



## University of Dundee

Narrative review – Barriers and facilitators to promotion of physical activity in primary care  
Leese, Callum; Abraham, Kirstin; Smith, Blair H.

*DOI:*  
[10.1002/lim2.81](https://doi.org/10.1002/lim2.81)

*Publication date:*  
2023

*Licence:*  
CC BY

*Document Version*  
Publisher's PDF, also known as Version of record

[Link to publication in Discovery Research Portal](#)

*Citation for published version (APA):*  
Leese, C., Abraham, K., & Smith, B. H. (2023). Narrative review – Barriers and facilitators to promotion of physical activity in primary care. *Lifestyle Medicine*, [e81]. <https://doi.org/10.1002/lim2.81>

### General rights

Copyright and moral rights for the publications made accessible in Discovery Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from Discovery Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain.
- You may freely distribute the URL identifying the publication in the public portal.

### Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

## REVIEW

# Narrative review – Barriers and facilitators to promotion of physical activity in primary care

Callum Leese  | Kirstin Abraham | Blair H Smith

Department of Population Health and Genomics, University of Dundee, Ninewells Hospital, Dundee, UK

**Correspondence**

Callum Leese, Department of Population Health and Genomics, University of Dundee, Ninewells Hospital, James Arrott Drive, DD2 4BF, Dundee, UK.

Email: [Cleese001@dundee.ac.uk](mailto:Cleese001@dundee.ac.uk)

**Funding information**

NHS Education Scotland

**Abstract**

**The objective:** to provide an overview of the literature on the barriers and facilitators to physical activity (PA) promotion in primary care, as experienced by practitioners and patients.

**Method:** A search strategy of the English-language literature was conducted in EMBASE, MEDLINE and the COCHRANE LIBRARY. Search terms were primary care OR general practice OR family medicine OR family practitioner AND physical activity OR exercise AND barriers OR facilitators. Databases were searched from inception until 21 October 2022.

**Results:** After screening, 63 articles were included within the summary and content analysis of this review. Analysis of the barriers to the implementation of PA highlighted four main themes perceived by practitioners: time, knowledge/skills, resources/support and financial implications. Analysis of the patient perspective identified themes which were categorised into individual (pre-existing health conditions, knowledge of benefits of PA, time/capacity), societal (social support and cultural norms) and environmental (availability of facilities and weather).

**Conclusions:** As the importance of PA increases through the manifestation of sedentary behaviour-related disease, a combined primary care and public health approach to increase PA is required. By identifying the main barriers to PA promotion in primary care, resources and funding can be directed to address this. This is particularly relevant in the United Kingdom, with the re-negotiation of the primary care contract and the changes to healthcare delivery as a consequence of the Covid-19 pandemic. Throughout this review, we have explored ways of addressing the identified barriers through evidence-based interventions.

**KEYWORDS**

barriers, physical activity, primary care

## 1 | INTRODUCTION

Research demonstrates that regular physical activity (PA) produces extensive physical, psychological, and social benefits.<sup>1</sup> In 2019, the

Chief Medical Officers for the United Kingdom introduced updated PA guidelines, recommending that adults should aim to accumulate 150 min of moderate-intensity aerobic exercise per week, including 2 weekly sessions aimed at muscle strength and balance.<sup>2</sup> This

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2023 The Authors. *Lifestyle Medicine* published by John Wiley & Sons Ltd.

aligns with the updated World Health Organisation guidance released in 2020.<sup>3</sup> Despite this, one third of adults in the United Kingdom fail to meet the Chief Medical Officers' PA Guidelines,<sup>4</sup> resulting in huge detrimental implications on an already stretched health service. According to the Department for Health of England and Wales, physical inactivity is associated with one in six deaths in the United Kingdom and costs the NHS £0.9 billion annually (and £7.2 billion to the UK economy).<sup>5</sup>

Lifestyle interventions via primary care have been shown to be effective at initiating behavioural change and reducing the risk of disease progression.<sup>6</sup> A recent systematic review of the literature by Kettle and colleagues showed that PA promotion delivered in primary care was effective at increasing PA levels in patients.<sup>7</sup> Furthermore, research has shown that PA promotion within primary care is a cost-effective intervention.<sup>8</sup>

Despite primary care being a key point of influence for positively changing PA behaviours, a survey done in 2016 by the Royal College of General Practitioners (RCGP) and Public Health England (PHE) evidenced poor implementation of PA promotion in primary care.<sup>9</sup>

Given the importance of addressing PA promotion in primary care and a current lack of reviews of literature in the area, this review aimed to examine research that identified the barriers and facilitators influencing the promotion of PA in primary care, and how these barriers might be overcome. The barriers were addressed in two categories: firstly, from the perspective of the health practitioner and, secondly, from the perspective of the patient. A narrative review was chosen to provide a descriptive overview from both perspectives (practitioner and patient). This is intended to inform future, more specific research needs and directions, as well as to highlight potential interventional approaches that may increase uptake and effectiveness of PA promotion in primary care.

## 2 | METHODS

The primary search strategy aimed to identify published papers from the following electronic databases: EMBASE, MEDLINE and the COCHRANE LIBRARY.

Search terms (abstract, keywords, MeSH term, subject heading, title) were primary care OR general practice OR family medicine OR family practitioner AND physical activity OR exercise AND barriers OR facilitators. Databases were searched from inception until 21 October 2022.

All peer-reviewed papers which were written in English and explored the barriers or facilitators to the promotion of PA in primary care were included. Original research papers and literature reviews were included.

