



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

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ABSTRACT

Objectives Despite the known health benefits of physical activity (PA), PA levels are in decline. Healthcare professionals, 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 guidelines among UK physiotherapists and identify barriers and possible solutions to delivering PA advice.

Design A qualitative approach using semistructured interviews that took place between March and May 2021. Data were analysed with a thematic approach using Braun and Clarke's six steps.

Setting Various inpatient and outpatient clinical settings across six UK regions.

Participants Eighteen UK-based physiotherapists managing National Health Service patients were recruited through volunteer sampling in March 2021.

Results Five themes and 16 subthemes (shown in parenthesis) were identified as barriers and solutions to delivering PA advice: physiotherapist intrinsic barriers (knowledge, fear/confidence); a lack of emphasis and priority given to PA (time constraints, minimal educational and staff training); patient barriers (compliance, expectations and fear of doing PA); increasing awareness of the PA guidelines (staff training, signposting awareness, use of social media and television campaigns); and optimising delivery (use of visual resources, good communication and approaches involving being individualised and gradual for patients with chronic conditions).

Conclusions In this study, physiotherapist participants seemed to have limited awareness of the PA guidelines despite recent updates and were faced with similar barriers to those previously reported in the literature. The solutions suggested could guide strategies to support physiotherapists being able to deliver PA advice. Further research is needed to evaluate the efficiency of any implemented solutions supporting the delivery of PA advice.

INTRODUCTION

Physical activity (PA) has multiple health benefits including improving mental health, reducing risk factors leading to

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This study identified physiotherapists' barriers to providing physical activity (PA) advice but also identified possible solutions informed by these key stakeholders.
- ⇒ The qualitative design and use of semistructured interviews enabled flexible discussions to capture the thoughts and opinions of the participants and to ensure responses could be explored further in future research.
- ⇒ The study findings cannot be generalised to all UK physiotherapists; however, they provide potentially useful insights into the participants' experiences in relation to barriers and possible solutions with respect to providing PA advice.

cardiometabolic diseases and improving physical health in cancer survivors.^{1 2} The advice of the Chief Medical Officers (CMOs) in the United Kingdom (UK) is that adults should complete 150 min of moderate activity, or 75 min of vigorous activity each week or a combination thereof, alongside strength training at least twice weekly.³ This is similar to the World Health Organisation (WHO) guidelines of at least 150–300 moderate intensity aerobic PA, or 75–150 vigorous intensity PA, with twice weekly strength training.⁴ Twenty-eight per cent of adults globally fail to reach the recommended aerobic PA guidelines.⁵ In the UK, this figure was slightly lower with 39% of the population failing to meet the aerobic PA guidelines between 2019 and 2020,⁶ 27% of which were classed as physically inactive meaning they did less than 30 min of moderate PA a week.⁶ Additionally, 43% of UK adults achieved the strength PA guidelines between 2020 and 2121, which was a 1.2% decrease from the previous year.⁶ While there are greater health benefits by reaching the recommended PA levels for most individuals, there are still

health benefits from completing even low amounts of light intensity PA for those who are inactive or limited by chronic health conditions and to then gradually increase intensity and duration over time.⁴ With physical inactivity leading to 1.6 million deaths annually, and non-communicable diseases (NCDs) increasing,⁷ global strategies promoting health and well-being need greater attention to ensure world health goals are achieved. In 2015, the United Nations agreed to promote healthy lives and well-being for all ages, as part of the Sustainable Development Goal 3, which has many health targets, including reducing premature mortality from NCDs by one-third.⁸ In accordance with this, the WHO launched the Global Action Plan on Physical Activity in 2018 to reduce physical inactivity by 15%.⁹ A major barrier to these goals being achieved was the COVID-19 global pandemic and associated restrictions, which led to more people working from home and to the temporary closure of gyms and sports facilities, further decreasing PA levels in the UK population.¹⁰ This has resulted in decreased physical and functional capacity, increased mental distress and an increased cardiovascular disease risk profile.¹¹ Therefore, now more than ever, public health policies and strategies to increase PA levels of the population safely, require urgent attention.¹⁰

The CMOs have identified healthcare professionals (HCPs) as key conduits in the promotion of PA.³ Physiotherapists are found across multiple clinical areas and are seen as experts in non-invasive management strategies; they are ideally placed to deliver PA guidance.¹² Physiotherapists reported that health promotion, especially PA, was within their scope of practice (SOP).¹³ Yet, in a 2016 survey of 514 UK physiotherapists only 16% knew all 3 components of the CMO PA guidelines despite 77% reporting that they discussed PA with patients.¹⁴ Of this sample, 12 completed follow-up interviews where reported barriers to PA promotion included patient complexity, work culture and a lack of time.¹⁵ The authors also reported some facilitators to health promotion such as having repeated appointments, collaborations with other services and building an alliance with the patient.¹⁵

Solutions to enable physiotherapists to successfully deliver PA guidance have yet to be explored in depth,^{15 16} particularly in the UK. Appropriate solutions are key for policy development, HCP awareness of PA guidelines and also behaviour change in physiotherapy management of patients. As knowledge of the PA guidelines has been previously identified as poor among UK physiotherapists prior to the updated CMO and WHO PA guidelines,¹⁴ it is yet unknown whether knowledge and awareness of the PA guidelines has improved.

The aims of this qualitative study were to explore the current knowledge physiotherapists have of the PA guidelines and promotion of PA, recognise common barriers experienced by physiotherapists when delivering PA advice and identify physiotherapists' perceptions of solutions to support successful delivery of PA guidance.

