Physical activity promotion in physiotherapy practice: A systematic scoping review of a decade of literature

Corresponding author

Anna Lowe

Sheffield Hallam University, Sheffield, S10-2BP. a.lowe@shu.ac.uk 01142255569

Co-authors

Melanie Gee, Centre for Health and Social Care Research, Sheffield Hallam University, Sheffield, UK.

Dr Chris Littlewood, School of Health and Related Research, University of Sheffield, Sheffield, and Clinical Trials Unit & Research Institute for Primary Care & Health Sciences, Keele University, Staffordshire, UK .

Dr Sionnadh McLean, Health and Wellbeing, Sheffield Hallam University, Sheffield, UK.

Carolyn Lindsay, Health and Wellbeing, Sheffield Hallam University, Sheffield, UK

Simon Everett, Physiotherapy Department, Nottinghamshire Healthcare NHS Foundation Trust, Sheffield, UK

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ABSTRACT

Background

The health benefits of physical activity (PA) have been extensively documented. Globally PA levels are low with only a small proportion of the population reaching recommended levels. Insufficient PA is seen as a major public health problem with high cost to society. Physiotherapists work with people to manage long-term conditions and are well-placed to deliver individual interventions to increase PA. Despite this little is known about the evidence that exists in this field.

Methods

This scoping review comprises a comprehensive search of key databases using pre-determined search terms. This is supplemented with a parallel search that incorporated novel social media strands. In-line with current guidance, a robust screening process took place using agreed inclusion and exclusion criteria.

Results

Thirty one studies met the inclusion criteria. The number of studies published annually increased over the decade. Ireland and USA yielded the largest number of publications with only one study from the UK. The target populations included physiotherapists and service users from a range of clinical populations. The studies were mainly quantitative and observational in design with a predominance of studies that scoped attitudes, perceptions, barriers and current practice.

Conclusions

This reconnaissance has shown the state of the evidence to be sparse and disparate. However, the sharp rise in published work in recent years is encouraging. The predominance of scoping studies and the clear social, economic and political drivers for change in this area highlights a need for more pragmatic, interventional studies that can inform clinical practice.

BACKGROUND

The positive effects of physical activity (PA) on physical and mental health,[1,2] health-related quality of life,[3] and healthy ageing[4] have been extensively documented. Many of the leading causes of ill health could be prevented if more inactive people were to become active.[5]

Insufficient PA is seen as a major public health problem, which puts a high demand on society due to the high costs it generates.[1] In developed countries physical inactivity accounts for 1.5% –3.0% of total direct healthcare costs.[6] In the UK in 2006-7 physical inactivity cost the NHS an estimated £0.9 billion.[7]

Physical activity is described as any body movement produced by the skeletal muscles that results in a substantial increase over resting energy expenditure.[8] Physical inactivity (PI) is described as doing no or very little physical activity at work, at home, for transport or during discretionary time and not reaching physical activity guidelines deemed necessary to benefit public health.[9]

In 2010 the World Health Organization published global recommendations on physical activity for health.[5] These were followed, in 2011, by UK guidelines for participation in physical activity across the life course.[10] Despite the well reported health and economic benefits of PA, levels of participation are low. Globally in 2010, around 23% of adults aged 18+ years were insufficiently physically active.[5] In the UK fewer than 40% of men and fewer than 30% of women met the recommended the PA guidelines across England, Scotland, Wales and Northern Ireland.[11]

In order to increase physical activity worldwide it has been identified that a systems approach is required that focuses on populations and the complex interactions among the correlates of physical inactivity, rather than solely a behavioural science approach focusing on individuals.[12]

Healthcare is part of this system and within healthcare there is a need for organisational, environmental and individual approaches promoting PA. Current UK guidance recommends that behaviour change is promoted by all health and social care professionals who have contact with the general public.[13] It has been identified that opportunities exist to promote the benefits of healthy lifestyles (including increasing PA) through routine contacts that people have with health services, by engaging individuals in conversations which support them in the steps they wish to take towards a healthier lifestyle.[14]

