a novel approach for professional growth and development, integrating knowledge  
20  
21 143 and skills acquired in a University setting into clinical practice. Findings from this international study  
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23 144 will place a spotlight on the MACP and CAMPT as leading and collaborating internationally in  
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25 145 innovative approaches to enable fulfilment of IFOMPT Educational Standards.  
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32 147 **Aim**

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35 148 To investigate the experiences of post-graduate Masters (MSc) physical therapy students, their  
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37 149 mentors, and patients with MSK complaints engaged telehealth e-mentoring  
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39 150 (consultation/rehabilitation) in a UK and Canadian University setting.  
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42 151 **Objectives**

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45 152 1) To examine the influence of telehealth e-mentoring on health outcomes in patients with MSK  
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47 153 complaints  
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49 154 2) To explore the development of critical thinking, clinical reasoning, communication skills and  
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51 155 confidence of post graduate students engaged in telehealth e-mentoring.  
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53 156 3) To explore the mentor acceptability and appropriateness of telehealth e-mentoring to facilitate  
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55 157 student development towards achievement IFOMPT Educational Standards  
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57 158 4) To conduct a cross cultural comparison of findings to inform international stakeholders  
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## 160 **METHODS AND ANALYSIS**

161

### 162 **Design and methods**

163 Using case study design [19] we will use sequential mixed qualitative and quantitative methods (Figure  
164 1). In the absence of reporting guidelines for mixed methods studies, the study is designed in line with  
165 the COnsolidated criteria for REporting Qualitative research (COREQ). [20] and STrengthening the  
166 Reporting of Observational Studies in Epidemiology (STROBE) statement [21] for qualitative and  
167 observational study designs respectively.

168 Semi structured interviews will be used to explore development of critical thinking, clinical  
169 reasoning, communication skills and confidence of post graduate students, patient reported  
170 outcomes to explore patient experiences and changes in MSK health following telehealth e-  
171 mentoring, a focus groups to explore mentor acceptability and appropriateness of telehealth e-  
172 mentoring and a focus group for cross cultural comparison of all data.

173

### 174 **Participant recruitment and eligibility for each site**

175 All participants must be able to communicate fluently in English, with access to a video consultation  
176 platform and able and willing to give informed consent.

- 177 • Patients (expected n=~50+) who self-refer to the UK University Advanced Manipulative  
178 Physical therapy telehealth service with a MSK complaint will be invited to participate.
- 179 • Students (n=10-15) from the cohort of postgraduate students registered on the respective  
180 IFOMPT approved programmes who are registered on the MCP module/course will be invited  
181 to participate in a semi structured interview. Purposive sampling will be used to ensure a

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3 182 variance in the profile of participants with respect to age, gender, geographical and clinical  
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5 183 experience on entry to the programme.

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8 184 • Clinical mentors from the University of Birmingham and Western University programme (n=6-  
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10 185 8) will be invited to participate in the focus group

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14 187 **Study setting**

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16 188 Two sites will be used to collect data; the University of Birmingham and Western University, London  
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18 189 Ontario. Both Universities host programmes that offer eligibility to IFOMPT via nationally accredited  
19  
20 190 programmes in MSK physical therapy; Birmingham since 2004 and Western since 2007. Each site  
21  
22 191 experiences unique challenges to fulfilment of MCP thereby affording a different lens on the potential  
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24 192 merits of telehealth e-mentoring. The video consulting platform Zoom (password protected) will be  
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26 193 used to conduct interviews and the focus group.

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33 195 **Data collection and procedures**

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36 196 **Objective 1, longitudinal observational study (UK only):** Participants (patients) will be invited to  
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38 197 participate in the study and complete the following questionnaires on initial assessment and/or  
39  
40 198 discharge or onward referral (Supplementary file 1).

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43  
44 199 1. Patient Health: The Musculoskeletal Health Questionnaire (MSK-HQ) [23] is a recently  
45  
46 200 developed Patient Reported Outcome Measure (PROM) for use with patients with MSK  
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48 201 conditions and Patient Specific Functional Scale [24] is a patient specific valid, reliable, and  
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50 202 responsive outcome measure for patients with MSK complaints. [24, 25]

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53 203 2. Patient Enablement: The Patient Enablement Instrument (PEI) [26] is a well-established  
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55 204 measure of self-care ability in first contact and primary care consultations.[26, 27] It has also

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3 205 been reported to demonstrate fair content validity, construct validity and internal consistency  
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5 206 in patients with chronic MSK symptoms [28]  
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7 207 3. Patient Reported Experience Measures (PREM): Rating of patient satisfaction will include key  
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10 208 telehealth patient satisfaction themes - namely overall satisfaction, audio-visual quality, and  
11  
12 209 the Consultation and Relational Empathy (CARE) measure. [29]  
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15 210 **Objective 2, semi-structured interviews:** Participants (students) will be invited to participate in a semi  
16  
17 211 structured interview which will last 45-60 minutes. The interview will explore students' expectations  
18  
19 212 and perceptions prior, during and after the period of telehealth e-mentoring, as well as exploring their  
20  
21 213 individual experiences and beliefs around their development of clinical reasoning. The topic guide  
22  
23 214 (Supplementary file 2) was informed by existing evidence including the M-Level health education Logic  
24  
25 215 Model [22] and the core constructs of MSc level practice in MSK physical therapy. [11]  
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29 216 **Objective 3, focus group:** Participants (mentors) will be invited to participate in a focus group which  
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31 217 will last 60-90 minutes. The focus group will explore acceptability and appropriateness of telehealth  
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33 218 e-mentorship to facilitate student development towards achievement of IFOMPT Educational  
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35 219 Standards. The topic guide will be developed inductively from the interim analysis of semi-structured  
36  
37 220 interview data.  
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41 221 **Objective 4, focus group:** Researchers and representatives from participant groups (patient, mentor  
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43 222 and mentee) will be invited to participate in a focus group which will last 90-120 minutes. The focus  
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45 223 group will explore key themes and outcomes from country specific findings as part of a cross cultural  
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47 224 analysis. The topic guide for this will be developed inductively from the analysis of data from focus  
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49 225 group, semi structured interviews and patient outcomes in each country.  
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56 227 **Data management and data analysis**  
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3 228 Quantitative data, including participant demographics will be analysed descriptively using means and  
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5 229 SD to determine change pre and post management. Interviews and focus group will be audio recorded  
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7 230 and transcribed verbatim. Post transcription, response clarification will be completed to enhance  
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9 231 accuracy and trustworthiness of participant views (member checking), with field notes used to  
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11 232 maintain contextual details and non-verbal responses during data analysis/interpretation. [20]  
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15 233 Qualitative data will be analysed using the well-established Framework Method [30] (a seven stage  
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17 234 process for qualitative data management and analysis) to examine and understand the experiences of  
18  
19 235 telehealth and e-mentoring from interview and focus group data. The method highlights the  
20  
21 236 importance involvement of individuals with experience in qualitative research, therefore experienced  
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23 237 qualitative researchers will be involved at every stage of analysis.  
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### 29 239 **Data storage, access and disposal**

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32 240 All quantitative data from the study will be collected using a bespoke online questionnaire,  
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34 241 incorporating the measures as detailed above. Audio data will be transferred securely, transcribed by  
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36 242 an approved service. Participant data will be stored confidentially for 10 years on password-protected  
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38 243 computers that can only be accessed by the researchers, and in accordance with General Data  
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40 244 Protection Regulation (GDPR), the Data Protection Act 2018 and University of Birmingham's research  
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42 245 governance frameworks in the UK and Western University Health Science Research Ethics Board.  
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### 47 247 **Patient and public involvement**

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51 248 Whilst conceived during the Covid-19 pandemic as a means of supporting ongoing student progression  
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53 249 and development, the study is informed through many years of working (clinically and educationally)  
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55 250 with patients, postgraduate students and MACP/CAMPT mentors. Mentors, mentees and patient  
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57 251 representatives from each country will be invited to participate in the focus group to support cross  
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3 252 cultural analysis and interpretation of results, including key recommendations. Key stakeholders in  
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5 253 postgraduate education for MSK physical therapists may also be contacted for their contribution and  
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7 254 insight to help aid analysis and interpretation of results including the MACP and CAMPT. Patient and  
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10 255 Public Involvement in the full study will be reported using the GRIPP2-SF when disseminating study  
11  
12 256 results.[31]  
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15 257

### 18 258 **Ethics approval and dissemination**

20  
21 259 Ethical approval has been granted by the University of Birmingham Ethics Committee (15/5/2020 ref  
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23 260 ERN\_20-0695) for the UK and will be granted by Western University, London Canada (under review).  
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25 261 All participants will sign a consent form and receive a participant information sheet prior to  
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27 262 participation. They will have the right to withdraw from the study at any point and up to four weeks  
28  
29 263 after data collection is completed. Patient participants will be advised that any involvement will not  
30  
31 264 impact on any current and future healthcare. There are minimal risks associated with this study. When  
32  
33 265 presenting the study findings, pseudonyms will be used to protect the participants' identities. Any  
34  
35 266 protocol deviations will be documented. The findings from this research will be disseminated to key  
36  
37 267 stakeholders in postgraduate MSK physical therapy education nationally and internationally, including  
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39 268 MACP and IFOMPT.  
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### 45 270 **DISCUSSION**

47  
48 271 This protocol outlines the rationale and methodology of a mixed methods case study design across 2  
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50 272 countries to explore the experiences of telehealth e-mentoring within postgraduate MSK physical  
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52 273 therapy education. The lead researcher for each site have considerable experience of postgraduate  
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54 274 education in MSK physical therapy and experiences of the proposed research methodologies including  
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56 275 relevant publications [1, 11, 22]. Findings from this research will inform the advancement of  
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58 276 international practice in advanced MSK physical therapy postgraduate education, overcoming the  
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3 277 limitations of conventional approaches to MCP. It is anticipated that the findings from this study will  
4  
5 278 also improve the access to mentors with specialist skills and knowledge globally, thus improving the  
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7 279 educational fulfilment of student mentees and in turn patient outcomes.  
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10 280

## 11 281 **AUTHOR CONTRIBUTIONS**

12  
13 282 NH is the CI leading the protocol development, analyses, and dissemination. NH and AR are lead  
14 283 researchers for each site, ensuring rigour and quality in project management. NH, WJ, MN, IT, JS, HG  
15 284 and AR have contributed to the design and development of the protocol and have contributed to the  
16 285 manuscript draft. All authors have read, provided feedback and approved the final manuscript.  
17  
18

## 19 286 **FUNDING**

20  
21 287 None  
22

## 23 288 **PATIENT CONSENT FOR PUBLICATION**

24  
25 289 Not required  
26

## 27 290 **CONFLICT OF INTEREST**

28  
29 291 The authors declare that they have no competing interests.  
30  
31 292

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20 377 **Figure 1: Exploratory sequential case study design**  
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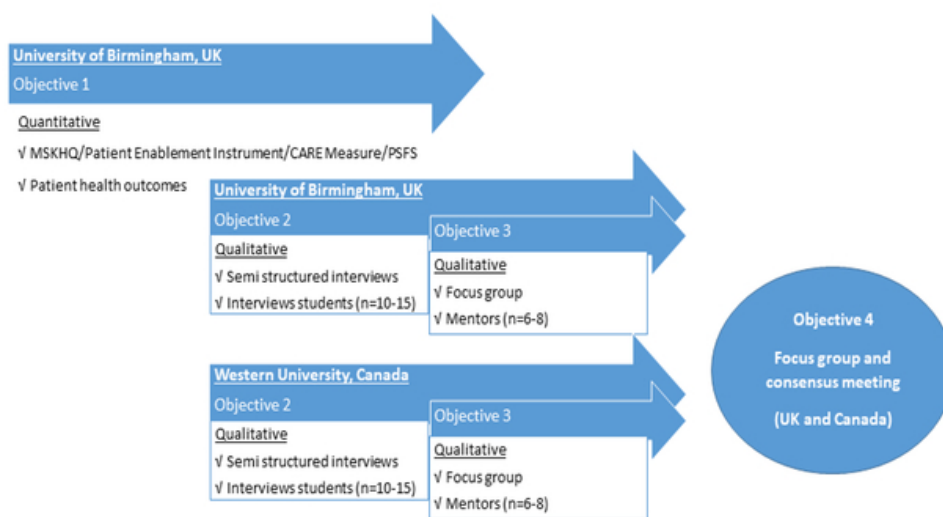


Figure 1: Exploratory sequential case study design

53x30mm (300 x 300 DPI)

## Supplementary file 1.

**MUSCULOSKELETAL HEALTH QUESTIONNAIRE (MSK-HQ)** (WITH PERMISSION)

This questionnaire is about your **joint, back, neck, bone and muscle symptoms** such as aches, pains and/or stiffness.

Please focus on the particular health problem(s) for which you sought treatment from this service.

For each question **tick (✓) or X one box** to indicate which statement best describes you **over the last 2 weeks**.