PA was the focus, and so studies that did not evaluate PA/exercise-based promotion were excluded. All studies that examined the barriers and/or facilitators to the promotion of PA only via a non-primary care service were excluded. Primary care services were defined as general practice clinics or health centres delivering care to people within

### What is known:

- Physical activity (PA) has numerous health benefits.
- Patient populations who would benefit the most are the least active.
- Promotion of PA in primary care is effective.
- Implementation of promotion of PA in primary care is poor.

### What are the new findings?

- Barriers for practitioners: time, knowledge/skills, resources/support and financial implications.
- Barriers for patients: individuals (pre-existing health conditions, knowledge of benefits of PA, time/capacity), societal (social support and cultural norms) and environmental (availability of facilities and weather).

the community. Studies were excluded if they only included children (defined as population < 18 years old), pregnant or immediately post-partum populations (< 6 months post-delivery) and/or if the primary focus of the study was not PA promotion. Otherwise, studies were included regardless of participants' age, gender, occupational status, or comorbidities. Any papers reporting quantitative and/or qualitative research were included. The search was undertaken by one author (CL). Any uncertainties regarding inclusion/exclusion were addressed in discussion with a second author (KA), and, where necessary, a third (BHS).

Papers were analysed using a conventional content analysis, as described by Hsieh and colleagues.<sup>10</sup> A conventional content analysis avoids adoption of pre-conceived categories, allowing the themes to flow directly from the literature. After familiarisation with the papers, they were re-read with their emergent themes and supporting evidence from papers stored in Microsoft Excel (version 2208). Papers were reviewed by one author (CL), with emergent themes in each paper categorised and coded. All codes were initially developed by CL and finalised in discussion with KA. This process was used to ensure that the codes were appropriately challenged and understood according to the aim(s) of this evaluation.

## 2.1 | Review of the literature

A total of 383 papers were identified from the database searches. After title screening 160 were removed for the following reasons: (1) duplicates ( $n = 12$ ), (2) intervention not related to physical activity ( $n = 114$ )<sup>3</sup> and study population under 18 years old ( $n = 34$ ). An abstract and full-text screening resulted in the removal of a further 160 papers (see PRISMA diagram, Supplementary File 1 in the Supporting Information), with 63 articles (see Table included in Supplementary File 2 in the Supporting Information) included within the summary and content analysis of this narrative review.

## 2.2 | The practitioner perspective

In a literature review, AuYoung et al.<sup>11</sup> highlighted five key barriers facing primary care practitioners in the implementation of PA counselling, namely lack of time, skills, finance, reach and resources. This is broadly consistent with the general findings from the studies identified in this literature review: restrictions on time, a lack of knowledge/skills, lack of resources and support available, and financial implications. Each of these themes will be explored in more detail.

## 2.3 | Time

In a cross-sectional survey of more than 800 general practitioners (GPs) in England, 77.8% highlighted lack of time as a major barrier to PA counselling.<sup>12</sup> Time was repeatedly highlighted as the biggest barrier to the implementation of PA advice in primary care.<sup>13–34</sup> In 2016, the King's Fund explored the pressures on general practice, highlighting an increase in the numbers and complexity of consultations compounded by a relative fall in funding.<sup>35</sup> An aging population, increasing comorbidity and a transfer of work from secondary and tertiary care to primary care further add to the demands placed on primary care services. This has led to a crisis in general practice, an issue that has been further heightened by the Covid-19 pandemic.<sup>36</sup> Within primary care the Covid-19 pandemic has resulted in rapid change: remote working, less face-to-face delivery, increased workload (vaccination roll out delivery, for instance), pent-up demand and a worsening of the pre-existing staffing shortage.<sup>36</sup> Given the current GP crisis, and the predicted longevity of the issue, ingenuity is required to offer and support PA interventions, which in turn will help to decrease pressure on the workforce. Third-party providers acting as 'brokers' have been effectively established in the Netherlands,<sup>20</sup> and there is increasing uptake in the United Kingdom.<sup>37</sup> A recent Scottish Parliament report has recommended that all GP practices employ a community link worker to aid in the delivery of PA and lifestyle promotion.<sup>38</sup> Although many of the recent technological developments will be covered below, technology needs to be intentional in its efforts to address the issue of limited time for health professionals.

In a novel approach, Maini and colleagues<sup>39</sup> found using medical students as health coaches an effective way of improving medical student self-efficacy and communication skills. If formalised, this could be a useful way of delivering a service without adding to the load of already overworked healthcare professionals, whilst also addressing another frequently cited issue of practitioner education and knowledge.<sup>13,14,16</sup> However, more research is required to assess the effectiveness and appropriateness of this approach on patient PA levels.

## 2.4 | Knowledge/skills

Primary care physicians frequently cite a lack of knowledge and training as a barrier to the promotion of PA.<sup>15–18,20–25,28–30,40–48</sup> A nationwide survey of 1013 GPs in England reported that only 20% were broadly familiar with the national PA guidelines, and 55% reported they

had not undertaken any training in PA counselling or advice.<sup>9</sup> A failure of medical school education in the United Kingdom was suggested by Weiler et al.<sup>49</sup> in a review of medical school curricula. They revealed that only 56% of medical schools taught the Chief Medical Officer's guidelines on PA to medical students, with a mean time spent teaching the benefits of PA of just 4.2 h across a 5- or 6-year programme. These findings were supported by a study of Scottish final-year medical students, which revealed that only 40% were aware of current guidelines.<sup>50</sup> Following this the General Medical Council introduced knowledge of PA as an 'Outcome for Graduates' in 2018.<sup>51</sup> Despite this, uptake in undergraduate curricula in the United Kingdom remains limited.<sup>52</sup> More work is required to address the issue at the undergraduate level, with research also required to assess the nature of teaching around PA in postgraduate environments (with particular interest in primary care).

