

Impact of a National Peer-Led Training Program to Increase Brief Physical Activity Advice Given to Patients by Health Care Professionals

Carlin, L., Whelan, M., Musson, H. & Adams, E.

Author post-print (accepted) deposited by Coventry University's Repository

Original citation & hyperlink:

Carlin, L, Whelan, M, Musson, H & Adams, E 2021, 'Impact of a National Peer-Led Training Program to Increase Brief Physical Activity Advice Given to Patients by Health Care Professionals', *Journal of Physical Activity & Health*, vol. 18, no. 11, pp. 1364-1371.

<https://dx.doi.org/10.1123/jpah.2021-0187>

DOI 10.1123/jpah.2021-0187

ISSN 1543-3080

Publisher: Human Kinetics

Accepted author manuscript version reprinted, by permission, from *Journal of Physical Activity & Health*, 2021, <https://doi.org/10.1123/jpah.2021-0187>. © Human Kinetics, Inc.

Copyright © and Moral Rights are retained by the author(s) and/ or other copyright owners. A copy can be downloaded for personal non-commercial research or study, without prior permission or charge. This item cannot be reproduced or quoted extensively from without first obtaining permission in writing from the copyright holder(s). The content must not be changed in any way or sold commercially in any format or medium without the formal permission of the copyright holders.

This document is the author's post-print version, incorporating any revisions agreed during the peer-review process. Some differences between the published version and this version may remain and you are advised to consult the published version if you wish to cite from it.

Abstract

Background: The benefits of physical activity for preventing and managing long-term health conditions are well established and healthcare professionals could promote physical activity to patients. The current study aims to evaluate the impact of the Clinical Champions Physical Activity Training Programme (CCTP).

Methods: Healthcare professionals attend a one-off in-person training session delivered by a trained Clinical Champion. Attendees at the CCTP were asked to complete a baseline survey prior to the training session and follow-up surveys 4 weeks and 12 weeks post-training.

Results: 5,945 training attendees completed the baseline survey. 1,859 and 754 participants completed 4-week and 12-week follow-up (31.3% and 12.7% response rate, respectively). Significant increases in confidence to deliver brief physical activity advice and knowledge of physical activity guidelines were reported at 12 weeks ($p < 0.001$). The perceived frequency of physical activity discussions with patients significantly increased ($p < 0.001$). Twelve weeks after training fewer barriers in promoting physical activity were reported.

Conclusions: The evaluation of the CCTP demonstrated an increase in knowledge of physical activity guidelines, levels of confidence and frequency of delivery of brief physical activity advice to patients. Further research is required to determine if this impact translates through to changes in patients' physical activity behaviour.

Text

Background

The benefits of physical activity for health and well-being, and for preventing and managing long-term conditions have been well reported.^{1,2} Despite this, a high proportion of the population in England do not meet current recommendations. Healthcare professionals (HCPs) are well positioned to reach and interact with a large number of individuals in the general population, including people with long-term health conditions. With more than 300 million consultations occurring each year in primary care alone,³ discussing and promoting physical activity during routine clinical practice could be a valuable, large-scale intervention.

Encouraging HCPs to deliver brief advice to patients during routine consultations could help address physical inactivity in the population. Brief advice refers to the provision of 'verbal advice, discussion, negotiation or encouragement, with or without written or other support or follow-up' and evidence suggests this can increase patient physical activity participation.⁴ One in four people have indicated that they would be more physically active if they were told by a General Practitioner (GP), practice nurse or pharmacist that physical activity would help manage long-term conditions.⁵ However, many HCPs do not have the knowledge, skills or confidence to enable them to effectively provide physical activity advice during consultations;⁶⁻⁸ currently limiting the potential effectiveness of this intervention.

Evidence suggests there is value in training HCPs to increase knowledge, skills and confidence for providing brief physical activity advice to patients.⁴ Confidence to promote physical activity⁹ and belief in ability to deliver the information to patients^{10,11} has been associated with increased physical activity promotion, which may lead to more frequent conversations with patients. The promotion of physical activity by HCPs has often been inconsistent and lacked fidelity.¹⁰ Furthermore, knowledge and recognition of opportunities to signpost or recommend physical activity amongst primary healthcare teams has been poor.⁸ Despite evidence of the effectiveness of peer-to-peer training

programmes within various health settings,^{12–14} there is a lack of evidence of the effectiveness of such programmes to improve the confidence and knowledge of HCPs pertaining to physical activity promotion, and the subsequent frequency of delivering physical activity advice to patients.

In England a national, whole system medical education programme has been established called the Moving Healthcare Professionals Programme (MHPP).¹⁵ This project aims to address training and educational needs from the undergraduate and post-graduate curriculum through to continuing professional development (CPD) for qualified HCPs, and to provide resources to support the promotion of physical activity in primary and secondary care. One component of the MHPP, the Clinical Champions Physical Activity Training Programme (CCTP), specifically aims to increase population levels of physical activity by increasing the proportion of HCPs integrating brief conversations about physical activity into routine clinical practice. The CCTP provides in-person, peer-led training to raise the profile of physical activity and increase the knowledge, skills and confidence of HCPs for providing brief advice on physical activity to patients.¹⁵ After an initial pilot phase, the CCTP was expanded and scaled up over two years to be delivered nationwide. An independent evaluation of the national CCTP was commissioned to assess the implementation and impact of the programme.