METHODS

Design

A qualitative research design was adopted in this study using semistructured interviews to explore the knowledge and perceptions towards providing PA advice to patients, among a range of UK-based physiotherapists. The research approach used in this study has previously been used by other authors and provided informative accounts for HCPs perceptions towards providing PA advice in healthcare.¹⁷ The standards for reporting qualitative research was followed throughout.¹⁸

Participants and procedures

The inclusion criteria for this study included UK-based physiotherapists who currently practised and managed National Health Service patients, from any clinical field. Participants were recruited through advertisement on the Musculoskeletal bulletin on the interactive Chartered Society of Physiotherapy portal as well as through LinkedIn and by word of mouth. The advertisement for this study informed prospective participants that it was exploring physiotherapists' knowledge and promotion of PA to patients. Willing participants followed a link to Microsoft Forms, where they viewed the participant information sheet and completed an eligibility survey that included questions on the inclusion criteria. Eligible participants were emailed the participant information sheet to keep, containing details of what the study involved and a consent form, which was signed by the participants and returned, then an interview date was arranged. Participants were informed that they could withdraw from this study at any point, and this was reiterated at the start and end of the interview. The recruitment and interview process continued until data saturation was reached, when there were no more emerging themes or new responses.¹⁹

Data collection

Interviews adopted a semistructured design, which is a common method in healthcare research,²⁰ to encourage open-ended responses that could be elaborated on with probing for the limited responses, which explores participants' thoughts and beliefs.²¹ The interview guide was created by Vishnubala *et al*²² and adapted to make questions specific to physiotherapists (see online supplemental file). The guide included 30 interview questions, split into 5 sections: (1) demographics, (2) PA knowledge and education, (3) resources and interventions, (4) COVID-19 and (5) other, providing an opportunity for the participants to express any other thoughts or ideas that emerged during the interview. Not all data collected from the interview questions were analysed as they addressed aspects beyond the aims of this paper.²² All interviews were conducted through the Zoom meeting platform by the lead researcher AS. DV provided training to AS and a mock interview was performed to practice and refine the interview technique and reduce any researcher influence emerging in the delivery of the interview questions. Follow-up calls

between AS, DV and CN reflected on the data collection of the initial few interviews to make sure they captured rich and informative data and to review how the interviews had gone. The interviews took place from March 2021 to May 2021 and were audio recorded. Interviews were automatically transcribed verbatim the same day by the Zoom platform, checked for accuracy by the main researcher and stored securely on the University of Leeds OneDrive. Each participant was assigned a participant number, with any identifiable information anonymised.

Data analysis

A thematic analysis approach following Braun and Clarke's six steps was undertaken: data familiarisation, coding, theme identification, revision of themes, defining and naming themes, and writing up.²³ This method was chosen for its flexibility, while providing in-depth complex data.²⁴ In reflecting similar approaches used elsewhere in the literature,¹⁷ interviews were transcribed verbatim and then read through several times in order to become immersed in the data. Transcripts were analysed in order of occurrence, with interesting features of each individual interview transcript identified and assigned a code. All interesting features in the data or codes were subsequently collated from the semi-structured interviews in a separate document, and across the data set common themes were identified. To assure the credibility and trustworthiness of the data, these were reviewed for consistency by the lead researcher. Once the themes were initially established these were discussed with a second researcher (CN) for purposes of composition and consistency and to confirm interpretation of the themes. In a further effort to assure credibility and trustworthiness, prior to the main analyses of the data, a pilot analysis was undertaken separately by two members of the research team (AS and CN) on two interview transcripts in order to confirm consistency and agreement in the interpretation of codes and reflect on emerging themes and to ensure that transcriptions represented participant responses and to reduce the likelihood of researcher bias.^{24 25} At each step in the thematic analysis the lead researcher (AS) reviewed progress with members of the research team (CN and DV) as undertaken in other peer review research.¹⁷

Regarding demographic data, IBM SPSS statistics V.27 was used to describe participant characteristics, including gender, level of education, years of experience, healthcare setting and UK region, which were presented as proportions and frequencies. Number of years of work experience were categorised into 0–5 years, 6–10, 11–15, 16–20 and >21 years. Locations of work were grouped into UK regions. Example quotes from transcripts were presented in tables for each theme.

Patient and public involvement

None.

RESULTS

Participant characteristics

Twenty-one potential participants completed the eligibility survey, but one did not meet the inclusion criteria

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)

BSc, bachelor of science; MSc, master of science.

and a further two failed to return the consent form. Data saturation was reached after 18 interviews and therefore no further participants were recruited. Interview length ranged from between 35 to 72 min. Demographic characteristics of the 18 physiotherapists who were interviewed are shown in [table 1](#). The sample consisted of physiotherapists across 6 different UK regions, with 67% female and 61% working in outpatient settings. Fifty per cent of the sample had less than 5 years of experience and 56% had either a postgraduate diploma or a masters level qualification.

Themes from thematic analysis

Following thematic analysis of the data set, five themes were identified as barriers and solutions to promoting and delivering PA guidance: physiotherapist intrinsic barriers, lack of emphasis and priority given to PA, patient barriers to delivering PA, increasing awareness of the PA guidelines and optimising the delivery of PA. Among the 5 themes, 16 subthemes were also identified from the interview transcripts.

Theme 1: physiotherapist intrinsic barriers

In relation to the CMO PA guidelines, 22% of physiotherapists correctly stated the three components of the guidelines (150 min of moderate or 75 min of vigorous intensity aerobic activity and twice weekly strength training), while 39% did not know any of the components of the PA guidelines. Vigorous intensity PA was the most

**Table 2** Subthemes for physiotherapist intrinsic barriers to delivering PA advice

Subtheme	Example quotes
Perceived lack of knowledge of the PA guidelines	<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> <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>
Confidence/fear of giving PA advice	<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> <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>

PA, physical activity.

incorrectly answered or unknown component, followed by the strength recommendations. Many of the physiotherapists admitted that they had a lack of knowledge of the PA guidelines, with some stating they had either not heard of or read the UK CMO PA guidelines, would not know where to find them and had also not seen any of the accompanying resources, such as infographics. Other emerging barriers were that the physiotherapists expressed low confidence and fear of giving PA advice, in case they gave incorrect advice, or something went wrong as a result of this dissemination (table 2).

