

# BMJ Open

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Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2022-069372.R2
Article Type:	Original research
Date Submitted by the Author:	14-Mar-2023
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<b>Primary Subject Heading</b>:	Qualitative research
Secondary Subject Heading:	Public health, Qualitative research, Sports and exercise medicine
Keywords:	PUBLIC HEALTH, SPORTS MEDICINE, QUALITATIVE RESEARCH

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# UK physiotherapists delivering physical activity advice: what are the challenges and possible solutions? A qualitative study

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Word count: 5,014

## ABSTRACT

**Objectives:** Despite the known health benefits of physical activity (PA), PA levels are in decline. Healthcare professionals (HCPs), including physiotherapists, have been identified as ideal conduits to promote PA, yet their knowledge and awareness of PA guidelines are poor. The aims of this study were to explore current knowledge of PA

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3 24 guidelines among UK physiotherapists and identify barriers and possible solutions to  
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5 25 delivering PA advice.  
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8  
9 26 **Design:** A qualitative approach using semi-structured interviews that took place between  
10  
11 27 March and May 2021. Data were analysed with a thematic approach using Braun and  
12  
13 28 Clarke's six steps.  
14  
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16  
17 29 **Setting:** Various inpatient and outpatient clinical settings across six UK regions.  
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20 30 **Participants:** Eighteen UK-based physiotherapists managing National Health Service  
21  
22 31 patients were recruited through volunteer sampling in March 2021.  
23  
24

25 32 **Results:** Five themes and 16 sub-themes (shown in parenthesis) were identified as  
26  
27 33 barriers and solutions to delivering PA advice: physiotherapist intrinsic barriers  
28  
29 34 (knowledge, fear/confidence); a lack of emphasis and priority given to PA (time  
30  
31 35 constraints, minimal educational and staff training); patient barriers (compliance,  
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33 36 expectations, and fear of doing PA); increasing awareness of the PA guidelines (staff  
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35 37 training, signposting awareness, use of social media and television campaigns); and  
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37 38 optimising delivery (use of visual resources, good communication and approaches  
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39 39 involving being individualised and gradual for patients with chronic conditions).  
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45 40 **Conclusions:** In this study, physiotherapist participants seemed to have limited  
46  
47 41 awareness of the PA guidelines despite recent updates and were faced with similar  
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49 42 barriers to those previously reported in the literature. The solutions suggested could guide  
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51 43 strategies to support physiotherapists being able to deliver PA advice. Further research  
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3 44 is needed to evaluate the efficiency of any implemented solutions supporting the delivery  
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5 45 of PA advice.  
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11 47 **Keywords:** Physical activity, physiotherapists, knowledge, awareness, advice  
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### 14 49 **Strengths and limitations of this study**

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17  
18 50 • This study identified physiotherapists' barriers to providing physical activity (PA)  
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20 51 advice but also identified possible solutions informed by these key stakeholders.  
21  
22 52 • The qualitative design and use of semi-structured interviews enabled flexible  
23  
24 53 discussions to capture the thoughts and opinions of the participants and to  
25  
26 54 ensure responses could be explored further in future research.  
27  
28 55 • The study findings cannot be generalised to all UK physiotherapists; however,  
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30 56 they provide potentially useful insights into the participant's experiences in  
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32 57 relation to barriers and possible solutions with respect to providing PA advice.  
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## 40 59 **INTRODUCTION**

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43 60 Physical activity (PA) has multiple health benefits including improving mental health,  
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45 61 reducing risk factors leading to cardiometabolic diseases, and improving physical health  
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47 62 in cancer survivors.[1,2] The advice of the Chief Medical Officers (CMO) in the United  
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49 63 Kingdom (UK) is that adults should complete 150 minutes of moderate activity, or 75  
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51 64 minutes of vigorous activity each week or a combination, alongside strength training at  
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53 65 least twice weekly.[3] This is similar to the World Health Organisation (WHO) guidelines  
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3 66 of at least 150-300 moderate intensity aerobic PA, or 75 to 150 vigorous intensity PA,  
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5 67 with twice weekly strength training.[4] Twenty-eight percent of adults globally fail to reach  
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7 68 the recommended aerobic PA guidelines.[5] In the UK this figure was slightly lower with  
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10 69 39% of the population failing to meet the aerobic PA guidelines between 2019 and  
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12 70 2020,[6] 27% of which were classed as physically inactive, meaning they did less than 30  
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14 71 minutes of moderate PA a week.[6] Additionally, 43% of UK adults achieved the strength  
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16 72 PA guidelines between 2020-2121, which was a 1.2% decrease from the previous year.[6]  
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18 73 Whilst there are greater health benefits by reaching the recommended PA levels for most  
19  
20 74 individuals, there are still health benefits from completing even low amounts of light  
21  
22 75 intensity PA for those who are inactive or limited by chronic health conditions and to then  
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24 76 gradually increase intensity and duration over time.[4] With physical inactivity leading to  
25  
26 77 1.6 million deaths annually, and non-communicable diseases (NCDs) increasing,[7]  
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28 78 global strategies promoting health and wellbeing need greater attention to ensure world  
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30 79 health goals are achieved. In 2015, the United Nations agreed to promote healthy lives  
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32 80 and well-being for all ages, as part of the Sustainable Development Goal 3, which has  
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34 81 many health targets, including reducing premature mortality from NCDs by one third.[8]  
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36 82 In accordance with this, the WHO launched the Global Action Plan on Physical Activity  
37  
38 83 (GAPPA) in 2018 to reduce physical inactivity by 15%.[9] A major barrier to these goals  
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40 84 being achieved was the COVID-19 global pandemic and associated restrictions, which  
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42 85 led to more people working from home and to the temporary closure of gyms and sports  
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44 86 facilities, further decreasing PA levels in the UK population.[10] This has resulted in  
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46 87 decreased physical and functional capacity, increased mental distress and an increased  
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48 88 cardiovascular disease risk profile.[11] Therefore, now more than ever, public health  
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3 89 policies and strategies to increase PA levels of the population safely require urgent  
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5 90 attention.[10]  
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9 91 The CMO identified HCPs as key conduits in the promotion of PA.[3] Physiotherapists are  
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11 92 found across multiple clinical areas and are seen as experts in non-invasive management  
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13 93 strategies; they are ideally placed to deliver PA guidance.[12] Physiotherapists reported  
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15 94 that health promotion, especially PA, was within their scope of practice (SOP).[13] Yet, in  
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17 95 a 2016 survey of 514 UK physiotherapists, only 16% knew all three components of the  
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19 96 CMO PA guidelines, despite 77% reporting that they discussed PA with patients.[14] Of  
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21 97 this sample, 12 completed follow up interviews where reported barriers to PA promotion  
22  
23 98 included patient complexity , work culture and a lack of time.[15] The authors also  
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25 99 reported some facilitators to health promotion, such as having repeated appointments,  
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27 100 collaborations with other services and building an alliance with the patient.[15]  
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33 101 Solutions to enable physiotherapists to successfully deliver PA guidance have yet to be  
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35 102 explored in depth,[15,16] particularly in the UK. Appropriate solutions are key for policy  
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37 103 development, HCP awareness of PA guidelines and also behaviour change in  
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39 104 physiotherapy management of patients. As knowledge of the PA guidelines has been  
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41 105 previously identified as poor amongst UK physiotherapists prior to the updated CMO and  
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43 106 WHO PA guidelines [14], it is yet unknown whether knowledge and awareness of the PA  
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45 107 guidelines has improved.  
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50 108 The aims of this qualitative study were to explore the current knowledge physiotherapists  
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52 109 have of the PA guidelines and promotion of PA, recognise common barriers experienced  
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3 110 by physiotherapists when delivering PA advice and identify physiotherapists' perceptions  
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5 111 of solutions to support successful delivery of PA guidance.  
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## 8 9 112 **METHODS**

