Understanding physical activity promotion in physiotherapy practice: A qualitative study

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Understanding Physical Activity Promotion in Physiotherapy Practice: A Qualitative Study.

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CONFLICT OF INTEREST

Anna Lowe is a Physical Activity Clinical Champion for Public Health England.

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AUTHORSHIP

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ABSTRACT

Objective: Physical inactivity is a major public health issue and healthcare professionals are encouraged to promote physical activity during routine patient contacts in order to reduce non-communicable diseases and enhance individuals' quality of life. Little is known about physical activity promotion in physiotherapy practice in the UK. The aim of this study was to better understand physiotherapists' experience of physical activity promotion in clinical practice.

Design: A qualitative study was undertaken comprising 12 telephone interviews with participants using a quota sampling approach. The qualitative data was analysed using a thematic analysis approach and written up according to COREQ guidelines.

Findings: Four themes were identified (1) Current physiotherapy practice (2) Barriers to, and facilitators of physical activity promotion, (3) Exercise or physical activity? and (4) Functional restoration versus general wellbeing.

Conclusions: Physiotherapists use routine clinical contacts to discuss physical activity. However, brief interventions are not consistently used and no common framework to guide physical activity promotion was identified. Approaches appear to be inconsistent and informal and focus largely on short-term restoration of function rather than health promotion. There is scope to improve practice in line with current guidance to maximise potential impact on inactivity.

WHAT ARE THE NEW FINDINGS?

Findings from this study further our understanding of physiotherapists' experience of promoting physical activity within UK physiotherapy practice.

- Physiotherapists discuss physical activity in routine clinical contacts but approaches to physical activity promotion were largely informal and inconsistent with no common framework.
- Brief interventions for physical activity, as part of a broader Making Every Contact Count approach, are not well understood and are not integrated into practice.
- Physical activity was predominantly discussed as a means of restoring function as opposed to a means of promoting longer-term health.

BACKGROUND

Physical activity (PA) is described as any bodily movement produced by skeletal muscles that requires energy expenditure. Exercise is a subgroup of PA where the activity is planned, structured, repetitive, and aims to improve or maintain one or more components of physical fitness [1].

The impact of physical inactivity (PI) on health has been extensively documented, it has been described as the biggest public health issue of the 21st century [2] and the fourth largest cause of death worldwide [3]. It is postulated that if PI decreased by 25% then more than 1.3 million deaths could be averted every year [4].

PI places substantial economic burden on healthcare systems and wider society. Inactive people spend 38% more days in hospital and use significantly more healthcare resources than active people [5]. It is estimated that in 2006-7, £0.9 billion of NHS money was spent on PI-related ill health [6]. Hence, there is guidance on how PI be addressed both nationally and internationally [7,8]. Within this guidance, health services are acknowledged as a key lever for change and integrating PA promotion into primary healthcare systems has been described as one of the seven "best investments" for reducing physical inactivity [9].

Physiotherapists work extensively with people with long term conditions, a large proportion of whom are either overweight or obese, have multiple comorbid health conditions and are physically inactive [10]. The Making Every Contact Count (MECC) approach supports clinicians to embed prevention (including PA promotion) into routine practice using brief interventions [11]. Physiotherapists have extensive opportunity to promote PA, yet little is known about the extent to which this is integrated into physiotherapy practice. The physiotherapy literature is sparse [12] and evidence from other healthcare professions describes rates of PA promotion as unacceptably low [13].

A recent, national cross-sectional survey of PA promotion in physiotherapy practice generated a preliminary picture reporting that a large proportion of survey respondents routinely delivered brief interventions for PA [14]. The purpose of this qualitative study is to build on the survey findings to further develop our understanding of physiotherapists' experience of PA promotion in UK physiotherapy practice.

METHOD

Theoretical Framework

This qualitative study is the final part of a broader programme of research comprising a scoping review, a quantitative survey and this qualitative follow-up. The research paradigm that underpins the programme of research is pragmatism which allows relative theoretical freedom. Quantitative and qualitative strands are not viewed as fundamentally opposed and can be mutually illuminating [15].

Ethical Approval

Ethical approval was granted by the Faculty Research Ethics Committee at Sheffield Hallam University (Research proposal: 2016-7/HWB-HSC-16).

Design & Setting

This qualitative study used semi-structured, telephone interviews.

Sampling

Respondents from the previous survey (all UK physiotherapists with current patient contact) were asked if they consented to future contact from the research team. Those who agreed were emailed with an invitation to participate (including participant information sheet and consent form). A purposive, quota sampling method was used to ensure that key groups were represented [16]. Survey data was used to identify high promoting respondents and low promoting respondents (based on self-report). Approximately 40 physiotherapists were emailed (10 at a time to avoid over-recruitment). No one refused although some did not respond to emails. The first 6 from each quota to respond were interviewed (see flowchart in Supplementary file 1). Sampling ceased after 12 interviews when there was consensus that theoretical saturation had occurred.