Closely linked to knowledge, practitioner attitudes to PA promotion have major influence on its uptake. A lack of practitioner belief in the potential of PA and its promotion is a major barrier in the implementation of promotion of PA.<sup>12,15,17–19,21,23–25,27,29,53,54</sup> A personal experience of the benefits of PA may have a positive impact on PA promotion. One of the major factors influencing effective delivery of PA advice to patients is when this is done by physicians who undertake high levels of PA themselves.<sup>12,21</sup> Therefore, encouraging healthcare professionals to consider their own levels of PA could be a further approach to enabling physicians to deliver PA promotion effectively.

## 2.5 | Resources/support

In the book *A Fortunate Man*, Berger and Mohr<sup>55</sup> eloquently describe the value in a primary care practitioner intimately knowing the local area. Lowe et al.<sup>12</sup> cite knowledge of local PA opportunities as the second most important facilitator (behind GPs' own behaviour) in the promotion of PA in primary care. Community engagement is a requirement mandated of GP trainees in the United Kingdom by the RCGP,<sup>56</sup> but the changing face of general practice in the light of the current workforce crisis and recent pandemic has the potential to negatively impact this local knowledge. Increasing support and funding available for social prescribers/community link workers through primary care<sup>38,57</sup> offers an opportunity for ongoing community mapping, which if shared could aid healthcare practitioners and patients alike.

A lack of support and resources is frequently cited as impeding promotion of PA for health.<sup>12,16,18,19,21,22,24,28,32,40,41</sup> To address this, several resources have been developed. These include but are not limited to, a validated brief two-question tool for assessment of PA levels (*PA Vital Sign*),<sup>58</sup> a commonly used and validated behaviour change theory adapted to PA (*5 A's Consultation Model*)<sup>59</sup> and a multitude of technology-based resources including 'apps' and websites.<sup>60</sup> These resources are all valuable; however, finding and utilising resources to decrease the pressure on primary care physicians' time is imperative. With further development, technology for the promotion of PA has the potential to meet this opportunity.<sup>60</sup> Technology-based resources have evolved in two ways: PA-based trackers (or wearables)

and fitness-based applications for smartphones and tablets.<sup>60</sup> A systematic review of activity-tracking devices found that they were effective at increasing PA levels among users.<sup>61</sup> This technology offers opportunities, yet financial barriers exist and practitioners will have to implement boundaries to prevent the potential increase in workload that reviewing the data generated by these devices may generate. Apps that can deliver personalised plans and instructions, encouragement, feedback, self-monitoring and accountability will be of particular value with the potential they hold for improving PA levels, whilst decreasing time demands on primary health services.<sup>62</sup> As of 2017, more than 150,000 of these apps exist; however, they are frequently limited in their scope, function or association with the UK Chief Medical Officers' PA Guidelines.<sup>2,62</sup> Therefore, a systematic approach across the NHS is required to ensure the right (and factually accurate) resources reach the right people, with more work needed to promote app engagement and the development of patient-tailored plans that can be promoted in primary care.

In keeping with the lack of resources proving a barrier to the implementation of PA promotion, the accessibility of local facilities is also a problem.<sup>12,25,27,28,63</sup> Within the United Kingdom, recommendations and policy<sup>38,57</sup> support the roles of health coaches and link workers; however, funding is still largely being provided by the third sector. Because of this, resources offered vary by both practice and postcode, leading to large geographical variations in availability of resources and facilities.

## 2.6 | Financial implications

Concerns of primary care practitioners regarding financial implications of PA act as a significant limiting factor in its promotion and delivery.<sup>17,19–21,27,28,40,63</sup> Financial concerns related to the cost of activities are pertinent to patients, but as highlighted by Hébert et al.<sup>21</sup> these concerns will also impact practitioners' delivery of PA promotion. The practitioner concerns include a loss of income due to time taken for PA counselling and the lack of incentives or reimbursement for this in healthcare funding within the United Kingdom. In a reverse scenario, a survey of England's GPs found that 35% felt financial incentives were a significant facilitator in the delivery of PA advice in primary care. As described by Molema et al.,<sup>64</sup> financial incentives can be offered at multiple levels within healthcare, including incentives for insurers, healthcare providers and patients. Incentives can come from multiple sources, often determined by a country's healthcare system. The United Kingdom has a history of financially incentivising healthcare professionals to deliver lifestyle changes, most notably the provision of smoking cessation through primary care.<sup>65</sup> Given that brief advice for PA is more effective at inducing behaviour change than brief advice for smoking cessation, the benefits of incentives through primary care could be significant.<sup>66,67</sup>

## 2.7 | The patient perspective

Barriers identified by patients to PA can largely be categorised into three main themes: individual, societal and environmental.