Theme 2: lack of emphasis and priority given to PA

There were multiple barriers that focused on lack of emphasis and priority given to promoting PA, identified by the physiotherapists (table 3). These included many expressing that they received minimal training on PA, both at university and through continuing professional development (CPD) offered at work. Time was a common barrier and issue among those interviewed, often because of multiple tasks required within an appointment that were considered a greater priority. Staffing shortages,

Table 3 Subthemes for lack of emphasis and priority given to delivering PA advice

Subtheme	Example quotes
Lack of CPD training at work	<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, for example, walking, is important but there won't be much depth behind physical activity as a topic." P18</i> <i>"Since graduating, I don't think that I've had any specific further training on specific like recommendations for physical activity." P14</i> <i>"I wouldn't say I've had that much specifically about exercise while I've been working" P10</i>
Lack of emphasis through training at university level	<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> <i>"I think, would probably fairly minimal training undergrad because it was quite long ago I trained." P16</i> <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> <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>
Time pressures	<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> <i>"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 pressure from your patient caseload and so time is definitely a barrier." P7</i>

CPD, continuing professional development; PA, physical activity.

Table 4 Subthemes for patient barriers to delivering PA

Subtheme	Example quotes
Patient compliance	<p><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."</i> P9</p> <p><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."</i> P18</p>
Patient fear of exercise	<p><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."</i> P4</p> <p><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."</i> P3</p>
Expectations of physiotherapy	<p><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."</i> P6</p> <p><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."</i> P18</p>

PA, physical activity.

pressures for quick discharges and work cultures that deprioritises education and advice over other treatments such as manual therapy were other less common but important barriers mentioned by some participants.

Theme 3: patient barriers to delivering PA

Another commonly identified theme among physiotherapists was patient limitations to delivering PA advice (table 4). This included physiotherapists reporting that patients often had low compliance to home management, particularly with exercise. Patient fear of doing PA, in case of reinjury or exacerbation of symptoms, was also a reoccurring perception by physiotherapists, particularly for patients who had chronic conditions with low PA levels. Another common barrier was patient expectations of physiotherapy management, which would often not align with exercise or PA advice, with many reporting that patients would prefer quick fixes and passive treatments such as massage.

Solutions and successful approaches to managing patients with chronic and acute conditions were discussed in the interview, in addition to their opinions on the most efficient and effective ways to communicate the PA guidelines.

Theme 4: increasing awareness of the PA guidelines

A key theme identified from physiotherapists in response to successfully promoting PA to patients was to increase awareness of the PA guidelines to both patients and physiotherapists (table 5). Most responses included improving

staff training with some suggesting it should be a mandatory annual module and others proposing having more group discussions between staff on PA and its benefits. Awareness of local initiatives and exercise referral schemes (ERS) to enable signposting was also recommended as a solution, particularly for those with time constraints and to support the patients more long term. Social media was mentioned on multiple occasions as a solution to both increasing awareness of PA and PA opportunities for the general public and physiotherapists alike, such as Twitter or LinkedIn, by following influential people in the field and listening to podcasts. Social media was specifically recommended as a useful tool to raise awareness to the younger populations and those who regularly use technology, although for populations less suited to social media many physiotherapists suggested television advertisement to engage more people and spread awareness of the PA guidelines.

Theme 5: optimising the delivery of PA

Successful approaches were discussed in terms of delivering PA advice to patients with chronic and acute conditions and how promotion can be optimised (table 6). With patient barriers in mind, many participants suggested ensuring any PA prescription should be individualised, functional and based on what the patient enjoys. Many also reported communication as a key factor and that the language used should not be patronising, forceful or lack empathy, which echoed the advice physiotherapists would

**Table 5** Subthemes for increasing awareness of the PA guidelines as a solution to delivering PA advice

Subtheme	Example quotes
Staff training	<p><i>"I think better ongoing potentially mandatory training or better kind of educational pieces that go out across the board."</i> P2</p> <p><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."</i> P7</p>
Use of campaigns through television and advertising	<p><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."</i> P1</p> <p><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."</i> P11</p>
Use of social media	<p><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."</i> P17</p> <p><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"</i> P12</p>
Signposting to other exercise services	<p><i>"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."</i> P5</p> <p><i>"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."</i> P14</p>

PA, physical activity.

give towards encouraging less enthusiastic colleagues to promote PA. To facilitate discussions and support patients, visual resources, such as infographics, were advocated; some suggested giving them to patients after an appointment or displaying them in waiting rooms and toilets. Other visual resources, such as leaflets and hand-outs, were also mentioned.

DISCUSSION

The aims of this study were to provide a greater insight into UK physiotherapists' current levels of PA knowledge and identify the main barriers and solutions perceived to delivering PA guidance and we have used these terms as an organising framework to structure the discussion in the sections below. Among the study participants, few physiotherapists knew the UK CMO PA guidelines, despite these having been updated in 2019 and identifying HCPs, including physiotherapists, as key to their dissemination.³ Further, very few of the participants knew where to access the PA guidelines and associated infographics. Common barriers found included: lack of time, low confidence, limited PA training at university and through CPD once qualified, in addition to patient expectations, compliance and fear of exercise. Solutions, separated into increasing awareness of the PA guidelines and optimising delivery of

the PA guidelines, consisted of using television advertisement campaigns and social media to spread awareness; increased staff training; signposting to local services; following individualised and gradual approaches for patients with chronic conditions; having good communication; and use of visual resources, such as infographics, to facilitate the PA advice given by physiotherapists.