Data Collection

An interview guide was developed based on the key survey findings, this was pilot tested by AL in one face to face, semi-structured interview with a physiotherapist from the high-promoting category. It was then subject to peer review by CL and SM and was refined and agreed (see appendix 1). Following this, 12 individual telephone interviews were conducted by AL and recorded using an encrypted digital recording device with a telephone adaptor. The duration of the interviews was approximately 45 minutes.

Data Analysis

Audio files were transcribed, checked for accuracy and imported into Quirkos [17], qualitative data was analysed using the following 6-stage thematic approach detailed in Table 1. [18].

Table 1. Six Stages of Thematic Analysis (based on Braun and Clarke, 2006)

Stage	Activity
1. Familiarisation with the data	This phase involves reading and re-reading the data, to become immersed and intimately familiar with its content.
2. Coding	This phase involves generating succinct labels (or codes) that identify important features of the data that might be relevant to answering the research question. It involves coding the entire dataset, and after that, collating all the codes and all relevant data extracts, together for later stages of analysis.
3. Searching for themes	This phase involves examining the codes and collated data to identify significant broader patterns of meaning (potential themes). It then involves collating data relevant to each candidate theme, so that you can work with the data and review the viability of each candidate theme.
4. Reviewing themes	This phase involves checking the candidate themes against the dataset, to determine that they tell a convincing story of the data, and one that answers the research question. In this phase, themes are typically refined, which sometimes involves them being split, combined, or discarded.
5. Defining and naming themes	This phase involves developing a detailed analysis of each theme, working out the scope and focus of each theme, determining the 'story' of each. It also involves deciding on an informative name for each theme.
6. Writing up	This final phase involves weaving together the analytic narrative and data extracts, and contextualising the analysis in relation to existing literature.

An inductive approach was taken in that codes and themes developed from the data without an existing framework. Initial coding was performed on 2 transcripts within Quirkos by AL, these were

then independently coded by CL and SM. This process was discussed and the process was refined. AL coded the remaining 10 transcripts and these were reviewed collectively by AL, CL and SM. Candidate themes were reviewed and refined by AL, SM and CL and final themes were agreed by all. Detailed information on the analysis process was recorded in an audit document. Findings were written up in line with reporting guidelines for qualitative research [19].

FINDINGS

Characteristics of the 12 participants can be seen in Table 2.

Table 2. Characteristics of Participants.

Characteristic		Count	%
Gender	Female	7	58%
	Male	5	42%
Years of Experience	0 - 5 years	3	25%
	6 - 10 years	2	17%
	11 - 15 years	3	25%
	16 - 20 years	3	25%
	20+ years	1	8%
Healthcare Sector	National Health Service	12	100%
Nation	Scotland	1	8%
	Northern Ireland	0	0
	Wales	0	0
	England	11	92%
Healthcare Setting	Primary care	3	25%
	Secondary care	3	25%
	Community	2	17%
	A mixture	4	33%
PA Promotion Status	High	6	50%
	Low	6	50%

A number of themes developed, including semantic themes which were directly linked to the quantitative findings, these involve “the surface or semantic appearance” of data. [18].

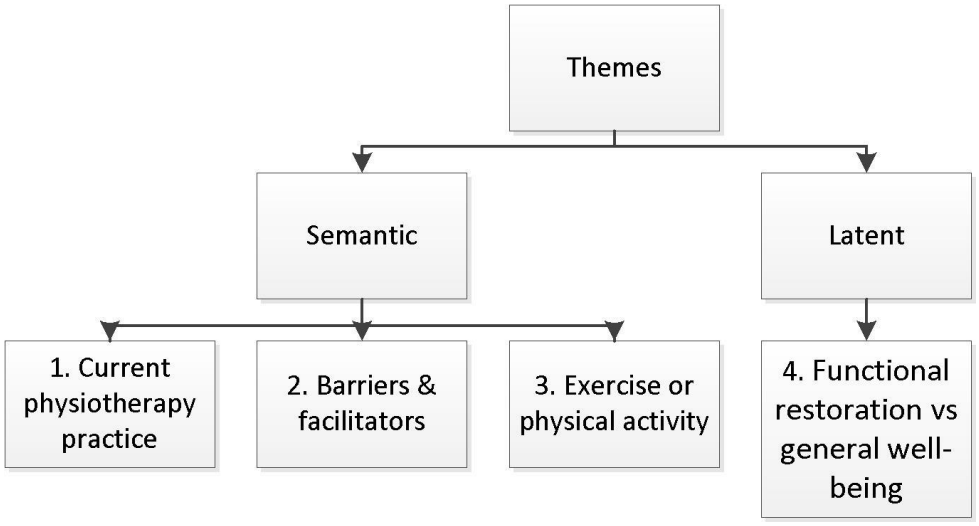
Additionally, a higher order of latent themes which represent over-arching concepts, patterns and assumptions. Latent themes move away from description to interpretation and a wider framework of meanings and connotations [20].

