

Employer schemes to encourage walking to work: feasibility study incorporating an exploratory randomised controlled trial

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Declared competing interests of authors: Rona Campbell is a director of DECIPHer IMPACT Ltd, a university-owned not-for-profit company that licenses and supports the implementation of evidence-based health promotion interventions, for which she receives fees paid into a grant account held by the University of Bristol used to support further research activities. She is also a population and public health member of the Wellcome Trust's Expert Research Group; a fee was paid for the time spent reviewing applications and attending board meetings in London. Adrian Davis is an independent public health consultant on transport planning and health, promoting evidence-based transport policy and practice, and has been paid by Bristol City Council in this capacity.

Published March 2015

DOI: 10.3310/phr03040

Scientific summary

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Public Health Research 2015; Vol. 3: No. 4

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Background

Physical inactivity increases the risk of many chronic diseases, including coronary heart disease, type 2 diabetes, obesity and some cancers. It is currently recommended that adults should undertake at least 150 minutes of moderate intensity physical activity in bouts of 10 minutes or more throughout the week, but many adults in the UK and other high-income countries do not achieve this. Increasing physical activity levels, particularly among the most sedentary, is an important aim of current public health policy in the UK.

There is evidence of the link between adult obesity levels and travel behaviour; countries with the highest levels of active travel generally have the lowest obesity rates. Walking has been described as near-perfect exercise. It is a popular, familiar, convenient and free form of exercise that can be incorporated into everyday life and sustained into older age. It is also a carbon-neutral mode of transport that has declined in recent decades in parallel with the growth in car use. Even walking at a moderate pace of 5 km/hour (3 miles/hour) expends sufficient energy to meet the definition of moderate intensity physical activity. An opportunity for working adults to accumulate the recommended moderate activity levels is through the daily commute, and experts in many World Health Organization (WHO) countries agree that significant public health benefits can be realised through greater use of active transport modes.

Systematic reviews have examined the effectiveness of interventions to promote physical activity in general, but there is less evidence about how best to promote walking to work. Available systematic review evidence has focused on interventions that promote walking, interventions that promote walking and cycling as an alternative to car use, and the effectiveness of workplace physical activity interventions. The National Institute for Health and Care Excellence (NICE) public health guidance on workplace health promotion concluded that although a range of schemes exist to encourage employees to walk or cycle to work, little is known about their impact; that few studies have used robust data collection methods to measure the impact of workplace interventions on employees' physical activity levels; and that there is a lack of studies examining how workplace physical activity interventions are influenced by the size and type of workplace and the characteristics of employees.

Aim and objectives

The overall aim of the research was to build on existing knowledge and resources to develop an employer-led scheme to increase walking to work and to test the feasibility of implementing and evaluating it in a full-scale randomised controlled trial (RCT). The objectives were:

- to explore with employees and employers the barriers to and facilitators of employer-led schemes to promote walking to work
- to use existing resources and websites to develop a Walk to Work information pack to train work-based Walk to Work promoters
- to conduct an exploratory RCT of the intervention to:
 - pilot workplace and employee recruitment procedures
 - examine retention rates
 - pilot cost and outcome measures
 - inform a sample size calculation for a full RCT
 - gather information regarding variability within and between workplaces

- to pilot the use of accelerometers and global positioning system (GPS) receivers to measure:
 - eligible employees' levels of moderate to vigorous physical activity (MVPA)
 - temporal pattern of physical activity (to identify when activity has increased and whether or not there is a compensatory decrease in activity at other times)
 - route taken and physical activity associated with journey
- to explore any social patterning in uptake of walking to work, particularly in relation to socioeconomic status, age and gender
- to provide preliminary evidence on the cost and economic benefits of the intervention to employers, employees and society.

Methods

Ethical approval

All protocols and resources used for recruitment, consent and data collection were submitted to the Faculty of Medicine and Dentistry Committee for Research Ethics at the University of Bristol before the study commenced and were given ethical approval.

Design and setting

This feasibility study comprised two phases of the Medical Research Council's framework for evaluating complex interventions. During phase 1, a review of current resources that promote walking (and in particular the benefits of walking to work) was undertaken. In addition, three focus groups with employees, and interviews with three employers, were conducted in one small, one medium-sized and one large workplace outside Bristol to finalise the intervention design. Phase 2 comprised an exploratory randomised trial in 17 workplaces in Bristol. An integral process evaluation included post-intervention interviews with employers and employees to examine the context, delivery and receipt of the intervention, and to explore their views about walk to work initiatives. An assessment of intervention costs to participating employers and employees was also undertaken.