The aim of this study was to evaluate the impact of the CCTP on healthcare professionals' delivery of brief advice to promote physical activity. The objectives of the evaluation were to (i) assess the perceived impact of the training on healthcare professionals' knowledge of physical activity and confidence for delivering brief advice to patients, (ii) assess the perceived impact of the training on the frequency and duration of brief physical activity advice in clinical practice, (iii) identify the barriers which might prevent brief advice being delivered, and (iv) make recommendations for the future development and evaluation of similar training programmes.

Methods

Overview of the CCTP

Forming part of the whole system approach to promoting physical activity,¹⁵ Public Health England oversee the delivery of the CCTP. The peer-to-peer training programme is delivered by trained medic, nurse or allied HCPs who volunteer to be Physical Activity Clinical Champions across various regions of England. Sessions were arranged at the request of local services and trusts through a Clinical Champion local to the area. Clinical Champions were also responsible for raising initial awareness of the programme and 'cold calling' local networks to promote and increase session uptake.

Training was delivered as a one-off, in-person session attended by primary care, secondary care and community-based HCPs and students within the healthcare sector. The training used a standardised, peer reviewed, core slide-set. These slide-sets focused on four key areas: (1) definitions and evidence for physical activity and health; (2) physical activity guidelines; (3) the importance of physical activity for the prevention and management of disease; and (4) the integration of brief interventions for physical activity into clinical practice using behaviour change theory. Additional supplementary slide-sets were made available to cover area-specific information on physical activity provision and motivational interviewing. In some areas training on the use of a physical activity prescription pad was piloted, this was a separate component of the CCTP and is outside the scope of this paper.¹⁶

The period of training covered by this impact evaluation included sessions delivered between 5th February and 31st December 2018. During this period, 509 training sessions were delivered across the nine regions of England and 8,917 HCPs attended sessions.

Evaluation Framework

The evaluation of the CCTP was based on Kirkpatrick's Four-Level Training Evaluation Model (Figure 1. Kirkpatrick, 1959).¹⁷ The focus of this evaluation was on Levels 1 to 3 which recommend that

researchers evaluate participants' reactions to the training and its usefulness and relevancy to their role (Level 1); the extent to which learning has taken place, knowledge has increased, and attitudes have changed as a result of attending the training (Level 2) and the extent to which participants' self-reported behaviour has changed because of attending the training (Level 3). Level 4 examines the perceived impact of the training at a patient and local level and is outside the scope of this evaluation, requiring further research.

Evaluation design

A mixed-method, quasi-experimental, pre-post evaluation design was adopted to assess the extent to which learning took place and participants' behaviour changed in response to attending the training session. A process evaluation was conducted to assess the uptake, reach and fidelity plus barriers and facilitators for implementation of the CCTP which is reported elsewhere.

Data collection

Organisational data were collected for each training session using a delivery audit form and attendee sign-in sheet. Individual level data were collected using surveys at three time points: baseline at the start of the training session then 4 weeks and 12 weeks after the training session.

Audit forms were completed by Clinical Champions to provide information on attendee numbers, setting and purpose of session, allocated session time and actual session duration. Attendees completed the sign-in sheets to report full names, professional roles and email addresses. The baseline surveys were completed at the start of the training session after attendees received information letters about the evaluation with an invitation to participate. The consent form and baseline survey were completed online, accessible via a custom, short URL to encourage quick access. However, due to accessibility issues for wi-fi and mobile phone signals within hospital settings, identical paper-based consent forms and surveys were provided as an alternative to

maximise participant uptake. The audit form and sign-in sheet were returned to the research team after each session using freepost Royal Mail Business Reply envelopes along with paper-based consent forms and surveys.

The two follow-up surveys after the training session were disseminated to attendees by email at 4 and 12 weeks, using the email address provided in the baseline survey response or sign-in sheet. Participants were given a 3-week window to allow time for survey completion. Reminders were sent to non-responders after two weeks of no response and a final reminder 24 hours prior to the window closing to further encourage responses. A monthly prize draw incentive was offered for the two follow-up timepoints.

Cuttlefish Limited (Loughborough, UK), an external data capture agency, supported online data collection, management and sharing. The research team accessed a web-based portal during data collection to monitor incoming training attendee responses and ensure data accuracy. Cuttlefish also incorporated a feature in the portal to enable the research team to upload responses obtained via paper-based survey responses to centralise data storage.

Measures

The baseline survey collected data on participant characteristics, including age and job role. At each survey timepoint participants were asked about the following: 1) perceptions of their role in promoting physical activity and benefits of physical activity for patients; 2) perceptions of the importance of having conversations about physical activity with patients; 3) knowledge of the physical activity guidelines; 4) confidence to promote physical activity to patients; 5) the perceived frequency and duration of conversations held with patients; and 6) perceived barriers in promoting physical activity to patients.