Four themes can be seen in Figure 1 and are described below;

1. Current physiotherapy practice.
2. Barriers to, and facilitators of PA promotion.
3. Exercise or physical activity?

4. Functional restoration versus general well-being.

Figure 1. Organisation of Themes



Theme 1: Current Physiotherapy Practice

This theme responds to many of the key issues that arose from the survey findings. It describes features of current practice and elucidates survey findings. As the most semantic of the 4 themes, data is represented literally and does not go beyond surface meaning within this theme.

Participants described how they discuss PA in routine practice and referred to the existing assessment framework common across many areas of physiotherapy. They described how they integrate questions about PA into the subjective assessment and specifically into the social history. It was described as an "automated" part of the assessment and participants explained that the framework was a useful prompt to elicit information from patients on PA particularly in relation to hobbies and employment.

> *"well it makes up part of the subjective assessment that I go through. I'll always specifically ask someone as part of the social history if they have any sport or exercise interests or any physical activity hobbies." P3*

Participants described their approach in general terms emphasising how they grade, tailor and personalise their approach to PA promotion.

The importance of good communication skills and an ability to connect with patients was consistent in the data, participants conveyed a sense that personalisation and empathy were central to their approach. Their role in educating patients came through strongly as a means of supporting self-management. The importance of building confidence and managing fear were highlighted as important factors.

> *"It's starting off at a level that's appropriate for them without making it scary really. Then from there, because you've got to build….. if they go out of the room thinking I'm weak and I don't do this and they haven't listened to me, you won't get anywhere really. It's trying to*

show them what they can do to start with and how making small changes throughout the day can make a big difference and then building from there as best they can. It can take quite a long time, but certainly it's about the everyday changes." P5

Participants had difficulty characterising their actual approach, the terms brief advice, brief intervention, cognitive behavioural therapy, motivational interviewing and MECC were used but confusion was expressed over some of the terminology.

"What is meant by brief intervention? What would that look like in practice?" P7

"It wouldn't be something I would normally use as terminology I don't think. How would you describe what you mean by brief intervention?" P9

There was little detail regarding the structure and specific content of PA promotion interventions and little commonality between participants.

When asked specifically about assessment of PA status participants conveyed a sense that this was important. They described how they would use an informal approach, rather than a formal measure to assess activity levels. These were often recorded in relation to hobbies or activities that patients want to return to.

This was recognised by some participants as different to formal measurement, use of formal measurement was largely absent, with one notable exception that is discussed later.

"Yes, I would say up to a point we tend to be asking patients what they do, but it tends to be based very much on a functional report from them, rather than on using any particular tools to measure that." P9

"Physical activity isn't routinely measured in any of our outcome measures in outpatients." P12

Questions related to the PA guidelines elicited a variety of responses, predominantly conveying a lack of awareness;

"I can't say that either myself or my colleagues necessarily refer to those guidelines in our daily work." P4

Yet there was acknowledgement of the potential value of the PA guidelines amongst participants and evidence that they are integrated into practice by some clinicians.

When asked if and how participants signpost their patients onto further PA support, participants described difficulties in knowing what services are available and the lack of straightforward referral pathways.

"I guess on the whole physios, or any profession, don't want to spend too much time finding out where someone can go or where you can signpost, but if those things are overt and clear, then I guess naturally that's more likely to happen." P12

These difficulties were off-set by some participants by developing partnerships with delivery services and finding ways to collate and share information on services available.

"We've gone and done a bit of training with some of our partners and they've come in and trained, so having that two-way relationship then reminds them that you're there, and them coming to see you reminds you that they're there, if that makes sense……we use the wellbeing

walls for things like that….we've got the diabetes wall up as well at the moment and the next one is going to be men's health." P6

Theme 2: Barriers to, and Facilitators of PA Promotion

Several barriers to PA promotion were identified, firstly the complexity of patients was identified as a factor that makes PA promotion more challenging. Complexities were described mainly in terms of co-morbidities but also in terms of wider social and economic factors.