### 2.7.1 | Individual factors

Three of the most frequently identified barriers to taking up PA that are faced by individual patients are the perceived nature of their underlying health condition,<sup>13,26,53,68–79</sup> patients' knowledge and understanding of the benefits of PA<sup>13,18,22,26,30,42,53,68–72,76,77,80–86</sup> and patients' time/capacity.<sup>13,18,22,26,30,42,53,68,70–72,75,76,81,87–89</sup>

Although the majority of the included studies were within general populations, several looked at specific populations including people with type 2 diabetes mellitus,<sup>13,78,81</sup> the elderly<sup>26,42,69,74,80,88</sup> and patients with chronic pain and osteoarthritis.<sup>75,76</sup> Patients with pre-existing conditions understandably cite underlying health concerns more frequently as a barrier to participation than those without. It is in this context that disease-specific exercise programmes or individually tailored regimes can add value by accounting for the specific challenges of certain diseases and addressing individual concerns. Disease-specific charities are increasingly acknowledging the need to address the issue of PA, and in Scotland these charities have formed an organisation called Movement for Health, with the aim of helping people living with long-term conditions to become more physically active as part of their daily routine.<sup>90</sup> Education has always been a cornerstone of public health and primary care. There are five ongoing PHE campaigns to address physical inactivity: 10 Minute Shake Up, Better Health Adult Obesity, We Are Undefeatable, Change4Life and Healthier You.<sup>91</sup> As highlighted by Morgan and colleagues in 2021, a lack of knowledge of the benefits of PA continues to be a barrier to patients in the United Kingdom, and therefore ongoing and enhanced public health and primary care messaging are required.<sup>53</sup>

Maula and colleagues<sup>26</sup> conducted semi-structured interviews with 30 older adults who had participated in community-based PA programmes (one community centre based and one home based). A major barrier to both programmes was a lack of time, with participants citing other activities upon which they placed a greater emphasis, including but not limited to socialising, volunteering, shopping and reading. Byambasukh et al.<sup>92</sup> offered a helpful distinction between leisure-time PA (activities chosen for pleasure or relaxation), commuting PA (activity to travel between place of residence and work/study) and occupational PA (determined by work). The narrative derived from the patients in Maula et al. would suggest an assumption that PA is only a leisure-time physical activity, with further work need to first clarify this assumption and then find ways to address and counter it.

### 2.7.2 | Societal factors

Maula et al.<sup>26</sup> highlighted competing demands between leisure-time activities and PA. Issues such as socialising were identified as preventing time for PA, but many of these barriers are not mutually exclusive. Repeatedly the literature cites a lack of support for PA as a barrier, whilst having supporting family and friends is seen as one of the biggest enablers of PA.<sup>13,18,22,30,42,68,69,71,72,74,75,77,78,81,85–87,89,93–95</sup> Creating a culture of PA, addressing leisure-time, commuting and occupational (where possible) PA could have a hugely beneficial effect at removing

barriers to PA uptake. Parkrun (a community-based running initiative) has played a role in shaping PA culture throughout the United Kingdom (and beyond) since its inception in 2008.<sup>86</sup> The introduction of GP parkrun-affiliated practices in 2018, with over 1500 now registered, has given a platform for GPs to promote PA and has demonstrated the role primary care can play in shaping PA culture in communities throughout the United Kingdom.<sup>96</sup>

The majority of the studies identified were from Anglo-European Western cultures, with only four from other parts of the world: Colombia, Saudi Arabia, Thailand and Oman.<sup>30,78,94,95</sup> These studies highlighted some socio-cultural issues influencing PA for health, with reference to cultural norms for females within Arabic cultures.<sup>78,94</sup> In African American populations, Tolliver et al.<sup>97</sup> highlighted that hair care in female populations was a barrier to PA. Given the increasing globalisation of the world, with increasing socio-cultural diversity, further research exploring culture-specific barriers to PA for health is required. Through identification of these cultural barriers, alterations to interventions, or new interventions entirely, could be introduced to improve the uptake of PA through primary care.

### 2.7.3 | Environmental factors

As with healthcare professionals, patients also highlighted a lack of facilities preventing the uptake of PA.<sup>26,30,42,73,75,76,80,81,89,93–95,98</sup> In a review of PA in osteoarthritis, Stevenson and Roach<sup>75</sup> identified an 'Exercise Milieu' questionnaire subscale, which found that a lack of locations, and greater distance from exercising locations were barriers to uptake. As noted above, the nature of the large third-party involvement in the United Kingdom can result in significant geographical variations, often noticed most acutely in rural areas. Access to facilities must remain a priority in addressing physical inactivity. There are increasing calls for planners to prioritise PA when designing neighbourhoods; indeed it has been repeatedly shown that town planning has an impact on PA.<sup>99</sup> In primary care, where there is good local knowledge of facilities and geography, this knowledge can be used in the promotion of PA. Primary care health professionals, therefore, have an advocacy role within communities, influencing planning and development.

Furthermore, multiple studies looking at barriers to PA highlight the weather as an issue.<sup>26,68,71,72,76,80,94</sup> This is particularly relevant in the United Kingdom (with the unpredictable temperate climate) and tends to be worse during winter months but has also been noted within times of recent heat waves. Although the lowly health professional has no influence over the weather, remaining cognisant of the barriers presented by poor weather and adjusting advice for this may help in supporting the patient appropriately to address these.