Barriers

Physiotherapist knowledge and intrinsic factors

Having knowledge and awareness of the PA guidelines is an important factor in being able to successfully promote PA. Around 22% of participants correctly identified moderate and vigorous intensity aerobic activity and strength recommendations in this study. This was only slightly higher than that found in previous research where 16% of 514 UK physiotherapists correctly identified all three components.¹⁴ While this study only had 18 participants, making true comparisons difficult, the findings might suggest that the 2019 updated CMO PA guidelines have had little impact on the knowledge or awareness of physiotherapists. However, it appears reduced knowledge of PA is not specific to UK physiotherapists, as Yona *et al* found that of 1062 Israeli physiotherapists who took part in a survey in 2018, 87% reported awareness of PA guidelines, yet only 6.8% correctly stated all three components

Table 6 Subthemes for optimising delivery of PA advice

Subtheme	Example quotes
Make PA individualised and functional	<p><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."</i> P1</p> <p><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."</i> P13</p>
Have gradual approach to introducing PA	<p><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."</i> P6</p> <p><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."</i> P18</p>
Supportive communication	<p><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."</i> P16</p> <p><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."</i> P15</p>
Use of visual resources	<p><i>"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."</i> P5</p> <p><i>"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."</i> P18</p>

PA, physical activity.

of the guidelines, with vigorous intensity PA and strength components being the least known,²⁶ similar to the present study. This could be due to physiotherapists possibly feeling more confident recommending light or moderate intensity PA to reduce likelihood of adverse effects, particularly for more complex patients typically with comorbidities such as cancer, heart or respiratory conditions and are therefore less aware of the other recommendations. Awareness of the guidelines and where to locate them were clear issues in this present study, with many not knowing where to find the CMO PA guidelines, which questions the effectiveness of the communication strategy when the guidelines were updated in 2019. Awareness of the CMO PA guidelines was also recently reported to be limited in a qualitative study of 15 general practitioners (GPs) by Vishnubala *et al.*²² Another larger study in 2016 of 1013 GPs found that 30% had never heard of the CMO PA guidelines and a further 50% had heard of them but were very unfamiliar.²⁷ Arguably, the lack of awareness of the CMO PA guidelines could be a result of HCPs using alternative PA guidelines, with some participants in this study reporting using the WHO guidelines. Nevertheless, the recommendations from the different guidelines are very similar and thus does not justify limited knowledge of the key components of the CMO PA guidelines.

Fears of litigation are prevalent in healthcare, which can prevent HCPs from delivering some treatments. De Vivo and Mills identified fear and a perception of vulnerability as a barrier experienced by 10 midwives who gave PA advice to pregnant patients,²⁸ which was also reported in another study of nurses and GPs who managed patients with diabetes, leading to disengagement in PA advice.¹⁷ This is especially important when patients can both benefit from increasing their PA and also present with a readiness to change their PA status. Further, Lowe *et al* highlighted that PA discussions were more difficult with complex patients.¹⁵ A survey of 7026 GPs in 2012, found that many would practise defensively, particularly for high-risk patients due to the impact of complaints.²⁹ This perceived risk could be attributed to lack of knowledge of how to adapt PA to the patient's needs leading to reduced confidence giving the advice. Yet, many physiotherapists in this present study were at least fairly confident giving PA advice, which may be due to physiotherapists seeing health promotion as part of their SOP and that they have the skills to engage the patients into changing their lifestyle by basing PA advice on experience rather than specific guidelines. Indeed, physiotherapists have at least confidence in providing basic PA advice, though are

possibly more fearful with complex patients due to the increased risks.

Lack of emphasis and priority

Lack of emphasis and priority placed on PA is another barrier faced by physiotherapists in this study. Although HCPs are identified as being key to PA promotion in the CMO guidelines, the time pressures during assessments are a frequent challenge for many physiotherapists, with time being the most cited barrier by 22 UK inpatient physiotherapists during focus groups.¹³ Time pressures during appointments have an impact on the ability to give advice, leading to prioritisation of tasks and mean significantly less lifestyle advice is provided.³⁰ Furthermore, perceptions that PA advice is a low priority needs to be changed. In part, this would require training and a greater emphasis on the dissemination of PA guidance by HCPs. A lack of training on PA by HCPs is not uncommon,¹⁷ despite over half of the physiotherapists in this study completing a postgraduate diploma or master's degree many reported inadequate training on PA, questioning the integration of health promotion in the curriculum. Yet, physiotherapy students who took part in focus groups, reported receiving academic public health training and reported completing public health qualifications while at university.³¹ This suggests that while public health topics are being taught at university, a possible lack of emphasis and importance placed on PA and how to promote PA effectively is leading to the knowledge not being sustained. A lack of emphasis on training on PA promotion seems to be an issue that continues post qualification with 55% of GPs reporting not receiving any CPD on PA since leaving university.²⁷ It also raises questions if training and education that has been provided through recent initiatives such as the Public Health England Clinical PA Champions programme has been accessed and subsequently used to the full effect.