However, despite these aspirations, it has been suggested that there is little evidence that PA is being comprehensively promoted in healthcare settings.[15] The barriers to increasing health promotion and preventative care in healthcare settings are consistent across professional groups and include lack of time, perceived lack of knowledge, lack of confidence and lack of organisational support.[16-18]

It has been suggested that Physiotherapists have a professional and ethical responsibility to ensure that health promotion opportunities are maximally exploited.[19,20] The opportunities are significant with Physiotherapy outpatient contacts numbering 3 million in 2012 in the UK alone.[21] However little is known about the extent to which physiotherapists embed PA promotion in routine/usual care. This type of PA promotion has been termed "non-treatment" PA promotion", highlighting that PA is unlikely to be the main focus of the contact but acknowledging that the contact represents an opportunity for PA behaviour change.[22]

To date published reviews in this field have focussed on;

(i) Programmes commissioned with the primary aim of increasing PA (as opposed to integration of PA promotion into existing healthcare infrastructure). Orrow et al (2012) concluded that promotion of physical activity to sedentary adults recruited in primary care significantly increased self-reported physical activity levels at 12 months.[23]

(ii) Other health care professionals. A recent global review of PA counselling in primary care included studies involving physicians, counsellors, exercise professionals, health visitors, nurses, activity coaches; none of the included studies involved physiotherapists.[24]

(iii) Broader prevention themes of which PA is a subtheme. In a narrative synthesis of the literature related to allied health professionals (including Physiotherapy) and health promotion, Needles (2011) concluded that interventions were focused on individuals with identified "target" pre-existing conditions rather than approaches that identify risk factors.[25] In 2012, Frerichs et al published a systematic review of the literature exploring whether physical therapists can effectively counsel patients for lifestyle-related health conditions, the 7 included studies included both the provision of additional PA interventions as well as PA promotion integrated into usual practice.[26] The authors concluded that health counselling delivered by a physical therapist has the potential to be effective, at least in the short term. Finally Taukobong et al (2013) performed a systematic review of the literature related to health promotion and physiotherapy (of which PA was a component) identifying a lack of physical activity promotion in educational literature.[27]

To summarise, despite the compelling rationale for promoting PA and the opportunities that physiotherapy practice presents, little is known about the extent to which PI is addressed in current physiotherapy practice.

The over-arching aim of the review is to carry out a reconnaissance of the literature related to physical activity promotion in Physiotherapy practice. Specific aims were to;

1. Ascertain the extent of the literature that explicitly relates to physical activity promotion in physiotherapy practice.

2. Explore the key characteristics of the body of evidence.

METHODS

Design

This review uses the scoping review design described by Peters et al (2015) and is further informed by additional relevant guidance.[28-31] Scoping reviews are indicated when the nature and extent of the available evidence is unknown and they have been increasingly used in response to demand for effective and timely summaries of primary research.[28]

Search Methods

The search strategy was developed by Principle Investigator (AL) and Information Scientist (MG).

The strategy was deliberately narrow, with the aim of retrieving articles that explicitly mention physiotherapy and physical activity (and synonymous terms) in the title or abstract. Appropriate search terms were identified from relevant literature known to the author and from exploring the National Library of Medicine Medical Subject Headings. See Table 1 for the search parameters and appendix 1 for the search terms.

Table 1. Search Parameters

Descriptor	Where	Search term
Physiotherapy	Title	physiotherap*, "physical therap*"
Exercise/PA	Title/abstract	"physical activit*", exercis*, "general health", wellbeing, "physical fitness", sedentar*, inactiv*, "exercise therap*",
Intervention	Title/abstract	Interven*, program*, promot*, encourag*, advi*, counsel*
Date Limit	2005-2015	
Exclusions	NOT comment or editorial or letter as publication type	
Language	Abstract available in English	

The search was carried out in December 2015 and the database date parameters were set from 2005 to 2015. Search terms were combined using Boolean logic and used to perform searches of key databases (MEDLINE, CINAHL complete, PsychINFO, Web of Science, Cochrane Central Register for Controlled Trials, Applied Social Sciences Index and Abstracts (ASSIA)).