<b>1. Pain/stiffness during the day</b> How severe was your usual joint or muscle pain and/or stiffness overall during the <b>day</b> in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Fairly severe <input type="checkbox"/> 1	Very severe <input type="checkbox"/> 0
<b>2. Pain/stiffness during the night</b> How severe was your usual joint or muscle pain and/or stiffness overall during the <b>night</b> in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Fairly severe <input type="checkbox"/> 1	Very severe <input type="checkbox"/> 0
<b>3. Walking</b> How much have your symptoms interfered with your ability to walk in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Severely <input type="checkbox"/> 1	Unable to walk <input type="checkbox"/> 0
<b>4. Washing/Dressing</b> How much have your symptoms interfered with your ability to wash or dress yourself in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Severely <input type="checkbox"/> 1	Unable to wash or dress myself <input type="checkbox"/> 0
<b>5. Physical activity levels</b> How much has it been a problem for you to do physical activities (e.g. going for a walk or jogging) to the level you want because of your joint or muscle symptoms in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Very much <input type="checkbox"/> 1	Unable to do physical activities <input type="checkbox"/> 0
<b>6. Work/daily routine</b> How much have your joint or muscle symptoms interfered with your work or daily routine in the last 2 weeks (including work & jobs around the house)?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Severely <input type="checkbox"/> 1	Extremely <input type="checkbox"/> 0
<b>7. Social activities and hobbies</b> How much have your joint or muscle symptoms interfered with your social activities and hobbies in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Severely <input type="checkbox"/> 1	Extremely <input type="checkbox"/> 0

<p><b>8. Needing help</b> How often have you needed help from others (including family, friends or carers) because of your joint or muscle symptoms in the last 2 weeks?</p>	<p>Not at all <input type="checkbox"/> 4</p>	<p>Rarely <input type="checkbox"/> 3</p>	<p>Sometimes <input type="checkbox"/> 2</p>	<p>Frequently <input type="checkbox"/> 1</p>	<p>All the time <input type="checkbox"/> 0</p>
<p><b>9. Sleep</b> How often have you had trouble with either falling asleep or staying asleep because of your joint or muscle symptoms in the last 2 weeks?</p>	<p>Not at all <input type="checkbox"/> 4</p>	<p>Rarely <input type="checkbox"/> 3</p>	<p>Sometimes <input type="checkbox"/> 2</p>	<p>Frequently <input type="checkbox"/> 1</p>	<p>Every night <input type="checkbox"/> 0</p>
<p><b>10. Fatigue or low energy</b> How much fatigue or low energy have you felt in the last 2 weeks?</p>	<p>Not at all <input type="checkbox"/> 4</p>	<p>Slight <input type="checkbox"/> 3</p>	<p>Moderate <input type="checkbox"/> 2</p>	<p>Severe <input type="checkbox"/> 1</p>	<p>Extreme <input type="checkbox"/> 0</p>
<p><b>11. Emotional well-being</b> How much have you felt anxious or low in your mood because of your joint or muscle symptoms in the last 2 weeks?</p>	<p>Not at all <input type="checkbox"/> 4</p>	<p>Slightly <input type="checkbox"/> 3</p>	<p>Moderately <input type="checkbox"/> 2</p>	<p>Severely <input type="checkbox"/> 1</p>	<p>Extremely <input type="checkbox"/> 0</p>
<p><b>12. Understanding of your condition and any current treatment</b> Thinking about your joint or muscle symptoms, how well do you feel you understand your condition and any current treatment (including your diagnosis and medication)?</p>	<p>Completely <input type="checkbox"/> 4</p>	<p>Very well <input type="checkbox"/> 3</p>	<p>Moderately <input type="checkbox"/> 2</p>	<p>Slightly <input type="checkbox"/> 1</p>	<p>Not at all <input type="checkbox"/> 0</p>
<p><b>13. Confidence in being able to manage your symptoms</b> How confident have you felt in being able to manage your joint or muscle symptoms by yourself in the last 2 weeks (e.g. medication, changing lifestyle)?</p>	<p>Extremely <input type="checkbox"/> 4</p>	<p>Very <input type="checkbox"/> 3</p>	<p>Moderately <input type="checkbox"/> 2</p>	<p>Slightly <input type="checkbox"/> 1</p>	<p>Not at all <input type="checkbox"/> 0</p>
<p><b>14. Overall impact</b> How much have your joint or muscle symptoms bothered you overall in the last 2 weeks?</p>	<p>Not at all <input type="checkbox"/> 4</p>	<p>Slightly <input type="checkbox"/> 3</p>	<p>Moderately <input type="checkbox"/> 2</p>	<p>Very much <input type="checkbox"/> 1</p>	<p>Extremely <input type="checkbox"/> 0</p>

<p><b>Physical activity levels</b> In the past week, on how many days have you done a total of 30 minutes or more of physical activity, which was enough to raise your heart rate? <i>This may include sport, exercise and brisk walking or cycling for recreation or to get to and from places, but should not include housework or physical activity that is part of your job.</i></p>							
<p>None <input type="checkbox"/></p>	<p>1 day <input type="checkbox"/></p>	<p>2 days <input type="checkbox"/></p>	<p>3 days <input type="checkbox"/></p>	<p>4 days <input type="checkbox"/></p>	<p>5 days <input type="checkbox"/></p>	<p>6 days <input type="checkbox"/></p>	<p>7 days <input type="checkbox"/></p>

### PATIENT SPECIFIC FUNCTIONAL SCALE

Please identify up to two important activities that you are unable to do or are having difficulty with as a result of your current problem/diagnosis.

Please rate each of these problems on the 0-10 scale below.

0 = Able to perform activity at the same level as before injury or problem (No issues) 10 = Unable to perform activity (Cannot perform)

Patient-specific activity scoring scheme (Circle one number or provide a range):

<b>1. Activity</b>										
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>No issues</b>								<b>Cannot perform</b>		

<b>2. Activity</b>										
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>No issues</b>								<b>Cannot perform</b>		

### THE PATIENT ENABLEMENT INSTRUMENT (PEI)

As a result of your visit to the physiotherapist today, so you feel you are.....

	<b>Much better</b>	<b>Better</b>	<b>Same or less</b>	<b>Not applicable</b>
<b>able to cope with life</b>				
<b>able to understand your musculoskeletal complaint</b>				
<b>able to cope with your musculoskeletal complaint</b>				
<b>able to keep yourself healthy</b>				
	<b>Much more</b>	<b>More</b>	<b>Same or less</b>	<b>Not applicable</b>
<b>confident about your help</b>				
<b>able to help your self</b>				

**CONSULTATION AND RELATIONAL EMPATHY MEASURE (CARE Measure)**

Please rate the following statement about today consultation. Please tick one box for each statement and answer every statement.

	Poor	Fair	Good	Very good	Excellent	Does not apply
<b>1. Making you feel at ease.....</b> (being friendly and warm toward you, treating you with respect; not cold or abrupt)						
<b>2. Letting you tell your 'story'</b> (giving you time to fully describe your complaint in your own words, not interrupting or diverting you)						
<b>3. Really listening....</b> (paying close attention to what you were saying; not looking at the notes or computer as you were talking)						
<b>4. Being interested in you as a whole person.....</b> (asking/knowing relevant details about your life, your situation; not treating you as just a number)						
<b>5. Fully understanding your concerns....</b> (communicating that he/she had accurately understood your concerns; not overlooking or dismissing anything)						
<b>6. Showing care and compassion....</b> (seeming genuinely concerned, connecting with you on a human level; not being indifferent or detached)						
<b>7. Being positive...</b> (having a positive approach and a positive attitude; being honest but not negative about your problems)						
<b>8. Explaining things clearly....</b> (fully answering your questions, explaining clearly, giving you adequate information; not being vague)						
<b>9. Helping you take control...</b> (exploring with you about what you can do to improve your health yourself, encouraging rather than lecturing you)						
<b>10. Making a plan of action with you...</b> (discussing the options, involving you in decisions as much as you want to be involved; not ignoring your views)						
<b>Any other comments</b>						

## Supplementary file 2

Research Aim	<b>Experiences of telehealth e-mentoring within postgraduate MSK physical therapy education: protocol for a mixed methods study</b>		
Interview Section	Questions/Content	Prompts	Aims
Ethics Statement	<p>Firstly, I would like to thank you for participating in this interview. Just a reminder that it will be audio/video-recorded but all information shared will be kept strictly confidential. You are entitled to stop the interview and the recording at any point or terminate the interview altogether if you wish.</p> <p>You also have the right not to answer a question if you do not wish to. There are no right or wrong answers. I am interested in your own personal experiences, thoughts and perceptions, with the aim of today being to understand your experiences of telehealth e-mentoring, which covers all forms of consultation with patients using remote means, within postgraduate MSK physical therapy education.</p> <p>Before we start do you have any further questions?</p>	<ul style="list-style-type: none"> <li>• <i>Can I confirm that you have read and understand the information sheet and signed the consent form?</i></li> <li>• <i>Are you comfortable?</i></li> </ul>	<ul style="list-style-type: none"> <li>• To ensure full understanding of what is expected of the participant during this interview.</li> <li>• Make sure the participant is comfortable and ready to begin.</li> </ul>
Introductory Questions	<ol style="list-style-type: none"> <li>1. Can you tell me a bit about yourself?</li> <li>2. Can you tell me about your clinical background and recent posts/roles?</li> <li>3. Can you tell me about your experiences of professional development and approaches to learning/development?</li> <li>4. How many weeks into your CMP module are You?</li> </ol>	<ul style="list-style-type: none"> <li>• <i>Age, where do you come from, clinical posts, setting (NHS/private/sport/military)</i></li> <li>• <i>What professional development have you been involved in before- weekend courses, IST</i></li> <li>• <i>Thinking back what approaches worked best and you remember the most?</i></li> </ul>	<ul style="list-style-type: none"> <li>• Make participant relax and feel comfortable with talking and opening up.</li> <li>• Build rapport.</li> <li>• To gain an insight into the participant's background</li> </ul>

<p>Transition Questions</p>	<ol style="list-style-type: none"> <li>1. What is your overall experience of being a postgraduate MSK physical therapy student?</li> <li>2. How do you study through the week? Can you run me through the different approaches you use?</li> <li>3. When this telehealth e-mentoring was first proposed as alternative approach to conventional clinical mentorship, how did it make you feel?</li> </ol>	<ul style="list-style-type: none"> <li>• <i>What does being a masters level student mean to you?</i></li> <li>• <i>What aspects of your studies do you enjoy?</i></li> <li>• <i>Any challenges with studying at masters level?</i></li> <li>• <i>How do you break up your studies to keep focused?</i></li> <li>• <i>Are there approaches used in the University that work best or engage you more? Seminars, workshops, lectures, patient presentations etc</i></li> <li>• <i>Do you meet with other students? How does that work and what e-platforms do you use? Does this involve just those in your cohort or other individuals?</i></li> <li>• <i>What works well and what does not work so well?</i></li> <li>• <i>Thoughts, beliefs and expectations around different approach to development? Anxieties and thoughts about relevance?</i></li> </ul>	<ul style="list-style-type: none"> <li>• Start to guide the interview towards experiences of masters level professional development</li> <li>• To get an idea of their approach to studying at masters level</li> <li>• To explore approaches used and their preferences to learning</li> <li>• Explore beliefs and perceptions of something unplanned.</li> </ul>
<p>E-mentoring and telehealth background</p>	<p>As well as a considerable body of evidence supporting the use of telehealth as cost effective, accessible means of providing patient care there is an emergence body of evidence supporting the use of e-mentoring to facilitate professional development. With the widespread use of telehealth to offer MSK physical therapy during the Covid-19 pandemic, this offered you as a student an opportunity to integrate knowledge and skills gained from the programme thus far in an authentic way and towards achievement of your programme learning outcomes.</p> <p>Where we are focusing on telehealth e-mentoring to develop advanced clinical reasoning skills to optimise care of patients with MSK symptoms, we will consider outcomes of masters level</p>	<ul style="list-style-type: none"> <li>• <i>Do you have any questions?</i></li> <li>• <i>If you are unsure at any point regarding aspects of the Logic Model, please ask.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Inform the participant of the background of the study</li> <li>• Ensure the participant knows they can ask questions if they are unsure.</li> </ul>



	<p>education in MSK physical therapy, which includes</p> <ol style="list-style-type: none"> <li>1. <i>Critical thinking skills and analysis</i></li> <li>2. <i>Clinical reasoning</i></li> <li>3. <i>Confidence and motivation to practice</i></li> <li>4. <i>Enhanced career progression</i></li> <li>5. <i>Becoming a lifelong learner</i></li> <li>6. <i>Advanced communication skills</i></li> <li>7. <i>Enhanced sense of autonomy</i></li> </ol> <p>I have a number of questions for you founded on this model and if you are not clear on anything as we go through, then please let me know.</p>		
	<p>1. To start with, could you perhaps give me an idea of how the telehealth e-mentoring has influenced your <b>critical thinking skills</b>?</p>	<ul style="list-style-type: none"> <li>• <i>In what way do you think you have become more critical or analytical?</i></li> <li>• <i>Has your clinical decision making changed?</i></li> <li>• <i>In what way has your evidenced based practice changed?</i></li> <li>• <i>What aspects of the process facilitated that?</i></li> <li>• <i>What role did the others have in your group to enable that?</i></li> <li>• <i>What role did the mentor have in facilitating this?</i></li> <li>• <i>Have there been any additional learning activities you have been set during the CMP module which you have found beneficial?</i></li> <li>• <i>How have different patient presentations influenced your critical analysis and decision making skills</i></li> <li>• <i>Is there any different challenges between NP/FU</i></li> <li>• <i>Assessment/management/rehab</i></li> </ul>	<ul style="list-style-type: none"> <li>• To explore the influences of the experience on critical thinking and development of analytical skills across a range of patient presentations</li> </ul>

<p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33</p> <p>Main Questions</p>	<p>2. Could you perhaps give me an idea of how the telehealth e-mentoring has influenced your <b>ability to clinical reasonin?</b></p>	<ul style="list-style-type: none"> <li>• <i>Has this influenced your approach to reasoning e.g. collaborative or narrative reasoning of cases?</i></li> <li>• <i>How did the different patients you saw influence this?</i></li> <li>• <i>Knowledge is a component of clinical reasoning – was this challenged in anyway?</i></li> <li>• <i>How did time influence this – reflection on and in action</i></li> <li>• <i>Where you were involved in peer mentoring, how did this influence your own development?</i></li> <li>• <i>Has this experience changed your meta cognition? If so, how?</i></li> <li>• <i>What strategies did you use to support development of your clinical reasoning? Planning sheets, PROMs etc</i></li> <li>• <i>Are your experiences the same for NP and FP</i></li> <li>• <i>Did you feel this differed accordingly to stages of management e.g. assessment, management and rehab? What about doing physical tests? What about approaches to management?</i></li> </ul>	<ul style="list-style-type: none"> <li>• To explore the influences of the experience on their ability to clinically reason and justify patient management across a range of patient presentations</li> </ul>
	<p>3. How do you feel the telehealth e-mentoring has influenced your <b>confidence and motivation to practice in MSK physical therapy</b></p>	<ul style="list-style-type: none"> <li>• <i>Do you feel more of less confidence in managing patients within a biopsychosocial model of practice?</i></li> <li>• <i>Why do you feel that? Is there any specific aspect of the mentorship that has helped or hindered that?</i></li> <li>• <i>Does this reflect all stages of patient care – assessment, management and rehab</i></li> <li>• <i>What aspects of your practice do you have more or less confidence in – e.g. reasoning complex cases, certain presentations, etc.</i></li> <li>• <i>How do you feel about now going back into practice?</i></li> <li>• <i>How do feel about dealing with uncertainty in managing complex patient cases in the future?</i></li> </ul>	<ul style="list-style-type: none"> <li>• To explore confidence and motivation to practice in MSK physical therapy, drawing on new skills and knowledge</li> <li>• To explore how comfortable they are with dealing with uncertainty and problem solving to inform clinical decision making?</li> </ul>