Patient barriers

Patient barriers for taking up PA advice can heavily impact on clinical outcomes if not identified and addressed. The perception of low patient compliance was a re-emerging barrier in this study, which reflected previous findings where 24% of Australian physiotherapists agreed PA advice would not change a patient's behaviour.³² While this perception of low compliance may be warranted in some cases and based on experiences, it may also be that exercises and PA prescribed are not meeting the needs of the patient. Indeed, UK-based Pakistani women identified that exercise-based management did not meet cultural needs, leading to poor compliance.³³ Patient demographics can also influence compliance, with smokers and the elderly less likely to change their PA levels.³⁴ Moreover, this may feedback to low confidence of physiotherapists in modifying advice to tailor approaches that are socioculturally meaningful to individuals from diverse backgrounds. Additionally, patient expectations of physiotherapy can contribute to poor compliance,

with some patients more reliant on passive treatments such as massage compared with active treatments such as exercise,³⁵ which was highlighted as a barrier in this study. Regardless of expectations, patient fear can affect compliance, often as a result of exercise misconceptions, poor clinician communication or negative past experiences, leading to the perception that PA is harmful and causing fear avoidance.³⁶⁻³⁷ Fear avoidance of PA, particularly with chronic musculoskeletal conditions, can impact on clinical outcomes and rehabilitation if not addressed.³⁸ Patient barriers should not be overlooked when promoting PA, and therefore, strategies to optimise compliance, reduce fear and manage expectations are vital for succeeding in behaviour change.

Solutions

Increasing awareness of the PA guidelines

Increasing awareness of the PA guidelines to both patients and physiotherapists was one solution identified in this study. Indeed, with inadequate training reported, there is a need for improvements in university and staff training, an opinion also expressed by other HCPs.¹⁷⁻²² A possible explanation for this is that many physiotherapists often incorporate exercise prescription into a patient's management plan and so feel they already have the skills to deliver PA advice to some extent.¹⁶ Nevertheless, for those with more limited knowledge of the CMO PA guidelines, staff training would benefit physiotherapists giving them confidence in discussing PA with any patient. Awareness of local services and ERS available to facilitate signposting can also support physiotherapists who lack confidence providing specific PA guidance. In addition, the importance of having PA resources and information in one consolidated place is also important in this respect.¹⁷ To improve adherence, exercise professionals have suggested that HCPs should understand the schemes they signpost to, so that they are not used as a last resort and ensure the patient is motivated to participate.³⁹ Signposting appears to be an effective solution to PA promotion, though this requires the availability of schemes, and awareness and understanding for HCPs to appropriately refer patients to these services.¹⁷

Optimising delivery

Optimising the delivery of PA guidance is essential for patient understanding, compliance and subsequent clinical outcomes. Graded exposure to PA for those who are fearful or deconditioned was one of the proposed successful approaches to delivering PA guidance in this study and has previously been reported as an effective sustainable approach to prescribing exercise,³⁸ while still offsetting the adverse effects that being inactive can cause.⁴⁰ Making PA individualised, with consideration of patient preferences to build confidence is more favourable by patients.⁴¹ This person-centred approach, in addition to goal setting and self-monitoring, has been found to be an effective behavioural change technique leading to long-term change in PA levels.⁴² Moreover,

use of other behavioural therapies, such as acceptance and commitment therapies (ACT), which were developed from cognitive-behavioural therapy, can be used to direct development of interventions to sustain long-term behaviour change and compliance to PA.⁴³ Additionally, good communication has been found to be crucial to challenge the misconceptions leading to poor compliance, especially in patients with chronic conditions where pacing is advised,³⁶ whereas forceful or patronising language discouraged patients from communicating their concerns.⁴⁴ Furthermore, there are multiple factors that can influence a patient's response to PA advice, and therefore, the approach taken and language used is vital for successful changes in behaviour and thus needs to be carefully considered by HCPs.

To further facilitate discussions, visual resources, such as leaflets, have also been suggested to reinforce advice given to patients.²² HCPs have previously reported leaflets as a convenient concise way to help focus information during a consultation and more convenient than using websites.¹⁷ Freene *et al* found that 93% of an Australian physiotherapy sample also agreed that having resources would be useful for promoting PA.³² Leaflets have been found to improve patient satisfaction, communication and reduced the need for reassessments of the same pathology in French emergency departments.⁴⁵ Additionally, infographics have been found to be an effective visual way to convey complex information on PA, though the effectiveness of influencing health behaviour change is unknown.⁴⁶ In this study, some participants reported displaying the CMO PA infographics in waiting rooms and toilets, which increases exposure to the PA guidelines and may facilitate discussions. However, as the CMO PA infographics are aimed towards HCPs, consideration is needed to ensure displayed information is not too complex to meet the needs of patients.⁴⁷ Visual resources can assist physiotherapists in promoting PA and reinforce the message delivered during the appointment, though must involve patient friendly material.

Strengths and limitations

To the authors' knowledge, this is the first study to review UK physiotherapists' knowledge of the updated 2019 CMO PA guidelines and explore, in depth, physiotherapists' perceived solutions to address the barriers faced when delivering PA guidance. Virtual interviews conducted using online platforms enabled recruitment of physiotherapists from all over the country, increasing the representation across different geographical regions. Additionally, the sample contained a range of clinical expertise and years of experience. The interview questions enabled flexibility to responses and encouraged reflection of personal practices on delivering PA advice that could help improve the promotion of PA guidelines. Moreover, this study highlights the importance of holding dialogue with physiotherapists when identifying solutions for promoting the CMO

guidelines. Limitations include increased risk of bias due to having a volunteer sample, with those who are more enthusiastic about PA or have more knowledge on the topic being more likely to participate. Findings cannot be generalised to UK physiotherapists per-se, as qualitative data are heavily impacted by personal viewpoints and values; however, these findings provide valuable insights into physiotherapists' awareness and application of CMO PA guidelines and provides a foundation for future research. Moreover, this study also provides valuable insights that inform future intervention design aimed at supporting physiotherapists to give PA advice. Placing physiotherapists at the heart of these discussions is important in shaping workable solutions aimed at promoting the PA guidelines in routine care. Greater depth in the analysis of themes by comparing the different clinical fields of physiotherapy would have added value and enable more specific solutions to each clinical field. Finally, although efforts were made to reduce researcher bias by reviewing and discussing the themes to ensure reliability of interpretations, and reflection at each stage following Braun and Clarke's six steps, there was still a risk of bias when interpreting the results.