### 10 11 12 113 **Design**

13  
14  
15 114 A qualitative research design was adopted in this study using semi-structured interviews  
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17 115 to explore the knowledge and perceptions towards providing PA advice to patients,  
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20 116 amongst a range of UK based physiotherapists. The research approach used in this study  
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22 117 has previously been used by other authors and provided informative accounts for HCPs  
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24 118 perceptions towards providing PA advice in healthcare.[17] The standards for reporting  
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26 119 qualitative research was followed throughout.[18] Ethical approval was granted by the  
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29 120 Faculty of Biological Sciences at the University of Leeds (27 July 2020/ BIOSCI 19-039).  
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### 32 121 **Participants and procedures**

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36 122 The inclusion criteria for this study included UK based physiotherapists who currently  
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38 123 practised and managed National Health Service patients, from any clinical field.  
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40 124 Participants were recruited through advertisement on the Musculoskeletal bulletin on the  
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42 125 interactive Chartered Society of Physiotherapy (iCSP) portal as well as through LinkedIn  
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44 126 and by word of mouth. The advertisement for this study informed prospective participants  
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47 127 that it was exploring physiotherapists' knowledge and promotion of PA to patients. Willing  
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49 128 participants followed a link to Microsoft Forms, where they viewed the participant  
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51 129 information sheet and completed an eligibility survey that included questions on the  
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54 130 inclusion criteria. Eligible participants were emailed the participant information sheet to  
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3 131 keep, containing details of what the study involved and a consent form, which was signed  
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5 132 by the participants and returned, then an interview date was arranged. Participants were  
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7 133 informed that they could withdraw from this study at any point, and this was reiterated at  
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9 134 the start and end of the interview. The recruitment and interview process continued until  
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11 135 data saturation was reached, when there were no more emerging themes or new  
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13 136 responses.[19]  
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### 18 137 **Data collection**

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21 138 Interviews adopted a semi-structured design, which is a common method in healthcare  
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23 139 research [20], to encourage open ended responses that could be elaborated on with  
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25 140 probing for the limited responses, which explores participants' thoughts and beliefs.[21]  
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27 141 The interview guide was created by Vishnubala et al. [22] and adapted to make questions  
28  
29 142 specific to physiotherapists (see Supplementary file). The guide included 30 interview  
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31 143 questions, split into five sections: 1) demographics; 2) PA knowledge and education; 3)  
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33 144 resources and interventions; 4) COVID-19; and 5) other, providing an opportunity for the  
34  
35 145 participants to express any other thoughts or ideas that emerged during the interview. Not  
36  
37 146 all data collected from the interview questions were analysed as they addressed aspects  
38  
39 147 beyond the aims of this paper.[22] All interviews were conducted through the Zoom  
40  
41 148 meeting platform by the lead researcher AS. DV provided training to AS and a mock  
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43 149 interview was performed to practice and refine the interview technique and reduce any  
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45 150 researcher influence emerging in the delivery of the interview questions. Follow up calls  
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47 151 between AS, DV and CN reflected on the data collection of the initial few interviews to  
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49 152 make sure they captured rich and informative data and to review how the interviews had  
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51 153 gone. The interviews took place from March 2021 until May 2021 and were audio  
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3 154 recorded. Interviews were automatically transcribed verbatim the same day by the Zoom  
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5 155 platform, checked for accuracy by the main researcher and stored securely on the  
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7 156 University of Leeds OneDrive. Each participant was assigned a participant number, with  
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10 157 any identifiable information anonymised.  
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### 13 158 **Data analysis**

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17 159 A thematic analysis approach following Braun and Clarke's six steps was undertaken:  
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19 160 data familiarisation; coding; theme identification; revision of themes; defining and naming  
20  
21 161 themes; and writing up.[23] This method was chosen for its flexibility, whilst providing in-  
22  
23 162 depth complex data.[24] In reflecting similar approaches used elsewhere in the literature,  
24  
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26 163 [17] interviews were transcribed verbatim and then read through several times in order to  
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28 164 become immersed in the data. Transcripts were analysed in order of occurrence, with  
29  
30 165 interesting features of each individual interview transcript identified and assigned a code.  
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33 166 All interesting features in the data or codes were subsequently collated from the semi-  
34  
35 167 structured interviews in a separate document, and across the data set common themes  
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37 168 were identified. To assure the credibility and trustworthiness of the data these were  
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40 169 reviewed for consistency by the lead researcher. Once the themes were initially  
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42 170 established these were discussed with a second researcher (CN) for purposes of  
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44 171 composition and consistency and to confirm interpretation of the themes. In a further effort  
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47 172 to assure credibility and trustworthiness, prior to the main analyses of the data, a pilot  
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49 173 analysis was undertaken separately by two members of the research team (AS and CN)  
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51 174 on two interview transcripts in order to confirm consistency and agreement in the  
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53 175 interpretation of codes and reflect on emerging themes and to ensure that transcriptions  
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56 176 represented participant responses and to reduce the likelihood of researcher bias.[24,25]  
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3 177 At each step in the thematic analysis the lead researcher (AS) reviewed progress with  
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5 178 members of the research team (CN and DV) as undertaken in other peer review  
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8 179 research.[17]  
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11 180 Regarding demographic data, IBM SPSS statistics V.27 was used to describe participant  
12  
13 181 characteristics, including gender, level of education, years of experience, healthcare  
14  
15 182 setting and UK region, which were presented as proportions and frequencies. The  
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17 183 number of years of experience were categorised into 0-5 years, 6-10, 11-15, 16-20, and  
18  
19 184 >21 years. Locations of work were grouped into UK regions. Example quotes from  
20  
21 185 transcripts were presented in tables for each theme.  
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## 25 26 186 **Patient and public involvement**

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29 187 None.  
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## 32 188 **RESULTS**

### 33 34 35 189 **Participant characteristics**

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39 190 Twenty-one potential participants completed the eligibility survey, but one did not meet  
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41 191 the inclusion criteria and a further two failed to return the consent form. Data saturation  
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43 192 was reached after 18 interviews and therefore no further participants were recruited.  
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45 193 Interview length ranged from between 35 to 72 minutes. Demographic characteristics of  
46  
47 194 the 18 physiotherapists who were interviewed are shown in Table 1. The sample  
48  
49 195 consisted of physiotherapists across six different UK regions, with 67% female and 61%  
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51 196 working in outpatient settings. Fifty percent of the sample had less than five years of  
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53 197 experience and 56% had either a postgraduate diploma or a masters level qualification.  
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198 **Table 1. Participant characteristics (n=18)**

Characteristic	Category	n (%)
Gender	Male	6 (33.3)
	Female	12 (66.7)
Level of education	BSC or equivalent	8 (44.4)
	BSc + postgraduate diploma	3 (16.7)
	BSc + MSc	7 (38.9)
Years of experience	0-5	9 (50)
	6-10	6 (33.3)
	11-15	0 (0.0)
	16-20	2 (11.1)
	21+	1 (5.6)
Healthcare setting	Inpatients	5 (27.8)
	Outpatients	11 (61.1)
	Both	2 (11.1)
UK region	West Midlands	3 (16.7)
	East Midlands	8 (44.4)
	Yorkshire and Humber	4 (22.2)
	North West	1 (5.6)
	London	1 (5.6)

Scotland

1 (5.6)

199 *BSc, Bachelor of Science; MSc, Master of Science; n, number; UK, United Kingdom.*

200

## 201 **Themes from thematic analysis**

202 Following thematic analysis of the data set, five themes were identified as barriers and  
203 solutions to promoting and delivering PA guidance: physiotherapist intrinsic barriers; lack  
204 of emphasis and priority given to PA; patient barriers to delivering PA; increasing  
205 awareness of the PA guidelines; and optimising the delivery of PA. Amongst the five  
206 themes, 16 sub-themes were also identified from the interview transcripts.