	<p>4. <b>Advanced communication skills</b> are central to patient history taking and I wonder how you feel these have been influenced by the telehealth e mentoring?</p>	<ul style="list-style-type: none"> <li>• <i>Do you think your communication skills have changed? If so in what way? Which skills – listening, oral, written?</i></li> <li>• <i>Do you feel there are any barriers or facilitators that have aided the development of your communication skills</i></li> <li>• <i>How do you think this has influenced your relationship with your patients and peers?</i></li> <li>• <i>Have your communications skills changed as a result of working in a small group? If so in what way?</i></li> <li>• <i>What influence has this medium had on building a rapport with your patients?</i></li> <li>• <i>What communication strategies have you used to develop your therapeutic relationship with patients?</i></li> <li>• <i>Do you feel these experience have influenced your ability to interpret patient data, and articulate clinical diagnosis and treatment decisions</i></li> <li>• <i>How have you optimised patient engagement in management plans?</i></li> </ul>	<ul style="list-style-type: none"> <li>• To explore the scope of communication and the influences of this at a personnel, group and professional level</li> </ul>
	<p>5. How do you feel the telehealth e-mentoring may have influenced</p> <ol style="list-style-type: none"> <li><b>Career progression</b></li> <li><b>Becoming a lifelong learner</b></li> <li><b>Enhanced sense of autonomy</b></li> </ol>	<ul style="list-style-type: none"> <li>• <i>How do you feel now you have completed the clinical mentorship?</i></li> <li>• <i>Do you feel this experience will be useful in supporting career progression e.g. triage?</i></li> <li>• <i>Where students have reported changes such as career enhancement, becoming a lifelong learner or increased sense of autonomy, do you feel the experiences you have had will be useful? If so in what way?</i></li> <li>• <i>In light of Covid-19 and social distancing how do you feel about the next stage of your career? What are your priorities and plans following completion of the programme?</i></li> </ul>	<ul style="list-style-type: none"> <li>• To explore views and perceptions of this authentic experience on career progression, being a lifelong learning and sense of autonomy</li> </ul>
<p>Conclusion</p>	<p>That's all the questions, is there anything else you would like to add about your experiences of telehealth e-mentoring?</p>	<ul style="list-style-type: none"> <li>• <i>Is there anything you would like to ask regarding the analysis of the data or the next steps of the process?</i></li> </ul>	<ul style="list-style-type: none"> <li>• Ensure the participant is comfortable with what has been discussed.</li> </ul>

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	The interview has now finished. Thank you for participating in this study, I really appreciate your time and input.		
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For peer review only

# BMJ Open

## Experiences of telehealth e-mentoring within postgraduate musculoskeletal physical therapy education in the United Kingdom and Canada: a protocol for parallel mixed methods studies and cross cultural comparison

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Keywords:	MEDICAL EDUCATION & TRAINING, Telemedicine < BIOTECHNOLOGY & BIOINFORMATICS, REHABILITATION MEDICINE

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3 1 **TITLE**  
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5 2 **Experiences of telehealth e-mentoring within postgraduate musculoskeletal physical therapy**  
6 **education in the United Kingdom and Canada: a protocol for parallel mixed methods studies and**  
7 **cross cultural comparison**  
8  
9 4

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3 27 **ABSTRACT**  
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6 29 **Introduction:**  
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8 30 Mentored clinical practice is central to demonstrating achievement of International Educational  
9 31 Standards in advanced musculoskeletal physical therapy. Whilst traditionally delivered face-to-face,  
10 32 telehealth e-mentoring is a novel alternative to offering this unique pedagogy, to facilitate mentee  
11 33 critical reflection, deeper learning and enhanced knowledge translation to optimise patient care. With  
12 34 Covid-19 resulting in widespread adoption of telehealth and access to mentors often limited by  
13 35 geography or cost, the potential value of telehealth e-mentoring needs investigating. To investigate  
14 36 the experiences and outcomes of multiple stakeholders (student-mentees, mentors and patients)  
15 37 engaged in musculoskeletal physical therapy telehealth e-mentoring across two Universities (United  
16 38 Kingdom, Canada).

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23 39 **Methods and analysis:**

24 40 Using case study design, we will use sequential mixed methods involving qualitative and quantitative  
25 41 components based on existing evidence. To examine the influence of telehealth e-mentoring on  
26 42 health outcomes in patients with musculoskeletal complaints we will use patient reported outcomes  
27 43 for satisfaction, patient empowerment and change in musculoskeletal health. We will conduct semi  
28 44 structured interviews to explore the development of critical thinking, clinical reasoning,  
29 45 communication skills and confidence of students engaged in telehealth e-mentoring. To explore the  
30 46 mentor acceptability and appropriateness of telehealth e-mentoring we will conduct a focus group in  
31 47 each site. Finally, we will include a focus group of participants from each site to allow a cross cultural  
32 48 comparison of findings to inform international stakeholders. Quantitative data will be analysed using  
33 49 descriptive statistics (median and IQR) to describe changes in outcome data and qualitative data will  
34 50 be analysed following the Framework Method.

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39 51 **Ethics and dissemination:**

40 52 This study has ethical approval (ERN\_20-0695) granted by the University of Birmingham and will  
41 53 have approval at Western University prior to data collection. Findings will be published in a peer  
42 54 reviewed journal and disseminated to key stakeholders in musculoskeletal physical therapy  
43 55 education and practice.

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54 57 **Keywords**

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57 58 Telehealth; e-mentoring; postgraduate education; musculoskeletal physical therapy  
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## ARTICLE SUMMARY

### Strengths and Limitations

- This is the first study to explore the experiences of multiple stakeholders engaged in telehealth e-mentoring for postgraduate physical therapy
- The mixed methods case study design enables detailed exploration of experiences and outcomes involving all stakeholders as participants
- Cross cultural comparison is enabled through use of multiple study site settings across countries/ continents
- Findings will be specific to physical therapy, the two Universities and their respective countries, thus limiting transferability to other professions, settings and countries

85

86

**INTRODUCTION**

88 Telehealth, which encompasses ‘telemedicine’, ‘telecare’, ‘telerehabilitation’ ‘teleconsult’ and ‘e-  
89 health’ [1] delivers healthcare using virtual technology and online communication platforms and can  
90 move beyond traditional practice settings, [2, 3] to overcome barriers to accessing healthcare such as  
91 time, geography and costs of specialist services. [1, 4] Considerable evidence exists to support its  
92 effectiveness (clinical and cost) and acceptability for improving health outcomes for patients, including  
93 reducing hospital admissions. [1, 3, 5]. Patient satisfaction with telehealth in MSK physical therapy is  
94 widely reported as high [3] and in fact recent trials reported higher levels than face to face care. [3, 6]  
95 Yet, widespread adoption of telehealth within physical therapy has been slow [3] and to the author’s  
96 knowledge has not yet been used as a medium to support postgraduate professional development in  
97 MSK physical therapy. Whilst a high level of psychomotor skills are deemed a core construct of MSK  
98 advanced practice, [7] a considerable number of other core constructs (e.g. high levels of clinical  
99 reasoning, background knowledge and self-analysis as well as patient-centred approach, critical  
100 approach to practice etc.) could be achieved via telehealth. [6-8] With evidence of good concurrent  
101 validity for a range of outcomes (pain, swelling, joint mobility, muscle strength etc.) [9] and a range of  
102 studies within medicine supporting that 75-83% of diagnoses are derived from the patient history data  
103 alone, [10, 11] learning outcomes could arguably be achieved through telehealth e-mentoring.

104 In MSK physical therapy the International Federation of Orthopaedic Manipulative Physical Therapists  
105 (IFOMPT) sets the international educational standards; [12] being then operationalised through  
106 approved programmes in the United Kingdom (UK) by the Musculoskeletal Association of Chartered  
107 Physiotherapists (MACP) and in Canada by the Canadian Association of Manipulative Physical Therapy  
108 (CAMPT). Mentored clinical practice (MCP) is central to demonstrating achievement of these  
109 educational standards and using a framework of clinical reasoning, students as mentees, facilitated by

1  
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3 110 a mentor, are able to integrate new skills and knowledge (procedural and propositional) acquired  
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5 111 within a University setting into their assessment and management of patients with musculoskeletal  
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7 112 (MSK) complaints in a practice setting. MCP offers a unique pedagogy to facilitate critical reflection,  
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9 113 deeper learning and enhanced knowledge translation [13] to optimise patient care. Improvements in  
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11 114 patient outcomes for those physical therapists who had completed fellowships with a component of  
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13 115 MCP [14] and clinical trial data supporting its clinical effectiveness now exist. [15]  
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17 116 MCP is highly dependent on specialist input and suitably qualified MSK physical therapy mentors.  
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19 117 Access to these mentors has become increasingly difficult in the UK with many of these highly trained  
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21 118 mentors often working at an advanced practice level or in consultant practitioner roles; therefore  
22  
23 119 being involved in managing or leading large physical therapy services with no capacity for mentorship.  
24  
25 120 Additionally, in Canada the geography of the country makes access to mentors challenging and limits  
26  
27 121 opportunities for mentees to access mentors based on location. This often results in professional  
28  
29 122 isolation for physical therapists practising in rural areas.[13] Likewise, students report increasing  
30  
31 123 difficulties when negotiating time away from work (costs, access, impact on service etc.) to complete  
32  
33 124 the MCP component of IFOMPT approved programmes. The COVID-19 pandemic has further  
34  
35 125 compounded these issues forcing us to rethink how we approach healthcare delivery and mentorship.  
36  
37 126 This has resulted in a shift of all initial contact MSK physical therapy being delivered as telehealth via  
38  
39 127 remote digital consultation (telephone consultation and/or video consultation) and a stepped  
40  
41 128 rationale for escalation to face to face consultation. [3] In light of these changes, alternative MCP  
42  
43 129 approaches are urgently required to fulfil student and IFOMPT approved programmes' needs,  
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45 130 including the use of telehealth e-mentoring  
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51 131 Whilst a myriad of approaches are used (face to face, e-mentoring and telehealth) telehealth e-  
52  
53 132 mentoring could be an adjunct to conventional face-to-face MCP approaches beyond Covid-19, to  
54  
55 133 better prepare students through novel approaches to delivery of specialist MSK physical therapy; using  
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3 134 remote and digital consultation as part of clinical triage in outpatient healthcare consultations. [16-  
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8 136 Where telehealth e-mentoring has been introduced in light of Covid-19 we urgently need to evaluate  
9  
10 137 its acceptability, appropriateness, satisfaction from the stakeholder perspectives of patients, mentors  
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12  
13 138 and students as a novel approach for professional growth and development, integrating knowledge  
14  
15 139 and skills acquired in a University setting into clinical practice.

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21 141 **Aim**

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24 142 To investigate the experiences of post-graduate Masters (MSc) physical therapy students, their  
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26 143 mentors, and patients with MSK complaints engaged telehealth e-mentoring  
27  
28 144 (consultation/rehabilitation) in a UK and Canadian University setting.

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31 145 **Objectives**

- 32  
33  
34 146 1) To examine the influence of telehealth e-mentoring on health outcomes in patients with MSK  
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36 147 complaints
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38 148 2) To explore the development of critical thinking, clinical reasoning, communication skills and  
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41 149 confidence of post graduate students engaged in telehealth e-mentoring.
- 42  
43 150 3) To explore the mentor acceptability and appropriateness of telehealth e-mentoring to facilitate  
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45 151 student development towards achievement IFOMPT Educational Standards
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47 152 4) To conduct a cross cultural comparison of findings to inform international stakeholders  
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## 154 **METHODS AND ANALYSIS**

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### 156 **Design and methods**

157 Using case study design [19] we will use sequential mixed qualitative and quantitative methods to  
158 investigate telehealth e-mentoring as part of postgraduate physiotherapy education (Figure 1). Data  
159 collection will take place from May 2020 through to December 2021. Details of the telehealth e-  
160 mentoring are detailed in Figure 2. In the absence of reporting guidelines for mixed methods studies,  
161 the study is designed in line with the COnsolidated criteria for REporting Qualitative research (COREQ).  
162 [20] and STrengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement  
163 [21] for qualitative and observational study designs respectively.

164 Semi structured interviews will be used to explore development of critical thinking, clinical  
165 reasoning, communication skills and confidence of post graduate students, patient reported  
166 outcomes to explore patient experiences and changes in MSK health following telehealth e-  
167 mentoring, a focus groups to explore mentor acceptability and appropriateness of telehealth e-  
168 mentoring and a focus group for cross cultural comparison of all data.

169

### 170 **Participant recruitment and eligibility for each site**

171 All participants must be able to communicate fluently in English, with access to a video consultation  
172 platform and able and willing to give informed consent.

- 173 • Patients (expected n=~50+) who self-refer to the UK University Advanced Manipulative  
174 Physical therapy telehealth service with a MSK complaint will be invited to participate.
- 175 • Students (n=10-15) from the cohort of postgraduate students registered on the respective  
176 IFOMPT approved programmes who are registered on the MCP module/course will be invited

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3 177 to participate in a semi structured interview. Purposive sampling will be used to ensure a  
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5 178 variance in the profile of participants with respect to age, gender, geographical and clinical  
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8 179 experience on entry to the programme.

- 9  
10 180 • Clinical mentors from the University of Birmingham and Western University programme (n=6-  
11  
12 181 8) will be invited to participate in the focus group

13  
14 182 Exclusion criteria for patient participants includes those who are not reporting a MSK complaint e.g.  
15  
16 183 stroke rehabilitation. Mentees and mentors without licence to practice and professional indemnity  
17  
18 184 insurance for the respective countries will be excluded.

### 19 185 **Study setting**

20  
21 186 Two sites will be used to collect data; the University of Birmingham, United Kingdom and Western  
22  
23 187 University, London Ontario, Canada. Both Universities host programmes that offer eligibility to  
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25 188 IFOMPT via nationally accredited programmes in MSK physical therapy; Birmingham since 2004 and  
26  
27 189 Western since 2007. Each site experiences unique challenges to fulfilment of MCP thereby affording  
28  
29 190 a different lens on the potential merits of telehealth e-mentoring. The video consulting platform Zoom  
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31 191 (password protected) will be used to conduct interviews and the focus group.  
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### 38 193 **Data collection and procedures**

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40 194 **Objective 1, longitudinal observational study (UK only):** Participants (patients) will be invited to  
41  
42 195 participate in the study and complete the following questionnaires on initial assessment and/or  
43  
44 196 discharge or onward referral (Supplementary file 1). Outcomes were selected to enable  
45  
46 197 characterisation of the patient population and evaluation of their experiences of telehealth (self-care  
47  
48 198 ability and satisfaction).