Clinical implications

Placing physiotherapists at the heart of discussions is important in shaping workable solutions aimed at promoting the PA guidelines in routine care and so ongoing dialogue is important in effective intervention design and delivery aimed at this group of HCPs; though, it is acknowledged that this does not consider the wider determinants of professional practice, such as workloads, remuneration, time pressures and priorities for both patients and physiotherapists. Nonetheless, as barriers and knowledge appear to be unchanged with time,^{14 15} action is needed both at university level and through CPD to increase knowledge and awareness of the PA guidelines. Physiotherapists should accept responsibility of their own development on PA knowledge and reflect on their current practices, comparing to the optimised approaches suggested in this study and adapt accordingly, especially for patients with different sociocultural backgrounds. Following this study, future research needs to explore any differences in the barriers and solutions to delivering PA advice between various clinical fields of physiotherapy. Action is needed to begin implementing the solutions raised, to challenge these persisting barriers and to evaluate the effectiveness of the solutions in supporting physiotherapists delivering PA advice. Consideration of behavioural change techniques and use of ACTs can help to guide development of interventions for either clinicians or patients to improve and sustain PA levels in the population. The continued involvement of physiotherapists started within this study is important in shaping such solutions.

CONCLUSION

Despite updates to the CMO PA guidelines and previous research highlighting barriers to physiotherapists delivering PA advice, the same barriers including time, inadequate training and low patient compliance remain. While physiotherapists have some confidence delivering PA advice, many felt their knowledge of the PA guidelines specifically was limited. Increasing awareness and optimising delivery of PA were identified as the main solutions to increasing PA promotion, with a greater emphasis needed on PA in training and specific approaches to increase the efficiency of giving PA advice being suggested. These findings can be used to help to facilitate implementation of the solutions and future research should then evaluate the effectiveness of the implemented strategies in supporting PA discussions, to increase the public's PA levels.

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REFERENCES

- Nystoriak MA, Bhatnagar A. Cardiovascular effects and benefits of exercise. *Front Cardiovasc Med* 2018;5:135:135:..
- The exercise for people with cancer Guideline development group. exercise for people with cancer: a systematic review. *Current Oncology* 2017;24:e290. 10.3747/co.24.3619 Available: <https://doi.org/10.3747/co.24.3619>
- Department of Health and Social Care, Llwodraeth Cymru Welsh Government, Department of Health Northern Ireland, The Scottish Government. Uk chief medical officers' physical activity guidelines. 2019. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/832868/uk-chief-medical-officers-physical-activity-guidelines.pdf [Accessed 26 Sep 2021].
- World Health Organisation. *Who Guidelines On Physical Activity And Sedentary Behaviour*. 2020.
- Guthold R, Stevens GA, Riley LM, et al. Worldwide trends in insufficient physical activity from 2001 to 2016: a pooled analysis of 358 population-based surveys with 1.9 million participants. *Lancet Glob Health* 2018;6:S2214-109X(18)30357-7:e1077-86:.. 10.1016/S2214-109X(18)30357-7 Available: [https://doi.org/10.1016/S2214-109X\(18\)30357-7](https://doi.org/10.1016/S2214-109X(18)30357-7)
- Sport. Active lives adult survey November 2019/20 report. 2021. Available: https://sportengland-production-files.s3.eu-west-2.amazonaws.com/s3fs-public/2022-04/Active%20Lives%20Adult%20Survey%20November%2020-21%20Report.pdf?VersionId=nPU_v3jFjwG8o_xnv62FcKOdEiVmRWcb [Accessed 26 Aug 2021].
- Forouzanfar MH, Afshin A, Alexander LT, et al. Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990-2015: a systematic analysis for the global burden of disease study 2015. *Lancet* 2016;388:1659-724.
- United Nations. Ensure healthy lives and promote well-being for all at all ages. 2015. Available: <https://sdgs.un.org/goals/goal3>
- World Health Organisation. *Global Action Plan on Physical Activity 2018-2030: More Active People for a Healthier World*. Geneva, Switzerland: World Health Organization (WHO), 2018.
- Stockwell S, Trott M, Tully M, et al. Changes in physical activity and sedentary behaviours from before to during the COVID-19 pandemic lockdown: a systematic review. *BMJ Open Sport Exerc Med* 2021;7:e000960.
- Pinto AJ, Dunstan DW, Owen N, et al. Combating physical inactivity during the COVID-19 pandemic. *Nat Rev Rheumatol* 2020;16:347-8.
- Dean E, Dornelas de Andrade A, O'Donoghue G, et al. The second physical therapy Summit on global health: developing an action plan to promote health in daily practice and reduce the burden of non-communicable diseases. *Physiotherapy Theory and Practice* 2014;30:261-75.
- Walkeden S, Walker KM. Perceptions of physiotherapists about their role in health promotion at an acute Hospital: a qualitative study. *Physiotherapy* 2015;101:S0031-9406(14)00078-9:226-31:..
- Lowe A, Littlewood C, McLean S, et al. Physiotherapy and physical activity: a cross-sectional survey exploring physical activity promotion, knowledge of physical activity guidelines and the physical activity habits of UK physiotherapists. *BMJ Open Sport Exerc Med* 2017;3:e000290.
- Lowe A, Littlewood C, McLean S. Understanding physical activity promotion in physiotherapy practice: a qualitative study. *Musculoskelet Sci Pract* 2018;35:S2468-7812(18)30038-9:1-7:..
- West K, Purcell K, Haynes A, et al. "people associate us with movement so 't's an awesome opportunity": perspectives from physiotherapists on promoting physical activity, exercise and sport. *Int J Environ Res Public Health* 2021;18:2963.
- Kime N, Pringle A, Zwolinsky S, et al. How prepared are healthcare professionals for delivering physical activity guidance to those with diabetes? A formative evaluation. *BMC Health Serv Res* 2020;20:8.
- O'Brien BC, Harris IB, Beckman TJ, et al. Standards for reporting qualitative research: a synthesis of recommendations. *Acad Med* 2014;89:1245-51.
- Saunders B, Sim J, Kingstone T, et al. Saturation in qualitative research: exploring its conceptualization and operationalization. *Qual Quant* 2018;52:1893-907.
- Kallio H, Pietilä A-M, Johnson M, et al. Systematic methodological review: developing a framework for a qualitative semi-structured interview guide. *J Adv Nurs* 2016;72:2954-65.
- DeJonckheere M, Vaughn LM. Semistructured interviewing in primary care research: a balance of relationship and rigour. *Fam Med Community Health* 2019;7:e000057.
- Vishnubala D, Iqbal A, Marino K, et al. Uk doctors delivering physical activity advice: what are the challenges and possible solutions? A qualitative study. *Int J Environ Res Public Health* 2022;19:12030. 10.3390/ijerph191912030 Available: <https://doi.org/10.3390/ijerph191912030>