### 207 ***Theme 1: Physiotherapist intrinsic barriers***

208 In relation to the CMO PA guidelines, 22% of physiotherapists correctly stated the three  
209 components of the guidelines (150 minutes of moderate or 75 minutes of vigorous  
210 intensity aerobic activity and twice weekly strength training), whilst 39% did not know any  
211 of the components of the PA guidelines. Vigorous intensity PA was the most incorrectly  
212 answered or unknown component, followed by the strength recommendations. Many of  
213 the physiotherapists admitted that they had a lack of knowledge of the PA guidelines, with  
214 some stating they had either not heard of or read the UK CMO PA guidelines, would not  
215 know where to find them and had also not seen any of the accompanying resources, such  
216 as infographics. Other emerging barriers were that the physiotherapists expressed low  
217 confidence and fear of giving PA advice, in case they gave incorrect advice, or something  
218 went wrong as a result of this dissemination (Table 2).

219 **Table 2. Sub-themes for physiotherapist intrinsic barriers to delivering PA advice**

Sub-theme	Example quotes
Perceived lack of knowledge of the PA guidelines	<p><i>"I guess my lack of knowledge of the exact parameters that we should be advising. So, I think because I'm not 100% sure how many minutes I should be giving, I don't want to advise patients wrongly." P1</i></p> <p><i>"My lack of knowledge in terms of not being up to date with what needs to be done in certain cases. Like, if it's like chronic low back pain or diabetes, or some such diseases, I know what to do, but if there's something beyond this which I haven't read or talked about or it's a more complicated presentation, this is what kind of keeps me a bit apart for not giving that advice." P8</i></p>
Confidence/fear of giving PA advice	<p><i>"I think there is a bit of fear of giving the wrong advice and getting penalised for that and also kind of an anxiety is if you've given some advice and it hasn't helped, will you be held accountable?" P7</i></p> <p><i>"We know physiotherapy as an intervention doesn't have too many risks associated and certainly not severe ones like other interventions, but I think when we prescribe exercises that tends to be maybe one of the more risky things we do. And so yes, I'd probably say the fear associated with what if it goes wrong, and I think maybe a lack of support from, whether it's the company in terms of training or support." P18</i></p>

220 PA, physical activity.

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4 221 ***Theme 2: Lack of emphasis and priority given to PA***

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7 222 There were multiple barriers that focused on lack of emphasis and priority given to  
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9 223 promoting PA, identified by the physiotherapists (Table 3). These included many  
10  
11 224 expressing that they received minimal training on PA, both at university and through  
12  
13 225 continuing professional development (CPD) offered at work. Time was a common barrier  
14  
15 226 and issue amongst those interviewed, often because of multiple tasks required within an  
16  
17 227 appointment that were considered a greater priority. Staffing shortages, pressures for  
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19 228 quick discharges and work cultures that deprioritises education and advice over other  
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21 229 treatments such as manual therapy, were other less common but important barriers  
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26 230 mentioned by some participants.  
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231 **Table 3. Sub-themes for lack of emphasis and priority given to delivering PA advice**

Sub-theme	Example quotes
Lack of CPD training at work	<p><i>"We have not had any postgraduate or sort of say with, you know, in house extensive training around physical activity, just more something that we touch on. That is if we're looking at you know management of low back pain, we might then say, but physical activity, e.g. walking, is important but there won't be much depth behind physical activity as a topic." P18</i></p> <p><i>"Since graduating, I don't think that I've had any specific further training on specific like recommendations for physical activity." P14</i></p>
Lack of emphasis through training at university level	<p><i>"I wouldn't say I've had that much specifically about exercise while I've been working" P10</i></p> <p><i>"So, I guess the university BSc course I did there was some sort of exercise prescription, strength and conditioning type tutoring, but I think it was one or two lectures and tutorials so it made up of a small part of kind of the course and our studies." P13</i></p> <p><i>"I think, would probably fairly minimal training undergrad because it was quite long ago I trained." P16</i></p> <p><i>"So we've obviously done a bit on health promotion and health activity in university. There was probably a lecture or two on it. There was also an optional module which I opted not to take." P9</i></p> <p><i>"In terms of my physiotherapy training specifically, I've not had much specific training on physical activity. I would say that my training around is probably very limited in terms of from university I don't think they touched on it that much he was on a very brief." P5</i></p>
Time pressures	<p><i>"If you have someone coming in to see you with a specific condition, so if it is pain or with an injury or whether it is acute or long term, you are going to have to go through that, assess it before your objective assessment, provide them with advice and specific exercises for that condition. Write the notes, get them booked in, write out the exercises, whatever it is. And if you want to give that advice on top of that, you just don't have time, so if you've got someone coming to a specific condition that's going to take priority over general lifestyle advice, even if we feel as though that they may really benefit from that, so time is a huge factor." P6</i></p>



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4 *"It also might be that you just don't have the time to do it and give that advice, because you're under so much*  
5 *pressure from your patient caseload and so time is definitely a barrier." P7*

6 232 PA, physical activity, CPD, continuing professional development.  
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For peer review only

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3 **233 Theme 3: Patient barriers to delivering PA**  
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6 234 Another commonly identified theme amongst physiotherapists was patient limitations to  
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8 235 delivering PA advice (Table 4). This included physiotherapists reporting that patients often  
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11 236 had low compliance to home management, particularly with exercise. Patient fear of doing  
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13 237 PA, in case of reinjury or exacerbation of symptoms, was also a reoccurring perception  
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15 238 by physiotherapist, particularly for patients who had chronic conditions, with low PA  
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17 239 levels. Another common barrier was patient expectations of physiotherapy management,  
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19 240 which would often not align with exercise or PA advice, with many reporting that patients  
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21 241 would prefer quick fixes and passive treatments such as massage.  
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242 **Table 4. Sub-themes for patient barriers to delivering PA**

Sub-theme	Example quotes
Patient compliance	<p data-bbox="447 394 1934 565"><i>“Sometimes your patients just don't want to do it, they won't have any of it. I think there's a mixture of reasons that you can't really just pinpoint to on certain factors that affects just how you might deliver physical activity advice kind of thing, because sometimes patients are just not on board and with behaviour modification. With behaviour motivational interviewing, you definitely need them to have some sort of interest before actually trying to then even try doing anything really because if they are not on board, they are not going to do it when you tell them.” P9</i></p> <p data-bbox="447 597 1934 695"><i>“I guess sometimes maybe the compliance. Again, I'm just thinking about the demographic of some patients that I see, they may find it quite hard to change the amount of physical activity or find that it's not something that they're necessarily prioritising or too willing to do so maybe that behaviour change element.” P18</i></p>
Patient fear of exercise	<p data-bbox="447 771 1934 836"><i>“Kind of what I've experienced a lot recently is people that have come in with say like pain or you know, like crepitus in the knee. And quite fearful of movement and quite fearful of exercise and kind of have that fear avoidance.” P4</i></p> <p data-bbox="447 868 1934 933"><i>“Quite often, in regards of exercise as well, any physical activity is a fear avoidance, patients are just afraid to do and make things worse.” P3</i></p>
Expectations of physiotherapy	<p data-bbox="447 1015 1934 1112"><i>“Patient expectations of a physio appointment. So, if they're just wanting manual therapy, for example, and we're chewing their ear off about walking more and keeping themselves active and moving or trying to encourage them to pick up a new hobby if they are pretty sedentary, then that could be a barrier as well.” P6</i></p> <p data-bbox="447 1144 1934 1274"><i>“We see a lot of chronic pain patients who are looking for a quick fix. And they might turn towards medications or massage or other passive interventions, which actually I try and use the analogy to patients around chronic pain that it's not a machine that can be fixed or should be fixed, but instead of garden that we should try and tend to regularly and, and then that way we may have better success at keeping on top of chronic pain.” P18</i></p>

