

differences in change from baseline step-count and 19 providing mean between-group differences in end-point only step-counts. From the 22 studies, 16 reported the primary outcome at ≤ 3 months with a mean difference (MD) in step-count of 1255 [95% Confidence Interval 848, 1661]; 8 studies at ≤ 6 months, MD 1084 steps [647, 1520]; 9 studies at ≤ 1 year, MD 516 steps [273, 758]; 2 studies at ≤ 2 years, MD 290 steps [-7, 587]; and 4 studies at > 2 years, MD 494 steps [251, 738]. The 19 studies with end-point only step-counts highlighted similar findings, but had fewer participants and reported no outcomes beyond one year.

Discussion This review demonstrated that pedometers and other step-count monitoring interventions significantly increase individuals' step-counts in the short-term, with larger trials also showing small sustained long-term effects. These interventions could therefore provide a means of addressing the public health inactivity challenge. Further work will evaluate which type of interventions are more effective and determine the effect-modifiers of physical activity maintenance.

OP66

EFFECT OF PEDOMETER-BASED WALKING INTERVENTIONS ON LONG-TERM HEALTH OUTCOMES: PROSPECTIVE 4-YEAR FOLLOW-UP OF 2 RANDOMISED CONTROLLED TRIALS USING ROUTINE PRIMARY CARE DATA

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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 PACE-UP and 3 PACE-Lift English general practices. 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): non-fatal cardiovascular; total cardiovascular (including fatal); incident diabetes; depression; fractures; and falls. Intervention effects on time to first event post-randomisation were modelled using Cox regression for all outcomes, except for falls, which used Poisson regression to allow for multiple events, adjusting for age, sex, and study. Absolute risk reductions (ARRs) and numbers needed to treat (NNT) were estimated.

Results 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: non-fatal cardiovascular 0.24 (95% CI 0.07 to 0.77); total cardiovascular 0.35 (0.12 to 0.91); diabetes 0.75 (0.42 to 1.36); depression 0.98 (0.46 to 2.07); and fractures 0.56 (0.35 to 0.90). Poisson incident rate ratio for falls was

1.09 (95% CI 0.83–1.43). ARR and NNT (95% CI) for cardiovascular events were: non-fatal 1.7% (0.5% to 2.1%), NNT=59 (48 to 194); total 1.6% (0.2% to 2.2%), NNT=61 (46 to 472); and for fractures 3.6% (0.8% to 5.4%), NNT 28 (19 to 125).

Discussion New cardiovascular events and fractures were significantly decreased in the intervention group at 4 years. Though no significant differences between intervention and control groups were demonstrated for other events, direction of effect for diabetes was protective. Short-term primary care pedometer-based walking interventions can produce long-term health benefits and should be more widely used to help address the public health inactivity challenge.

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OP67

THE PHYSICAL ACTIVITY WEARABLES IN THE POLICE FORCE (PAW-FORCE) TRIAL: FEASIBILITY, ACCEPTABILITY AND IMPACT

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Background Policing is an increasingly sedentary occupation that is associated with high levels of physical and psychological morbidities. Mobile health (mHealth) technology is increasingly popular, low cost and accessible. The study aim was to assess the potential impact, feasibility and acceptability of an mHealth technology intervention (Fitbit® activity monitor and 'Bupa Boost' smartphone app) to promote physical activity (PA), reduce sedentary time, and improve health and well-being, perceived stress and perceived productivity in the police force.

Methods Single-group, pre-post, mixed methods exploratory trial. Police officers and staff (n=180) were recruited from two sites (Plymouth Basic Command Unit, Devon & Cornwall Police and North Dorset territorial area, Dorset Police). Participants used the technology for 12 weeks (an 'individual' then 'social' phase) followed by five months of optional use. Data sources included Fitbit®-recorded objective step count, questionnaire surveys and semi-structured interviews (n=32). Outcome assessment points were baseline (week 0), mid-intervention (week 6), post-intervention (week 12) and follow-up (month 8). Quantitative data was analysed using paired t-tests, regression and correlations. Qualitative analysis involved framework and thematic analysis. Findings were integrated during interpretation; qualitative findings confirmed, explained, and expanded on quantitative results.