## 3 | DISCUSSION

Primary care in the United Kingdom is in the midst of a crisis with increasing demands, restricted funding and staffing shortages,<sup>35,36</sup> which limits the ability to provide non-essential services. Adding to this

workload is the worsening population health, to which low levels of PA probably contribute, combined with increasing calls for primary care to act to improve PA levels. Nonetheless, due to its scope and influence, PA promotion through primary care has been repeatedly shown to be a cost-effective intervention and therefore provides a great opportunity to improve the health of the nation.<sup>8</sup>

Limitations of this literature review include a restriction in the databases and languages searched, and a predominantly single-handed content analysis of the included articles. This was a narrative, rather than a systematic, review with the purpose of providing a general overview of the current knowledge, from the perspectives of both healthcare professionals and patients. Although our approach to identifying relevant studies was rigorous, it is possible that we may have missed some relevant work without a fully systematic approach. A systematic review would have necessitated a narrow research question and therefore would have been unable to provide the descriptive overview above. Specific systematic reviews, addressing specific questions, may be useful in the future. Nonetheless, we have highlighted that a lack of time, insufficient knowledge/skills, lack of resources and a lack of financial reimbursement/incentives for PA promotion are consistently shown to act as barriers to prevent primary care practitioners delivering PA promotion. Addressing these barriers requires both ingenuity and investment, given the challenges facing primary care in the United Kingdom. We have identified some examples of innovative interventions already in place to overcome these barriers. This review also highlights the barriers identified by patients for the uptake of PA recommended in primary care. These barriers can be divided into individual, societal and environmental factors, which all need to be addressed cohesively by healthcare practitioners, policymakers, town planners, teachers, charities, health promoters and employers.

Further research and development are required in several areas: assessment of the delivery of education in PA promotion across medical professions (including nursing and allied health); development/research into technology-based resources; and the exploration of financial incentives for healthcare professionals. By embracing innovation and improving the evidence base, policymakers and healthcare professionals have the capacity to promote PA throughout the population and create lasting change in its health and well-being.

### ACKNOWLEDGEMENTS

CL's and KA's posts are funded by NHS Education Scotland.

### CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

### DATA AVAILABILITY STATEMENT

The data described in this article is currently openly available. Please contact the author for further information if required.