A parallel search was carried out, this included using key search terms in Google; the top 100 results were scanned for relevance. The allied health professions (AHP) research network CHAIN was used to circulate a request for information and an abbreviated message was circulated on Twitter. The reference lists of included articles were checked, publications of particular relevance were hand searched and publication lists of key authors were manually checked for relevant articles.

Screening

The references from the above search strands were imported into Refworks reference management software and duplicates were removed. AL read all titles and excluded overtly irrelevant articles. All three reviewers then conducted a small pilot test of the inclusion/exclusion criteria; this was an iterative process that required several amendments before agreement was reached. All potentially eligible abstracts were then reviewed independently by CL and SE who applied the inclusion/exclusion criteria, AL arbitrated in the event of disagreement. In line with the aim of identifying articles explicitly relating to physiotherapy and physical activity screening and data extraction were from the abstracts only.

Inclusion and Exclusion Criteria

Studies that met the following criteria were included in the review;

1. Studies focussed on the physiotherapy workforce (physiotherapists, assistants, students) or physiotherapy service users.
2. Interventions were related to physical activity promotion in a physiotherapy context. Articles were excluded if they pertained only to specific, targeted or "therapeutic" exercise.
3. Studies were available in English; studies were excluded if the abstract was not available in English.
4. Primary research of any design. Secondary research, including reviews were excluded but relevant studies from these reviews were included if they met the criteria. Editorials and commentaries were excluded.
5. Published 2005 onwards. This date was chosen because it corresponds with increased global interest in PA following the adoption by WHO of the Global strategy on diet, physical activity and health.[32] It also allowed for mapping of a full decade of activity.

Search Outcome

Articles that met the above criteria were included in the review. The process of identification, screening, eligibility and inclusion has been documented in accordance with PRISMA guidance and is represented in Figure 1.[33]

Figure 1. Flowchart of the Study Selection Process.

Quality Appraisal

In line with current guidance, as this is a preliminary reconnaissance, quality appraisal was not considered necessary to achieve the aims of the study.[28]

Data Extraction

A database in Microsoft Excel was created for data entry and management, it was developed iteratively, when consensus was reached on data base design CL and SE extracted data from all studies independently. Data was extracted from abstracts only as this was deemed sufficient to gain required information based on the pilot exercise and with reference to other similar reviews.[34,35]

Collation and synthesis

The data extraction spreadsheets were collated by AL. All studies meeting the inclusion criteria were summarised numerically in the first instance. This included the overall number of studies, year of publication, geographical location of study, study design, aims and study populations used and can be seen in Table 3.

Table 2. Summary of Included studies (Full details of data extraction can be seen in Table 3).