> *"we come across so many cognitive difficulties and memory issues, and it's perhaps partly because of the patient population that it's harder to have those conversations with people in terms of being able to utilise it for them to retain that information." P8*

> *"The thing is our patient population at this centre has over the past couple of years also changed to the slightly older, the slightly less fitter than the population that we used to treat a couple of years back. It's got to do with how the contracts across the Trust have changed over the years, so it's an economic, political change that has affected us." P4*

Some participants identified that the culture within their team hindered change and expressed a sense that PA promotion just wasn't the "done thing"

> *"I'm not really sure why – whether it's just partly cultural as well in the sense that it's not something that I feel like has been a focus when I've seen other people perhaps doing assessments and things." P8*

The acute setting was identified by some participants as a barrier, although this was not unanimous so may be linked more to the culture within specific teams.

> *"Once they are conscious you're very much more focused on short-term goals, so it was less of an issue there." P7*

Lack of time was identified as being a barrier by some participants although it is acknowledged that this may relate more to perceived clinical priorities.

> *"So, in that half an hour there are so many things you need to get done. With some patients, it's not... it's not that it's never the priority, but you have to let patients talk and then you have to try to fit in everything else." P5*

> *"I think that's a case of integrating it into that routine practice and the physiotherapist seeing that as integral to their physiotherapy activity and feeling that there will be benefits to putting that into action. So, I think that's more the change of mindset, rather than a real-time barrier or difficulty with overload." P11*

Several factors were identified as facilitating PA promotion, firstly repeat appointments were seen as facilitating flexible discussions about PA.

> *"Quite often it's doing the first assessment and then on the second or third appointment you can delve more into the other extra things." P5*

Supporting resources were identified as facilitating PA promotion, these included smart phone apps, assessment tools (such as the GPPAQ (General Practice Physical Activity Questionnaire), wall displays and policy documents.

"Before, not having the GPPAQ, or not having that in front of you, either you'd forget because you're so busy and it's not written in front of you, or you may not know how to ask the questions. But because it's objective and it's there, it's easy." P6

As mentioned previously, collaborations with other services that support PA were described as facilitating PA promotion both in terms of raising awareness amongst physiotherapists and also creating accessible, easy pathways for onwards referral.

Participants consistently discussed their own PA experience as faciliatory in that it enabled them to empathise and connect with patients.

"I think because I've had a few injuries in the past I can sympathise with patients on how difficult it can be sometimes with the various limitations, say in terms of pain relief to get going and maybe other obstacles that people face, both known to themselves and unknown to themselves." P4

"For me personally I think it's good that I am more physically active and I can then draw on that experience when I'm with patients and that's how I can use it. Even when my physically activity levels go down a bit, again I can still draw on that and use that and say this is what I've done when I'm not as physically active as I should be. So, I think anything that can make you more relatable to patients is a good thing really." P7

In line with this a positive alliance between patient and clinician was also identified as being a facilitator.

"That just gives the patient a more personal touch. You're not just being told by your doctor you need to lose weight or do a bit more exercise. There's kind of a trusted relationship there of 'I trust you as my therapist, what you're saying to me – perhaps I should trust that'." P6

Theme 3: Physical activity or exercise?

There was a lack of clarity and consistency over key terms "exercise" and "physical activity". Participants used the terms loosely, interchangeably or recognised confusion amongst their peers.

"Well I think exercise, I tend to think of something that's going to maybe do the cardiovascular system some good, whereas movement or activity I'm just literally wanting anything that will get some sort of joint movement going on really I suppose, because some of my patients are really quite inactive." P9

"I think a lot of physios would struggle to tell you the difference. I see that being a bit of a problem with maybe that ambiguity about what the difference might be between, say, a specific targeted exercise programme and a general physical activity." P12

In addition, participants identified that terminology can be important to patients and the potential negative connotations associated with the term "exercise" were highlighted.

"She doesn't do exercise, she can't do exercise, she's always been told she can't do exercise and as soon as we realised what she did and we switched it to talking about being active, she accepted that. In her head exercise was sports or competitive things, so I try and stick on the activity point of view rather than exercise." P1

"If you say to patients about exercise, they tend to think of more formal, like going to a gym or going to an exercise class or going running or something that's more formal, you know, you put sports clothes on and you go and do. Whereas I think if you talk about activity or movement they tend to just think about something that they can fit into their everyday, it's something that they're doing anyway and it's just trying to enhance that, rather than they're going to have to get changed and go and do." P9

Theme 4: Functional restoration versus general well-being

Conceptually over-arching; this latent theme relates to the aims of physiotherapy. Participants consistently emphasised the notion of "getting people better" and restoring function.