### ORCID

Callum Leese  <https://orcid.org/0000-0002-2708-0499>

## REFERENCES

1. Hardman AE, Stensel DJ. *Physical Activity and Health: The Evidence Explained*. 2nd ed. Routledge; 2009.
2. Foster C. *UK Chief Medical Officers' Physical Activity Guidelines*. Department for Health and Social Care; 2019.
3. Bull FC, Al-Ansari SS, Biddle S, et al. World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *Br J Sports Med*. 2020;54(24):1451-1462.
4. Bull FC. *Start Active, Stay Active*. Department for Health and Social Care; 2016.
5. Department for Health and Social Care. *Physical Activity: Applying All Our Health*. Department for Health and Social Care EaW, Office for Health Improvement and Disparities; 2022.
6. Haskell WL. Cardiovascular disease prevention and lifestyle interventions: effectiveness and efficacy. *J Cardiovasc Nurs*. 2003;18(4):245-255.
7. Kettle VE, Madigan CD, Coombe A, et al. Effectiveness of physical activity interventions delivered or prompted by health professionals in primary care settings: systematic review and meta-analysis of randomised controlled trials. *Br J Med*. 2022;376:e068465.
8. Campbell F, Holmes M, Everson-Hock E, et al. A systematic review and economic evaluation of exercise referral schemes in primary care: a short report. *Health Technol Assess*. 2015;19(60):1-110.
9. Chatterjee R, Chapman T, Brannan MG, Varney J. GPs' knowledge, use, and confidence in national physical activity and health guidelines and tools: a questionnaire-based survey of general practice in England. *Br J Gen Pract*. 2017;67(663):e668-e675.
10. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005;15(9):1277-1288.
11. AuYoung M, Linke SE, Pagoto S, et al. Integrating physical activity in primary care practice. *Am J Med*. 2016;129(10):1022-1029.
12. Lowe A, Myers A, Quirk H, Blackshaw J, Palanee S, Copeland R. Physical activity promotion by GPs: a cross-sectional survey in England. *BJGP Open*. 2022;6(3):0227.
13. Lim RBT, Wee WK, For WC, et al. Correlates, facilitators and barriers of physical activity among primary care patients with prediabetes in Singapore—a mixed methods approach. *BMC Public Health*. 2020;20(1):1.
14. Jones M, Bright P, Hansen L, Ihnatsenka O, Carek PJ. Promoting physical activity in a primary care practice: overcoming the barriers. *Am J Lifestyle Med*. 2021;15(2):158-164.
15. Omura JD, Bellissimo MP, Watson KB, Loustalot F, Fulton JE, Carlson SA. Primary care providers' physical activity counseling and referral practices and barriers for cardiovascular disease prevention. *Prev Med*. 2018;108:115-122.
16. Leenaars KE, Smit E, Wagemakers A, Molleman GR, Koelen MA. Facilitators and barriers in the collaboration between the primary care and the sport sector in order to promote physical activity: a systematic literature review. *Prev Med*. 2015;81:460-478.
17. Singer J, Lindsay EA, Wilson DM. Promoting physical activity in primary care: overcoming the barriers. *Can Fam Physician*. 1991;37:2167-2173.
18. Carstairs SA, Rogowsky RH, Cunningham KB, Sullivan F, Ozakinci G. Connecting primary care patients to community-based physical activity: a qualitative study of health professional and patient views. *BJGP Open*. 2020;4(3):bjgpopen20X101100.
19. AuYoung M, Linke SE, Pagoto S, et al. Integrating physical activity in primary care practice. *Am J Med*. 2016;129(10):1022-1029.
20. Leenaars KE, Florisson AM, Smit E, Wagemakers A, Molleman GR, Koelen MA. The connection between the primary care and the physical activity sector: professionals' perceptions. *BMC Public Health*. 2016;16(1):1001.
21. Hébert ET, Caughy MO, Shuval K. Primary care providers' perceptions of physical activity counselling in a clinical setting: a systematic review. *Br J Sports Med*. 2012;46(9):625-631.
22. Hall LH, Thorneloe R, Rodriguez-Lopez R, et al. Delivering brief physical activity interventions in primary care: a systematic review. *Br J Gen Pract*. 2022;72(716):e209-e216.
23. Din NU, Moore GF, Murphy S, Wilkinson C, Williams NH. Health professionals' perspectives on exercise referral and physical activity promotion in primary care: findings from a process evaluation of the National Exercise Referral Scheme in Wales. *Health Educ J*. 2015;74(6):743-757.
24. Charles M, Ouchchane L, Thivel D, Celine L, Duclos M. Does legislative framework favors prescription of physical activity in primary care The French experience. *Phys Sports Med*. 2022;50(1):47-53.
25. Leenaars K, Smit E, Wagemakers A, Molleman G, Koelen M. The role of the care sport connector in the Netherlands. *Health Promot Int*. 2018;33(3):422-435.
26. Maula A, LaFond N, Orton E, et al. Use it or lose it: a qualitative study of the maintenance of physical activity in older adults. *BMC Geriatr*. 2019;19(1):1-12.
27. Hong YA, Forjuoh SN, Ory MG, Reis MD, Sang H. A multi-level, mobile-enabled intervention to promote physical activity in older adults in the primary care setting (iCanFit 2.0): protocol for a cluster randomized controlled trial. *JMIR Res Protoc*. 2017;6(9):e183.
28. Sherman MD, Hooker SA. Family medicine physicians' confidence and perceived effectiveness in delivering health behaviour change interventions. *Family Pract*. 2020;37(4):493-498.
29. Dickfos M, King D, Parekh S, Boyle FM, Vandelanotte C. General practitioners' perceptions of and involvement in health behaviour change: can computer-tailored interventions help? *Prim Health Care Res Dev*. 2015;16(3):316-321.
30. Wattanapisit A, Wattanapisit S, Wongsiri S. Overview of physical activity counseling in primary care. *Korean J Fam Med*. 2021;42(4):260-228.
31. Keohane D, Mulligan N, Daly B. Physical activity levels and perceived barriers to exercise participation in Irish general practitioners and general practice trainees. *Ir Med J*. 2018;111(2):690.
32. Matoff-Stepp S. Findings and recommendations from the interim evaluation of the bright futures for women's health and wellness physical activity and healthy eating tools. *Health Promot Pract*. 2012;13(1):55-62.
33. Patel A, Schofield GM, Kolt GS, Keogh JW. General practitioners' views and experiences of counselling for physical activity through the New Zealand Green Prescription program. *BMC Fam Pract*. 2011;12:119.
34. Buchholz SW, Purath J. Physical activity and physical fitness counseling patterns of adult nurse practitioners. *J Am Acad Nurse Pract*. 2007;19(2):86-92.
35. Baird B, Charles A, Honeyman M, Maguire D, Das P. *Understanding pressures in general practice*. King's Fund London. 2016.
36. Jefferson L, Golder S, Heathcote C, et al. GP wellbeing during the COVID-19 pandemic: a systematic review. *Br J Gen Practice*. 2022;72(718):e325-e333.
37. Arie S. The health coaches from Dunkin' Donuts. *Br J Med*. 2015;350:h1456.
38. Martin G, O'Kane P, Callaghan S, Gulhane S. Tackling Health inequalities in Scotland. *Scottish Parliamentary Corporate Body*. 2022. Health ScaSc.
39. Maini A, Fyfe M, Kumar S. Medical students as health coaches: adding value for patients and students. *BMC Med Educ*. 2020;20(1):1-8.
40. Douglas F, van Teijlingen E, Torrance N, Fearn P, Kerr A, Meloni S. Promoting physical activity in primary care settings: health visitors' and practice nurses' views and experiences. *J Adv Nurs*. 2006;55(2):159-168.
41. de Boer JJ, Feleus A, Hesselink A, Siemonsma P, Verhoef J, Schmitt M. Using storytelling methodology to identify barriers and facilitators of sustained physical activity in patients with a chronic disease: a qualitative study. *BMJ Open*. 2022;12(3):e057236.
42. Dergance JM, Calmbach WL, Dhanda R, Miles TP, Hazuda HP, Mouton CP. Barriers to and benefits of leisure time physical activity in the