Perceptions of their role in promoting physical activity was assessed using a 10-point Likert scale. Attendees were asked to what extent they agreed it was part of their role to discuss physical activity with patients. A score of one indicated *'totally disagree'* and a score of ten indicated *'totally agree'*. Patient benefit was assessed through two 10-point Likert scale questions; the extent of agreement that regular physical activity is of benefit to most patients living with a long-term condition and the extent to which the attendee values physical activity as a method of chronic disease prevention for patients (one indicating *'not at all valued'* and 10 indicating *'highly valued'*). The perceptions of importance of having conversations with patients on the benefits of physical activity were scored using a range from one, indicating *'not at all important'*, to 10, indicating *'extremely important'*. The 10-point Likert scale was also used for assessing confidence of the participant in promoting physical activity to patients with a score of one indicating *'not at all confident'* and ten indicating *'extremely confident'*. Knowledge of the UK Government's physical activity guidelines on the number of minutes of moderate-intensity physical activity which should be undertaken by an adult was assessed using an open text box. After data collection, an answer of 150 minutes per week was coded as correct and any other answer coded as incorrect.

Attendees were asked how often they discussed physical activity with patients in a typical working day scoring one indicating *'never'* to ten indicating *'almost always'*. Additionally, an option of *'N/A in current role'* was provided to account for those in non-patient facing roles or in other areas such as administrators or attendees working in palliative care. The follow-up question on duration asked 'Of those patients with whom you discuss physical activity, on average, how long do you spend discussing physical activity' with four possible options: not applicable, less than 60 seconds, 1-2 minutes or more than 2 minutes.

To identify the barriers that might prevent brief advice being delivered, participants were provided with a list of 11 barriers and were asked to select all that applied to them. There was also an 'other'

option with a free text response field provided to specify the barrier. The suggested barrier list was developed in consultation with several core Clinical Champions prior to commencing data collection.

Research governance and ethics

Prior to completing each survey, written informed consent was obtained. Ethical approval was obtained from the Loughborough University Research Ethics Committee (REF C17-87; Dec 2017).

Data analysis

Descriptive data were summarised using frequencies and percentages. Data collected from baseline and follow-up surveys were used to assess impact. Data were excluded for attendees who had indicated moving from a patient facing role at baseline to a non-patient facing role at follow-up. Data were handled using listwise deletion so only survey responses without missing data were taken forward in analysis. For categorical data, Friedman tests were used to assess differences between baseline and the two follow-up survey responses. Post-hoc analysis using Wilcoxon signed-ranked tests were conducted with a Bonferroni correction applied, resulting in a significance level set at $p < 0.025$. Continuous data were analysed to test for differences over time from baseline to 4 weeks and 12 weeks follow-up. In the event data were not normally distributed, non-parametric tests were utilised. Data were analysed using SPSS Statistics Version 26 (IBM SPSS Inc., New York).

Results

Participant characteristics

Of the 8,917 training participants, 6,679 (74.9%) attendees completed the baseline survey (Figure 2). In total, 744 responders were excluded because they either attended an alternative training session (the physical activity clinical advice pad (PACAP) training) or were taking part in the PACAP pilot study as PACAP training may have impacted the knowledge or behaviours of the participants. The

evaluation of the PACAP training and pilot study has been reported elsewhere.¹⁶ The remaining sample comprised 5,945 (66.7%) responders at baseline. A total of 1,859 participants (31.2%) completed the 4-week follow-up survey and 754 participants (12.7%) completed the 12-week follow-up survey.

Participant characteristics are presented in Table 1. Participants were most often aged between 25 and 34 years (35.7%). The most commonly reported healthcare profession was doctor (2099/5945 [35.3%]), followed by nurse (1118/5945; [18.8%]) and other allied HCP (1106/5945; 18.6%). Allied HCPs primarily consisted of physiotherapists (490/1106; 44.3%) and allied healthcare assistants or midwifery assistants (269/1106; 24.3%).

Impact

Perceptions of role to promote physical activity and benefits of physical activity

The number of attendees who thought giving brief advice on physical activity was part of their role significantly increased from 92% (688/748) at baseline to 95.5% (714/748) at the 12-week follow-up ($p < 0.001$). A significant increase was also observed in attendee perceptions toward the importance of telling patients about the benefits of physical activity (a mean score increase from 9.04 to 9.34, $p < 0.001$), and its use as a method of chronic disease prevention (58.2% versus 70.7%, $p < 0.001$).

However, perceptions of the benefits of partaking in regular physical activity for patients living with a long-term condition increased non-significantly ($p = 0.022$).

Confidence for delivering brief physical activity advice

A significant difference was observed in perceived confidence in advising patients about increasing physical activity between the three timepoints ($\chi^2(2) = 295.444$, $p < 0.001$). Median (IQR) perceived confidence levels at baseline, 4 weeks and 12 weeks were 7 (6-9), 8 (7-10) and 8 (7-10), respectively.

There was a significant increase in perceived confidence from baseline to 4 weeks ($Z = -21.942$,

$p < 0.001$) and from baseline to 12 weeks ($Z = -16.450$, $p < 0.001$). At the 12 week follow-up, the proportion of participants rating their confidence as 10/10 had risen from 16.3% at baseline to 25.7%.