- 49  
50 199 1. Patient Health: The 15-item Musculoskeletal Health Questionnaire (MSK-HQ) [22] is a recently  
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52 200 developed Patient Reported Outcome Measure (PROM) for use with patients with MSK  
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3 201 conditions and Patient Specific Functional Scale [23] is a patient specific valid, reliable, and  
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5 202 responsive outcome measure for patients with MSK complaints (participants selecting 2-  
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7 203 activities to rate; 2-item. [23, 24]  
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9

10 204 2. Patient Enablement: The 6-item Patient Enablement Instrument (PEI) [25] is a well-established  
11  
12 205 measure of self-care ability in first contact and primary care consultations.[25, 26] It has also  
13  
14 206 been reported to demonstrate fair content validity, construct validity and internal consistency  
15  
16 207 in patients with chronic MSK symptoms [27]  
17  
18

19 208 3. Patient Reported Experience Measures (PREM) (10-item): Rating of patient satisfaction will  
20  
21 209 include key telehealth patient satisfaction themes - namely overall satisfaction, audio-visual  
22  
23 210 quality, and the Consultation and Relational Empathy (CARE) measure. [28]  
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25

26 211 **Objective 2, semi-structured interviews:** Participants (students) will be invited to participate in a semi  
27  
28 212 structured interview which will last 45-60 minutes. The interview will explore students' expectations  
29  
30 213 and perceptions prior, during and after the period of telehealth e-mentoring, as well as exploring their  
31  
32 214 individual experiences and beliefs around their development of clinical reasoning. The topic guide  
33  
34 215 (Supplementary file 2) was informed by existing evidence including the M-Level health education Logic  
35  
36 216 Model [29] and the core constructs of MSc level practice in MSK physical therapy. [7]  
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40 217 **Objective 3, focus group:** Participants (mentors) will be invited to participate in a focus group which  
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42 218 will last 60-90 minutes. The focus group will explore acceptability and appropriateness of telehealth  
43  
44 219 e-mentorship to facilitate student development towards achievement of IFOMPT Educational  
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46 220 Standards. The topic guide will be developed inductively from the interim analysis of semi-structured  
47  
48 221 interview data.  
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52 222 **Objective 4, focus group:** Researchers and representatives from participant groups (patient, mentor  
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54 223 and mentee) will be invited to participate in a focus group which will last 90-120 minutes. The focus  
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56 224 group will explore key themes and outcomes from country specific findings as part of a cross cultural  
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225 analysis. The topic guide for this will be developed inductively from the analysis of data from focus  
226 group, semi structured interviews and patient outcomes in each country.

227

### 228 **Data management and data analysis**

229 Quantitative data, including participant demographics will be analysed descriptively using means and  
230 SD to determine change pre and post management, and to characterise the patient population who  
231 presented for telehealth in this study. Interviews and focus group will be audio recorded and  
232 transcribed verbatim. Post transcription, response clarification will be completed to enhance accuracy  
233 and trustworthiness of participant views (member checking), with field notes used to maintain  
234 contextual details and non-verbal responses during data analysis/interpretation. [20]

235 Qualitative data will be analysed using the well-established Framework Method [30]. This is a seven  
236 stage process for qualitative data management and analysis involving 1) Transcription, 2)  
237 Familiarisation with the interview, 3) Coding, 4) Developing a working analytical framework, 5)  
238 Applying the analytical framework, 6) Charting data into the framework matrix and 7) Interpreting the  
239 data). This approach will allow us to examine and understand the experiences of telehealth and e-  
240 mentoring from interview and focus group data. The method highlights the importance involvement  
241 of individuals with experience in qualitative research, therefore experienced qualitative researchers  
242 will be involved at every stage of analysis.

243

### 244 **Data storage, access and disposal**

245 All quantitative data from the study will be collected using a bespoke online questionnaire,  
246 incorporating the measures as detailed above. Audio data will be transferred securely, transcribed by  
247 an approved service. Participant data will be stored confidentially for 10 years on password-protected



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3 248 computers that can only be accessed by the researchers, and in accordance with General Data  
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5 249 Protection Regulation (GDPR), the Data Protection Act 2018 and University of Birmingham's research  
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7 250 governance frameworks in the UK and Western University Health Science Research Ethics Board.  
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## 11 252 **Patient and public involvement**

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15 253 Whilst conceived during the Covid-19 pandemic as a means of supporting ongoing student progression  
16  
17 254 and development, the study is informed through many years of working (clinically and educationally)  
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19 255 with patients, postgraduate students and MACP/CAMPT mentors. Given the novelty of this approach  
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21 256 to postgraduate education, our pre-study consultation involved, students, patients, practitioners, and  
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23 257 representatives from relevant professional, ethical and legal bodies.

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27 258 Mentors, mentees and patient representatives from each country will be invited to participate in the  
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29 259 focus group to support cross cultural analysis and interpretation of results, including key  
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31 260 recommendations. Key stakeholders in postgraduate education for MSK physical therapists may also  
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33 261 be contacted for their contribution and insight to help aid analysis and interpretation of results  
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35 262 including the MACP and CAMPT. Patient and Public Involvement in the full study will be reported using  
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37 263 the GRIPP2-SF when disseminating study results.[31]  
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## 42 265 **Ethics approval and dissemination**

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47 266 Ethical approval has been granted by the University of Birmingham Ethics Committee (15/5/2020 ref  
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49 267 ERN\_20-0695) for the UK and will be granted by Western University, London Canada (under review).  
50  
51 268 All participants will sign a consent form and receive a participant information sheet prior to  
52  
53 269 participation. They will have the right to withdraw from the study at any point and up to four weeks  
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55 270 after data collection is completed. Patient participants will be advised that any involvement will not  
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57 271 impact on any current and future healthcare. There are minimal risks associated with this study. When  
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3 272 presenting the study findings, pseudonyms will be used to protect the participants' identities. Any  
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5 273 protocol deviations will be documented. The findings from this research will be disseminated to key  
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7 274 stakeholders in postgraduate MSK physical therapy education nationally and internationally, including  
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9 275 MACP and IFOMPT.  
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14 277 **DISCUSSION**

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16 278 This protocol outlines the rationale and methodology of a mixed methods case study design across 2  
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18 279 countries to explore the experiences of telehealth e-mentoring within postgraduate MSK physical  
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20 280 therapy education. The lead researchers for each site have considerable experience of postgraduate  
21  
22 281 education in MSK physical therapy and experiences of the proposed research methodologies including  
23  
24 282 relevant publications [7, 12, 29].  
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26

27  
28 283 Findings from this international study will place a spotlight on the MACP and CAMPT as leading and  
29  
30 284 collaborating internationally in innovative approaches to enable fulfilment of IFOMPT Educational  
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32 285 Standards. The cross cultural analysis will allow us to consider and share best practice experiences in  
33  
34 286 telehealth e-mentoring, recognising that telehealth is well established in Canada as a means of  
35  
36 287 delivering healthcare. We plan to explore how this and other cultural factors may influence the  
37  
38 288 experiences of stakeholders to inform recommendations to IFOMPT for the adoption of telehealth e-  
39  
40 289 mentoring in other member countries. Findings will inform the advancement of curriculum design in  
41  
42 290 advanced MSK physical therapy postgraduate education, specifically overcoming the known  
43  
44 291 limitations of existing approaches to MCP and to support development of advanced clinical reasoning  
45  
46 292 using an authentic alternative to conventional approaches. It is anticipated that the findings from this  
47  
48 293 study will also improve the access to mentors with specialist skills and knowledge globally, thus  
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50 294 improving the educational fulfilment of student mentees and in turn patient outcomes.  
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## 297 **Limitations**

298 Where data collection is occurring across two sites (country and setting) at different time points, the  
299 experiences for all participants may differ across sites. Likewise those leading the interviews and focus  
300 groups across sites will differ. Steps will be taken to minimise the influence of these factors on the  
301 cross cultural analysis, including use of a co-written standardised topic guide, collaboration through  
302 stages of data analysis and interpretation etc. Furthermore this will be specifically explored with  
303 participants from both sites involved in the final focus group.

304

## 305 **AUTHOR CONTRIBUTIONS**

306 NH is the CI leading the protocol development, analyses, and dissemination. NH and AR are lead  
307 researchers for each site, ensuring rigour and quality in project management. NH, WJ, MN, IT, JS, HG  
308 and AR have contributed to the design and development of the protocol and have contributed to the  
309 manuscript draft. All authors have read, provided feedback and approved the final manuscript.

## 310 **FUNDING**

311 None

## 312 **PATIENT CONSENT FOR PUBLICATION**

313 Not required

## 314 **CONFLICT OF INTEREST**

315 The authors declare that they have no competing interests.

316

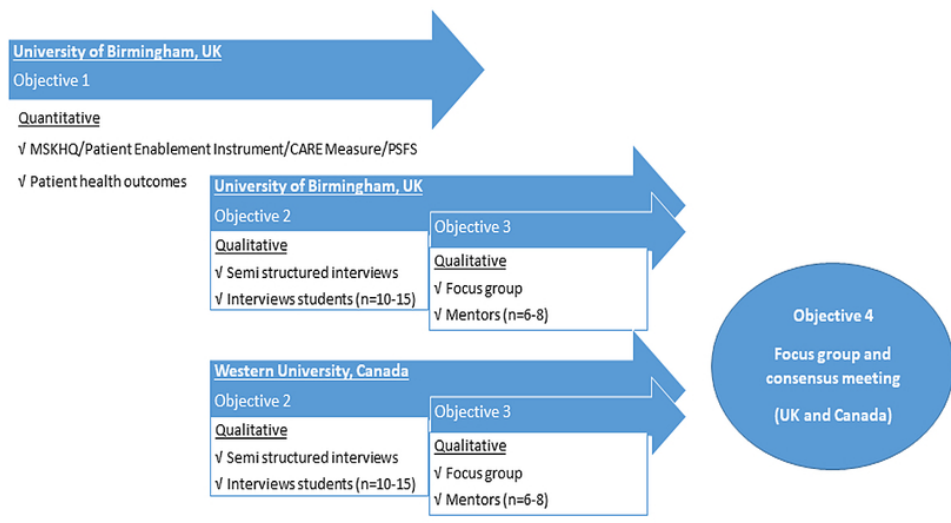
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25 401 **Figure Legend**  
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27 402 **Figure 1: Exploratory sequential case study design**  
28 403 **Figure 2: Description of telehealth**  
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Study design and methods  
35x20mm (600 x 600 DPI)

	UK	Canada
Setting	University	Private Practice, University
Platform	Secure, password encrypted platforms (Zoom, WebEx, Canvas Virtual Learning Platform)	
Delivery model (150 hours of mentored practice)	May to September 2020 One telehealth clinic per week over 20 weeks Mentee assesses new patient (NP) each week with follow up patient (FP) appointments	October 2000 to July 2021 In-person, e-mentoring and/or mock scenarios. Patient assessment are in person or e-mentoring.
Mentor : mentee ratio	1:1 to 1:4	
Formative feedback	Weekly formative feedback (verbal/written) virtually and/or in-person (peer and mentor observation). Formative individual assessment week 10	Weekly formative feedback virtually and/or in-person
Summative feedback	Week 20 (assessment and management of a NP (1 hour) and FP (30 mins) with 30 minutes clinical reasoning viva. Examination includes evaluation of personal professional portfolio	Two NP assessment with expectations differing fall to spring.  Written report of clinical reasoning of patient assessment and management, with evaluation of patient goals and expectations
Key components	<ul style="list-style-type: none"> <li>• Student mentee's individual learning contract and aligned to IFOMPT Educational Standards</li> <li>• Assessment and management of a range of msk patients (spinal, peripheral etc.)</li> <li>• Full informed consent gained by mentor/mentee (clinical and research)</li> <li>• Following mentee patient history taking (observed by mentor), mentee plans for physical examination.</li> <li>• Physical examination and management provided as required (adapted examination, exercise prescription etc.)</li> <li>• Patient centred care supported via additional resources e.g. exercise sheets etc.</li> <li>• Mentor observation of mentee</li> <li>• Peer mentoring facilitated through observation of mentee</li> </ul>	
PROM	MSK-HQ, PEI, PSFS and CARE	
Governance procedures	Patient care provided with a UK licenced physical therapist (HCPC registration) Patient data managed in accordance with University Guidelines and GDPR 2018 – University secure server including record of informed consent (patient care and research)	Patient/client consent is in accordance with the Canadian Physiotherapy Provincial license board

### Telehealth e-mentoring description

52x33mm (600 x 600 DPI)

## Supplementary file 1.

**MUSCULOSKELETAL HEALTH QUESTIONNAIRE (MSK-HQ)** (WITH PERMISSION)

This questionnaire is about your **joint, back, neck, bone and muscle symptoms** such as aches, pains and/or stiffness.

Please focus on the particular health problem(s) for which you sought treatment from this service.

For each question **tick (✓) or X one box** to indicate which statement best describes you **over the last 2 weeks**.

<b>1. Pain/stiffness during the day</b> How severe was your usual joint or muscle pain and/or stiffness overall during the <b>day</b> in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Fairly severe <input type="checkbox"/> 1	Very severe <input type="checkbox"/> 0
<b>2. Pain/stiffness during the night</b> How severe was your usual joint or muscle pain and/or stiffness overall during the <b>night</b> in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Fairly severe <input type="checkbox"/> 1	Very severe <input type="checkbox"/> 0
<b>3. Walking</b> How much have your symptoms interfered with your ability to walk in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Severely <input type="checkbox"/> 1	Unable to walk <input type="checkbox"/> 0
<b>4. Washing/Dressing</b> How much have your symptoms interfered with your ability to wash or dress yourself in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Severely <input type="checkbox"/> 1	Unable to wash or dress myself <input type="checkbox"/> 0
<b>5. Physical activity levels</b> How much has it been a problem for you to do physical activities (e.g. going for a walk or jogging) to the level you want because of your joint or muscle symptoms in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Very much <input type="checkbox"/> 1	Unable to do physical activities <input type="checkbox"/> 0
<b>6. Work/daily routine</b> How much have your joint or muscle symptoms interfered with your work or daily routine in the last 2 weeks (including work & jobs around the house)?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Severely <input type="checkbox"/> 1	Extremely <input type="checkbox"/> 0
<b>7. Social activities and hobbies</b> How much have your joint or muscle symptoms interfered with your social activities and hobbies in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Severely <input type="checkbox"/> 1	Extremely <input type="checkbox"/> 0