- elderly: differences across cultures. *J Am Geriatr Soc.* 2003;51(6):863-868.
43. Neher M, Landén Ludvigsson M, Enblom A. Preparedness to implement physical activity and rehabilitation guidelines in routine primary care cancer rehabilitation: focus group interviews exploring rehabilitation professionals' perceptions. *J Cancer Educ.* 2021;36(4):779-786.
  44. Wheeler PC, Mitchell R, Ghaly M, Buxton K. Primary care knowledge and beliefs about physical activity and health: a survey of primary healthcare team members. *BJGP Open.* 2017;1(2):bjgpopen17x100809.
  45. Courtney-Long EA, Stevens AC, Carroll DD, Griffin-Blake S, Omura JD, Carlson SA. Primary care providers' level of preparedness for recommending physical activity to adults with disabilities. *Prev Chronic Dis.* 2017;14:E114.
  46. Bondaronek P, Dicken SJ, Singh Jennings S, Mallion V, Stefanidou C. Barriers to and facilitators of the use of digital tools in primary care to deliver physical activity advice: semistructured interviews and thematic analysis. *JMIR Hum Factors.* 2022;9(3):e35070.
  47. Holtz B, Vasold K, Cotten S, Mackert M, Zhang M. Health care provider perceptions of consumer-grade devices and apps for tracking health: a pilot study. *JMIR Mhealth Uhealth.* 2019;7(1):e9929.
  48. Attalin V, Romain AJ, Avignon A. Physical-activity prescription for obesity management in primary care: attitudes and practices of GPs in a southern French city. *Diabetes Metab.* 2012;38(3):243-249.
  49. Weiler R, Chew S, Coombs N, Hamer M, Stamatakis E. Physical activity education in the undergraduate curricula of all UK medical schools: Are tomorrow's doctors equipped to follow clinical guidelines? *Br J Sports Med.* 2012;46(14):1024-1106.
  50. Dunlop M, Murray AD. Major limitations in knowledge of physical activity guidelines among UK medical students revealed: implications for the undergraduate medical curriculum. *Br J Sports Med.* 2013;47(11):718-720.
  51. GMC. *Outcomes for Graduates.* General Medical Council; 2018.
  52. Radenkovic D, Aswani R, Ahmad I, Kreindler J, Robinson R. Lifestyle medicine and physical activity knowledge of final year UK medical students. *BMJ Open Sport Exerc Med.* 2019;5(1):e000518.
  53. Morgan K, Lewis J, Hawkins J, Moore G. From a research trial to routine practice: stakeholders' perceptions and experiences of referrals to the National Exercise Referral Scheme (NERS) in Wales. *BMC Health Serv Res.* 2021;21(1):1232.
  54. Goodrich DE, Buis LR, Janney AW, et al. Integrating an internet-mediated walking program into family medicine clinical practice: a pilot feasibility study. *BMC Med Inform Decis Mak.* 2011;11:47.
  55. Berger J, Mohr J. *A Fortunate Man.* The Penguin Press; 1967.
  56. RCGP. GP Curriculum London: Royal College of General Practitioners; 2022. Accessed December 4, 2022 <https://www.rcgp.org.uk/mrcgp-exams/gp-curriculum>
  57. NHS England. *Social prescribing link workers: Reference guide for primary care networks.* Accessed December 4, 2022 Department for Health and Social Care; 2019.
  58. Greenwood JL, Joy EA, Stanford JB. The physical activity vital sign: a primary care tool to guide counseling for obesity. *J Phys Act Health.* 2010;7(5):571-576.
  59. Reed JR, Estabrooks P, Pozehl B, Heelan K, Wichman C. Effectiveness of the 5A's model for changing physical activity behaviors in rural adults recruited from primary care clinics. *J Phys Act Health.* 2019;16(12):1138-1146.
  60. Kennedy AB, Hales SB. Tools clinicians can use to help get patients active. *Curr Sports Med Rep.* 2018;17(8):271-276.
  61. Brickwood KJ, Watson G, O'Brien J, Williams AD. Consumer-based wearable activity trackers increase physical activity participation: systematic review and meta-analysis. *JMIR Mhealth Uhealth.* 2019;7(4):e11819.
  62. Schoeppe S, Alley S, Rebar AL, et al. Apps to improve diet, physical activity and sedentary behaviour in children and adolescents: a review of quality, features and behaviour change techniques. *Int J Behav Nutr Phys Act.* 2017;14(1):83.
  63. Molema CCM, Wendel-Vos GCW, Ter Schegget S, Schuit AJ, van de Goor LAM. Perceived barriers and facilitators of the implementation of a combined lifestyle intervention with a financial incentive for chronically ill patients. *BMC Fam Pract.* 2019;20(1):137.
  64. Molema CC, Wendel-Vos GC, Puijk L, Jensen JD, Schuit AJ, de Wit GA. A systematic review of financial incentives given in the healthcare setting; do they effectively improve physical activity levels? *BMC Sports Sci Med Rehabil.* 2016;8:15.
  65. Szatkowski L, Aveyard P. Provision of smoking cessation support in UK primary care: impact of the 2012 QOF revision. *Br J Gen Pract.* 2016;66(642):e10-e15.
  66. Stead LF, Bergson G, Lancaster T. Physician advice for smoking cessation. *Cochrane Database Syst Rev.* 2008(2):Cd000165.
  67. Orrow G, Kinmonth AL, Sanderson S, Sutton S. Effectiveness of physical activity promotion based in primary care: systematic review and meta-analysis of randomised controlled trials. *BMJ.* 2012;344:e1389.
  68. Normansell R, Smith J, Victor C, et al. Numbers are not the whole story: a qualitative exploration of barriers and facilitators to increased physical activity in a primary care based walking intervention. *BMC Public Health.* 2014;14:1272.
  69. Clark DO. Physical activity and its correlates among urban primary care patients aged 55 years or older. *J Gerontol B Psychol Sci Soc Sci.* 1999;54(1):S41-S48.
  70. Attwood S, Morton KL, Mitchell J, Van Emmenis M, Sutton S. Reasons for non-participation in a primary care-based physical activity trial: a qualitative study. *BMJ Open.* 2016;6(5):e011577.
  71. Martínez-Ramos E, Martín-Borrás C, Trujillo J-M, et al. Prolonged sitting time: barriers, facilitators and views on change among primary healthcare patients who are overweight or moderately obese. *PLoS ONE.* 2015;10(6):e0125739.
  72. Elley CR, Dean S, Kerse N. Physical activity promotion in general practice-patient attitudes. *Aust Fam Physician.* 2007;36(12):1061-1064.
  73. Garner-Purkis A, Alageel S, Burgess C, Gulliford M. A community-based, sport-led programme to increase physical activity in an area of deprivation: a qualitative case study. *BMC Public Health.* 2020;20(1):1018.
  74. Lefler LL, Jones S, Harris B. Key strategies for physical activity interventions among older women: process evaluation of a clinical trial. *Am J Health Promot.* 2018;32(3):561-570.
  75. Stevenson JD, Roach R. The benefits and barriers to physical activity and lifestyle interventions for osteoarthritis affecting the adult knee. *J Orthop Surg Res.* 2012;7:15.
  76. Joelsson M, Bernhardsson S, Larsson ME. Patients with chronic pain may need extra support when prescribed physical activity in primary care: a qualitative study. *Scand J Prim Health Care.* 2017;35(1):64-74.
  77. Srisantharajah J, Kai J. Promoting physical activity among South Asian women with coronary heart disease and diabetes: What might help? *Fam Pract.* 2007;24(1):71-76.
  78. Alzahrani AM, Albakri SBB, Alqutub TT, Alghamdi AA, Rio AA. Physical activity level and its barriers among patients with type 2 diabetes mellitus attending primary healthcare centers in Saudi Arabia. *J Family Med Prim Care.* 2019;8(8):2671-2675.
  79. Auker L, Cordingley L, Pye SR, Griffiths CEM, Young HS. What are the barriers to physical activity in patients with chronic plaque psoriasis? *Br J Dermatol.* 2020;183(6):1094-1102.
  80. Sanders GJ, Roe B, Knowles ZR, Kaehne A, Fairclough SJ. Using formative research with older adults to inform a community physical activity programme: get healthy, get active. *Prim Health Care Res Dev.* 2019;20:e60.
  81. Donahue KE, Mielenz TJ, Sloane PD, Callahan LF, Devellis RF. Identifying supports and barriers to physical activity in patients at risk for diabetes. *Prev Chronic Dis.* 2006;3(4):A119.