The Walk to Work intervention

Following the resource review and focus groups during phase 1, members of the research team developed booklets for the Walk to Work promoters, and for participating employees in the intervention arm. The booklets included information about the health, environmental, economic and social benefits of walking to work. Specific behaviour change techniques included providing information on the link between walking and health; intention formation; identifying barriers and ways to overcome them; goal setting and review of goals; prompting self-monitoring; and providing social support and preventing relapse. There is evidence that these techniques can effect behaviour change.

There were four main stages of the intervention:

- Walk to Work promoters were identified in each workplace in the intervention arm of the study. They were either volunteers or nominated by participating employers.
- A half-day training session for the Walk to Work promoters was run by experts in the research team, and focused on information about the benefits of walking to work and the various websites and resources available to promote this; skills development in developing personal walking routes with participating employees; and building confidence to encourage other employees to walk to work. The Walk to Work promoters were provided with the booklets and pedometers to assist them in their role.

- Employees participating in the study were contacted by the Walk to Work promoter and those who were interested in walking to work were asked to 'sign up' to the intervention at this stage. The booklets and pedometers were distributed; safe, feasible walking routes were identified; and goals for walking to work were set.
- Further support was provided through four contacts from the Walk to Work promoter over the following 10 weeks (face to face, e-mail or telephone, as appropriate).

Workplace recruitment and randomisation

Workplaces were approached through Bristol Chamber of Commerce for initial expressions of interest, including willingness to allocate employee time for study activities. Those that did express an interest were asked to complete a short questionnaire about the size and type of business and to identify how many of their employees lived within 2 miles of the workplace. This process was aided by the research team supplying the first four digits of postcodes likely to contain employees living within the required range, and an instruction leaflet on how to calculate distance using Walkit.com. Workplaces that provided this information were recruited to the study and were 'matched' into pairs, with each pair containing workplaces as similar as possible with respect to total number of employees (up to 50, 51–250, 250+), location characteristics and type of business. Assignment of workplaces to the intervention group occurred within these matched pairs and employed computer-generated allocation by an independent member of the co-applicant group.

Participant recruitment

Employees living within 2 miles of the workplace were given information about the study, by e-mail or letter, as appropriate to the workplace, and invited to participate. As the study progressed, it was felt that this was too restrictive, and a second round of recruitment was undertaken to include people who lived further away and might be willing to incorporate some walking into their daily commute.

Outcome data collection

At baseline, participating employees in both the intervention and the control arm were asked to complete a questionnaire giving basic personal data, job title, mode of transport to work, before- and after-work 'routines' affecting travel mode (e.g. school run), typical commuting costs, household car ownership, commute-related adverse events, health service use and views about walking. In addition, participants were asked to wear accelerometers for 7 days, from waking in the morning until going to bed at night, to provide an objective measurement of physical activity, and to carry a personal GPS receiver during the journey to and from work to confirm the duration of the journey and quantify its contribution to overall physical activity. A £10 gift voucher was given to all participants who returned accelerometers and GPS receivers.

Shortly after the intervention was implemented, questionnaires were administered in the intervention and control arms to explore attitudes towards and experiences of walking to work, including perceived barriers and facilitators, and emotional and physical well-being. Additional questions about the acceptability of the intervention were included for the intervention arm only.

Finally, the questionnaires, accelerometers and GPS receivers were administered in the intervention and control arms (as per baseline protocol) at a 1-year follow-up data collection.

Process evaluation

Data relating to recruitment and participation in the study were collected at key stages of the study using an evaluation pro forma and field notes. Baseline and post-intervention interviews were conducted with employers to explore their views of workplace-based health promotion interventions in general and the Walk to Work intervention in particular. Post-intervention interviews were conducted with all Walk to Work promoters, and with a purposive sample of employees who had increased walking to work and those who had not, to explore the facilitators of and barriers to walking to work.

Assessment of costs

The cost of the Walk to Work promoter training and intervention was estimated by multiplying the time spent by trainers and employees at the training event by the wage rate (including on-costs). All expenses (e.g. materials, equipment, room use, travel) involved in the intervention were documented. Self-reported general health service use in the past month at the 1-year follow-up data collection was collected and national unit costs were applied to provide preliminary information on any difference in health service costs due to the intervention. Self-assessed productivity, absence from work and weekly commuting costs were also measured at follow-up.

Qualitative analysis

All focus groups and interview recordings were fully transcribed. The framework method of data management was used to aid analysis. Textual data were read and reread, and put into charts in relation to specific research questions. The charts were scrutinised and the data coded. Differences and similarities were identified within themes, bearing in mind the context within which these arose.

