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**PACE-UP primary care pedometer-based walking randomised controlled trial: mixed-methods results from 3-year follow-up**

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**Background**

Physical activity (PA) maintenance is important for health, but few trials provide long-term objective PA data or qualitative evaluation of factors affecting PA maintenance. The PACE-UP 3-arm (postal, nurse-support, control) primary care trial recruited 1023 45-75 year olds into a 12-week pedometer-based intervention including a PA diary and handbook incorporating behavior change techniques, controls received usual care. Recruitment was from September 2012 - October 2013. At 12-months, step-counts increased by around one-tenth and time in moderate-to-vigorous PA (MVPA) in bouts by around one-third in postal and nurse-supported arms compared with control. The postal group had a 50% chance of being cost-effective at a £20,000/quality-adjusted-life-year threshold within one year. 3-year PACE-UP cohort follow-up from October 2015 - November 2016 investigated whether intervention effects persisted using a mixed-methods approach.

**Methods**

Average daily step-counts and total weekly minutes of MVPA in ≥10 minute bouts at 3 years were collected using 7-day accelerometry (GT3X+) for all trial arms. Outcomes were regressed on baseline values to estimate change in treatment groups compared with control. Sensitivity analysis assessed missing data effects. Semi-structured telephone interviews were conducted with 60 participants. Interviews were audio-recorded, transcribed, coded, and thematic analysis performed.

**Findings**

3-year follow-up with accelerometry was 67% (681/1023). Compared to controls, intervention groups maintained higher steps/day, postal +627 (95% CI: 198, 1056; p=0.004), nurse +670 (95% CI: 237, 1102; p=0.002), and more total weekly minutes of MVPA in bouts, postal +28 (95% CI: 7, 49; p=0.009) nurse +24 (95% CI: 3, 45; p=0.03). Results were robust to sensitivity analyses. Most interviewees felt PACE-UP had increased their PA awareness. Facilitators to PA maintenance included self-motivation, social-support and maintaining good health; with poor health and lack of time as barriers.

**Implications**

There were significant persistent effects on 3-year step-counts and bouts of MVPA, with no difference between intervention groups, suggesting a primary care pedometer intervention, delivered by post or with nurse support, could help address the public health physical inactivity challenge. Major future challenges are how to apply this kind of effective intervention widely in the population and how to transform perceived barriers into facilitators, e.g. poor physical health.

**350 words**

**Authors’ contributions**

TH, DC, CV and SK conceived the idea for the study. TH, DC, CV, SK, SI, MU, UE, PW and JF-W participated in the design of the study, developed the research protocol for funding and for additional funding for the 3-year follow-up . TH, JI, SDW and MU were involved in questionnaire development and practice recruitment, selection and training. CF and CW planned and conducted the 3 year follow-up. SK, DC and EL were responsible for the statistical analysis plan and statistical analyses. CV, CW, RN, CB and TH designed the qualitative aspects of the study. CW and CB conducted the qualitative interviews and CV, CW, RN, CB and TH conducted qualitative analyses. All the authors have read and approved the abstract.

**Competing interests**

None of the authors have any competing interests to report.

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**Ethics**

This study was reviewed and given a favourable opinion by the National Research Ethics Service Committee London-Hampstead.

**Extra information:**

Charlotte Wahlich is an early career researcher.

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