Knowledge of physical activity guidelines

Knowledge was assessed primarily as participants' awareness of the physical activity guidelines outlined by the UK government of 150 minutes of moderate-to-vigorous intensity physical activity per week.¹⁸ A significant increase was observed in knowledge of moderate physical activity amongst attendees ($p < 0.001$). More attendees correctly recalled the moderate physical activity guidelines at 4 weeks compared to baseline ($Z = -18.291$, $p < 0.001$) and at 12 weeks compared to baseline ($Z = -13.270$, $p < 0.001$). A quarter of participants (24.9%, 178/715) did not know the guidelines at baseline but correctly recalled them at 4 weeks and 12 weeks.

Application of brief physical activity advice in routine clinical practice

The perceived frequency of discussions with patients about physical activity increased in 38.9% (291/748, $p < 0.001$; median IQR 7[5-9]) of attendees, however 25.7% (192/748) reported decreasing the frequency of discussions with patients. Despite the increase in the frequency of conversations, the length of time spent discussing physical activity with patients did not significantly increase between the three timepoints. A duration of 1-2 minutes was the most frequently reported length of conversation and increased from 43.5% (322/740) at baseline to 49.7% (368/740) at 12 weeks.

Barriers to delivering brief advice on physical activity to patients

At baseline, a total of 2,433 barriers were reported averaging a total of 3.6 barriers per participant (Table 2). The most frequently reported barrier at baseline (60.2% of participants) was '*not enough time*' during appointments or visits to discuss physical activity with patients. '*Patients are not motivated to increase their physical activity levels*' (47.2%), '*I'm unaware of what's available locally*

to support my patients' (44.3%) and *'Lack of good quality information to give to patients'* (42.5%) were the next most frequently reported barriers.

The least frequently reported barrier at baseline was *'Inadequate reimbursement'* (4.5%), followed by *'Lack of evidence on the effectiveness of physical activity to improve health'* (4.8%) and *'Other'* (5.5%). Barriers listed within *'Other'* included that it was not appropriate in the current role of the HCP as they were in a non-patient facing role, or it was not appropriate for their client group. For instance, working in palliative care or surgical roles, and it may interfere and potentially be detrimental to other advice provided to patients including those with eating disorders. Also related to the client group, a number of HCPs suggested that patients who are wheelchair users, have mobility issues or lack capacity due to dementia were unable to take part in physical activity. *'Other'* barriers mentioned by several participants indicated they felt hypocritical promoting physical activity prior to receiving the training (as they were not active themselves); however, this only remained a barrier for one participant at the follow-up timepoints.

At the 12-week follow-up, the average number of barriers dropped to 3 per participant, totalling 1,938 barriers. The barrier *'Not adequately trained'* showed the greatest reduction reducing from 39.6% at baseline to 17.3% at 12-week follow-up. Significant reductions were also noted in *'Fear of offending my patient'* (23% to 16.9%), *'Lack of evidence on the effectiveness of physical activity to improve health'* (4.8% to 2.2%), *'Lack of good quality information to give to patients'* (42.5% to 38.0%), *'I'm unaware of what's available locally to support my patients'* (44.3% to 37.2%) and *'I'm unsure of the effectiveness of giving physical activity advice'* (9.4% to 4.0%).

The most significant increase in perceived barriers from baseline to the 12-week follow-up was for *'Not enough time'* (60.2% to 68.1%). An increase was also shown in the *'Other'* category from 5.5% at baseline to 7.5% at 12-week follow-up. The remainder of the barriers indicated small, non-significant changes across the timepoints.

Perceptions of barriers that related to patient motivation to change behaviour, their likelihood to follow advice and the availability of referral services for patients are amongst those that did not significantly change following training attendance.

Discussion

The findings outline the impact of the peer-led CCTP in increasing the knowledge and confidence of healthcare professionals (HCPs) in delivering brief physical activity advice to patients during routine clinical care. Our evaluation indicated the training had a significant positive impact on HCP behaviour, increasing the frequency of physical activity advice given to patients and changing the barriers faced by HCPs in promoting physical activity.

Perceived impact on HCP confidence and knowledge for promoting physical activity

This evaluation show that the CCTP had a positive impact on HCP confidence for delivering brief advice on physical activity to patients. Our findings are consistent with other studies reporting that training and education can influence self-efficacy and consequently increase physical activity promotion by HCPs.^{19,20} In addition, HCPs' self-efficacy for physical activity promotion is known to be positively associated with levels of physical activity promotion,²¹ suggesting increased confidence levels following the CCTP training as important for increasing the delivery of brief advice.

The need for knowledge to give HCPs the capability to deliver advice has been highlighted as being important in a training intervention to support the delivery of physical activity advice by HCPs to patients undergoing cancer treatment.²² Thus, our finding that the CCTP increased HCPs knowledge of the physical activity guidelines is important. However, there is mixed evidence as to whether having knowledge of physical activity is associated with increased physical activity promotion to patients;²¹ other factors (such as self-efficacy and beliefs about physical activity) may also be important which were addressed in the CCTP training.