"Also, I suppose sometimes we're very focused on what we're doing for the patient, rather than what's going to happen beyond that." P9

"I think it's more about aiming to return to where they were….it does tend to focus of course very much on recovery activity, rather than necessarily increasing or maintaining physical activity for the sake of wellbeing, if you can see the difference." P4

"I would probably say that I personally would find myself focusing on the here and now, rather than perhaps the future. It's almost like I guess where patients are at the time, it's about getting their function back." P8

This view is contrasted with a longer-term, health promotion approach that was less prevalent within the data.

"I think there are specific physiotherapy related issues that most people will want to tackle within their physiotherapy sessions and then there's a little bit more of a distinction between looking at the wider health benefits of being physically active, or signposting towards healthy eating or to other activities as well." P11

DEVIANT CASE ANALYSIS

Development of themes was an iterative process, deviant cases were examined in order to revise, broaden and confirm the patterns emerging from data analysis [21]. P6 was considered to be a deviant case, contributions were anomalous in that PA promotion was clearly well integrated into practice and P6 was familiar with all terminology and policy documents and evidence. P6 reported a progressive and collaborative approach to PA and although barriers were acknowledged solutions had been identified. As such P6 was considered to be a deviant case representing an isolated pocket of good practice.

When findings from high promoters were compared to those from low promotors no substantial differences were found. This is in line with the fact that only one deviant case was identified, the findings were relatively homogenous with the exception of P6.

DISCUSSION

This is the first exploration of PA promotion amongst UK physiotherapists and as such it expands our understanding of physiotherapists' experiences of PA promotion in practice.

There was a lack of cohesion in the ways in which participants described approaches to PA. There appeared to be no defined, common framework for promoting PA in practice. There was an

assumption in the preliminary survey that brief interventions, as part of a wider MECC approach, were integrated into physiotherapy practice to some degree, as a mechanism for PA promotion. However, findings from the current study elucidate survey findings and suggest that this is not the case, this raises questions about the extent to which MECC approaches have been translated to clinicians and embedded within practice to date.

In line with this, exploration of specific components of PA promotion revealed firstly, that assessment of PA status was frequently informal or absent. Assessment of PA status is essential if change is to be measured and identifying inactive individuals facilitates a more economically viable, targeted approach to PA promotion [22]. Secondly, findings suggest that in line with evidence from other health professions, PA guidelines are not widely used to inform clinical practice [23,24]. Finally on this point, findings suggest that signposting is often perceived to be time consuming, complex and difficult to do in routine clinical contacts.

The barriers and facilitators identified in Theme 2 are broadly in line with findings from other healthcare professions [25–28]. However, in contrast to reviews from other professions, lack of confidence in PA promotion and lack of knowledge related to PA promotion were not cited as barriers by physiotherapists in this study [29]. It could be hypothesised that because exercise and rehabilitation are central in physiotherapy practice it may naturally give rise to discussions about PA. Thus, confidence in raising the issue may be less of a barrier than it is for other healthcare professionals.

A lack of clarity around the central concepts of PA and exercise was apparent. The relationship between PA and exercise in a physiotherapy context is complex, an ideal progression would be for a physiotherapist to use exercise to improve components of physical fitness which enables people to become more physically active, which in turn improves wellbeing and quality of life (see Figure 2). Findings suggest that current practice focusses on the initial 2 phases and may miss the opportunity to move into the realm of PA for longer-term health. Encouraging the use of universally accepted terminology may help to clarify the aims of physiotherapy interventions ensuring that PA is not overlooked as a key outcome.

Figure 2. Relationship between Exercise and Physical Activity in Physiotherapy Practice.

Participants identified readily with the core aim of restoring function with a focus on targeted exercise and short-term goals. This has been a core aim of physiotherapy since its inception; “Physiotherapy helps restore movement and function when someone is affected by injury, illness or disability” [30]. The idea of PA as a means of promoting general health across the life course is acknowledged but is much less prominent in the data. This may be partly explained by changes in population health; physiotherapy has been part of UK health care since the late 19th century, at this time life expectancy was less than 50 years of age and the major causes of death were infectious diseases [31,32]. Today non-communicable diseases (influenced by modifiable risk factors including

physical activity) are responsible for a large proportion of ill health [33]. This enormous change in patterns of health puts physiotherapists in a position to influence health in its broadest terms, through prevention rather than a narrow focus on restoration of function [34,35]. Indeed encouraging healthcare professionals to embed prevention in frontline services is a central tenet of current policy [36].