	Author	Year	Title
1	Aweto, HA et al[22]	2013	Knowledge, attitude and practice of physiotherapists towards promotion of physically active lifestyles in patient management.
2	Bodner, ME et al[36]	2013	Benchmarking curriculum content in entry-level health professional education with special reference to health promotion practice in physical therapy: A multi-institutional international study
3	Christian, A et al[37]	2015	Designing a Wellness Program for Rural Community Physical Therapy Clinics Based Upon a Needs Assessment
4	de Vries, NM et al[38]	2013	Development and Acceptability of an Individually Tailored Physical Therapy Strategy to Increase Activity Levels in Older Adults With Mobility Problems.
5	de Vries, NM et al[39]	2015a	Personalized physiotherapy in frail older adults with mobility problems is (cost)-effective in improving physical activity and frailty: a RCT
6	de Vries, NM et al[40]	2015b	Patient-centred physical therapy is (cost-) effective in increasing physical activity and reducing frailty in older adults with mobility problems: a randomized controlled trial with 6?months follow-up
7	Frantz, JM et al[41]	2013	Physical activity and health promotion strategies among physiotherapists in Rwanda.
8	Healey, WE et al[42]	2013	Creating a community-physical therapy partnership to increase physical activity in urban African-American adults.
9	Holm I, et al[43]	2015	Does outpatient physical therapy with the aim of improving health-related physical fitness influence the level of physical activity in patients with long-term musculoskeletal conditions?
10	Langhammer, B et al[44]	2014	Physiotherapy and physical functioning post-stroke: Exercise habits and functioning 4 years later? Long-term follow-up after a 1-year long-term intervention period: A randomized controlled trial.
11	Lau,C et al[45]	2015	Facilitating community-based exercise for people with stroke: a cross-sectional e-survey of physical therapy practice and perceived needs.
12	McPhail, S.[46]	2015a	Multi-morbidity, obesity and quality of life among physically inactive Australians accessing physiotherapy clinics for musculoskeletal disorders
13	McPhail, S[47]	2015b	Patient-perceived barriers and facilitators to increasing physical activity among patients with musculoskeletal disorders receiving outpatient physiotherapy: a qualitative investigation.
14	Messner, T.[48]	2012	Change in the activity behavior in the context of outpatient physiotherapy treatments Effects of planning and action control intervention
15	Mulligan, H et al.[49]	2012	Promoting physical activity for people with neurological disability: perspectives and experiences of physiotherapists.
16	O'Donoghue, G et al[50]	2011	Physical activity and exercise promotion and prescription in undergraduate physiotherapy education: content analysis of Irish curricula
17	O'Donoghue, G et al[51]	2012	Contemporary undergraduate physiotherapy education in terms of physical activity and exercise prescription: practice tutors' knowledge, attitudes and beliefs.
18	O'Donoghue, G et al[52]	2014a	Assessment and management of risk factors for the prevention of lifestyle-related disease: a cross-sectional survey of current activities, barriers and perceived training

			needs of primary care physiotherapists in the Republic of Ireland.
19	O'Donoghue, G et al[53]	2014b	Physical activity and exercise promotion and prescription: Recommendations for contemporary professional entry-level physiotherapy education
20	Radež,P et al[54]	2015	The physiotherapy and physical activity components within the antenatal classes in Slovenia
21	Sandström K et al[55]	2009	Prerequisites for carrying out physiotherapy and physical activity - experiences from adults with cerebral palsy.
22	Sheridan,C et al[56]	2008	Do physiotherapy-led exercise classes change activity levels and weight parameters in children attending a weight management clinic?
23	Shirley,D et al[57]	2010	Physical activity promotion in the physical therapy setting: perspectives from practitioners and students
24	Smith CM et al[58]	2013	Participant perceptions of a novel physiotherapy approach ("Blue Prescription") for increasing levels of physical activity in people with multiple sclerosis: a qualitative study following intervention.
25	Snodgrass, SJ. et al[59]	2014	Weight management including dietary and physical activity advice provided by Australian physiotherapists: a pilot cross-sectional survey.
26	Soundy, A. et al[60]	2014a	Barriers to and facilitators of physical activity among persons with schizophrenia: a survey of physical therapists.
27	Soundy, A. et al[61]	2014b	The value of social support to encourage people with schizophrenia to engage in physical activity: an international insight from specialist mental health physiotherapists.
28	Stretton, C. et al[62]	2013	Activity coaching to improve walking is liked by rehabilitation patients but physiotherapists have concerns: a qualitative study.
29	Tovin, M. et al[63]	2014	Parent Perspectives on Physical Activity and the Role of Physical Therapy in Children With Autism Spectrum Disorder
30	Walkeden, S. et al[64]	2015	Perceptions of physiotherapists about their role in health prootion at an acute hospital: a qualitative study.
31	Zalewski K. et al[65]	2014	Identifying barriers to remaining physically active after rehabilitation: differences in perception between physical therapists and older adult patients.

RESULTS

A total of 2050 records were identified through the searches. Following the screening process 31 records met the study inclusion criteria, these are summarised in Table 1. Reasons for exclusion are listed in Figure 1.