- 23 Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology* 2006;3:77–101.
- 24 Nowell LS, Norris JM, White DE, et al. Thematic analysis. *International Journal of Qualitative Methods* 2017;16:160940691773384.
- 25 Leung L. Validity, reliability, and generalizability in qualitative research. *J Family Med Prim Care* 2015;4:324–7.
- 26 Yona T, Ben Ami N, Azmon M, et al. Physiotherapists lack knowledge of the who physical activity guidelines. A local or a global problem? *Musculoskelet Sci Pract* 2019;43:70–5.
- 27 Chatterjee R, Chapman T, Brannan MG, et al. Gps' knowledge, use, and confidence in national physical activity and health guidelines and tools: a questionnaire-based survey of general practice in England. *Br J Gen Pract* 2017;67:e668–75.
- 28 De Vivo M, Mills H. "they turn to you first for everything": insights into midwives' perspectives of providing physical activity advice and guidance to pregnant women. *BMC Pregnancy Childbirth* 2019;19:462.
- 29 Bourne T, Wynants L, Peters M, et al. The impact of complaints procedures on the welfare, health and clinical practise of 7926 doctors in the UK: a cross-sectional survey. *BMJ Open* 2015;5:e006687.
- 30 Tsiga E, Panagopoulou E, Sevdalis N, et al. The influence of time pressure on adherence to guidelines in primary care: an experimental study. *BMJ Open* 2013;3:e002700.
- 31 McLean S, Charlesworth L, May S, et al. Healthcare students' perceptions about their role, confidence and competence to deliver brief public health interventions and advice. *BMC Med Educ* 2018;18:114.
- 32 Freene N, Cools S, Bissett B. Are we missing opportunities? physiotherapy and physical activity promotion: a cross-sectional survey. *BMC Sports Sci Med Rehabil* 2017;9:19.
- 33 Yeowell G. What are the perceived needs of Pakistani women in the North West of England in relation to physiotherapy, and to what extent do they feel their needs are being Met? *Physiotherapy* 2010;96:257–63.
- 34 Scheers T, Philippaerts R, Lefevre J. Compliance with different physical activity recommendations and its association with socio-demographic characteristics using an objective measure. *BMC Public Health* 2013;13:136.
- 35 Yoshikawa K, Brady B, Perry MA, et al. Sociocultural factors influencing physiotherapy management in culturally and linguistically diverse people with persistent pain: a scoping review. *Physiotherapy* 2020;107:292–305.
- 36 Semmons J. The role of physiotherapy in the management of chronic pain. *Anaesthesia & Intensive Care Medicine* 2016;17:445–7.
- 37 Bunzli S, O'Brien P, Ayton D, et al. Misconceptions and the acceptance of evidence-based nonsurgical interventions for knee osteoarthritis. A qualitative study. *Clin Orthop Relat Res* 2019;477:1975–83.
- 38 Booth J, Moseley GL, Schiltenswolf M, et al. Exercise for chronic musculoskeletal pain: a biopsychosocial approach. *Musculoskeletal Care* 2017;15:413–21.
- 39 Moore GF, Moore L, Murphy S. Facilitating adherence to physical activity: exercise professionals' experiences of the National exercise referral scheme in Wales: a qualitative study. *BMC Public Health* 2011;11:935.
- 40 Park JH, Moon JH, Kim HJ, et al. Sedentary lifestyle: overview of updated evidence of potential health risks. *Korean J Fam Med* 2020;41:365–73.
- 41 Segar M, Taber JM, Patrick H, et al. Rethinking physical activity communication: using focus groups to understand women's goals, values, and beliefs to improve public health. *BMC Public Health* 2017;17:462.
- 42 Samdal GB, Eide GE, Barth T, et al. Effective behaviour change techniques for physical activity and healthy eating in overweight and obese adults; systematic review and meta-regression analyses. *Int J Behav Nutr Phys Act* 2017;14:42.
- 43 Yildiz E. The effects of acceptance and commitment therapy on lifestyle and behavioral changes: a systematic review of randomized controlled trials. *Perspect Psychiatr Care* 2020;56:657–90.
- 44 Baker SC, Watson BM. How patients perceive their doctors' communication: implications for patient willingness to communicate. *J Lang Soc Psychol* 2015;34:621–39.
- 45 Sustersic M, Tissot M, Tyrant J, et al. Impact of patient information leaflets on doctor-patient communication in the context of acute conditions: a prospective, controlled, before-after study in two French emergency departments. *BMJ Open* 2019;9:e024184.
- 46 Budzynski-Seymour E, Milton K, Mills H, et al. A rapid review of communication strategies for physical activity guidelines and physical activity promotion: a review of worldwide strategies. *J Phys Act Health* 2021;18:1014–27.
- 47 Protheroe J, Estacio EV, Saidy-Khan S. Patient information materials in general practices and promotion of health literacy: an observational study of their effectiveness. *Br J Gen Pract* 2015;65:e192–7.