<p><b>8. Needing help</b> How often have you needed help from others (including family, friends or carers) because of your joint or muscle symptoms in the last 2 weeks?</p>	<p>Not at all <input type="checkbox"/> 4</p>	<p>Rarely <input type="checkbox"/> 3</p>	<p>Sometimes <input type="checkbox"/> 2</p>	<p>Frequently <input type="checkbox"/> 1</p>	<p>All the time <input type="checkbox"/> 0</p>
<p><b>9. Sleep</b> How often have you had trouble with either falling asleep or staying asleep because of your joint or muscle symptoms in the last 2 weeks?</p>	<p>Not at all <input type="checkbox"/> 4</p>	<p>Rarely <input type="checkbox"/> 3</p>	<p>Sometimes <input type="checkbox"/> 2</p>	<p>Frequently <input type="checkbox"/> 1</p>	<p>Every night <input type="checkbox"/> 0</p>
<p><b>10. Fatigue or low energy</b> How much fatigue or low energy have you felt in the last 2 weeks?</p>	<p>Not at all <input type="checkbox"/> 4</p>	<p>Slight <input type="checkbox"/> 3</p>	<p>Moderate <input type="checkbox"/> 2</p>	<p>Severe <input type="checkbox"/> 1</p>	<p>Extreme <input type="checkbox"/> 0</p>
<p><b>11. Emotional well-being</b> How much have you felt anxious or low in your mood because of your joint or muscle symptoms in the last 2 weeks?</p>	<p>Not at all <input type="checkbox"/> 4</p>	<p>Slightly <input type="checkbox"/> 3</p>	<p>Moderately <input type="checkbox"/> 2</p>	<p>Severely <input type="checkbox"/> 1</p>	<p>Extremely <input type="checkbox"/> 0</p>
<p><b>12. Understanding of your condition and any current treatment</b> Thinking about your joint or muscle symptoms, how well do you feel you understand your condition and any current treatment (including your diagnosis and medication)?</p>	<p>Completely <input type="checkbox"/> 4</p>	<p>Very well <input type="checkbox"/> 3</p>	<p>Moderately <input type="checkbox"/> 2</p>	<p>Slightly <input type="checkbox"/> 1</p>	<p>Not at all <input type="checkbox"/> 0</p>
<p><b>13. Confidence in being able to manage your symptoms</b> How confident have you felt in being able to manage your joint or muscle symptoms by yourself in the last 2 weeks (e.g. medication, changing lifestyle)?</p>	<p>Extremely <input type="checkbox"/> 4</p>	<p>Very <input type="checkbox"/> 3</p>	<p>Moderately <input type="checkbox"/> 2</p>	<p>Slightly <input type="checkbox"/> 1</p>	<p>Not at all <input type="checkbox"/> 0</p>
<p><b>14. Overall impact</b> How much have your joint or muscle symptoms bothered you overall in the last 2 weeks?</p>	<p>Not at all <input type="checkbox"/> 4</p>	<p>Slightly <input type="checkbox"/> 3</p>	<p>Moderately <input type="checkbox"/> 2</p>	<p>Very much <input type="checkbox"/> 1</p>	<p>Extremely <input type="checkbox"/> 0</p>

<p><b>Physical activity levels</b> In the past week, on how many days have you done a total of 30 minutes or more of physical activity, which was enough to raise your heart rate? <i>This may include sport, exercise and brisk walking or cycling for recreation or to get to and from places, but should not include housework or physical activity that is part of your job.</i></p>							
<p>None <input type="checkbox"/></p>	<p>1 day <input type="checkbox"/></p>	<p>2 days <input type="checkbox"/></p>	<p>3 days <input type="checkbox"/></p>	<p>4 days <input type="checkbox"/></p>	<p>5 days <input type="checkbox"/></p>	<p>6 days <input type="checkbox"/></p>	<p>7 days <input type="checkbox"/></p>

### PATIENT SPECIFIC FUNCTIONAL SCALE

Please identify up to two important activities that you are unable to do or are having difficulty with as a result of your current problem/diagnosis.

Please rate each of these problems on the 0-10 scale below.

0 = Able to perform activity at the same level as before injury or problem (No issues) 10 = Unable to perform activity (Cannot perform)

Patient-specific activity scoring scheme (Circle one number or provide a range):

<b>1. Activity</b>										
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>No issues</b>								<b>Cannot perform</b>		

<b>2. Activity</b>										
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>No issues</b>								<b>Cannot perform</b>		

### THE PATIENT ENABLEMENT INSTRUMENT (PEI)

As a result of your visit to the physiotherapist today, so you feel you are.....

	<b>Much better</b>	<b>Better</b>	<b>Same or less</b>	<b>Not applicable</b>
<b>able to cope with life</b>				
<b>able to understand your musculoskeletal complaint</b>				
<b>able to cope with your musculoskeletal complaint</b>				
<b>able to keep yourself healthy</b>				
	<b>Much more</b>	<b>More</b>	<b>Same or less</b>	<b>Not applicable</b>
<b>confident about your help</b>				
<b>able to help your self</b>				

**CONSULTATION AND RELATIONAL EMPATHY MEASURE (CARE Measure)**

Please rate the following statement about today consultation. Please tick one box for each statement and answer every statement.

	Poor	Fair	Good	Very good	Excellent	Does not apply
<b>1. Making you feel at ease.....</b> (being friendly and warm toward you, treating you with respect; not cold or abrupt)						
<b>2. Letting you tell your 'story'</b> (giving you time to fully describe your complaint in your own words, not interrupting or diverting you)						
<b>3. Really listening....</b> (paying close attention to what you were saying; not looking at the notes or computer as you were talking)						
<b>4. Being interested in you as a whole person.....</b> (asking/knowing relevant details about your life, your situation; not treating you as just a number)						
<b>5. Fully understanding your concerns....</b> (communicating that he/she had accurately understood your concerns; not overlooking or dismissing anything)						
<b>6. Showing care and compassion....</b> (seeming genuinely concerned, connecting with you on a human level; not being indifferent or detached)						
<b>7. Being positive...</b> (having a positive approach and a positive attitude; being honest but not negative about your problems)						
<b>8. Explaining things clearly....</b> (fully answering your questions, explaining clearly, giving you adequate information; not being vague)						
<b>9. Helping you take control...</b> (exploring with you about what you can do to improve your health yourself, encouraging rather than lecturing you)						
<b>10. Making a plan of action with you...</b> (discussing the options, involving you in decisions as much as you want to be involved; not ignoring your views)						
<b>Any other comments</b>						

## Supplementary file 2

Research Aim	<b>Experiences of telehealth e-mentoring within postgraduate MSK physical therapy education: protocol for a mixed methods study</b>		
Interview Section	Questions/Content	Prompts	Aims
Ethics Statement	<p>Firstly, I would like to thank you for participating in this interview. Just a reminder that it will be audio/video-recorded but all information shared will be kept strictly confidential. You are entitled to stop the interview and the recording at any point or terminate the interview altogether if you wish.</p> <p>You also have the right not to answer a question if you do not wish to. There are no right or wrong answers. I am interested in your own personal experiences, thoughts and perceptions, with the aim of today being to understand your experiences of telehealth e-mentoring, which covers all forms of consultation with patients using remote means, within postgraduate MSK physical therapy education.</p> <p>Before we start do you have any further questions?</p>	<ul style="list-style-type: none"> <li>• <i>Can I confirm that you have read and understand the information sheet and signed the consent form?</i></li> <li>• <i>Are you comfortable?</i></li> </ul>	<ul style="list-style-type: none"> <li>• To ensure full understanding of what is expected of the participant during this interview.</li> <li>• Make sure the participant is comfortable and ready to begin.</li> </ul>
Introductory Questions	<ol style="list-style-type: none"> <li>1. Can you tell me a bit about yourself?</li> <li>2. Can you tell me about your clinical background and recent posts/roles?</li> <li>3. Can you tell me about your experiences of professional development and approaches to learning/development?</li> <li>4. How many weeks into your CMP module are You?</li> </ol>	<ul style="list-style-type: none"> <li>• <i>Age, where do you come from, clinical posts, setting (NHS/private/sport/military)</i></li> <li>• <i>What professional development have you been involved in before- weekend courses, IST</i></li> <li>• <i>Thinking back what approaches worked best and you remember the most?</i></li> </ul>	<ul style="list-style-type: none"> <li>• Make participant relax and feel comfortable with talking and opening up.</li> <li>• Build rapport.</li> <li>• To gain an insight into the participant's background</li> </ul>

<p>Transition Questions</p>	<ol style="list-style-type: none"> <li>1. What is your overall experience of being a postgraduate MSK physical therapy student?</li> <li>2. How do you study through the week? Can you run me through the different approaches you use?</li> <li>3. When this telehealth e-mentoring was first proposed as alternative approach to conventional clinical mentorship, how did it make you feel?</li> </ol>	<ul style="list-style-type: none"> <li>• <i>What does being a masters level student mean to you?</i></li> <li>• <i>What aspects of your studies do you enjoy?</i></li> <li>• <i>Any challenges with studying at masters level?</i></li> <li>• <i>How do you break up your studies to keep focused?</i></li> <li>• <i>Are there approaches used in the University that work best or engage you more? Seminars, workshops, lectures, patient presentations etc</i></li> <li>• <i>Do you meet with other students? How does that work and what e-platforms do you use? Does this involve just those in your cohort or other individuals?</i></li> <li>• <i>What works well and what does not work so well?</i></li> <li>• <i>Thoughts, beliefs and expectations around different approach to development? Anxieties and thoughts about relevance?</i></li> </ul>	<ul style="list-style-type: none"> <li>• Start to guide the interview towards experiences of masters level professional development</li> <li>• To get an idea of their approach to studying at masters level</li> <li>• To explore approaches used and their preferences to learning</li> <li>• Explore beliefs and perceptions of something unplanned.</li> </ul>
<p>E-mentoring and telehealth background</p>	<p>As well as a considerable body of evidence supporting the use of telehealth as cost effective, accessible means of providing patient care there is an emergence body of evidence supporting the use of e-mentoring to facilitate professional development. With the widespread use of telehealth to offer MSK physical therapy during the Covid-19 pandemic, this offered you as a student an opportunity to integrate knowledge and skills gained from the programme thus far in an authentic way and towards achievement of your programme learning outcomes.</p> <p>Where we are focusing on telehealth e-mentoring to develop advanced clinical reasoning skills to optimise care of patients with MSK symptoms, we will consider outcomes of masters level</p>	<ul style="list-style-type: none"> <li>• <i>Do you have any questions?</i></li> <li>• <i>If you are unsure at any point regarding aspects of the Logic Model, please ask.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Inform the participant of the background of the study</li> <li>• Ensure the participant knows they can ask questions if they are unsure.</li> </ul>

	<p>education in MSK physical therapy, which includes</p> <ol style="list-style-type: none"> <li>1. <i>Critical thinking skills and analysis</i></li> <li>2. <i>Clinical reasoning</i></li> <li>3. <i>Confidence and motivation to practice</i></li> <li>4. <i>Enhanced career progression</i></li> <li>5. <i>Becoming a lifelong learner</i></li> <li>6. <i>Advanced communication skills</i></li> <li>7. <i>Enhanced sense of autonomy</i></li> </ol> <p>I have a number of questions for you founded on this model and if you are not clear on anything as we go through, then please let me know.</p>		
	<p>1. To start with, could you perhaps give me an idea of how the telehealth e-mentoring has influenced your <b>critical thinking skills</b>?</p>	<ul style="list-style-type: none"> <li>• <i>In what way do you think you have become more critical or analytical?</i></li> <li>• <i>Has your clinical decision making changed?</i></li> <li>• <i>In what way has your evidenced based practice changed?</i></li> <li>• <i>What aspects of the process facilitated that?</i></li> <li>• <i>What role did the others have in your group to enable that?</i></li> <li>• <i>What role did the mentor have in facilitating this?</i></li> <li>• <i>Have there been any additional learning activities you have been set during the CMP module which you have found beneficial?</i></li> <li>• <i>How have different patient presentations influenced your critical analysis and decision making skills</i></li> <li>• <i>Is there any different challenges between NP/FU</i></li> <li>• <i>Assessment/management/rehab</i></li> </ul>	<ul style="list-style-type: none"> <li>• To explore the influences of the experience on critical thinking and development of analytical skills across a range of patient presentations</li> </ul>

<p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33</p> <p>Main Questions</p>	<p>2. Could you perhaps give me an idea of how the telehealth e-mentoring has influenced your <b>ability to clinical reasonin?</b></p>	<ul style="list-style-type: none"> <li>• <i>Has this influenced your approach to reasoning e.g. collaborative or narrative reasoning of cases?</i></li> <li>• <i>How did the different patients you saw influence this?</i></li> <li>• <i>Knowledge is a component of clinical reasoning – was this challenged in anyway?</i></li> <li>• <i>How did time influence this – reflection on and in action</i></li> <li>• <i>Where you were involved in peer mentoring, how did this influence your own development?</i></li> <li>• <i>Has this experience changed your meta cognition? If so, how?</i></li> <li>• <i>What strategies did you use to support development of your clinical reasoning? Planning sheets, PROMs etc</i></li> <li>• <i>Are your experiences the same for NP and FP</i></li> <li>• <i>Did you feel this differed accordingly to stages of management e.g. assessment, management and rehab? What about doing physical tests? What about approaches to management?</i></li> </ul>	<ul style="list-style-type: none"> <li>• To explore the influences of the experience on their ability to clinically reason and justify patient management across a range of patient presentations</li> </ul>
	<p>3. How do you feel the telehealth e-mentoring has influenced your <b>confidence and motivation to practice in MSK physical therapy</b></p>	<ul style="list-style-type: none"> <li>• <i>Do you feel more of less confidence in managing patients within a biopsychosocial model of practice?</i></li> <li>• <i>Why do you feel that? Is there any specific aspect of the mentorship that has helped or hindered that?</i></li> <li>• <i>Does this reflect all stages of patient care – assessment, management and rehab</i></li> <li>• <i>What aspects of your practice do you have more or less confidence in – e.g. reasoning complex cases, certain presentations, etc.</i></li> <li>• <i>How do you feel about now going back into practice?</i></li> <li>• <i>How do feel about dealing with uncertainty in managing complex patient cases in the future?</i></li> </ul>	<ul style="list-style-type: none"> <li>• To explore confidence and motivation to practice in MSK physical therapy, drawing on new skills and knowledge</li> <li>• To explore how comfortable they are with dealing with uncertainty and problem solving to inform clinical decision making?</li> </ul>

	<p>4. <b>Advanced communication skills</b> are central to patient history taking and I wonder how you feel these have been influenced by the telehealth e mentoring?</p>	<ul style="list-style-type: none"> <li>• <i>Do you think your communication skills have changed? If so in what way? Which skills – listening, oral, written?</i></li> <li>• <i>Do you feel there are any barriers or facilitators that have aided the development of your communication skills</i></li> <li>• <i>How do you think this has influenced your relationship with your patients and peers?</i></li> <li>• <i>Have your communications skills changed as a result of working in a small group? If so in what way?</i></li> <li>• <i>What influence has this medium had on building a rapport with your patients?</i></li> <li>• <i>What communication strategies have you used to develop your therapeutic relationship with patients?</i></li> <li>• <i>Do you feel these experience have influenced your ability to interpret patient data, and articulate clinical diagnosis and treatment decisions</i></li> <li>• <i>How have you optimised patient engagement in management plans?</i></li> </ul>	<ul style="list-style-type: none"> <li>• To explore the scope of communication and the influences of this at a personnel, group and professional level</li> </ul>
	<p>5. How do you feel the telehealth e-mentoring may have influenced</p> <ol style="list-style-type: none"> <li><b>Career progression</b></li> <li><b>Becoming a lifelong learner</b></li> <li><b>Enhanced sense of autonomy</b></li> </ol>	<ul style="list-style-type: none"> <li>• <i>How do you feel now you have completed the clinical mentorship?</i></li> <li>• <i>Do you feel this experience will be useful in supporting career progression e.g. triage?</i></li> <li>• <i>Where students have reported changes such as career enhancement, becoming a lifelong learner or increased sense of autonomy, do you feel the experiences you have had will be useful? If so in what way?</i></li> <li>• <i>In light of Covid-19 and social distancing how do you feel about the next stage of your career? What are your priorities and plans following completion of the programme?</i></li> </ul>	<ul style="list-style-type: none"> <li>• To explore views and perceptions of this authentic experience on career progression, being a lifelong learning and sense of autonomy</li> </ul>
<p>Conclusion</p>	<p>That's all the questions, is there anything else you would like to add about your experiences of telehealth e-mentoring?</p>	<ul style="list-style-type: none"> <li>• <i>Is there anything you would like to ask regarding the analysis of the data or the next steps of the process?</i></li> </ul>	<ul style="list-style-type: none"> <li>• Ensure the participant is comfortable with what has been discussed.</li> </ul>