243 PA, physical activity.

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4 244 Solutions and successful approaches to managing patients with chronic and acute  
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6 245 conditions were discussed in the interview, in addition to their opinions on the most  
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8 246 efficient and effective ways to communicate the PA guidelines.  
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12 247 ***Theme 4: Increasing awareness of the PA guidelines***  
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15 248 A key theme identified from physiotherapists in response to successfully promoting PA to  
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17 249 patients was to increase awareness of the PA guidelines to both patients and  
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19 250 physiotherapists (Table 5). Most responses included improving staff training with some  
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21 251 suggesting it should be a mandatory annual module and others proposing having more  
22  
23 252 group discussions between staff on PA and its benefits. Awareness of local initiatives and  
24  
25 253 exercise referral schemes (ERS) to enable signposting was also recommended as a  
26  
27 254 solution, particularly for those with time constraints and to support the patients more long-  
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29 255 term. Social media was mentioned on multiple occasions as a solution to both increasing  
30  
31 256 awareness of PA and PA opportunities for the general public and physiotherapists alike,  
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33 257 such as Twitter or LinkedIn, by following influential people in the field and listening to  
34  
35 258 podcasts. Social media was specifically recommended as a useful tool to raise awareness  
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37 259 to the younger populations and those who regularly use technology, though, for  
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39 260 populations less suited to social media many physiotherapists suggested television  
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41 261 advertisement to engage more people and spread awareness of the PA guidelines.  
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262 **Table 5. Sub-themes for increasing awareness of the PA guidelines as a solution to delivering PA advice**

Sub-theme	Example quotes
Staff training	<p data-bbox="396 407 1955 440"><i>"I think better ongoing potentially mandatory training or better kind of educational pieces that go out across the board." P2</i></p> <p data-bbox="396 472 1955 570"><i>"If we do it as a yearly in-service training, just as a refresher, it makes it more accessible, because if someone's a bit embarrassed or they don't want to ask when they feel they should know, but they don't know where to know, if you do it as a training for the whole team then that's not targeting anyone, but it is very informative." P7</i></p>
Use of campaigns through television and advertising	<p data-bbox="396 659 1955 789"><i>"I think TV ads would be quite useful. Often when I'm prescribing exercises to patients that are very sedentary, I use the advert break, as an example of when they could get up change their posture, move around. Do something, do their exercises if they so desire. So having an actual maybe government led advertisement, because the people that are going to see that are the ones that have sat all day in front of the TV." P1</i></p> <p data-bbox="396 821 1955 886"><i>"Kind of just campaigning that everybody should be doing, you know even just like adverts on TV, you know, like so it's kind of in people's faces a bit more frequently and every day." P11</i></p>
Use of social media	<p data-bbox="396 959 1955 1024"><i>"If you want to get the younger ones you need to go social media, you need to get your TikTok influences, you need to get your instagrammers." P17</i></p> <p data-bbox="396 1057 1955 1154"><i>"Social media is the only way forward I think at the minute and it's difficult because obviously you do want to target the older generation as well, however, like I said before, culture change takes such a long time that I think the main way to get it across to people nowadays is through social media and get that to filter down through the next generations" P12</i></p>

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Signposting  
to other  
exercise  
services

*“I think we're quite lucky particularly in Sheffield in that we've got sort of for those patients who we know are safe and obviously are happy to do activity we've got a lot of referral schemes, so we've basically got like SPARS [Sheffield Physical Activity Scheme] access which has got physical activity guidance, and so we can actually send them through to health trainers. So they give again further guidance on exercise obviously dieting and things like that.” P5*

*“So, one of the ways I think was having further links with like community, like gyms or, like other outdoor spaces. They could yeah link in with that you can like continue the programme after it's like just a clinical referral and, like the six weeks, whatever and then after that the physical activity should carry on.” P14*

263 PA, physical activity.

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3 264 **Theme 5: Optimising the delivery of PA**  
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6 265 Successful approaches were discussed in terms of delivering PA advice to patients with  
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8 266 chronic and acute conditions and how promotion can be optimised (Table 6). With patient  
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10 267 barriers in mind, many participants suggested ensuring any PA prescription should be  
11  
12 268 individualised, functional and based on what the patient enjoys. Many also reported  
13  
14 269 communication as a key factor and that the language used should not be patronising,  
15  
16 270 forceful or lack empathy, which echoed the advice physiotherapists would give towards  
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18 271 encouraging less enthusiastic colleagues to promote PA. To facilitate discussions and  
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20 272 support patients, visual resources, such as infographics, were advocated; some  
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22 273 suggested giving them to patients after an appointment or displaying them in waiting  
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24 274 rooms and toilets. Other visual resources, such as leaflets and handouts, were also  
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26 275 mentioned.  
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276 **Table 6. Sub-themes for optimising delivery of PA advice**

Sub-theme	Example quotes
Make PA individualised and functional	<p data-bbox="426 435 1829 500"><i>“Get to know them as an individual, so ask them their current hobbies and the types of activities that they are interested in. So that I can tailor the activity to their needs and something that I think they are likely to do.” P1</i></p> <p data-bbox="426 532 1898 634"><i>“I think for anyone who's maybe going to increase their physical activity, I'd have given them advice to sort of take their time with it, just ease themselves in and find something they enjoy and that's regardless of chronic conditions and or anything really.” P13</i></p>
Have gradual approach to introducing PA	<p data-bbox="426 727 1919 824"><i>“If someone's got a long-term condition, it might be more of a structured manner, so I might start off really small and then, catch up with them, see how they responded to it and then incremental it up and just progress things on a lot slower.” P6</i></p> <p data-bbox="426 857 1934 959"><i>“If they have had pain a long time, I would probably want to at least begin at a low manageable intensity or volume, and then have that graded exposure to it, so gradually building things up as to, so they can not only build confidence, but they're able to manage it without having regular flare-ups.” P18</i></p>
Supportive communication	<p data-bbox="426 1011 1934 1182"><i>“I think appreciating where patients are. So, kind of sympathising with the fact that they're in pain, in particular for chronic patients with chronic problems. You know I hear a lot that people don't listen, believe me, they think I'm putting it on, or they think I should be able to do more and I think just understanding and empathising is a really good starting point, because I think once people feel listened to, then they're more likely to take on board the advice of education that you can offer them.” P16</i></p> <p data-bbox="426 1214 1934 1373"><i>“The biggest thing I've learned is to not ram it down their throat and try and come across you know better because, it just really pisses people off, but, in terms of trying to just say this is what you could be doing, how much of that do you think you could manage which sounds like it's doable for you and kind of go from there seems to work quite reasonably well.” P15</i></p>



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*"I'd say if I have to pick one, I would go for the government infographics just because they've got the information that you can print out and stick up. So, you've got everything you need and is not in depth and it's obviously patient friendly as well, so it is simple, for everyone, and everyone can understand it, so I'd probably say that's the best resource, in my opinion." P5*