Year of Publication

Figure 2 shows the results by year of publication. It demonstrates a steady increase from 2008 onwards with more than 50% (n=17) of the studies published in 2014 and 2015.

Figure 2. Year of Publication of Records.

Geographic Location

Ireland and USA have produced the greatest volume of literature with 5 studies per country. This is followed by Australia which yielded 4 studies; there were also 3 international studies where data collection occurred in more than one country. Only one study from the UK met the inclusion criteria.

Populations

The focus populations in the included studies were physiotherapists, students, associate/support works, service users and a number of literature based educational studies. Several of the included studies focussed on more than one population.

The service users included in the studies were from a variety of clinical groups including musculoskeletal, older adults, stroke, general adults, cerebral palsy, children with obesity, multiple sclerosis, autistic spectrum disorder and long-term neurological conditions.

Study Design

The design of the included studies was categorised according to a research design framework by Littlewood and May (2013),[66] see Figure 3. All included studies were primary research as per inclusion criteria. The most frequently employed design was quantitative, observational studies, followed by mixed methods and qualitative studies. The smallest category was quantitative interventional studies.

Figure 3. Study Type by Research Design.

Focus/Theme of the Studies

The included studies fell broadly into five categories;

(i) Scoping of barriers, current practice, knowledge and attitudes. This included scoping of physiotherapists and/or service users (n=17).
(ii) Identifying the need for PA promotion (n=1).
(iii) Development or evaluation of a specific PA promotion initiative (n=2).
(iv) Educational studies (n=3).
(v) PA promotion intervention (n=8).

DISCUSSION

The key aims of this review were to identify and map the body of literature related to physiotherapy and physical activity promotion. To our knowledge this is the most up to date published review of existing literature that explicitly relates to physical activity promotion in physiotherapy practice thus providing an important springboard for discussion and research.

This study returned 31 studies globally from the last decade; it is important to recognise that this is not a large body of literature. This could be due to the way in which PA promotion is recorded in research literature, it may be "packaged" as part of a broader "health promotion" or "Making Every Contact Count" approach for example and may therefore not have been returned in the search. It was the intention of this research to identify articles in which there was explicit reference to physiotherapy and physical activity in the title or abstract. The vast majority of studies were excluded because of a lack of specific reference to Physiotherapy. It is also important to note than some studies were excluded despite having a physiotherapy and physical activity component. Reasons for this include (i) usual physiotherapy being compared to a non-physiotherapy PA intervention (ii) physical activity approaches were developed with PTs involved but were not explicitly labelled as physiotherapy. The above points raise questions for the physiotherapy profession about the terminology used and the visibility of physical activity promotion within professional practice.

The search strategy incorporated novel social media strands; although the additional strands didn't yield any included studies they highlighted a number of relevant protocols and helped develop international networks. The impact of this is hard to measure but twitter impressions can be used as a guideline for reach within the twitter community. Basic analytics on the original tweet show that it was retweeted 21 times and had 8,388 "impressions" (i.e. was seen by 8,388 twitter users). This suggests that incorporation of twitter may be a useful, cheap and accessible means of increasing the reach of a search.

The overall trend shows an increase research outputs over time, this is consistent with the increased awareness of the impact of physical inactivity globally and the corresponding increase in focus on PA in public health policy, and consequently, as a research priority. The overall volume of literature however, remains small and the geographical location of the studies shows that large areas of the global Physiotherapy community were not represented.

Fewer than half of the included studies focussed on service users, with most focussing on Physiotherapists, this may be indicative of an immature field of research or may be a reflection of the fact that accessing healthcare professionals for research purposes can be quicker and more straightforward than accessing service users.

In terms of the aims of the included studies, over half of all included studies focussed on scoping, which may suggest that there is an appetite for development in this area and a rationale for further interventional research. Only 8 interventional studies were identified, these included testing the acceptability of PA interventions[62] and the effectiveness of specific physiotherapy-related PA promotion programmes.[38-40,43,44,48,56] This includes examples of projects that have been developed specifically with the purpose of increasing PA in a specific population, (for example a

physiotherapy-led service for obese children[56)] and examples of existing physiotherapy services that have evolved to incorporate effective PA promotion interventions.[43] Both are important and viable future research strands.