Perceived impact on delivery of brief physical activity advice

Training on the provision of brief physical activity advice has been associated with an increase in the promotion of physical activity advice to patients across a variety of healthcare professions including practice nurses,²³ oncology nurses,²⁴ and psychologists.²⁵ The present evaluation also showed an increase in the frequency of advice given across a broad range of healthcare professions reflecting attendance at the training sessions. Providing training across as many medical and allied healthcare professionals as possible is therefore important to increase capacity for delivering brief advice to patients on physical activity.

Barriers to delivering physical activity advice

There was a reduction in several perceived barriers after training attendance. For example, the barriers related to the provision of advice specific to each geographical location. The availability of an expert to provide evidence-based guidance on physical activity and adequate availability of information for physical activity sources for specific areas or client groups is a known barrier for HCPs.²⁶ In the CCTP, where possible, Clinical Champions arranged to be joined by Local Service Providers (LSPs) who were able to provide more location-specific information to enable HCPs to signpost more effectively to non-clinical services. This was reflected in the current evaluation in the reduction in perceived barrier related to awareness of local support for patients.

In contrast, time is a limiting barrier to the provision of physical activity advice to patients, which was highlighted by participants in this evaluation and did not change before and after training. This is consistent with findings observed elsewhere with *“not enough time with patients”* (pg.4091) being highlighted as one of six structural barriers for oncology nurses discussing physical activity with cancer patients.²⁶ Pressures on health services and low availability of appointments has been an issue for several years with restrictive consultation times limiting how much HCPs can discuss in one consultation. This has been noted to be an issue for the promotion of physical activity^{9,23,27} and may

help to explain the finding from our evaluation that there was no increase in the duration of the physical activity advice given to patients after training. In the UK, the average consultation time for a GP appointment is 5-11.7 minutes, which is increasing by 4.2s per year.²⁸ It is known that longer consultation times in general practice are more likely to include lifestyle advice and preventative activities,²⁹ and increasing a consultation by 1.5-2 minutes will result in a higher likelihood of physical activity promotion taking place.²⁷ Efforts to address this at a national level would align directly with the NHS long term plan focusing on preventing illness and tackling inequalities through lifestyle promotion.³⁰

Our findings indicate that barriers related to patients can remain an issue for HCPs, specifically regarding patient motivation levels and likelihood of following the advice given. Further assessment of the impact of the brief physical activity advice on patients' motivation and behaviour is needed to develop the evidence base which could then be included in future training programmes to help overcome these perceived barriers.

Limitations

Whilst care was taken to ensure rigour throughout the research process, there were some limitations in conducting this evaluation due to the constraints of collecting electronic data within a healthcare setting. Hospitals are often large, concrete buildings with poor internet making it difficult for attendees to complete the baseline survey online. Paper versions of the baseline survey were provided to address this issue. It was also noted that hospital internet security firewall systems blocked access to several follow-up surveys and many emails failed to deliver due to incorrect email address, impacting the response rate.

The response rates for the surveys were reduced due to the exclusion of 734 participants citing their attendance at sessions that included the Physical Activity Clinical Advice Pad (PACAP) or participation in the PACAP pilot program, which are part of a separate evaluation. Another limitation was the use of non-validated Likert scales. Finally, it is likely a degree of bias in terms of who responded to the

follow-up surveys, with individuals benefiting most from the training or those who have made a change to their clinical practice more likely to respond.

Recommendations

Based on our findings, we propose several recommendations for the future development of the CCTP (which has now resumed delivery, following a pause due to the COVID-19 pandemic) and other similar training programmes. The recommendations are as follows:

1. The range of healthcare professionals who are eligible to attend the training should be expanded to include other Allied Health Professionals such as social workers to increase capacity in the healthcare workforce for physical activity promotion.
2. Long-term monitoring of the programme is encouraged with the addition of a 12-month follow-up to ascertain the long-term impact of the training on HCPs behaviour in relation to the provision of brief physical activity advice to patients.
3. Develop additional support structures, peer-to-peer support networks, localised advice, good quality resources and information and increased opportunities for referral and signposting to physical activity services and opportunities to help overcome perceived barriers.
4. A collaborative approach with local service providers to develop information leaflets specific for their area would be beneficial to HCPs and patients.
5. Evaluate the impact of the programme on patient attitudes, confidence and motivation to be active as well as any change in their physical activity behaviour.

Conclusion

The Clinical Champions Physical Activity Training Programme has been shown to be an effective method for delivering peer-to-peer training of healthcare professionals to increase brief advice on physical activity to patients. The training led to improvements in levels of confidence and knowledge as well as changes in perceptions of the importance of the physical activity message. However, several perceived barriers to physical activity promotion remained post training. Further follow-up training, resources and support may be needed to enhance the positive impact of the training,

however expansion of research and evaluation is required to investigate longer term effects and impact on patient physical activity levels.

Acknowledgements

We would like to thank Ms Kim Buxton for her instrumental role in designing and delivering the evaluation of the Clinical Champions Physical Activity Training Programme and the Clinical Champions for their support in collecting data for this evaluation. We would also like to express our thanks to all participants who attended training sessions and completed baseline and follow-up questionnaires.