*"Infographics, so if you've got certain clinicians who are visual learners, let's say, using things like that they might be ones that they can print off, put up in their clinic rooms I've seen that before and facilitates that discussion with the patient." P18*

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12 277 PA, physical activity

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## 278 **DISCUSSION**

279 The aims of this study were to provide a greater insight into UK physiotherapists' current  
280 levels of PA knowledge and identify the main barriers and solutions perceived to  
281 delivering PA guidance and we have used these terms as an organising framework to  
282 structure the discussion. Among the study participants, few physiotherapists knew the UK  
283 CMO PA guidelines, despite these having been updated in 2019 and identifying HCPs,  
284 including physiotherapists, as key to their dissemination.[3] Further, very few of the  
285 participants knew where to access the PA guidelines and associated infographics.  
286 Common barriers found included: lack of time, low confidence, limited PA training at  
287 university and through CPD once qualified, in addition to patient expectations, compliance  
288 and fear of exercise. Solutions, separated into increasing awareness of the PA guidelines  
289 and optimising delivery of the PA guidelines, consisted of using television advertisement  
290 campaigns and social media to spread awareness; increased staff training; signposting  
291 to local services; following individualised and gradual approaches for patients with chronic  
292 conditions; having good communication; and use of visual resources, such as  
293 infographics, to facilitate the PA advice given by physiotherapists.

### 294 **Barriers**

#### 295 ***Physiotherapist knowledge and intrinsic factors***

296 Having knowledge and awareness of the PA guidelines is an important factor in being  
297 able to successfully promote PA. Around 22% of participants correctly identified moderate  
298 and vigorous intensity aerobic activity and strength recommendations in this study. This

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3 299 was only slightly higher than that found in previous research where 16% of 514 UK  
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5 300 physiotherapists correctly identified all three components.[14] Whilst this study only had  
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7 301 18 participants, making true comparisons difficult, the findings might suggest that the  
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9 302 2019 updated CMO PA guidelines have had little impact on the knowledge or awareness  
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11 303 of physiotherapists. However, it appears reduced knowledge of PA is not specific to UK  
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13 304 physiotherapists, as Yona et al. found that of 1062 Israeli physiotherapists who took part  
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15 305 in a survey in 2018, 87% reported awareness of PA guidelines, yet only 6.8% correctly  
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17 306 stated all three components of the guidelines, with vigorous intensity PA and strength  
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19 307 components being the least known,[26] similar to the present study. This could be due to  
20  
21 308 physiotherapists possibly feeling more confident recommending light or moderate  
22  
23 309 intensity PA to reduce likelihood of adverse effects, particularly for more complex patients  
24  
25 310 typically with comorbidities such as cancer, heart or respiratory conditions, and are  
26  
27 311 therefore, less aware of the other recommendations. Awareness of the guidelines and  
28  
29 312 where to locate them were clear issues in this present study, with many not knowing  
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31 313 where to find the CMO PA guidelines, which questions the effectiveness of the  
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33 314 communication strategy when the guidelines were updated in 2019. Awareness of the  
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35 315 CMO PA guidelines was also recently reported to be limited in a qualitative study of 15  
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37 316 GPs recent by Vishnubala et al.[22] Another larger study in 2016 of 1,013 GPs found that  
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39 317 30% had never heard of the CMO PA guidelines and a further 50% had heard of them  
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41 318 but were very unfamiliar.[27] Arguably, the lack of awareness of the CMO PA guidelines  
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43 319 could be a result of HCPs using alternative PA guidelines, with some participants in this  
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45 320 study reporting using the WHO guidelines. Nevertheless, the recommendations from the  
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3 321 different guidelines are very similar and thus does not justify limited knowledge of the key  
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5 322 components of the CMO PA guidelines.  
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9 323 Fears of litigation are prevalent in healthcare, which can prevent HCPs from delivering  
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11 324 some treatments. De Vivo and Mills identified fear and a perception of vulnerability as a  
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13 325 barrier experienced by 10 midwives who gave PA advice to pregnant patients,[28] which  
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15 326 was also reported by nurses and GPs who managed diabetic patients, leading to  
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17 327 disengagement in PA advice.[17] This is especially important when patients can both  
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19 328 benefit from increasing their PA and also present with a readiness to change their PA  
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21 329 status. Further, Lowe et al. highlighted that PA discussions were more difficult with  
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23 330 complex patients.[15] A survey of 7,026 GPs in 2012, found that many would practise  
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25 331 defensively, particularly for high-risk patients due to the impact of complaints.[29] This  
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27 332 perceived risk, could be attributed to lack of knowledge of how to adapt PA to the patient's  
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29 333 needs leading to reduced confidence giving the advice. Yet, many physiotherapists in this  
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31 334 present study were at least fairly confident giving PA advice, which may be due to  
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33 335 physiotherapists seeing health promotion as part of their SOP and that they have the  
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35 336 skills to engage the patients into changing their lifestyle by basing PA advice on  
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37 337 experience rather than specific guidelines. Indeed, physiotherapists have at least  
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39 338 confidence in providing basic PA advice, though are possibly more fearful with complex  
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41 339 patients due to the increased risks.  
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49 340 ***Lack of emphasis and priority***

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52 341 Lack of emphasis and priority placed on PA is another barrier faced by physiotherapists  
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54 342 in this study. Although HCPs are identified as being key to PA promotion in the CMO  
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3 343 guidelines, the time pressures during assessments are a frequent challenge for many  
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5 344 physiotherapists, with time being the most cited barrier by 22 UK inpatient  
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7 345 physiotherapists during focus groups.[13] Time pressures during appointments have an  
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9 346 impact on the ability to give advice, leading to prioritisation of tasks and mean significantly  
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11 347 less lifestyle advice is provided.[30] Furthermore, perceptions that PA advice is a low  
12  
13 348 priority needs to be changed. In part, this would require training and a greater emphasis  
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15 349 on the dissemination of PA guidance by HCPs. A lack of training on PA by HCPs is not  
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17 350 uncommon,[17] despite over half of the physiotherapists in this study completing a  
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19 351 postgraduate diploma or master's degree many reported inadequate training on PA,  
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21 352 questioning the integration of health promotion in the curriculum. Yet, physiotherapy  
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23 353 students who took part in focus groups, reported receiving academic public health training  
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25 354 and reported completing public health qualifications whilst at university.[31] This suggests  
26  
27 355 that while public health topics are being taught at university, a possible lack of emphasis  
28  
29 356 and importance placed on PA and how to promote PA effectively, is leading to the  
30  
31 357 knowledge not being sustained. A lack of emphasis on training on PA promotion seems  
32  
33 358 to be an issue that continues post qualification with 55% of GPs reporting not receiving  
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35 359 any CPD on PA since leaving university.[27] It also raises questions if training and  
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37 360 education that has been provided through recent initiatives such as the Public Health  
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39 361 England Clinical PA Champions programme has been accessed and subsequently used  
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41 362 to the full effect.