One notable study focussed on highlighting the need for PA promotion (and other lifestyle interventions) amongst physiotherapy service users by quantifying the prevalence of co-morbidities amongst inactive musculoskeletal service users.[46] This Australian study provides an important rationale for physiotherapy action in this area suggesting that;

> "…interventions in ambulatory hospital clinics for people with musculoskeletal disorders primarily focus on their presenting musculoskeletal complaint with cursory attention given to lifestyle risk factors; including physical inactivity. This missed opportunity is likely to have both personal costs for patients and economic costs from downstream healthcare utilisation."

Only 2 studies described the development of physiotherapy/PA interventions both were community partnerships.[37,42] This highlights an important area for future research; it is essential that Physiotherapy PA promotion interventions dovetail with community services and meet the needs of local populations. Without this any benefit from Physiotherapy interventions is likely to be short lived.

Three studies focussed on pre-registration physiotherapy education.[36,50,53] None of the educational literature focuses on post-registration education highlighting a gap concerned with the educational needs of the current workforce.

Despite the small volume of identified research, these studies add to the body of literature around barriers to change, and provide examples of both physiotherapy-led PA promotion initiatives and examples whereby PA promotion is integrated into existing practice.

Physiotherapists are part of the multiagency workforce required to influence system-wide PA change. It is essential that physiotherapists recognise their potential contribution, particularly in relation to using PA as a way of reducing and managing long-term health conditions.[21] Access to this growing and increasingly costly population of people with long-term conditions should be viewed as a significant health promotion opportunity. To have impact physiotherapists need to be equipped to capitalise on these opportunities at scale. This requires recognition of PA promotion opportunities, knowledge skills and confidence to deliver PA promotion that is acceptable and effective in a PT context and robust recording and evaluation processes.

What is already known on this topic:

- The positive effects of physical activity on physical and mental health, health-related quality of life, and healthy ageing have been extensively documented.
- Many of the leading causes of ill health could be prevented if more inactive people were to become active
- There are compelling social, economic and political drivers for incorporating physical activity promotion into routine physiotherapy care.

What this review adds:

- Only a limited amount of research explicitly related to physiotherapy and physical activity was identified.
- Research in the area of physiotherapy and physical activity promotion has increased significantly in the last few years.
- More interventional studies are needed to understand the best way for PA promotion to be effectively integrated into practice in a way that is acceptable and effective.
- Educational research in this field focuses on pre-registration curricula. The educational needs of the current workforce warrants further investigation.

STRENGTHS AND LIMITATIONS

This comprehensive and systematic scoping review followed good practice guidance and robust, clearly reported methods.

Novel, social media strands were incorporated into the search strategy to increase the reach of the search.

The aim of identifying and mapping literature that explicitly relates to physical activity promotion and physiotherapy meant that the focus of the search was relatively narrow and information was extracted from titles and abstracts only.

CONCLUSION

This is the most up to date scoping review that identifies, collates and maps literature on physiotherapy and physical activity promotion. The review shows an increasing research interest in physiotherapy and physical activity although it remains an immature field of research. This review highlights an appetite for engagement in this area; this should be cultivated to increase the impact on PI through individual approaches. In addition to individual approaches highlighted in this review there is scope for Physiotherapists to be involved in more systems-based approaches including promoting healthy environments, healthy workforces and creating connections with community assets. This would enable physiotherapists to promote PA on a much larger scale and thus increase their impact on physical inactivity.

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Review Team

Lead: Anna Lowe (AL)

Reviewer 1: Carolyn Lindsay (CL)

Reviewer 2: Simon Everett (SE)

Data Scientist: Melanie Gee (MG)

Advisors: Dr Sionnadh McLean & Dr Chris Littlewood

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