Funding source

The programme was funded by Sport England and Public Health England. Public Health England supported the delivery of the evaluation but did not play any role in the design or analyses or in the writing of this manuscript.

Author contributions

LC contributed to data management, data analysis, drafted the manuscript and approved the final version submitted.

MW contributed to the conception and design of the process evaluation, data management, data analysis, drafted the manuscript and approved the final version submitted.

HM contributed to data management, data analysis drafted the manuscript and approved the final version submitted.

EA contributed to project management, drafted the manuscript and approved the final version submitted.

Conflict of interest

None to declare.

References

1. Public Health England. *Everybody Active, Every Day: An Evidence-Based Approach to Physical Activity*. London, UK; 2014.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/374914/Framework_13.pdf.
2. Physical activity guidelines - GOV.UK. <https://www.gov.uk/government/collections/physical-activity-guidelines>. Accessed February 16, 2021.
3. Appointments in General Practice, October 2018 [PAS] - NHS Digital.
<https://digital.nhs.uk/data-and-information/publications/statistical/appointments-in-general-practice/oct-2018>. Accessed February 16, 2021.
4. Overview | Physical activity: brief advice for adults in primary care | Guidance | NICE.
5. Craig R, Shelton N. *Health Survey for England 2007 2.; 2008*.
6. Chatterjee R, Chapman T, ... MB-BJ of G, 2017 undefined. GPs' knowledge, use, and confidence in national physical activity and health guidelines and tools: a questionnaire-based survey of general practice in England. *bjgp.org*. doi:10.3399/bjgp17X692513
7. Lowe A, Littlewood C, McLean S, Kilner K. Physiotherapy and physical activity: A cross-sectional survey exploring physical activity promotion, knowledge of physical activity guidelines and the physical activity habits of UK physiotherapists. *BMJ Open Sport Exerc Med*. 2017;3(1):e000290. doi:10.1136/bmjsem-2017-000290
8. 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). doi:10.3399/bjgpopen17X100809
9. Florindo AA, Mielke GI, Gomes GADO, et al. Physical activity counseling in primary health care in Brazil: A national study on prevalence and associated factors. *BMC Public Health*. 2013;13(1):1-10. doi:10.1186/1471-2458-13-794
10. Huijg JM, Gebhardt WA, Verheijden MW, et al. Factors Influencing Primary Health Care

- Professionals' Physical Activity Promotion Behaviors: A Systematic Review. *Int J Behav Med*. 2015;22(1):32-50. doi:10.1007/s12529-014-9398-2
11. Mullen P, Medicine JH-AJ of P, 1990 undefined. Selected predictors of health promotion counseling by three groups of allied health professionals. *Elsevier*.
<https://www.sciencedirect.com/science/article/pii/S0749379718310201>. Accessed February 17, 2021.
 12. Christensen JH, Elsborg P, Melby PS, Nielsen G, Bentsen P. A Scoping Review of Peer-Led Physical Activity Interventions Involving Young People: Theoretical Approaches, Intervention Rationales, and Effects. *Youth Soc*. January 2020:0044118X2090173.
doi:10.1177/0044118X20901735
 13. Abadi MH, Drake C, Richard BO, et al. An evaluation of the facilitator training to implement 'Taking charge of my life and health', a peer-led group program to promote self-care and patient empowerment in Veteran participants. *Patient Educ Couns*. 2020;103(12):2489-2498.
doi:10.1016/j.pec.2020.06.014
 14. Campbell R, Starkey F, Holliday J, et al. An informal school-based peer-led intervention for smoking prevention in adolescence (ASSIST): a cluster randomised trial. *Lancet*. 2008;371(9624):1595-1602. doi:10.1016/S0140-6736(08)60692-3
 15. Brannan M, Bernardotto M, Clarke N, Varney J. Moving healthcare professionals - A whole system approach to embed physical activity in clinical practice. *BMC Med Educ*. 2019;19(1):1-7. doi:10.1186/s12909-019-1517-y
 16. Myers A, Copeland R, Quirk H, Crank H, Broom D, Goldsmith S. Evaluation of the Public Health England and Sport England Funded Physical Activity Clinical Advice Pad Pilot in Primary Care. 2020. doi:10.31219/osf.io/st94m
 17. Evaluating Training Programs: The Four Levels - Donald Kirkpatrick, James Kirkpatrick - Google Books.
<https://books.google.co.uk/books?hl=en&lr=&id=BJ4QCmvP5rcC&oi=fnd&pg=PR9&dq=1959>