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	The interview has now finished. Thank you for participating in this study, I really appreciate your time and input.		
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For peer review only

# BMJ Open

## Experiences of telehealth e-mentoring within postgraduate musculoskeletal physical therapy education in the United Kingdom and Canada: a protocol for parallel mixed methods studies and cross cultural comparison

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3 1 **TITLE**  
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5 2 **Experiences of telehealth e-mentoring within postgraduate musculoskeletal physical therapy**  
6 **education in the United Kingdom and Canada: a protocol for parallel mixed methods studies and**  
7 **cross cultural comparison**  
8  
9 4

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3 27 **ABSTRACT**  
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6 29 **Introduction:**  
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8 30 Mentored clinical practice is central to demonstrating achievement of International Educational  
9 31 Standards in advanced musculoskeletal physical therapy. Whilst traditionally delivered face-to-face,  
10 32 telehealth e-mentoring is a novel alternative to offering this unique pedagogy, to facilitate mentee  
11 33 critical reflection, deeper learning and enhanced knowledge translation to optimise patient care. With  
12 34 Covid-19 resulting in widespread adoption of telehealth and access to mentors often limited by  
13 35 geography or cost, the potential value of telehealth e-mentoring needs investigating. To investigate  
14 36 the experiences and outcomes of multiple stakeholders (student-mentees, mentors and patients)  
15 37 engaged in musculoskeletal physical therapy telehealth e-mentoring across two Universities (United  
16 38 Kingdom, Canada).  
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24 39 **Methods and analysis:**

25 40 Using case study design, we will use sequential mixed methods involving qualitative and quantitative  
26 41 components based on existing evidence. To examine the influence of telehealth e-mentoring on  
27 42 health outcomes in patients with musculoskeletal complaints we will use patient reported outcomes  
28 43 for satisfaction, patient empowerment and change in musculoskeletal health. We will conduct semi  
29 44 structured interviews to explore the development of critical thinking, clinical reasoning,  
30 45 communication skills and confidence of students engaged in telehealth e-mentoring. To explore the  
31 46 mentor acceptability and appropriateness of telehealth e-mentoring we will conduct a focus group in  
32 47 each site. Finally, we will include a focus group of participants from each site to allow a cross cultural  
33 48 comparison of findings to inform international stakeholders. Quantitative data will be analysed using  
34 49 descriptive statistics (median and IQR) to describe changes in outcome data and qualitative data will  
35 50 be analysed following the Framework Method.  
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39 51 **Ethics and dissemination:**

40 52 This study has ethical approval (ERN\_20-0695) granted by the University of Birmingham and will  
41 53 have approval at Western University prior to data collection. Findings will be published in a peer  
42 54 reviewed journal and disseminated to key stakeholders in musculoskeletal physical therapy  
43 55 education and practice.  
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55 57 **Keywords**

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57 58 Telehealth; e-mentoring; postgraduate education; musculoskeletal physical therapy  
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56 60 **ARTICLE SUMMARY**7  
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9 61 **Strengths and Limitations**

- 10  
11 62 • This is the first study to explore the experiences of multiple stakeholders engaged in telehealth  
12 e-mentoring for postgraduate physical therapy  
13 63  
14 64 • The mixed methods case study design enables detailed exploration of experiences and  
15 outcomes involving all stakeholders as participants  
16 65  
17 66 • Cross cultural comparison is enabled through use of multiple study site settings across  
18 countries/ continents  
19 67  
20 68 • Findings will be specific to physical therapy, the two Universities and their respective  
21 countries, thus limiting transferability to other professions, settings and countries  
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**87 INTRODUCTION**

88 Telehealth, which encompasses ‘telemedicine’, ‘telecare’, ‘telerehabilitation’ ‘teleconsult’ and ‘e-  
89 health’ [1] delivers healthcare using virtual technology and online communication platforms and can  
90 move beyond traditional practice settings, [2, 3] to overcome barriers to accessing healthcare such as  
91 time, geography and costs of specialist services. [1, 4] Considerable evidence exists to support its  
92 effectiveness (clinical and cost) and acceptability for improving health outcomes for patients, including  
93 reducing hospital admissions. [1, 3, 5]. Patient satisfaction with telehealth in MSK physical therapy is  
94 widely reported as high [3] and in fact recent trials reported higher levels than face to face care. [3, 6]  
95 Yet, widespread adoption of telehealth within physical therapy has been slow [3] and to the author’s  
96 knowledge has not yet been used as a medium to support postgraduate professional development in  
97 MSK physical therapy. Whilst a high level of psychomotor skills are deemed a core construct of MSK  
98 advanced practice, [7] a considerable number of other core constructs (e.g. high levels of clinical  
99 reasoning, background knowledge and self-analysis as well as patient-centred approach, critical  
100 approach to practice etc.) could be achieved via telehealth. [6-8] With evidence of good concurrent  
101 validity between telehealth based physiotherapy assessment and that involving face to face  
102 assessment for a range of outcomes (pain, swelling, joint mobility, muscle strength etc.) [9] and a  
103 range of studies within medicine supporting that 75-83% of diagnoses are derived from the patient  
104 history data alone, [10, 11] learning outcomes could arguably be achieved through telehealth e-  
105 mentoring.

106 In MSK physical therapy the International Federation of Orthopaedic Manipulative Physical Therapists  
107 (IFOMPT) sets the international educational standards; [12] being then operationalised through  
108 approved programmes in the United Kingdom (UK) by the Musculoskeletal Association of Chartered  
109 Physiotherapists (MACP) and in Canada by the Canadian Association of Manipulative Physical Therapy

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3 110 (CAMPT). Mentored clinical practice (MCP) is central to demonstrating achievement of these  
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5 111 educational standards and using a framework of clinical reasoning, students as mentees, facilitated by  
6  
7 112 a mentor, are able to integrate new skills and knowledge (procedural and propositional) acquired  
8  
9 113 within a University setting into their assessment and management of patients with musculoskeletal  
10  
11 114 (MSK) complaints in a practice setting. MCP offers a unique pedagogy to facilitate critical reflection,  
12  
13 115 deeper learning and enhanced knowledge translation [13] to optimise patient care. Improvements in  
14  
15 116 patient outcomes for those physical therapists who had completed fellowships with a component of  
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17 117 MCP [14] and clinical trial data supporting its clinical effectiveness now exist. [15]  
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20  
21 118 MCP is highly dependent on specialist input and suitably qualified MSK physical therapy mentors.  
22  
23 119 Access to these mentors has become increasingly difficult in the UK with many of these highly trained  
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25 120 mentors often working at an advanced practice level or in consultant practitioner roles; therefore  
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27 121 being involved in managing or leading large physical therapy services with no capacity for mentorship.  
28  
29 122 Additionally, in Canada the geography of the country makes access to mentors challenging and limits  
30  
31 123 opportunities for mentees to access mentors based on location. This often results in professional  
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33 124 isolation for physical therapists practising in rural areas.[13] Likewise, students report increasing  
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35 125 difficulties when negotiating time away from work (costs, access, impact on service etc.) to complete  
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37 126 the MCP component of IFOMPT approved programmes. The COVID-19 pandemic has further  
38  
39 127 compounded these issues forcing us to rethink how we approach healthcare delivery and mentorship.  
40  
41 128 This has resulted in a shift of all initial contact MSK physical therapy being delivered as telehealth via  
42  
43 129 remote digital consultation (telephone consultation and/or video consultation) and a stepped  
44  
45 130 rationale for escalation to face to face consultation. [3] In light of these changes, alternative MCP  
46  
47 131 approaches are urgently required to fulfil student and IFOMPT approved programmes' needs,  
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49 132 including the use of telehealth e-mentoring  
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55 133 Whilst a myriad of approaches are used (face to face, e-mentoring and telehealth) telehealth e-  
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57 134 mentoring could be an adjunct to conventional face-to-face MCP approaches beyond Covid-19, to  
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3 135 better prepare students through novel approaches to delivery of specialist MSK physical therapy; using  
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5 136 remote and digital consultation as part of clinical triage in outpatient healthcare consultations. [16-  
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7 137 18]  
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10 138 Where telehealth e-mentoring has been introduced in light of Covid-19 we urgently need to evaluate  
11  
12 139 its acceptability, appropriateness, satisfaction from the stakeholder perspectives of patients, mentors  
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14 140 and students as a novel approach for professional growth and development, integrating knowledge  
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16 141 and skills acquired in a University setting into clinical practice.  
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23 143 **Aim**

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26 144 To investigate the experiences of post-graduate Masters (MSc) physical therapy students, their  
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28 145 mentors, and patients with MSK complaints engaged telehealth e-mentoring  
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30 146 (consultation/rehabilitation) in a UK and Canadian University setting.  
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33 147 **Objectives**

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36 148 1) To examine the influence of telehealth e-mentoring on health outcomes in patients with MSK  
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38 149 complaints  
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40 150 2) To explore the development of critical thinking, clinical reasoning, communication skills and  
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42 151 confidence of post graduate students engaged in telehealth e-mentoring.  
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44 152 3) To explore the mentor acceptability and appropriateness of telehealth e-mentoring to facilitate  
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46 153 student development towards achievement IFOMPT Educational Standards  
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48 154 4) To conduct a cross cultural comparison of findings to inform international stakeholders  
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## 156 **METHODS AND ANALYSIS**

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### 158 **Design and methods**

159 Using case study design [19] we will use sequential mixed qualitative and quantitative methods to  
160 investigate telehealth e-mentoring as part of postgraduate physiotherapy education (Figure 1). Data  
161 collection will take place from May 2020 through to December 2021. Details of the telehealth e-  
162 mentoring are detailed in Figure 2. In the absence of reporting guidelines for mixed methods studies,  
163 the study is designed in line with the COnsolidated criteria for REporting Qualitative research (COREQ).  
164 [20] and STrengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement  
165 [21] for qualitative and observational study designs respectively.

166 Semi structured interviews will be used to explore development of critical thinking, clinical  
167 reasoning, communication skills and confidence of post graduate students, patient reported  
168 outcomes to explore patient experiences and changes in MSK health following telehealth e-  
169 mentoring, a focus groups to explore mentor acceptability and appropriateness of telehealth e-  
170 mentoring and a focus group for cross cultural comparison of all data.

171

### 172 **Participant recruitment and eligibility for each site**

173 All participants must be able to communicate fluently in English, with access to a video consultation  
174 platform and able and willing to give informed consent.

- 175 • Patients (expected n=~50+) who self-refer to the UK University Advanced Manipulative  
176 Physical therapy telehealth service with a MSK complaint will be invited to participate.
- 177 • Students (n=10-15) from the cohort of postgraduate students registered on the respective  
178 IFOMPT approved programmes who are registered on the MCP module/course will be invited

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3 179 to participate in a semi structured interview. Purposive sampling will be used to ensure a  
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5 180 variance in the profile of participants with respect to age, gender, geographical and clinical  
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7 181 experience on entry to the programme.  
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- 10 182 • Clinical mentors from the University of Birmingham and Western University programme (n=6-  
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12 183 8) will be invited to participate in the focus group

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14 184 Exclusion criteria for patient participants includes those who are not reporting a MSK complaint e.g.  
15  
16 185 stroke rehabilitation. Mentees and mentors without licence to practice and professional indemnity  
17  
18 186 insurance for the respective countries will be excluded.  
19

### 20 21 187 **Study setting**

22  
23 188 Two sites will be used to collect data; the University of Birmingham, United Kingdom and Western  
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25 189 University, London Ontario, Canada. Both Universities host programmes that offer eligibility to  
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27 190 IFOMPT via nationally accredited programmes in MSK physical therapy; Birmingham since 2004 and  
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29 191 Western since 2007. Each site experiences unique challenges to fulfilment of MCP thereby affording  
30  
31 192 a different lens on the potential merits of telehealth e-mentoring. The video consulting platform Zoom  
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33 193 (password protected) will be used to conduct interviews and the focus group.  
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### 38 39 40 195 **Data collection and procedures**

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43 196 **Objective 1, longitudinal observational study (UK only):** Participants (patients) will be invited to  
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45 197 participate in the study and complete the following questionnaires on initial assessment and/or  
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47 198 discharge or onward referral (Supplementary file 1). Outcomes were selected to enable  
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49 199 characterisation of the patient population and evaluation of their experiences of telehealth (self-care  
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51 200 ability and satisfaction).