REFLEXIVITY

As lead researcher, I am also employed as a Physical Activity Clinical Champion, thus my background and beliefs about PA are well known to many physiotherapists. Continual efforts were made to understand the role of the self in the creation of knowledge in this study [37]. Regular peer debriefs with CL and SM, a reflective journal and a detailed audit trail were used to monitor the impact of my biases (conscious and unconscious), beliefs, and personal experiences [38]. The benefits of being an insider-researcher are also acknowledged in that I have a detailed understanding of key issues and frontline experience of the phenomena under scrutiny which facilitated many aspects of the research process.

STRENGTHS AND LIMITATIONS

To our knowledge this is the first time that physiotherapists' experiences of promoting PA in the UK have been examined through qualitative enquiry, this extends our understanding of current practice and opportunities for improvement.

The sample was drawn from the large, self-selecting sample who completed the preliminary cross-sectional survey. Steps were taken to limit the bias associated with a self-selecting sample including the use of quotas to ensure that contributions from both high-promoters and low promoters were included.

Telephone interviews were used for practical reasons associated with having a sample from a large geographic area. There are inherent limitations with this approach including an inability to observe body language and facial expressions. Although field notes were taken, the lack of direct observation may have resulted in more subtle aspects of communication being missed.

Further testing of the interview guide in a telephone, rather than face to face, interview setting may have allowed for further changes to be made to enhance suitability for that particular medium.

IMPLICATIONS

Our findings suggest that there is scope to improve integration of evidence into practice in relation to brief interventions for PA as part of a broader MECC approach. This should include further consideration of assessment to identify inactive patients, targeted knowledge mobilisation of the PA guidelines and work to ensure that signposting is feasible for clinicians.

There are questions for the physiotherapy profession about how it evolves in response to the substantial changes in patterns of health. The prevailing view amongst physiotherapists in this study was that their interventions are short-term and restorative. Adopting a broader view that acknowledges the role of modifiable health behaviours on wellbeing across the life-course would help to align physiotherapy with the prevailing direction of travel of healthcare.

Pockets of good practice were identified, supporting efforts to share learning may facilitate practice developments in this area.

CONCLUSION

PI is a major threat to the health of the public, supporting healthcare professionals to promote PA to patients in routine clinical contacts is recognised as an important means of tackling inactivity.

Findings from this qualitative study suggest that physiotherapists discuss PA with their patients in relation to physiotherapy goals, however this is often inconsistent and informal with isolated pockets of good practice. Brief interventions are not well understood and no common framework to guide PA promotion is currently integrated into physiotherapy practice. There is scope for service improvement in this area to better align physiotherapy practice with current health policy.

REFERENCES

1 World Health Organisation. WHO | Physical activity Fact Sheet. *WHO* Published Online First: 2017.http://www.who.int/mediacentre/factsheets/fs385/en/ (accessed 3 Oct 2017).

2 Blair SN. Physical inactivity: the biggest public health problem of the 21st century. *Br J Sports Med* 2009;**43**:1–2.http://bjsm.bmj.com/content/bjsports/43/1/1.full.pdf (accessed 7 Aug 2017).

3 Kohl HW, Craig CL, Lambert EV, *et al.* The pandemic of physical inactivity: Global action for public health. *Lancet* Published Online First: 2012. doi:10.1016/S0140-6736(12)60898-8

4 Lee IM, Shiroma EJ, Lobelo F, *et al.* Effect of physical inactivity on major non-communicable diseases worldwide: An analysis of burden of disease and life expectancy. *Lancet* Published Online First: 2012. doi:10.1016/S0140-6736(12)61031-9

5 Sari N. Physical inactivity and its impact on healthcare utilization. *Health Econ* 2009;**18**:885–901. doi:10.1002/hec.1408

6 Scarborough P, Bhatnagar P, Wickramasinghe KK, *et al.* The economic burden of ill health due to diet, physical inactivity, smoking, alcohol and obesity in the UK: An update to 2006-07 NHS costs. *J Public Health (Bangkok)* Published Online First: 2011. doi:10.1093/pubmed/fdr033

7 Department of Health. Start Active, Stay Active A report on physical activity for health from the four home countries' Chief Medical Officers. Published Online First: 2011.https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/216370/dh_128210.pdf (accessed 7 Aug 2017).

8 International Society for Physical Activity and Health. The Bangkok declaration on physical activity for global health and sustainable development. Published Online First: 2016.https://static1.squarespace.com/static/559a3ff1e4b0b0193b9d9862/t/5843cdfbe3df28eae5f43c10/1480838663699/BKK_Declaration+FINAL+Dec2.pdf (accessed 7 Aug 2017).

9 Global Advocacy for Physical Activity IS for PA and H. Investments that Work for Physical Activity. Published Online First: 2011.https://static1.squarespace.com/static/559a3ff1e4b0b0193b9d9862/t/5965c68c4c8b0390421dc167/1499842190766/InvestmentsWork_FINAL-low.pdf (accessed 7 Aug 2017).