### 363 ***Patient barriers***

364 Patient barriers for taking up PA advice can heavily impact on clinical outcomes if not  
365 identified and addressed. The perception of low patient compliance was a re-emerging

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3 366 barrier in this study, which reflected previous findings where 24% of Australian  
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5 367 physiotherapists agreed PA advice would not change a patient's behaviour.[32] Whilst  
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7 368 this perception of low compliance may be warranted in some cases and based on  
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10 369 experiences, it may also be that exercises and PA prescribed are not meeting the needs  
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12 370 of the patient. Indeed, UK based Pakistani women identified that exercise-based  
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14 371 management did not meet cultural needs, leading to poor compliance.[33] Patient  
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16 372 demographics can also influence compliance, with smokers and the elderly less likely to  
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18 373 change their PA levels.[34] Moreover, this may feedback to low confidence of  
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20 374 physiotherapists in modifying advice to tailor approaches that are socio-culturally  
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22 375 meaningful to individuals from diverse backgrounds. Additionally, patient expectations of  
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24 376 physiotherapy can contribute to poor compliance, with some patients more reliant on  
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26 377 passive treatments such as massage compared to active treatments such as  
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28 378 exercise,[35] which was highlighted as a barrier in this study. Regardless of expectations,  
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30 379 patient fear can affect compliance, often as a result of exercise misconceptions, poor  
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32 380 clinician communication or negative past experiences, leading to the perception that PA  
33  
34 381 is harmful and causing fear avoidance.[36,37] Fear avoidance of PA, particularly with  
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36 382 chronic musculoskeletal conditions, can impact on clinical outcomes and rehabilitation if  
37  
38 383 not addressed.[38] Patient barriers should not be overlooked when promoting PA and  
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40 384 therefore strategies to optimise compliance, reduce fear and manage expectations are  
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42 385 vital for succeeding in behaviour change.  
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## 50 386 **Solutions**

### 51 52 53 387 ***Increasing awareness of the PA guidelines***

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3 388 Increasing awareness of the PA guidelines to both patients and physiotherapists was one  
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5 389 solution identified in this study. Indeed, with inadequate training reported, there is a need  
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7 390 for improvements in undergraduate and staff training, an opinion also expressed by other  
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10 391 HCPs.[22,17] A possible explanation for this is that many physiotherapists often  
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12 392 incorporate exercise prescription into a patient's management plan and so feel they  
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14 393 already have the skills to deliver PA advice to some extent.[16] Nevertheless, for those  
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16 394 with more limited knowledge of the CMO PA guidelines, staff training would benefit  
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18 395 physiotherapists giving them confidence in discussing PA with any patient. Awareness of  
19  
20 396 local services and ERS available to facilitate signposting can also support  
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22 397 physiotherapists that lack confidence providing specific PA guidance. In addition, the  
23  
24 398 importance of having PA resources and information in one consolidated place is also  
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26 399 important in this respect.[17] To improve adherence, exercise professionals have  
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28 400 suggested that HCPs should understand the schemes they signpost to, so that they are  
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30 401 not used as a last resort and ensure the patient is motivated to participate.[39] Signposting  
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32 402 appears to be an effective solution to PA promotion, though this requires the availability  
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34 403 of schemes, and awareness and understanding for HCPs to appropriately refer patients  
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36 404 to these services.[17]

### 43 405 ***Optimising delivery***

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46 406 Optimising the delivery of PA guidance is essential for patient understanding, compliance  
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48 407 and subsequent clinical outcomes. Graded exposure to PA for those who are fearful or  
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50 408 deconditioned was one of the proposed successful approaches to delivering PA guidance  
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52 409 in this study and has previously been reported as an effective sustainable approach to  
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54 410 prescribing exercise,[38] whilst still offsetting the adverse effects that being inactive can

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3 411 cause.[40] Making PA individualised, with consideration of patient preferences to build  
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5 412 confidence is more favourable by patients.[41] This person centred approach, in addition  
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7 413 to goal setting and self-monitoring, has been found to be an effective behavioural change  
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9 414 technique, leading to long term change in PA levels.[42] Moreover, use of other  
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11 415 behavioural therapies, such as acceptance and commitment therapies (ACT), which were  
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13 416 developed from cognitive behavioural therapy (CBT) can be used to direct development  
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15 417 of interventions to sustain long term behaviour change and compliance to PA.[43]  
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17 418 Additionally, good communication has been found to be crucial to challenge the  
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19 419 misconceptions leading to poor compliance, especially in patients with chronic conditions  
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21 420 where pacing is advised,[36] whereas forceful or patronising language discouraged  
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23 421 patients from communicating their concerns.[44] Furthermore, there are multiple factors  
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25 422 that can influence a patient's response to PA advice and therefore, the approach taken  
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27 423 and language used is vital for successful changes in behaviour and thus needs to be  
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29 424 carefully considered by HCPs.  
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36 425 To further facilitate discussions, visual resources, such as leaflets, have also been  
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38 426 suggested to reinforce advice given to patients.[22] HCPs have previously reported  
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40 427 leaflets as a convenient concise way to help focus information during a consultation and  
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42 428 more convenient than using websites.[17] Freene et al. found that 93% of an Australian  
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44 429 physiotherapy sample also agreed having resources would be useful for promoting  
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46 430 PA.[32] Leaflets have been found to improve patient satisfaction, communication and  
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48 431 reduced need for reassessments of the same pathology in French emergency  
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50 432 departments.[45] Additionally, infographics have been found to be an effective visual way  
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52 433 to convey complex information on PA, though the effectiveness of influencing health  
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3 434 behaviour change is unknown.[46] In this study some participants reported displaying the  
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5 435 CMO PA infographics in waiting rooms and toilets, which increases exposure to the PA  
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7 436 guidelines and may facilitate discussions. However, as the CMO PA infographics are  
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9 437 aimed towards HCPs, consideration is needed to ensure displayed information is not too  
10  
11 438 complex to meet the needs of patients.[47] Visual resources can assist physiotherapists  
12  
13 439 in promoting PA and reinforce the message delivered during the appointment, though  
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15 440 must involve patient friendly material.  
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### 20 441 **Strengths and limitations**

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23 442 To the authors' knowledge, this is the first study to review UK physiotherapists' knowledge  
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25 443 of the updated 2019 CMO PA guidelines and explore, in depth, physiotherapists'  
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27 444 perceived solutions to address the barriers faced when delivering PA guidance. Virtual  
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29 445 interviews conducted using online platforms enabled recruitment of physiotherapists from  
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31 446 all over the country, increasing the representation across different geographical areas.  
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33 447 Additionally, the sample contained a range of clinical expertise and years of experience.  
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35 448 The interview questions enabled flexibility to responses and encouraged reflection of  
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37 449 personal practices on delivering PA advice that could help improve the promotion of PA  
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39 450 guidelines. Moreover, this study highlights the importance of holding dialogue with  
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41 451 physiotherapists when identifying solutions for promoting the CMO guidelines. Limitations  
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43 452 include increased risk of bias due to having a volunteer sample, with those who are more  
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45 453 enthusiastic about PA or have more knowledge on the topic being more likely to  
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47 454 participate. Findings cannot be generalised to UK physiotherapists per-se, as qualitative  
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49 455 data is heavily impacted by personal viewpoints and values; however, these findings  
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51 456 provide valuable insights into physiotherapists' awareness and application of CMO PA  
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3 457 guidelines and provides a foundation for future research. Moreover, this study also  
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5 458 provides valuable insights that inform future intervention design aimed at supporting  
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7 459 physiotherapists in this study to give PA advice. Placing physiotherapists at the heart of  
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9 460 these discussions is important in shaping workable solutions aimed at promoting the PA  
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11 461 guidelines in routine care. Greater depth in the analysis of themes by comparing the  
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13 462 different clinical fields of physiotherapy would have added value and enable more specific  
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15 463 solutions to each clinical field. Finally, although efforts were made to reduce researcher  
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17 464 bias by reviewing and discussing the themes to ensure reliability of interpretations, and  
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19 465 reflection at each stage following Braun and Clarke's six steps, there was still a risk of  
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21 466 bias when interpreting the results.  
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### 27 467 **Clinical implications**