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55 201 1. Patient Health: The 15-item Musculoskeletal Health Questionnaire (MSK-HQ) [22] is a recently  
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57 202 developed Patient Reported Outcome Measure (PROM) for use with patients with MSK  
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3 203 conditions and Patient Specific Functional Scale [23] is a patient specific valid, reliable, and  
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5 204 responsive outcome measure for patients with MSK complaints (participants selecting 2-  
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7 205 activities to rate; 2-item. [23, 24]  
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10 206 2. Patient Enablement: The 6-item Patient Enablement Instrument (PEI) [25] is a well-established  
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12 207 measure of self-care ability in first contact and primary care consultations.[25, 26] It has also  
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14 208 been reported to demonstrate fair content validity, construct validity and internal consistency  
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16 209 in patients with chronic MSK symptoms [27]  
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19 210 3. Patient Reported Experience Measures (PREM) (10-item): Rating of patient satisfaction will  
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21 211 include key telehealth patient satisfaction themes - namely overall satisfaction, audio-visual  
22  
23 212 quality, and the Consultation and Relational Empathy (CARE) measure. [28]  
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26 213 **Objective 2, semi-structured interviews:** Participants (students) will be invited to participate in a semi  
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28 214 structured interview which will last 45-60 minutes. The interview will explore students' expectations  
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30 215 and perceptions prior, during and after the period of telehealth e-mentoring, as well as exploring their  
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32 216 individual experiences and beliefs around their development of clinical reasoning. The topic guide  
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34 217 (Supplementary file 2) was informed by existing evidence including the M-Level health education Logic  
35  
36 218 Model [29] and the core constructs of MSc level practice in MSK physical therapy. [7]  
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40 219 **Objective 3, focus group:** Participants (mentors) will be invited to participate in a focus group which  
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42 220 will last 60-90 minutes. The focus group will explore acceptability and appropriateness of telehealth  
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44 221 e-mentorship to facilitate student development towards achievement of IFOMPT Educational  
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46 222 Standards. The topic guide will be developed inductively from the interim analysis of semi-structured  
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48 223 interview data.  
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52 224 **Objective 4, focus group:** Researchers and representatives from participant groups (patient, mentor  
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54 225 and mentee) will be invited to participate in a focus group which will last 90-120 minutes. The focus  
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56 226 group will explore key themes and outcomes from country specific findings as part of a cross cultural  
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3 227 analysis. The topic guide for this will be developed inductively from the analysis of data from focus  
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5 228 group, semi structured interviews and patient outcomes in each country.  
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### 10 11 230 **Data management and data analysis** 12

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14 231 Quantitative data, including participant demographics will be analysed descriptively using means and  
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16 232 SD to determine change pre and post management, and to characterise the patient population who  
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18 233 presented for telehealth in this study. Interviews and focus group will be audio recorded and  
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20 234 transcribed verbatim. Post transcription, response clarification will be completed to enhance accuracy  
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22 235 and trustworthiness of participant views (member checking), with field notes used to maintain  
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24 236 contextual details and non-verbal responses during data analysis/interpretation. [20]  
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28 237 Qualitative data will be analysed using the well-established Framework Method [30]. This is a seven  
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30 238 stage process for qualitative data management and analysis involving 1) Transcription, 2)  
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32 239 Familiarisation with the interview, 3) Coding, 4) Developing a working analytical framework, 5)  
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34 240 Applying the analytical framework, 6) Charting data into the framework matrix and 7) Interpreting the  
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36 241 data). This approach will allow us to examine and understand the experiences of telehealth and e-  
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38 242 mentoring from interview and focus group data. The method highlights the importance involvement  
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40 243 of individuals with experience in qualitative research, therefore experienced qualitative researchers  
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42 244 will be involved at every stage of analysis.  
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### 50 246 **Data storage, access and disposal** 51

52 247 All quantitative data from the study will be collected using a bespoke online questionnaire,  
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54 248 incorporating the measures as detailed above. Audio data will be transferred securely, transcribed by  
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56 249 an approved service. Participant data will be stored confidentially for 10 years on password-protected  
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3 250 computers that can only be accessed by the researchers, and in accordance with General Data  
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5 251 Protection Regulation (GDPR), the Data Protection Act 2018 and University of Birmingham's research  
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7 252 governance frameworks in the UK and Western University Health Science Research Ethics Board.  
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### 11 12 254 **Patient and public involvement**

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15 255 Whilst conceived during the Covid-19 pandemic as a means of supporting ongoing student progression  
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17 256 and development, the study is informed through many years of working (clinically and educationally)  
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19 257 with patients, postgraduate students and MACP/CAMPT mentors. Given the novelty of this approach  
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21 258 to postgraduate education, our pre-study consultation involved, students, patients, practitioners, and  
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23 259 representatives from relevant professional, ethical and legal bodies.  
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27 260 Mentors, mentees and patient representatives from each country will be invited to participate in the  
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29 261 focus group to support cross cultural analysis and interpretation of results, including key  
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31 262 recommendations. Key stakeholders in postgraduate education for MSK physical therapists may also  
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33 263 be contacted for their contribution and insight to help aid analysis and interpretation of results  
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35 264 including the MACP and CAMPT. Patient and Public Involvement in the full study will be reported using  
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37 265 the GRIPP2-SF when disseminating study results.[31]  
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### 42 43 44 267 **Ethics approval and dissemination**

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47 268 Ethical approval has been granted by the University of Birmingham Ethics Committee (15/5/2020 ref  
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49 269 ERN\_20-0695) for the UK and will be granted by Western University, London Canada (under review).  
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51 270 All participants will sign a consent form and receive a participant information sheet prior to  
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53 271 participation. They will have the right to withdraw from the study at any point and up to four weeks  
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55 272 after data collection is completed. Patient participants will be advised that any involvement will not  
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57 273 impact on any current and future healthcare. There are minimal risks associated with this study. When  
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3 274 presenting the study findings, pseudonyms will be used to protect the participants' identities. Any  
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5 275 protocol deviations will be documented. The findings from this research will be disseminated to key  
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7 276 stakeholders in postgraduate MSK physical therapy education nationally and internationally, including  
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9 277 MACP and IFOMPT.  
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14 279 **DISCUSSION**

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16 280 This protocol outlines the rationale and methodology of a mixed methods case study design across 2  
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18 281 countries to explore the experiences of telehealth e-mentoring within postgraduate MSK physical  
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20 282 therapy education. The lead researchers for each site have considerable experience of postgraduate  
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22 283 education in MSK physical therapy and experiences of the proposed research methodologies including  
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24 284 relevant publications [7, 12, 29].  
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28 285 Findings from this international study will place a spotlight on the MACP and CAMPT as leading and  
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30 286 collaborating internationally in innovative approaches to enable fulfilment of IFOMPT Educational  
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32 287 Standards. The cross cultural analysis will allow us to consider and share best practice experiences in  
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34 288 telehealth e-mentoring, recognising that telehealth is well established in Canada as a means of  
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36 289 delivering healthcare. We plan to explore how this and other cultural factors may influence the  
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38 290 experiences of stakeholders to inform recommendations to IFOMPT for the adoption of telehealth e-  
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40 291 mentoring in other member countries. Findings will inform the advancement of curriculum design in  
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42 292 advanced MSK physical therapy postgraduate education, specifically overcoming the known  
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44 293 limitations of existing approaches to MCP and to support development of advanced clinical reasoning  
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46 294 using an authentic alternative to conventional approaches. It is anticipated that the findings from this  
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48 295 study will also improve the access to mentors with specialist skills and knowledge globally, thus  
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50 296 improving the educational fulfilment of student mentees and in turn patient outcomes.  
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## 299 **Limitations**

300 Where data collection is occurring across two sites (country and setting) at different time points, the  
301 experiences for all participants may differ across sites. Likewise those leading the interviews and focus  
302 groups across sites will differ. Steps will be taken to minimise the influence of these factors on the  
303 cross cultural analysis, including use of a co-written standardised topic guide, collaboration through  
304 stages of data analysis and interpretation etc. Furthermore this will be specifically explored with  
305 participants from both sites involved in the final focus group.

306

## 307 **AUTHOR CONTRIBUTIONS**

308 NH is the CI leading the protocol development, analyses, and dissemination. NH and AR are lead  
309 researchers for each site, ensuring rigour and quality in project management. NH, WJ, MN, IT, JS, HG  
310 and AR have contributed to the design and development of the protocol and have contributed to the  
311 manuscript draft. All authors have read, provided feedback and approved the final manuscript.

## 312 **FUNDING**

313 None

## 314 **PATIENT CONSENT FOR PUBLICATION**

315 Not required

## 316 **CONFLICT OF INTEREST**

317 The authors declare that they have no competing interests.

318

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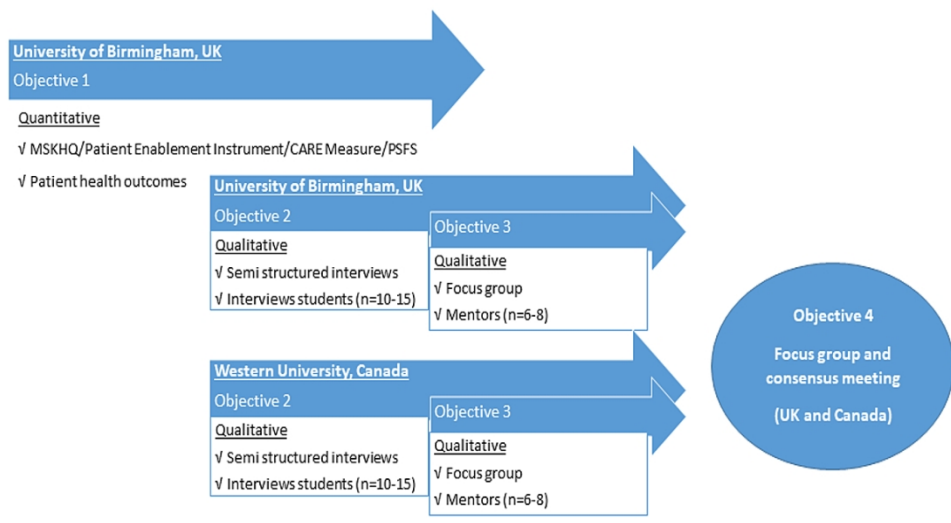
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### **Figure Legend**

**Figure 1: Exploratory sequential case study design**

**Figure 2: Description of telehealth**

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Study design and methods  
36x20mm (900 x 900 DPI)

	UK	Canada
Setting	University	Private Practice, University
Platform	Secure, password encrypted platforms (Zoom, WebEx, Canvas Virtual Learning Platform)	
Delivery model (150 hours of mentored practice)	May to September 2020 One telehealth clinic per week over 20 weeks Mentee assesses new patient (NP) each week with follow up patient (FP) appointments	October 2000 to July 2021 In-person, e-mentoring and/or mock scenarios. Patient assessment are in person or e-mentoring.
Mentor : mentee ratio	1:1 to 1:4	
Formative feedback	Weekly formative feedback (verbal/written) virtually and/or in-person (peer and mentor observation). Formative individual assessment week 10	Weekly formative feedback virtually and/or in-person
Summative feedback	Week 20 (assessment and management of a NP (1 hour) and FP (30 mins) with 30 minutes clinical reasoning viva. Examination includes evaluation of personal professional portfolio	Two NP assessment with expectations differing fall to spring.  Written report of clinical reasoning of patient assessment and management, with evaluation of patient goals and expectations
Key components	<ul style="list-style-type: none"> <li>• Student mentee's individual learning contract and aligned to IFOMPT Educational Standards</li> <li>• Assessment and management of a range of msk patients (spinal, peripheral etc.)</li> <li>• Full informed consent gained by mentor/mentee (clinical and research)</li> <li>• Following mentee patient history taking (observed by mentor), mentee plans for physical examination.</li> <li>• Physical examination and management provided as required (adapted examination, exercise prescription etc.)</li> <li>• Patient centred care supported via additional resources e.g. exercise sheets etc.</li> <li>• Mentor observation of mentee</li> <li>• Peer mentoring facilitated through observation of mentee</li> </ul>	
PROM	MSK-HQ, PEI, PSFS and CARE	
Governance procedures	Patient care provided with a UK licenced physical therapist (HCPC registration) Patient data managed in accordance with University Guidelines and GDPR 2018 – University secure server including record of informed consent (patient care and research)	Patient/client consent is in accordance with the Canadian Physiotherapy Provincial license board

Telehealth e-mentoring description

52x33mm (900 x 900 DPI)

## Supplementary file 1.

## MUSCULOSKELETAL HEALTH QUESTIONNAIRE (MSK-HQ) (WITH PERMISSION)

This questionnaire is about your **joint, back, neck, bone and muscle symptoms** such as aches, pains and/or stiffness.

Please focus on the particular health problem(s) for which you sought treatment from this service.

For each question **tick (✓) or X one box** to indicate which statement best describes you **over the last 2 weeks**.

<b>1. Pain/stiffness during the day</b> How severe was your usual joint or muscle pain and/or stiffness overall during the <b>day</b> in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Fairly severe <input type="checkbox"/> 1	Very severe <input type="checkbox"/> 0
<b>2. Pain/stiffness during the night</b> How severe was your usual joint or muscle pain and/or stiffness overall during the <b>night</b> in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Fairly severe <input type="checkbox"/> 1	Very severe <input type="checkbox"/> 0
<b>3. Walking</b> How much have your symptoms interfered with your ability to walk in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Severely <input type="checkbox"/> 1	Unable to walk <input type="checkbox"/> 0
<b>4. Washing/Dressing</b> How much have your symptoms interfered with your ability to wash or dress yourself in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Severely <input type="checkbox"/> 1	Unable to wash or dress myself <input type="checkbox"/> 0
<b>5. Physical activity levels</b> How much has it been a problem for you to do physical activities (e.g. going for a walk or jogging) to the level you want because of your joint or muscle symptoms in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Very much <input type="checkbox"/> 1	Unable to do physical activities <input type="checkbox"/> 0
<b>6. Work/daily routine</b> How much have your joint or muscle symptoms interfered with your work or daily routine in the last 2 weeks (including work & jobs around the house)?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Severely <input type="checkbox"/> 1	Extremely <input type="checkbox"/> 0
<b>7. Social activities and hobbies</b> How much have your joint or muscle symptoms interfered with your social activities and hobbies in the last 2 weeks?	Not at all <input type="checkbox"/> 4	Slightly <input type="checkbox"/> 3	Moderately <input type="checkbox"/> 2	Severely <input type="checkbox"/> 1	Extremely <input type="checkbox"/> 0

<p><b>8. Needing help</b> How often have you needed help from others (including family, friends or carers) because of your joint or muscle symptoms in the last 2 weeks?</p>	<p>Not at all <input type="checkbox"/> 4</p>	<p>Rarely <input type="checkbox"/> 3</p>	<p>Sometimes <input type="checkbox"/> 2</p>	<p>Frequently <input type="checkbox"/> 1</p>	<p>All the time <input type="checkbox"/> 0</p>
<p><b>9. Sleep</b> How often have you had trouble with either falling asleep or staying asleep because of your joint or muscle symptoms in the last 2 weeks?</p>	<p>Not at all <input type="checkbox"/> 4</p>	<p>Rarely <input type="checkbox"/> 3</p>	<p>Sometimes <input type="checkbox"/> 2</p>	<p>Frequently <input type="checkbox"/> 1</p>	<p>Every night <input type="checkbox"/> 0</p>
<p><b>10. Fatigue or low energy</b> How much fatigue or low energy have you felt in the last 2 weeks?</p>	<p>Not at all <input type="checkbox"/> 4</p>	<p>Slight <input type="checkbox"/> 3</p>	<p>Moderate <input type="checkbox"/> 2</p>	<p>Severe <input type="checkbox"/> 1</p>	<p>Extreme <input type="checkbox"/> 0</p>
<p><b>11. Emotional well-being</b> How much have you felt anxious or low in your mood because of your joint or muscle symptoms in the last 2 weeks?</p>	<p>Not at all <input type="checkbox"/> 4</p>	<p>Slightly <input type="checkbox"/> 3</p>	<p>Moderately <input type="checkbox"/> 2</p>	<p>Severely <input type="checkbox"/> 1</p>	<p>Extremely <input type="checkbox"/> 0</p>
<p><b>12. Understanding of your condition and any current treatment</b> Thinking about your joint or muscle symptoms, how well do you feel you understand your condition and any current treatment (including your diagnosis and medication)?</p>	<p>Completely <input type="checkbox"/> 4</p>	<p>Very well <input type="checkbox"/> 3</p>	<p>Moderately <input type="checkbox"/> 2</p>	<p>Slightly <input type="checkbox"/> 1</p>	<p>Not at all <input type="checkbox"/> 0</p>
<p><b>13. Confidence in being able to manage your symptoms</b> How confident have you felt in being able to manage your joint or muscle symptoms by yourself in the last 2 weeks (e.g. medication, changing lifestyle)?</p>	<p>Extremely <input type="checkbox"/> 4</p>	<p>Very <input type="checkbox"/> 3</p>	<p>Moderately <input type="checkbox"/> 2</p>	<p>Slightly <input type="checkbox"/> 1</p>	<p>Not at all <input type="checkbox"/> 0</p>
<p><b>14. Overall impact</b> How much have your joint or muscle symptoms bothered you overall in the last 2 weeks?</p>	<p>Not at all <input type="checkbox"/> 4</p>	<p>Slightly <input type="checkbox"/> 3</p>	<p>Moderately <input type="checkbox"/> 2</p>	<p>Very much <input type="checkbox"/> 1</p>	<p>Extremely <input type="checkbox"/> 0</p>

<p><b>Physical activity levels</b> In the past week, on how many days have you done a total of 30 minutes or more of physical activity, which was enough to raise your heart rate? <i>This may include sport, exercise and brisk walking or cycling for recreation or to get to and from places, but should not include housework or physical activity that is part of your job.</i></p>							
<p>None <input type="checkbox"/></p>	<p>1 day <input type="checkbox"/></p>	<p>2 days <input type="checkbox"/></p>	<p>3 days <input type="checkbox"/></p>	<p>4 days <input type="checkbox"/></p>	<p>5 days <input type="checkbox"/></p>	<p>6 days <input type="checkbox"/></p>	<p>7 days <input type="checkbox"/></p>

### PATIENT SPECIFIC FUNCTIONAL SCALE

Please identify up to two important activities that you are unable to do or are having difficulty with as a result of your current problem/diagnosis.

