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

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 cardiometabolic diseases and improving physical health in cancer survivors. 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. 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. Eighty-four per cent of adults globally fail to reach the recommended aerobic PA guidelines. In the UK, this figure was slightly lower with 39% of the population failing to meet the aerobic PA guidelines between 2019 and 2020. Twenty-seven per cent of which were classed as physically inactive meaning they did less than 30 min of moderate PA a week. Additionally, 43% of UK adults achieved the strength PA guidelines between 2020 and 2021, which was a 1.2% decrease from the previous year. 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. With physical inactivity leading to 1.6 million deaths annually, and non-communicable diseases (NCDs) increasing, 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. In accordance with this, the WHO launched the Global Action Plan on Physical Activity in 2018 to reduce physical inactivity by 15%. 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. This has resulted in decreased physical and functional capacity, increased mental distress and an increased cardiovascular disease risk profile. Therefore, now more than ever, public health policies and strategies to increase PA levels of the population safely, require urgent attention.

The CMOs have identified healthcare professionals (HCPs) as key conduits in the promotion of PA. 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. Physiotherapists reported that health promotion, especially PA, was within their scope of practice (SOP). 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. Of this sample, 12 completed follow-up interviews where reported barriers to PA promotion included patient complexity, work culture and a lack of time. 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.

Solutions to enable physiotherapists to successfully deliver PA guidance have yet to be explored in depth, 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, 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. The standards for reporting qualitative research was followed throughout.

**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.

**Data collection**

Interviews adopted a semistructured design, which is a common method in healthcare research, to encourage open-ended responses that could be elaborated on with probing for the limited responses, which explores participants’ thoughts and beliefs. The interview guide was created by Vishnubala et al 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 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. 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.\(^\text{23}\) This method was chosen for its flexibility, while providing in-depth complex data.\(^\text{24}\) In reflecting similar approaches used elsewhere in the literature,\(^\text{17}\) 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.\(^\text{24}\)\(^\text{25}\) 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.\(^\text{17}\)

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 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>
<thead>
<tr>
<th>Characteristic</th>
<th>Category</th>
<th>n (%)</th>
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<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>6 (33.3)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>12 (66.7)</td>
</tr>
<tr>
<td>Level of education</td>
<td>BSc or equivalent</td>
<td>8 (44.4)</td>
</tr>
<tr>
<td></td>
<td>BSc+postgraduate diploma</td>
<td>3 (16.7)</td>
</tr>
<tr>
<td></td>
<td>BSc+MSc</td>
<td>7 (38.9)</td>
</tr>
<tr>
<td>Years of experience</td>
<td>0–5</td>
<td>9 (50)</td>
</tr>
<tr>
<td></td>
<td>6–10</td>
<td>6 (33.3)</td>
</tr>
<tr>
<td></td>
<td>11–15</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td></td>
<td>16–20</td>
<td>2 (11.1)</td>
</tr>
<tr>
<td></td>
<td>21+</td>
<td>1 (5.6)</td>
</tr>
<tr>
<td>Healthcare setting</td>
<td>Inpatients</td>
<td>5 (27.8)</td>
</tr>
<tr>
<td></td>
<td>Outpatients</td>
<td>11 (61.1)</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>2 (11.1)</td>
</tr>
<tr>
<td>UK region</td>
<td>West Midlands</td>
<td>3 (16.7)</td>
</tr>
<tr>
<td></td>
<td>East Midlands</td>
<td>8 (44.4)</td>
</tr>
<tr>
<td></td>
<td>Yorkshire and Humber</td>
<td>4 (22.2)</td>
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<tr>
<td></td>
<td>North West</td>
<td>1 (5.6)</td>
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<td></td>
<td>London</td>
<td>1 (5.6)</td>
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<td></td>
<td>Scotland</td>
<td>1 (5.6)</td>
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BSc, bachelor of science; MSc, master of science.
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).

<table>
<thead>
<tr>
<th>Subtheme</th>
<th>Example quotes</th>
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| Perceived lack of knowledge of the PA guidelines       | “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  
“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 |
| Confidence/fear of giving PA advice                    | “I think there is a bit of fear of giving the wrong advice and getting penalised for that and also kind of an anxiety if you’ve given some advice and it hasn’t helped, will you be held accountable?” P7  
“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 |

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,
Thematic analysis of the interviews identified five key areas: patient barriers, awareness of the PA guidelines, recommending PA, patient compliance, and optimising the delivery of PA.

### 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 recurring 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.

Table 4: Subthemes for patient barriers to delivering PA

<table>
<thead>
<tr>
<th>Subtheme</th>
<th>Example quotes</th>
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<tbody>
<tr>
<td>Patient compliance</td>
<td>“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</td>
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<tr>
<td>Patient fear of exercise</td>
<td>“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</td>
</tr>
<tr>
<td>Expectations of physiotherapy</td>
<td>“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</td>
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</table>

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...
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 handouts, 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. 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. 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.
of the guidelines, with vigorous intensity PA and strength components being the least known, 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. 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. 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, which was also reported in another study of nurses and GPs who managed patients with diabetes, leading to disengagement in PA advice. 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. A survey of 7026 GPs in 2012, found that many would practise defensively, particularly for high-risk patients due to the impact of complaints. 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

Table 6 Subthemes for optimising delivery of PA advice

<table>
<thead>
<tr>
<th>Subtheme</th>
<th>Example quotes</th>
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<tbody>
<tr>
<td>Make PA individualised and functional</td>
<td>“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</td>
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<tr>
<td></td>
<td>“I think for anyone’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</td>
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<td>Have gradual approach to introducing PA</td>
<td>“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</td>
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<td></td>
<td>“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</td>
</tr>
<tr>
<td>Supportive communication</td>
<td>“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</td>
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<td></td>
<td>“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</td>
</tr>
<tr>
<td>Use of visual resources</td>
<td>“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</td>
</tr>
<tr>
<td></td>
<td>“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</td>
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PA, physical activity.
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. 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. 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, 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. 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. 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. 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. Patient demographics can also influence compliance, with smokers and the elderly less likely to change their PA levels. 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, 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. Fear avoidance of PA, particularly with chronic musculoskeletal conditions, can impact on clinical outcomes and rehabilitation if not addressed. 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. 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. 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.

**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, while still offsetting the adverse effects that being inactive can cause. Making PA individualised, with consideration of patient preferences to build confidence is more favourable by patients. 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. 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. 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, whereas forceful or patronising language discouraged patients from communicating their concerns. 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. HCPs have previously reported leaflets as a convenient concise way to help focus information during a consultation and more convenient than using websites. Freene et al found that 93% of an Australian physiotherapy sample also agreed that having resources would be useful for promoting PA. Leaflets have been found to improve patient satisfaction, communication and reduced the need for re-assessments of the same pathology in French emergency departments. 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. 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. 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, 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, 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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Contributors
AP and DV developed the research question, concept and design, while AI, CN and KRM acted as methodological council. AS led data collection and analysis, supervised by DV and CN. AS produced a first version of the manuscript. AI, AP, AS, CN, and DV revised the manuscript to bring it to its current version. All authors have read and approved the final manuscript. CN is guarantor of the content.

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Not applicable.

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ORCID iDs
Katherine Rose Marino http://orcid.org/0000-0001-9772-5494
Camilla Nykjaer http://orcid.org/0000-0002-8648-9972

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