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30 468 Placing physiotherapists at the heart of discussions is important in shaping workable  
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32 469 solutions aimed at promoting the PA guidelines in routine care and so ongoing dialogue  
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34 470 is important in effective intervention design and delivery aimed at this group of HCPs;  
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36 471 though, it is acknowledged that this does not consider the wider determinants of  
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38 472 professional practice, such as workloads, remuneration, time pressures, and priorities for  
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40 473 both patients and physiotherapists. Nonetheless, as barriers and knowledge appear to  
41  
42 474 be unchanged with time,[14,15] action is needed both at university level and through CPD  
43  
44 475 to increase knowledge and awareness of the PA guidelines. Physiotherapists should  
45  
46 476 accept responsibility of their own development on PA knowledge and reflect on their  
47  
48 477 current practices, comparing to the optimised approaches suggested in this study and  
49  
50 478 adapt accordingly, especially for those with different socio-cultural backgrounds.  
51  
52 479 Following this study, future research needs to explore any differences in the barriers and  
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3 480 solutions to delivering PA advice between various clinical fields of physiotherapy.  
4  
5  
6 481 Following this, action is needed to begin implementing the solutions raised, to challenge  
7  
8 482 these persisting barriers and to evaluate the effectiveness of these solutions in supporting  
9  
10 483 physiotherapists delivering PA advice. Consideration of behavioural change techniques  
11  
12 484 and use of ACTs can help to guide development of interventions for either clinicians or  
13  
14 485 patients to improve and sustain PA levels in the population. The continued involvement  
15  
16  
17 486 of physiotherapists started within this study is important in shaping such solutions.  
18  
19

## 20 487 **CONCLUSION**

21  
22  
23 488 Despite updates to the CMO PA guidelines and previous research highlighting barriers to  
24  
25 489 physiotherapists delivering PA advice, the same barriers including time, inadequate  
26  
27 490 training and low patient compliance remain. Whilst physiotherapists have some  
28  
29 491 confidence delivering PA advice, many felt their knowledge of the PA guidelines  
30  
31 492 specifically was limited. Increasing awareness and optimising delivery of PA were  
32  
33 493 identified as the main solutions to increasing PA promotion, with a greater emphasis  
34  
35 494 needed on PA in training and specific approaches to increase the efficiency of giving PA  
36  
37 495 advice being suggested. These findings can be used to help to facilitate implementation  
38  
39 496 of the solutions and future research should then evaluate the effectiveness of the  
40  
41 497 implemented strategies in supporting PA discussions, to increase the public's PA levels.  
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3 501 **Declarations**  
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6 502 **Ethics approval and consent to participate**  
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8

9  
10 503 Ethical approval was granted by the Faculty of Biological Sciences at the University of  
11  
12 504 Leeds (27 July 2020/ BIOSCI 19-039). All participants were given a study information  
13  
14 505 sheet and provided informed consent to participate.  
15  
16

17 506 **Consent for publication**  
18  
19

20  
21 507 Not applicable.  
22  
23

24 508 **Data availability statement**  
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26

27 509 The datasets generated and analysed during the current study are not publicly available  
28  
29 510 due to all material used in the analysis being reports and not databases. However,  
30  
31 511 anonymised interview transcripts are available from the corresponding author on  
32  
33 512 reasonable request.  
34  
35  
36

37 513 **Competing interests**  
38  
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40  
41 514 The authors declare that they have no competing interests.  
42  
43

44 515 **Funding**  
45  
46

47 516 This research received no external funding.  
48  
49

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51 517 **Contributors**  
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3 518 AP and DV developed the research question, concept and design, while AI, CN and KM  
4  
5 519 acted as methodological council. AS led data collection and analysis, supervised by DV  
6  
7 520 and CN. AS produced a first version of the manuscript. AI, AP, AS, CN, KM and DV  
8  
9 521 revised the manuscript to bring it to its current version. All authors have read and  
10  
11 522 approved the final manuscript.  
12  
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14

## 15 523 **Acknowledgements**

16  
17  
18  
19 524 Thank you to all participants who gave up their time to participate in this study.  
20  
21  
22 525

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4 1 **SUPPLEMENTARY FILE**  
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7  
8 2 **INTERVIEW GUIDE**  
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10 3

11 4 [Thank the participant for attending the interview]  
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13 5

14  
15 6 [Participant to have read the PIS and consent form, and returned a completed copy of  
16  
17 7 the consent to the researcher prior to the interview]  
18  
19 8

20 9 [Researcher and participant to introduce themselves. Researcher to introduce the  
21  
22 10 evaluation and the purpose of the interview]  
23  
24 11

25  
26 12 [Reiterate that the information participants provide will be anonymised and confidential.  
27  
28 13 **Check that the participant is comfortable with the interview being recorded]**  
29  
30 14

31 15 **START RECORDING**  
32  
33 16

34  
35 17 **In this interview I am interested in hearing about your experiences of**  
36  
37 18 **delivering physical activity (PA) guidance to a patient, your opinion as a**  
38  
39 19 **clinical expert in PA on the barriers, challenges and solutions to improving**  
40  
41 20 **health care professionals given PA advice and views on current**  
42  
43 21 **interventions/developments.**  
44  
45 22

46 23 Please be assured that you will remain anonymous and the research team will not share  
47  
48 24 your comments with anyone else, so be as honest as you can. If there are any  
49  
50 25 questions that you would prefer not to answer you do not have to answer them. If at  
51  
52 26 any point you do not understand what I am asking or need some clarification, please  
53  
54 27 feel free to ask as we go along. You will be given an opportunity to say anything that  
55  
56 28 we have not covered at the end of the interview  
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3 29  
4  
5 30 Do you have any questions about the interview before we begin?

6  
7 31 **DEMOGRAPHICS and KNOWLEDGE**  
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9  
10 32 Q1. State your role, level of study, experience and current location of work (primary or  
11  
12 33 secondary care)

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14  
15 34 Q1a. What is your speciality/discipline?

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17  
18 35 Q1b. How many years' experience post-graduation do you have?

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21  
22 36 Where work- eg hospital

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24  
25 37 Q1c. Do you know the basic recommendations for physical activity a week?

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28 38 Q2. Which statement best describes your own PA:

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31  
32 39 1. Currently meeting the CMO PA guidelines of 150 mins moderate/75 min vigorous  
33  
34 40 weekly PA or combination of both

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36  
37 41 2. Currently doing some PA 30 mins moderate physical activity (MPA) per week,  
38  
39 42 but not meeting CMO PA guidelines of 150 mins moderate/75 min vigorous weekly PA or  
40  
41 43 combination of both

42  
43  
44 44 3. Currently doing less than 30 min MPA per week

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48 45 PRIOR TO COVID AND AFTER- why??  
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52 46 Q3. Tell me about the education and training that you have received in relation to PA  
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3 47 [Education and training during formal medical degree and Continuous Professional  
4  
5 48 Development; Knowledge of PA guidelines; Feelings/confidence around delivering CMO  
6  
7  
8 49 PA guidance] Under/postgrad  
9

10  
11 50 Q4. If someone is diagnosed with chronic disease that can be improved by PA, what do  
12  
13 51 you currently do in terms of delivering PA guidance?  
14  
15

16  
17 52 [Explore who delivers guidance, whether part of standard procedure or ad hoc, whether  
18  
19 53 content of guidance is general advice or adheres to guidelines; eg motivational interview  
20  
21

22 54 Q4a. Why this approach;  
23  
24

25 55 Q4b. What s/he thinks of this approach;  
26  
27

28  
29 56 Q4c. What individuals/practice could do differently?  
30  
31

32 57 Q4d. What works well and why?  
33  
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35 58 Q4e. What needs to change for this to happen?  
36  
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38  
39 59 Signposting, etc.].  
40  
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42 60 Q5. What do you do differently for those who have chronic disease versus those who  
43  
44 61 don't in terms of the advice you give for PA guidance?  
45  
46