10 McPhail S. Multi-morbidity, obesity and quality of life among physically inactive Australians accessing physiotherapy clinics for musculoskeletal disorders. *Physiotherapy* 2015;**101**:e986–7. doi:10.1016/j.physio.2015.03.1846

11 Public Health England, NHS England HEE. Making Every Contact Count: Consensus statement. 2016. www.gov.uk/phe (accessed 7 Aug 2017).

12 Lowe A, Gee M, McLean S, *et al.* Physical activity promotion in physiotherapy practice: A systematic scoping review of a decade of literature. *Br J Sports Med* Published Online First: 2016. doi:10.1136/bjsports-2016-096735

13 Lobelo F, Garcia De Quevedo I. The Evidence in Support of Physicians and Health Care Providers as Physical Activity Role Models. *Am J Lifestyle Med* 2014;**10**:36–52.http://journals.sagepub.com/doi/pdf/10.1177/1559827613520120 (accessed 18 Oct 2017).

14 Lowe A, Littlewood C, McLean S. 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;**in press**.

15 Andrew S, Halcomb E. *Mixed method research for nursing and the health sciences*. Chichester, West Sussex ; Ames, Iowa: : Blackwell Pub 2009.

16 Robinson OC. Sampling in Interview-Based Qualitative Research: A Theoretical and Practical Guide. *Qual Res Psychol* 2014;**11**:25–41. doi:10.1080/14780887.2013.801543

17 Quirkos. Quirkos Software. 2017.

18 Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol* 2006;**3**:77–101. doi:10.1191/1478088706qp063oa

19 Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Heal Care* 2007;**19**:349–57. doi:10.1093/intqhc/mzm042

20 Javadi M, Zarea K. Understanding Thematic Analysis and its Pitfall. *J Client Care* 2016;**1**:34–40. doi:10.15412/J.JCC.02010107

21 Pope C, Ziebland S, Mays N. Qualitative research in health care: Analysing qualitative data. *BMJ* 2000;**320**:114–6.https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1117368/pdf/114.pdf (accessed 2 Oct 2017).

22 Bull FC, Milton KE. A process evaluation of a ' physical activity pathway' in the primary care setting. *BMC Public Health* 2010;**10**:463. doi:10.1186/1471-2458-10-463

23 Reid H, Milton K, Bownes G, *et al.* Making physical activity evidence accessible: are these infographics the answer? *Br J Sports Med* Published Online First: 2017. doi:10.1136/bjsports-2016-096500

24 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* Published Online First: 2017.http://bjgp.org/content/early/2017/08/14/bjgp17X692513 (accessed 15 Aug 2017).

25 Douglas F, Torrance N, Van Teijlingen E, *et al.* Primary care staff's views and experiences related to routinely advising patients about physical activity. A questionnaire survey. *BMC Public Health* 2006;**6**:138. doi:10.1186/1471-2458-6-138

26 Barrett EM, Darker CD, Hussey J. Promotion of physical activity in primary care: knowledge and practice of general practitioners and physiotherapists. *J Public Health (Oxf)* 2013;**21**:63–9. doi:10.1007/s10389-012-0512-0

27 Walkeden S, Walker KM. Perceptions of physiotherapists about their role in health promotion at an acute hospital: A qualitative study. *Physiotherapy* 2015;**101**:226–31. doi:10.1016/j.physio.2014.06.005

28 Campbell F, Blank L, Messina J, *et al.* Physical activity: Brief advice for adults in primary care (National Institute for Health and Clinical Excellence Public Health Intervention Guidance). 2012. https://www.nice.org.uk/guidance/ph44/evidence/review-of-effectiveness-and-barriers-and-facilitators-69102685 (accessed 10 Sep 2017).

29 Hébert E, Caughy MO, Shuval K. Primary care providers' perceptions of physical activity counselling in a clinical setting: a systematic review. *Br J Sport Med* 2012;**46**:625–31. doi:10.1136/bjsports-2011-090734

30 Chartered Society of Physiotherapy. What is Physiotherapy? 2013.http://www.csp.org.uk/your-health/what-physiotherapy (accessed 10 Sep 2017).

31 Griffiths C, Brock A. Twentieth Century Mortality Trends in England and Wales Examines trends in mortality over the Twentieth Century, using data from the ONS Twentieth Century Mortality CD-ROM. *Off Natl Stat* 2003.

32 Thompson G, Hawkins O, Dar A, *et al.* Grey Britain: The ageing of the UK population. In: *Olympic Britain: Social and economic change since the 1908 and 1948 London Games*. 2012.