- +AND+Kirkpatrick+AND+model&ots=MoU1c7t08U&sig=eVE8EHh5cdug4sHxuXSbRs_KAZc&redir_esc=y#v=onepage&q=1959 AND Kirkpatrick AND model&f=false. Accessed February 16, 2021.
18. Department of Health & Social Care. *UK Chief Medical Officers' Physical Activity Guidelines*.; 2019.
 19. Bock C, Diehm C, Schneider S. Physical activity promotion in primary health care: Results from a German physician survey. *Eur J Gen Pract*. 2012;18(2):86-91.
doi:10.3109/13814788.2012.675504
 20. Bull FCL, Schipper ECC, Jamrozik K, Blanksby BA. How can and do Australian doctors promote physical activity? *Prev Med (Baltim)*. 1997;26(6):866-873. doi:10.1006/pmed.1997.0226
 21. Crisford P, Winzenberg T, Venn A, Schultz M, Aitken D, Cleland V. Factors associated with physical activity promotion by allied and other non-medical health professionals: A systematic review. *Patient Educ Couns*. 2018;101(10):1775-1785.
doi:10.1016/j.pec.2018.05.011
 22. Webb J, Hall J, Hall K, Fabunmi-Alade R. Increasing the frequency of physical activity very brief advice by nurses to cancer patients. A mixed methods feasibility study of a training intervention. *Public Health*. 2016;139:121-133. doi:10.1016/j.puhe.2016.05.015
 23. McDowell N. Factors that influence practice nurses to promote physical activity. *Br J Sports Med*. 1997;31(4):308-313. doi:10.1136/bjism.31.4.308
 24. Karvinen K, Bruner B, Truant T. The teachable moment after cancer diagnosis: Perceptions from oncology nurses. *Oncol Nurs Forum*. 2015;42(6):602-609. doi:10.1188/15.ONF.602-609
 25. Wendt SJ. Smoking cessation and exercise promotion counseling in psychologists who practice psychotherapy. *Am J Heal Promot*. 2005;19(5):339-345. doi:10.4278/0890-1171-19.5.339
 26. Hausmann A, Ungar N, Gabrian M, et al. Are healthcare professionals being left in the lurch? The role of structural barriers and information resources to promote physical activity to

- cancer patients. *Support Care Cancer*. 2018;26(12):4087-4096. doi:10.1007/s00520-018-4279-x
27. McKenna J. Barriers to physical activity promotion by general practitioners and practice nurses. *Br J Sports Med*. 1998;32(3):242-247. doi:10.1136/bjism.32.3.242
 28. Irving G, Neves AL, Dambha-Miller H, et al. International variations in primary care physician consultation time: A systematic review of 67 countries. *BMJ Open*. 2017;7(10):e017902. doi:10.1136/bmjopen-2017-017902
 29. Wilson A, Childs S. The relationship between consultation length, process and outcomes in general practice: a systematic review. *Br J Gen Pract*. 2002;52(485).
 30. NHS Long Term Plan. <https://www.longtermplan.nhs.uk/>. Accessed September 4, 2020.

Tables

Table 1. Participant characteristics (N=5,945)

| | | Attendees |
|-------------------|--|------------------|
| | | n (%) |
| Age | <i>18-24 yrs</i> | 985 (16.6) |
| | <i>25-34 yrs</i> | 2,122 (35.7) |
| | <i>35-44 yrs</i> | 1,202 (20.2) |
| | <i>45-54 yrs</i> | 1,062 (17.9) |
| | <i>55-64 yrs</i> | 510 (8.6) |
| | <i>65 yrs or older</i> | 29 (0.5) |
| | <hr/> | |
| Profession | Job role | |
| <i>Doctor</i> | <i>GP Registrar (GP VTS) ST1-ST3, GP partner/other registered GP</i> | 1,396 (23.5) |
| | <i>Foundation level (F1 or F2)</i> | 518 (8.7) |
| | <i>Consultant</i> | 99 (1.7) |
| | <i>Other core trainee (CT1 or CT2)</i> | 23 (0.4) |
| | <i>Other higher Specialist Trainee (ST3 and above)</i> | 24 (0.4) |
| | <i>Other Doctor</i> | 39 (0.7) |
| <i>Nurse</i> | <i>Registered Nurse</i> | 1,118 (18.9) |
| <i>AHP</i> | <i>Physiotherapist/Assistant</i> | 490 (8.3) |
| | <i>Healthcare Assistant/Midwifery Assistant</i> | 269 (4.5) |
| | <i>Counsellor/Psychologist</i> | 124 (2.1) |
| | <i>Dietician</i> | 51 (0.9) |
| | <i>Midwife</i> | 27 (0.5) |
| | <i>Occupational Therapist/Assistant</i> | 145 (2.5) |

| | | |
|----------------|---|------------|
| <i>Student</i> | <i>Student (medical, nursing, or other)</i> | 975 (16.4) |
| <i>Other</i> | <i>Other clinical role</i> | 378 (6.4) |
| | <i>Non-clinical role</i> | 252 (4.2) |