82. Patel A, Schofield GM, Kolt GS, Keogh JW. Perceived barriers, benefits, and motives for physical activity: two primary-care physical activity prescription programs. *J Aging Phys Act*. 2013;21(1):85-99.
83. Cooper KM, Bilbrey D, Dubbert PM, Kerr K, Kirchner K. Health barriers to walking for exercise in elderly primary care. *Geriatr Nurs*. 2001;22(5):258-262.
84. Kosteli MC, Heneghan NR, Roskell C, et al. Barriers and enablers of physical activity engagement for patients with COPD in primary care. *Int J Chron Obstruct Pulmon Dis*. 2017;12:1019-1031.
85. Steptoe A, Rink E, Kerry S. Psychosocial predictors of changes in physical activity in overweight sedentary adults following counseling in primary care. *Prev Med*. 2000;31(2 Pt 1):183-194.
86. Haake S, Quirk H, Bullas A, Parkrun and the promotion of physical activity: insights for primary care clinicians from an online survey. *Br J Gen Pract*. 2022;72(722):e634-e640.
87. Josyula LK, Lyle RM. Barriers in the implementation of a physical activity intervention in primary care settings: lessons learned. *Health Promot Pract*. 2013;14(1):81-87.
88. Mansfield L, Kay T, Anokye N, Fox-Rushby J. Community sport and the politics of aging: co-design and partnership approaches to understanding the embodied experiences of low-income older people. *Front Social*. 2019;4:5.
89. Williams NH, Hendry M, France B, Lewis R, Wilkinson C. Effectiveness of exercise-referral schemes to promote physical activity in adults: systematic review. *Br J Gen Pract*. 2007;57(545):979-986.
90. MfH. Movement for Health Stirling: Movement for Health; 2020. Accessed November 11, 2022 <https://www.movementforhealth.scot/>
91. Public Health England. Campaign Resource Centre- Moving More. Public Health England; 2022. Accessed November 11, 2022 <https://campaignresources.phe.gov.uk/resources/campaigns>
92. Byambasukh O, Snieder H, Corpeleijn E. Relation between leisure time, commuting, and occupational physical activity with blood pressure in 125 402 adults: the lifelines cohort. *J Am Heart Assoc*. 2020;9(4):e014313.
93. van de Vijver P, Schalkwijk F, Numans ME, Slaets JPJ, van Bodegom D. Self-organizing peer coach groups to increase daily physical activity in community dwelling older adults. *Prev Med Rep*. 2020;20:101181.
94. Alghafri TS, Alharthi SM, Al-Balushi S, et al. Health professionals' perceptions about physical activity promotion in diabetes care within primary health care settings in Oman. *Heliyon*. 2017;3(12):e00495.
95. Rubio MA, Guevara-Aladino P, Urbano M, et al. Innovative participatory evaluation methodologies to assess and sustain multilevel impacts of two community-based physical activity programs for women in Colombia. *BMC Public Health*. 2022;22(1):771.
96. Fleming J. parkrun: increasing physical activity in primary care. *Br J Gen Pract*. 2019;69(687):483-484.
97. Tolliver SO, Hefner JL, Tolliver SD, McDougle L. Primary care provider understanding of hair care maintenance as a barrier to physical activity in African American women. *J Am Board Fam Med*. 2019;32(6):944-947.
98. Waterman MR, Wiecha JM, Manne J, Tringale SM, Costa E, Wiecha JL. Utilization of a free fitness center-based exercise referral program among women with chronic disease risk factors. *J Community Health*. 2014;39(6):1179-1185.
99. Carlson JA, Frank LD, Ulmer J, et al. Work and home neighborhood design and physical activity. *Am J Health Promot*. 2018;32(8):1723-1729.

## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

**How to cite this article:** Leese C, Abraham K, Smith BH. Narrative review – Barriers and facilitators to promotion of physical activity in primary care. *Lifestyle Medicine*. 2023;e81. <https://doi.org/10.1002/lim2.81>