

Effect of two pedometer-based walking interventions on long-term health outcomes: a study using routine primary care data

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Abstract

Background Data are lacking from physical activity (PA) trials with long-term follow-up of both objectively measured PA levels and robust health outcomes. Two primary care 12-week pedometer-based walking interventions in adults and older adults (PACE-UP and PACE-Lift) found sustained objectively measured PA increases at 3 and 4 years, respectively. Using routine primary care data, we aimed to evaluate intervention effects on long-term health outcomes relevant to walking interventions.

Methods We downloaded primary care data for trial participants who gave written informed consent, for 4-year periods after their randomisation from the 7 general practices in the PACE-UP trial and 3 general practices in the PACE-Lift trial (PACE-UP from Oct 23, 2012, to Nov 11, 2017; PACE-Lift from Oct 12, 2011, to Oct 11, 2016). The following new events were counted masked to intervention status for all participants, including those with pre-existing diseases (apart from diabetes, where existing cases were excluded): cardiovascular (myocardial infarction, coronary artery bypass graft, angioplasty, and stroke or transient ischaemic attack), diabetes cases, depression episodes, fractures, and falls. We modelled the effect of the interventions on outcomes using Cox and Poisson regression models, adjusting for age, sex, and practice.

Findings Data were downloaded for 1297 (98%) of 1321 trial participants. Event rates were low (<20 per group) for outcomes, apart from fractures and falls. Cox hazard ratios for time-to-first event after randomisation for interventions versus controls were: cardiovascular 0·24 (95% CI 0·07–0·77), diabetes 0·77 (0·43–1·38), depression 0·98 (0·46–2·07), and fractures 0·56 (0·35–0·90). Poisson incident rate ratio for falls was 1·09 (95% CI 0·83–1·43).

Interpretation Short-term primary care PA interventions led to long-term PA increases in the intervention groups, associated with significant decreases in new cardiovascular events and fractures at 4 years. Though no significant differences between intervention and control groups were demonstrated for other events, direction of effect for diabetes was protective, but our trials were underpowered to find differences in low frequency outcomes. Our study also demonstrates the potential for using routine data to evaluate the outcome of large-scale primary care walking interventions, avoiding expensive objective accelerometry assessment or inaccurate self-report PA data.

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Contributors

TH, EL, FH, IC, SD, SA, SK, CV, SI, JI, and DC conceptualised the study. CF, CW, and SD curated the data. EL, FH, IC, and DC analysed the data. TH, SK, CV, SI, PW, MU, UE, JF-R, and DC acquired funding. SA and JI did the literature review. TH, EL, and DC validated the data. TH, EL, FH, IC, and DC drafted the abstract. All authors reviewed and edited the abstract.

Declaration of interests

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