47 62 Q5a. Given an Example;  
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50  
51 63 Q5b. What works well and why?  
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54 64 Q5c. What works less well?  
55  
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3 65 Q6. What would be your 'top tip' for promoting PA to your patients with chronic disease  
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5 66 and those without?  
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8  
9 67 [Explore what they do well and would share with their fellow colleagues as  
10  
11 68 something that is exemplar practice]  
12  
13

14 69 Q7. What would help you to deliver the CMO PA guidelines to your patients? Can make  
15  
16 a note that they haven't seen it- what can help you deliver the guidance. How should  
17 70  
18 training be delivered.  
19 71  
20

21  
22 72 Prompts if needed: time, resources, partnerships with providers, better training, other  
23  
24 73 people I could refer to in house, policy commitment for PA promotion  
25  
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28 74 Q8. What in your opinion are the challenges and barriers that prevent HCPs giving PA  
29  
30 75 advice?  
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33 76 Prompts here-Consider intrinsic and extrinsic  
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37 77 Q9. How do you engage hard-to-reach HCPs who are less enthusiastic or even anti PA?  
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40 78 Q9a. What works why and how?  
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43 79 Q9b. What works less well and why?  
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47 80 Q10. Should we not bother engaging those HCPs who are less enthusiastic, yes or no  
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49 81 and why?  
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52 82 EDUCATION  
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3 83 Q11. What education /resources out there for HCPs do you feel is most effective at  
4  
5 84 enabling us to promote the guidelines?  
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9 85 [Prompts: The 2019 guidelines Infographics, PA training, Mentoring]  
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11  
12 86 What works well and why?  
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15 87 What should we do that would help you to see/ access the info.  
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19 88 Q12. How can we embed more PA into undergraduate and postgraduate curriculums?  
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21  
22 89 Consider delivery type/method, scalability, consider assessment  
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26 90 Q13. What do you think are the solutions to increase HCP giving PA advice?  
27

28  
29 91 Consider policy, motivating practices, clinicians  
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## 32 92 RESOURCES AND INTERVENTIONS 33

### 34 35 93 2019 Guidelines 36 37

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39 94 Q14. Do you think the 2019 update has been helpful or not?  
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41  
42 95 Q14a. Why is this?  
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46 96 Q15. Have you seen the CMO PA infographics? If so which ones?  
47

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49 97 Q15a. If yes- how do you use it?  
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52 98 Where would you find it?  
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56 99 Q16. What else would you like to see in the guidelines?  
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3 100 [Prompts: 24 hour message, inclusion of guidelines on sleep and PA, specific  
4  
5 101 diseases, other groups?] anything you'd want adding? Do you think there's any value in  
6  
7  
8 102 adding...

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11 103 Q17. What other action or resources should accompany the implementation of the CMO  
12  
13 104 PA guidelines?

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16 105 [Prompts: CMO PA Guidelines communication strategy, A campaign with TV,  
17  
18 106 radio, social media advertising, Better resourcing to support the campaign, Inclusion of  
19  
20 107 communication experts on different platforms, Coordinated approach with other health  
21  
22 108 issues]

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27 109 Q18. Do you use any other PA related guidelines?

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30 110 Yes/No... Why?

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33 111 Moving Medicine (MM)

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36 112 Q19. Do you know about MM? (yes/no)

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40 113 MM is an online suite of resources that provide time specific consultations for HCP  
41  
42 114 across 11 conditions

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45 115 Q20. Do you currently use MM resources? (yes/no)

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47  
48 116 Q20a. If you do use it, how do you use it?

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52 117 Q20b. If you don't use it, why not?

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55 118 Q21. What works well and why?

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3 119 [Prompts: Content, coverage, access, style?]  
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6 120 Q22. What does not work well and why?  
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10 121 [Prompts: Content, coverage, access, style?]  
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13 122 Q23. In your opinion what could be improved about moving medicine to make it more fit  
14  
15 123 for your purpose as a clinician?  
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18 124 COVID-19  
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22 125 Q24. Has COVID-19 changed the frequency or way you given PA advice?  
23  
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25 126 Q25. If you are giving PA advice during COVID-19 can you give an example of where and  
26  
27 127 how and why you have given PA advice?  
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31 128 Q26. Are you currently giving any specific advice to reduce sedentary behaviour during  
32  
33 129 covid?  
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36 130 Q27. Are you targeting any specific groups?  
37  
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40 131 Q28. Can you give an example of where you have done this? Eg educating, asking qu's.  
41  
42 132 do you bring this up in conversation.  
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45 133 OTHER  
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49 134 Q29. What are your thoughts about the current process where rehab typically stops after  
50  
51 135 Band 6?  
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136 Q30. Is there anything else that you would like to add about delivering PA before we finish  
137 or anything you have not said?

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## SRQR checklist

	Reporting item	Line number
<b>Title (#1)</b>	Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended	6-8
<b>Abstract (#2)</b>	Summary of the key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results and conclusions	25-49
<b>Introduction</b>		
Problem formulation (#3)	Description and significance of the problem /phenomenon studied: review of relevant theory and empirical work; problem statement	67-101
Purpose or research question (#4)	Purpose of the study and specific objectives or questions	101-104
<b>Methods</b>		
Qualitative approach and research paradigm (#5)	Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g. postpositivist, constructivist / interpretivist) is also recommended; rationale. The rationale should briefly discuss the justification for choosing that theory, approach, method or technique rather than other options available; the assumptions and limitations implicit in those choices and how those choices influence study conclusions and transferability. As appropriate the rationale for several items might be discussed together.	128-151
Researcher characteristics and reflexivity (#6)	Researchers' characteristics that may influence the research, including personal attributes, qualifications / experience, relationship with participants, assumptions and / or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results and / or transferability	125-128
Context (#7)	Setting / site and salient contextual factors; rationale	134-136
Sampling strategy (#8)	How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g. sampling saturation); rationale	116-124
Ethical issues pertaining to human subjects (#9)	Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	110-111, 119-120

Data collection methods (#10)	Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources / methods, and modification of procedures in response to evolving study findings; rationale	129-138
Data collection instruments and technologies (#11)	Description of instruments (e.g. interview guides, questionnaires) and devices (e.g. audio recorders) used for data collection; if / how the instruments(s) changed over the course of the study	129-138
Units of study (#12)	Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	159-168 (results)
Data processing (#13)	Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymisation / deidentification of excerpts	136-139
Data analysis (#14)	Process by which inferences, themes, etc. were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale	141-157
Techniques to enhance trustworthiness (#15)	Techniques to enhance trustworthiness and credibility of data analysis (e.g. member checking, audit trail, triangulation); rationale	146-152
<b>Results/findings</b>		
Syntheses and Interpretation (#16)	Main findings (e.g. interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	171-249
Links to empirical data (#17)	Evidence (e.g. quotes, field notes, text excerpts, photographs) to substantiate analytic findings	190-192, 201-203, 213-214, 233-235, 248-249
<b>Discussion</b>		
Intergration with prior work, implications, transferability and contribution(s) to the field (#18)	Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application / generalizability; identification of unique contributions(s) to scholarship in a discipline or field	251-376, 395-408
Limitations (#19)	Trustworthiness and limitations of findings	377-394
<b>Other</b>		
Conflicts of interest (#20)	Potential sources of influence of perceived influence on study conduct and conclusions; how these were managed	439-440

Funding (#21)	Sources of funding and other support; role of funders in data collection, interpretation and reporting	441-442
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