33 Public Health England. From evidence into action: opportunities to protect and improve the nation's health. 2014. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/366852/PHE_Priorities.pdf (accessed 10 Sep 2017).

34 Dean E. Physical therapy in the 21st century Part I: Toward practice informed by epidemiology and the crisis of lifestyle conditions. *Physiother Theory Pract 2009,* 2009;**25; Vol.25**:330; 330-353; 353. doi:10.1080/09593980802668027

35 Dean E. Physical therapy in the 21st century (Part II): Evidence-based practice within the context of evidence-informed practice. *Physiother Theory Pract* 2009;**25**:354–68. doi:10.1080/09593980902813416

36 NHS England. NHS England » The NHS Five Year Forward View – executive summary. NHS Engl. 2014.http://www.england.nhs.uk/ourwork/futurenhs/5yfv-exec-sum/

37 L Baillie. Promoting and evaluating scientific rigour in qualitative research. *Nurs Stand* 2014;**29**:36–42.

38 Berger R. Now I see it, now I don't: researcher's position and reflexivity in qualitative research. *Qual Res* 2015;**15**:219–34. doi:10.1177/1468794112468475

No	Item	Guide questions/description	
1: Research team and reflexivity			
Personal Characteristics			
1.	Interviewer/ facilitator	Which author/s conducted the interview or focus group?	Lead Author
2.	Credentials	What were the researcher's credentials? *E.g. PhD, MD*	Doctoral student Master's degree-Physiotherapy Member of Chartered Society of Physiotherapy
3.	Occupation	What was their occupation at the time of the study?	Doctoral student Physical Activity Clinical Champion - Public Health England
4.	Gender	Was the researcher male or female?	Female
5.	Experience and training	What experience or training did the researcher have?	Theoretical training in qualitative research methods & previous experience of conducting semi-structured interviews.
Relationship with participants			
6.	Relationship established	Was a relationship established prior to study commencement?	Methods section
7.	Participant knowledge of the interviewer	What did the participants know about the researcher? e*.g. personal goals, reasons for doing the research*	Methods section Reflexivity section
8.	Interviewer characteristics	What characteristics were reported about the	Patient info sheet Consent form & email inviting

No	Item	Guide questions/description	
		interviewer/facilitator? e.g. *Bias, assumptions, reasons and interests in the research topic*	participation. Reflexivity section
Domain 2: study design			
Theoretical framework			
9.	Methodological orientation and Theory	What methodological orientation was stated to underpin the study? *e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis*	Methods section
Participant selection			
10.	Sampling	How were participants selected? *e.g. purposive, convenience, consecutive, snowball*	Methods section
11.	Method of approach	How were participants approached? e*.g. face-to-face, telephone, mail, email*	Methods section
12.	Sample size	How many participants were in the study?	Methods section
13.	Non-	How many people refused to	Methods section

No	Item	Guide questions/description	
	participation	participate or dropped out? Reasons?	
Setting			
14.	Setting of data collection	Where was the data collected? e*.g. home, clinic, workplace*	Methods section
15.	Presence of non-participants	Was anyone else present besides the participants and researchers?	NA-telephone interviews Methods section
16.	Description of sample	What are the important characteristics of the sample? *e.g. demographic data, date*	Methods section
Data collection			
17.	Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	Methods section
18.	Repeat interviews	Were repeat interviews carried out? If yes, how many?	No-methods section
19.	Audio/visual recording	Did the research use audio or visual recording to collect the data?	Audio recorded see methods section
20.	Field notes	Were field notes made during and/or after the interview or focus group?	Methods section
21.	Duration	What was the duration of the interviews or focus group?	Approx 45 mins per interview see methods section

No	Item	Guide questions/description	
22.	Data saturation	Was data saturation discussed?	Yes-see methods section
23.	Transcripts returned	Were transcripts returned to participants for comment and/or correction?	No
Domain 3: analysis and findings			
Data analysis			
24.	Number of data coders	How many data coders coded the data?	1 See methods section
25.	Description of the coding tree	Did authors provide a description of the coding tree?	Yes -methods section
26.	Derivation of themes	Were themes identified in advance or derived from the data?	Derived from the data Methods section
27.	Software	What software, if applicable, was used to manage the data?	Quirkos Methods section
28.	Participant checking	Did participants provide feedback on the findings?	No
Reporting			
29.	Quotations presented	Were participant quotations presented to illustrate the themes / findings? Was each quotation identified? e.*g. participant number*	Findings section

No	Item	Guide questions/description	
30.	Data and findings consistent	Was there consistency between the data presented and the findings?	Findings section
31.	Clarity of major themes	Were major themes clearly presented in the findings?	Findings section
32.	Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	Findings section Deviant case analysis section.