1 **SUPPLEMENTARY FILE**

2 **INTERVIEW GUIDE**

3

4 [Thank the participant for attending the interview]

5

6 [Participant to have read the PIS and consent form, and returned a completed copy of
7 the consent to the researcher prior to the interview]

8

9 [Researcher and participant to introduce themselves. Researcher to introduce the
10 evaluation and the purpose of the interview]

11

12 [Reiterate that the information participants provide will be anonymised and confidential.

13 **Check that the participant is comfortable with the interview being recorded]**

14

15 **START RECORDING**

16

17 **In this interview I am interested in hearing about your experiences of**
18 **delivering physical activity (PA) guidance to a patient, your opinion as a**
19 **clinical expert in PA on the barriers, challenges and solutions to improving**
20 **health care professionals given PA advice and views on current**
21 **interventions/developments.**

22

23 Please be assured that you will remain anonymous and the research team will not share
24 your comments with anyone else, so be as honest as you can. If there are any
25 questions that you would prefer not to answer you do not have to answer them. If at
26 any point you do not understand what I am asking or need some clarification, please
27 feel free to ask as we go along. You will be given an opportunity to say anything that
28 we have not covered at the end of the interview

29

30 Do you have any questions about the interview before we begin?

31 **DEMOGRAPHICS and KNOWLEDGE**

32 Q1. State your role, level of study, experience and current location of work (primary or
33 secondary care)

34 Q1a. What is your speciality/discipline?

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

36 Where work- eg hospital

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

38 Q2. Which statement best describes your own PA:

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

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

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

45 PRIOR TO COVID AND AFTER- why??

46 Q3. Tell me about the education and training that you have received in relation to PA

47 [Education and training during formal medical degree and Continuous Professional
48 Development; Knowledge of PA guidelines; Feelings/confidence around delivering CMO
49 PA guidance] Under/postgrad

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

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

54 Q4a. Why this approach;

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

56 Q4c. What individuals/practice could do differently?

57 Q4d. What works well and why?

58 Q4e. What needs to change for this to happen?

59 Signposting, etc.].

60 Q5. What do you do differently for those who have chronic disease versus those who
61 don't in terms of the advice you give for PA guidance?

62 Q5a. Given an Example;

63 Q5b. What works well and why?

64 Q5c. What works less well?

65 Q6. What would be your 'top tip' for promoting PA to your patients with chronic disease
66 and those without?

67 [Explore what they do well and would share with their fellow colleagues as
68 something that is exemplar practice]

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

72 Prompts if needed: time, resources, partnerships with providers, better training, other
73 people I could refer to in house, policy commitment for PA promotion

74 Q8. What in your opinion are the challenges and barriers that prevent HCPs giving PA
75 advice?

76 Prompts here-Consider intrinsic and extrinsic

77 Q9. How do you engage hard-to-reach HCPs who are less enthusiastic or even anti PA?

78 Q9a. What works why and how?

79 Q9b. What works less well and why?

80 Q10. Should we not bother engaging those HCPs who are less enthusiastic, yes or no
81 and why?

82 EDUCATION

83 Q11. What education /resources out there for HCPs do you feel is most effective at
84 enabling us to promote the guidelines?

85 [Prompts: The 2019 guidelines Infographics, PA training, Mentoring]

86 What works well and why?

87 What should we do that would help you to see/ access the info.

88 Q12. How can we embed more PA into undergraduate and postgraduate curriculums?

89 Consider delivery type/method, scalability, consider assessment

90 Q13. What do you think are the solutions to increase HCP giving PA advice?

91 Consider policy, motivating practices, clinicians

92 RESOURCES AND INTERVENTIONS

93 2019 Guidelines

94 Q14. Do you think the 2019 update has been helpful or not?

95 Q14a. Why is this?

96 Q15. Have you seen the CMO PA infographics? If so which ones?

97 Q15a. If yes- how do you use it?

98 Where would you find it?

99 Q16. What else would you like to see in the guidelines?

100 [Prompts: 24 hour message, inclusion of guidelines on sleep and PA, specific
101 diseases, other groups?] anything you'd want adding? Do you think there's any value in
102 adding...

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

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

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

110 Yes/No... Why?

111 Moving Medicine (MM)

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

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

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

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

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

118 Q21. What works well and why?

119 [Prompts: Content, coverage, access, style?]

120 Q22. What does not work well and why?

121 [Prompts: Content, coverage, access, style?]

122 Q23. In your opinion what could be improved about moving medicine to make it more fit
123 for your purpose as a clinician?

124 COVID-19

125 Q24. Has COVID-19 changed the frequency or way you given PA advice?

126 Q25. If you are giving PA advice during COVID-19 can you give an example of where and
127 how and why you have given PA advice?

128 Q26. Are you currently giving any specific advice to reduce sedentary behaviour during
129 covid?

130 Q27. Are you targeting any specific groups?

131 Q28. Can you give an example of where you have done this? Eg educating, asking qu's.
132 do you bring this up in conversation.

133 OTHER

134 Q29. What are your thoughts about the current process where rehab typically stops after

135 Band 6?

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?