Please rate each of these problems on the 0-10 scale below.

0 = Able to perform activity at the same level as before injury or problem (No issues) 10 = Unable to perform activity (Cannot perform)

Patient-specific activity scoring scheme (Circle one number or provide a range):

<b>1. Activity</b>										
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>No issues</b>								<b>Cannot perform</b>		

<b>2. Activity</b>										
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>No issues</b>								<b>Cannot perform</b>		

### THE PATIENT ENABLEMENT INSTRUMENT (PEI)

As a result of your visit to the physiotherapist today, so you feel you are.....

	<b>Much better</b>	<b>Better</b>	<b>Same or less</b>	<b>Not applicable</b>
<b>able to cope with life</b>				
<b>able to understand your musculoskeletal complaint</b>				
<b>able to cope with your musculoskeletal complaint</b>				
<b>able to keep yourself healthy</b>				
	<b>Much more</b>	<b>More</b>	<b>Same or less</b>	<b>Not applicable</b>
<b>confident about your help</b>				
<b>able to help your self</b>				

## CONSULTATION AND RELATIONAL EMPATHY MEASURE (CARE Measure)

Please rate the following statement about today consultation. Please tick one box for each statement and answer every statement.

	Poor	Fair	Good	Very good	Excellent	Does not apply
<b>1. Making you feel at ease.....</b> (being friendly and warm toward you, treating you with respect; not cold or abrupt)						
<b>2. Letting you tell your 'story'</b> (giving you time to fully describe your complaint in your own words, not interrupting or diverting you)						
<b>3. Really listening....</b> (paying close attention to what you were saying; not looking at the notes or computer as you were talking)						
<b>4. Being interested in you as a whole person.....</b> (asking/knowing relevant details about your life, your situation; not treating you as just a number)						
<b>5. Fully understanding your concerns....</b> (communicating that he/she had accurately understood your concerns; not overlooking or dismissing anything)						
<b>6. Showing care and compassion....</b> (seeming genuinely concerned, connecting with you on a human level; not being indifferent or detached)						
<b>7. Being positive...</b> (having a positive approach and a positive attitude; being honest but not negative about your problems)						
<b>8. Explaining things clearly....</b> (fully answering your questions, explaining clearly, giving you adequate information; not being vague)						
<b>9. Helping you take control...</b> (exploring with you about what you can do to improve your health yourself, encouraging rather than lecturing you)						
<b>10. Making a plan of action with you...</b> (discussing the options, involving you in decisions as much as you want to be involved; not ignoring your views)						
<b>Any other comments</b>						



## Supplementary file 2

Research Aim	<b>Experiences of telehealth e-mentoring within postgraduate MSK physical therapy education: protocol for a mixed methods study</b>		
Interview Section	Questions/Content	Prompts	Aims
Ethics Statement	<p>Firstly, I would like to thank you for participating in this interview. Just a reminder that it will be audio/video-recorded but all information shared will be kept strictly confidential. You are entitled to stop the interview and the recording at any point or terminate the interview altogether if you wish.</p> <p>You also have the right not to answer a question if you do not wish to. There are no right or wrong answers. I am interested in your own personal experiences, thoughts and perceptions, with the aim of today being to understand your experiences of telehealth e-mentoring, which covers all forms of consultation with patients using remote means, within postgraduate MSK physical therapy education.</p> <p>Before we start do you have any further questions?</p>	<ul style="list-style-type: none"> <li>• <i>Can I confirm that you have read and understand the information sheet and signed the consent form?</i></li> <li>• <i>Are you comfortable?</i></li> </ul>	<ul style="list-style-type: none"> <li>• To ensure full understanding of what is expected of the participant during this interview.</li> <li>• Make sure the participant is comfortable and ready to begin.</li> </ul>
Introductory Questions	<ol style="list-style-type: none"> <li>1. Can you tell me a bit about yourself?</li> <li>2. Can you tell me about your clinical background and recent posts/roles?</li> <li>3. Can you tell me about your experiences of professional development and approaches to learning/development?</li> <li>4. How many weeks into your CMP module are You?</li> </ol>	<ul style="list-style-type: none"> <li>• <i>Age, where do you come from, clinical posts, setting (NHS/private/sport/military)</i></li> <li>• <i>What professional development have you been involved in before- weekend courses, IST</i></li> <li>• <i>Thinking back what approaches worked best and you remember the most?</i></li> </ul>	<ul style="list-style-type: none"> <li>• Make participant relax and feel comfortable with talking and opening up.</li> <li>• Build rapport.</li> <li>• To gain an insight into the participant's background</li> </ul>

<p>Transition Questions</p>	<ol style="list-style-type: none"> <li>1. What is your overall experience of being a postgraduate MSK physical therapy student?</li> <li>2. How do you study through the week? Can you run me through the different approaches you use?</li> <li>3. When this telehealth e-mentoring was first proposed as alternative approach to conventional clinical mentorship, how did it make you feel?</li> </ol>	<ul style="list-style-type: none"> <li>• <i>What does being a masters level student mean to you?</i></li> <li>• <i>What aspects of your studies do you enjoy?</i></li> <li>• <i>Any challenges with studying at masters level?</i></li> <li>• <i>How do you break up your studies to keep focused?</i></li> <li>• <i>Are there approaches used in the University that work best or engage you more? Seminars, workshops, lectures, patient presentations etc</i></li> <li>• <i>Do you meet with other students? How does that work and what e-platforms do you use? Does this involve just those in your cohort or other individuals?</i></li> <li>• <i>What works well and what does not work so well?</i></li> <li>• <i>Thoughts, beliefs and expectations around different approach to development? Anxieties and thoughts about relevance?</i></li> </ul>	<ul style="list-style-type: none"> <li>• Start to guide the interview towards experiences of masters level professional development</li> <li>• To get an idea of their approach to studying at masters level</li> <li>• To explore approaches used and their preferences to learning</li> <li>• Explore beliefs and perceptions of something unplanned.</li> </ul>
<p>E-mentoring and telehealth background</p>	<p>As well as a considerable body of evidence supporting the use of telehealth as cost effective, accessible means of providing patient care there is an emergence body of evidence supporting the use of e-mentoring to facilitate professional development. With the widespread use of telehealth to offer MSK physical therapy during the Covid-19 pandemic, this offered you as a student an opportunity to integrate knowledge and skills gained from the programme thus far in an authentic way and towards achievement of your programme learning outcomes.</p> <p>Where we are focusing on telehealth e-mentoring to develop advanced clinical reasoning skills to optimise care of patients with MSK symptoms, we will consider outcomes of masters level</p>	<ul style="list-style-type: none"> <li>• <i>Do you have any questions?</i></li> <li>• <i>If you are unsure at any point regarding aspects of the Logic Model, please ask.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Inform the participant of the background of the study</li> <li>• Ensure the participant knows they can ask questions if they are unsure.</li> </ul>

	<p>education in MSK physical therapy, which includes</p> <ol style="list-style-type: none"> <li>1. <i>Critical thinking skills and analysis</i></li> <li>2. <i>Clinical reasoning</i></li> <li>3. <i>Confidence and motivation to practice</i></li> <li>4. <i>Enhanced career progression</i></li> <li>5. <i>Becoming a lifelong learner</i></li> <li>6. <i>Advanced communication skills</i></li> <li>7. <i>Enhanced sense of autonomy</i></li> </ol> <p>I have a number of questions for you founded on this model and if you are not clear on anything as we go through, then please let me know.</p>		
	<p>1. To start with, could you perhaps give me an idea of how the telehealth e-mentoring has influenced your <b>critical thinking skills</b>?</p>	<ul style="list-style-type: none"> <li>• <i>In what way do you think you have become more critical or analytical?</i></li> <li>• <i>Has your clinical decision making changed?</i></li> <li>• <i>In what way has your evidenced based practice changed?</i></li> <li>• <i>What aspects of the process facilitated that?</i></li> <li>• <i>What role did the others have in your group to enable that?</i></li> <li>• <i>What role did the mentor have in facilitating this?</i></li> <li>• <i>Have there been any additional learning activities you have been set during the CMP module which you have found beneficial?</i></li> <li>• <i>How have different patient presentations influenced your critical analysis and decision making skills</i></li> <li>• <i>Is there any different challenges between NP/FU</i></li> <li>• <i>Assessment/management/rehab</i></li> </ul>	<ul style="list-style-type: none"> <li>• To explore the influences of the experience on critical thinking and development of analytical skills across a range of patient presentations</li> </ul>

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<p>Main Questions</p>	<p>2. Could you perhaps give me an idea of how the telehealth e-mentoring has influenced your <b>ability to clinical reasoning</b>?</p>	<ul style="list-style-type: none"> <li>• <i>Has this influenced your approach to reasoning e.g. collaborative or narrative reasoning of cases?</i></li> <li>• <i>How did the different patients you saw influence this?</i></li> <li>• <i>Knowledge is a component of clinical reasoning – was this challenged in anyway?</i></li> <li>• <i>How did time influence this – reflection on and in action</i></li> <li>• <i>Where you were involved in peer mentoring, how did this influence your own development?</i></li> <li>• <i>Has this experience changed your meta cognition? If so, how?</i></li> <li>• <i>What strategies did you use to support development of your clinical reasoning? Planning sheets, PROMs etc</i></li> <li>• <i>Are your experiences the same for NP and FP</i></li> <li>• <i>Did you feel this differed accordingly to stages of management e.g. assessment, management and rehab? What about doing physical tests? What about approaches to management?</i></li> </ul>	<ul style="list-style-type: none"> <li>• To explore the influences of the experience on their ability to clinically reason and justify patient management across a range of patient presentations</li> </ul>
	<p>3. How do you feel the telehealth e-mentoring has influenced your <b>confidence and motivation to practice in MSK physical therapy</b></p>	<ul style="list-style-type: none"> <li>• <i>Do you feel more of less confidence in managing patients within a biopsychosocial model of practice?</i></li> <li>• <i>Why do you feel that? Is there any specific aspect of the mentorship that has helped or hindered that?</i></li> <li>• <i>Does this reflect all stages of patient care – assessment, management and rehab</i></li> <li>• <i>What aspects of your practice do you have more or less confidence in – e.g. reasoning complex cases, certain presentations, etc.</i></li> <li>• <i>How do you feel about now going back into practice?</i></li> <li>• <i>How do feel about dealing with uncertainty in managing complex patient cases in the future?</i></li> </ul>	<ul style="list-style-type: none"> <li>• To explore confidence and motivation to practice in MSK physical therapy, drawing on new skills and knowledge</li> <li>• To explore how comfortable they are with dealing with uncertainty and problem solving to inform clinical decision making?</li> </ul>

	<p>4. <b>Advanced communication skills</b> are central to patient history taking and I wonder how you feel these have been influenced by the telehealth e mentoring?</p>	<ul style="list-style-type: none"> <li>• <i>Do you think your communication skills have changed? If so in what way? Which skills – listening, oral, written?</i></li> <li>• <i>Do you feel there are any barriers or facilitators that have aided the development of your communication skills</i></li> <li>• <i>How do you think this has influenced your relationship with your patients and peers?</i></li> <li>• <i>Have your communications skills changed as a result of working in a small group? If so in what way?</i></li> <li>• <i>What influence has this medium had on building a rapport with your patients?</i></li> <li>• <i>What communication strategies have you used to develop your therapeutic relationship with patients?</i></li> <li>• <i>Do you feel these experience have influenced your ability to interpret patient data, and articulate clinical diagnosis and treatment decisions</i></li> <li>• <i>How have you optimised patient engagement in management plans?</i></li> </ul>	<ul style="list-style-type: none"> <li>• To explore the scope of communication and the influences of this at a personnel, group and professional level</li> </ul>
	<p>5. How do you feel the telehealth e-mentoring may have influenced</p> <ol style="list-style-type: none"> <li><b>Career progression</b></li> <li><b>Becoming a lifelong learner</b></li> <li><b>Enhanced sense of autonomy</b></li> </ol>	<ul style="list-style-type: none"> <li>• <i>How do you feel now you have completed the clinical mentorship?</i></li> <li>• <i>Do you feel this experience will be useful in supporting career progression e.g. triage?</i></li> <li>• <i>Where students have reported changes such as career enhancement, becoming a lifelong learner or increased sense of autonomy, do you feel the experiences you have had will be useful? If so in what way?</i></li> <li>• <i>In light of Covid-19 and social distancing how do you feel about the next stage of your career? What are your priorities and plans following completion of the programme?</i></li> </ul>	<ul style="list-style-type: none"> <li>• To explore views and perceptions of this authentic experience on career progression, being a lifelong learning and sense of autonomy</li> </ul>
<p>Conclusion</p>	<p>That's all the questions, is there anything else you would like to add about your experiences of telehealth e-mentoring?</p>	<ul style="list-style-type: none"> <li>• <i>Is there anything you would like to ask regarding the analysis of the data or the next steps of the process?</i></li> </ul>	<ul style="list-style-type: none"> <li>• Ensure the participant is comfortable with what has been discussed.</li> </ul>

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	The interview has now finished. Thank you for participating in this study, I really appreciate your time and input.		
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For peer review only