Results

Workplace recruitment, randomisation and retention

The recruitment of workplaces took place during a time of financial crisis in the world economy, resulting in downsizing and uncertainty about the viability of some businesses and workplaces. Through contacting workplaces in Bristol using the Chambers of Commerce contact list and a publicly available list of major employers, we found 55 workplaces that expressed an interest: 19 of these were initially recruited and 17 took part in the study. Recruitment was complicated by the request for employers to identify employees living within 2 miles of the workplace. Large workplaces in particular found this burdensome. Two workplaces left the study after randomisation to the intervention arm, one as a result of downsizing and the other because of heavy workload. No workplace withdrew from the study between the baseline and the follow-up data collection.

Participant recruitment and retention

A total of 187 participants were recruited to the study: 147 living within 2 miles of the workplace and 40 living further away. The response rate was 80% (149 of 187) immediately post intervention and 71% (132 of 187) at 1-year follow-up.

Acceptability of the intervention

Walk to Work promoters were trained and given booklets and pedometers for participants in workplaces in the intervention arm. Qualitative data suggest that the intervention materials were acceptable to participants. Some Walk to Work promoters were more proactive than others (as would be expected in an effectiveness trial in which interventions are implemented in 'real world' conditions), with one not engaging in the task because of pressure of work. A requirement to ask people to sign an additional consent form before receiving the booklets appeared unnecessarily restrictive and would not be recommended for a full-scale trial.

Physical activity outcomes

Although the study was not powered to measure effectiveness, the accelerometer data suggest that overall weekday physical activity [measured in counts per minute (cpm)] was lower in the intervention (434.6 ± 165.0) than the control (441.9 ± 190.0) arm at baseline, but higher in the intervention (452.0 ± 188.7) than the control (400.6 ± 120.0) arm at 1-year follow-up. MVPA was similar in the intervention (63.4 ± 28.6) and control (63.3 ± 28.5) arms at baseline, and higher in the intervention (61.3 ± 28.4) than the control (55.8 ± 22.2) arm at 1-year follow-up.

Assessment of costs

The average cost of the intervention for participating workplaces was £441 (with a wide range, from £66.33 to £958.38). Costs varied because of the different numbers of promoters in each workplace and depending on the number of employees participating in the intervention. The location of promoter training also had an impact on the cost per workplace. Mean [standard deviation (SD)] daily commute costs were slightly lower in the intervention group at follow-up [£2.66 (£4.32) vs. £3.64 (£12.16)] and mean (SD) self-assessed productivity was somewhat better [1.51 (1.41) vs. 2.07 (2.24)] in the intervention group, but this study was not powered to provide strong evidence on these outcomes.

Intracluster correlation coefficient and sample size calculation for a full-scale cluster randomised controlled trial

The intracluster correlation coefficient for the feasibility study was calculated to be 0.12 (95% confidence interval 0.00 to 0.30) and the average cluster size was eight. Based on an ICC of 0.15 to allow for some imprecision in the estimate, 678 participants across 84 workplaces are required to give 80% power with a 5% significance level to detect a 15% increase in mean MVPA.

Conclusions

There continues to be a paucity of objective evidence about workplace-based interventions to promote walking during the daily commute. The Walk to Work intervention and its evaluation were feasible and acceptable to participants. Lessons were learned about the need to simplify and broaden the recruitment of workplaces and employees, and to give supportive prompts to the Walk to Work promoters during the 10-week intervention. Qualitative and statistical evidence suggest sufficient evidence of promise to justify a follow-on full-scale cluster RCT.

Trial registration

This trial is registered as ISRCTN72882329.

Funding

Funding for this study was provided by the Public Health Research programme of the National Institute for Health Research. The work was undertaken with the support of The Centre for the Development and Evaluation of Complex Interventions for Public Health Improvement (DECIPHer), a UK Clinical Research Collaboration Public Health Research Centre of Excellence. Joint funding (MR/KO232331/1) from the British Heart Foundation, Cancer Research UK, Economic and Social Research Council, Medical Research Council, the Welsh Government and the Wellcome Trust, under the auspices of the UK Clinical Research Collaboration, is gratefully acknowledged.

Public Health Research

ISSN 2050-4381 (Print)

ISSN 2050-439X (Online)

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The research reported in this issue of the journal was funded by the PHR programme as project number 10/3001/04. The contractual start date was in October 2011. The final report began editorial review in April 2014 and was accepted for publication in July 2014. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The PHR editors and production house have tried to ensure the accuracy of the authors' report and would like to thank the reviewers for their constructive comments on the final report document. However, they do not accept liability for damages or losses arising from material published in this report.

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