Table 2. Barriers to delivering brief physical activity to patients by survey time point, reported as n(%)

| Barrier | Baseline (pre-training) | 4 weeks | 12 weeks |
|--|--------------------------------|----------------|-----------------|
| Not enough time | 3,370 (60.2) | 1,108 (64.8) | 740 (68.1) |
| Patients are not motivated to increase their physical activity levels | 2,638 (47.2) | 813 (47.6) | 522 (48.0) |
| I'm unaware of what's available locally to support my patients | 2,480 (44.3) | 637 (37.2) | 404 (37.2) |
| Lack of good quality information to give to patients | 2,376 (42.5) | 593 (34.7) | 413 (38.0) |
| I'm not adequately trained in this area | 2,216 (39.6) | 270 (15.8) | 188 (17.3) |
| Patients are unlikely to follow my advice | 1,638 (29.3) | 464 (27.2) | 306 (28.2) |
| Lack of adequate referral services for my patients | 1,595 (28.5) | 466 (27.3) | 305 (28.1) |
| Fear of offending my patient | 1,285 (23.0) | 344 (20.1) | 184 (16.9) |
| I'm unsure of the effectiveness of giving physical activity advice | 527 (9.4) | 55 (3.2) | 44 (4.0) |
| Lack of evidence on the effectiveness of physical activity to improve health | 266 (4.8) | 17 (1.0) | 24 (2.2) |
| Inadequate reimbursement | 251 (4.5) | 87 (5.1) | 47 (4.3) |
| Other | 308 (5.5) | 116 (6.8) | 81 (7.5) |

Figures/graphics

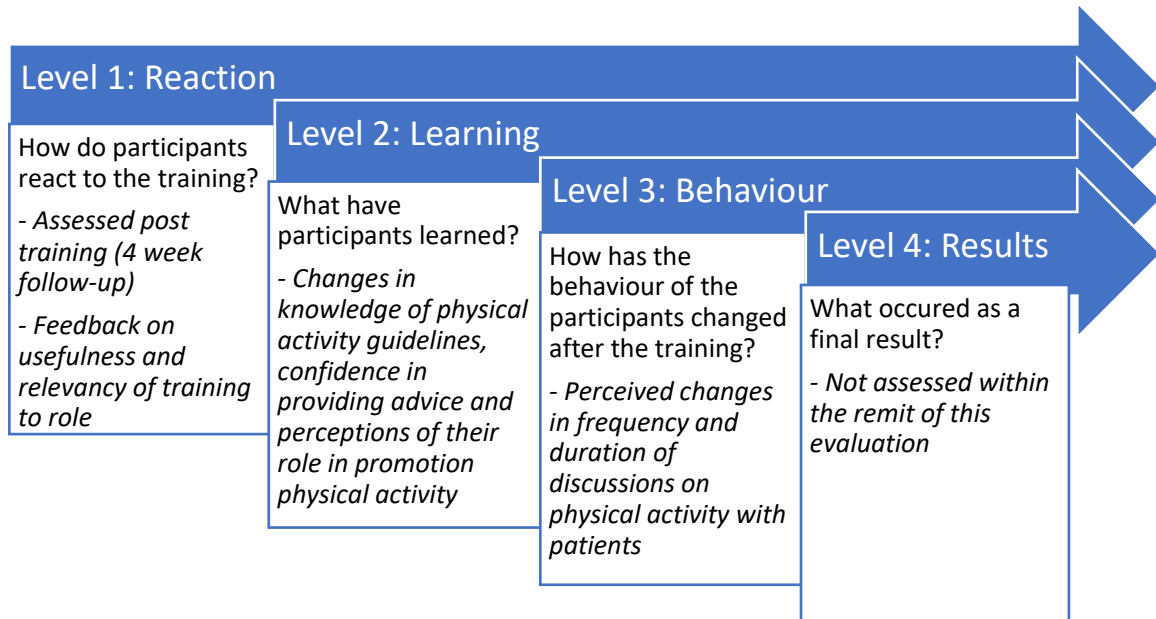


Figure 1: Kirkpatrick's (1959) Four-Level Training Evaluation Model and application to the MHPP evaluation

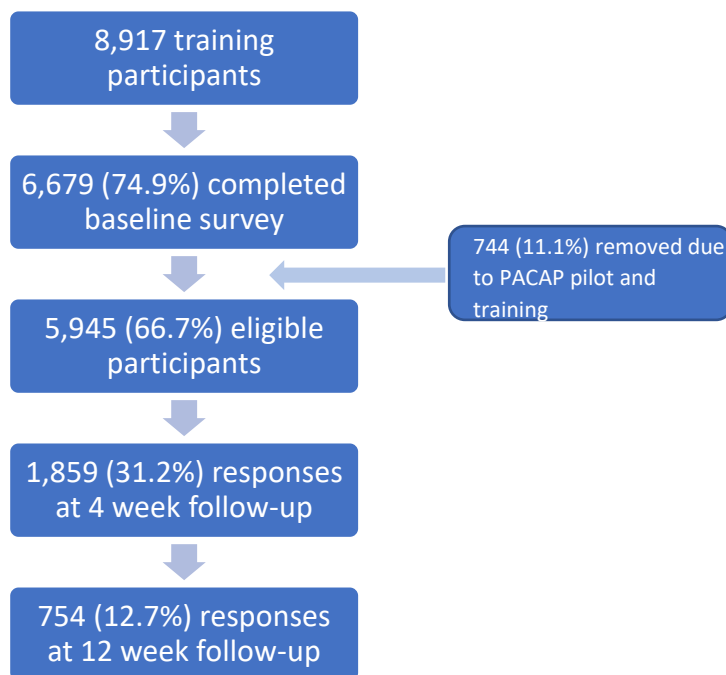


Figure 2. Survey response rate and inclusion of participants in the analyses (response rate reported as N (%))