Results While self-reported PA increased overall (e.g. mean increase +421 MET-minutes/week moderate to vigorous PA baseline to month 8, 95% CI 56–785), significant increases in steps were observed only in participants with a baseline mean daily step count less than 10,000 (+1028 steps/day, 95% CI 417–1,639 baseline to week 12; +810 steps/day, 95% CI 115–1,506 baseline to month 8).

Engagement and perceived acceptability were high overall, particularly for the less active participants, but some usability issues were reported with the Bupa Boost app, resulting in lower and declining engagement with this component.

Participants preferred individual self-monitoring and goal-setting to social features of the app.

There were no significant changes in sedentary time; participants perceived a need for more opportunities for breaks in the workplace. Mental health-related quality of life improved from baseline to month 8 (SF-12 mental component score +1.75 points, 95% CI 0.28–3.23). Despite interview-reported improvements in health and wellbeing, survey-assessed changes in physical health-related quality of life, perceived stress and perceived productivity were not statistically significant.

Conclusion mHealth technology is a potentially impactful, feasible and acceptable intervention for increasing PA in the police force, particularly for less active officers and staff. The intervention was less useful for reducing sedentary time and the impact on health, wellbeing, stress and productivity is unclear.

OP109 MULTIPLE RISK BEHAVIOUR INTERVENTIONS IN OVERWEIGHT AND OBESE ADULTS: SYSTEMATIC REVIEW AND META-ANALYSIS

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Background Risk behaviours (e.g. unhealthy diet, lack of physical activity (PA)) are associated with increased risk of chronic disease and mortality. The majority of adults in England engage in two or more risk behaviours, which tend to co-occur in individuals. There are also strong socio-economic gradients in key health behaviours. A systematic review of interventions targeting multiple risk behaviours (MRBs) in general adult populations found small improvements in diet, PA and smoking. In this systematic review, we aimed to evaluate the effectiveness of MRB interventions in overweight or obese adults (PROSPERO CRD42016051589).

Methods Six databases were searched up to October 2016 with no language restrictions, and references of relevant systematic reviews were screened. Randomised controlled trials (RCTs) of interventions targeting two or more risk behaviours in obese or overweight adults (≥ 16 years) were eligible if they reported behavioural outcomes. Quality of RCTs was assessed with the Cochrane risk of bias tool. Where possible, random-effects meta-analyses were conducted. Data not included in the meta-analyses were narratively synthesised. Associations between study factors and effectiveness were explored through meta-regression.

Results In total 4392 records were identified, 219 full texts screened and 51 RCTs included. All studies targeted diet and PA, with weight management the most common objective. This contrasts with our review in general adult populations which found smoking and alcohol were often targeted alongside diet and PA and the most common aim was healthy lifestyle promotion. Few interventions included components other than education, training and enablement. There were small changes in fruit and vegetable (MD 27.88 grams, 95% CI 13.01 to 42.76, $I^2=51.5\%$), fat (SMD -0.33, 95% CI -0.51 to -0.15, $I^2=87.7\%$) and calorie intake (MD -282.89, 95% CI -426.01 to -139.78, $I^2=91.6$) and total PA (SMD 0.21,

95% CI 0.01 to 0.41, $I^2=87.2\%$) at the end of interventions. Equivocal benefits were identified for other behavioural outcomes. Generally improvements declined at follow-up and when compared with an active control. We found no associations between study factors and effectiveness at the end of interventions.

Conclusion Interventions were effective for some behavioural outcomes in obese and overweight adults, but improvements were small and declined over time. Studies were limited in their approach, with most adopting ‘agentive’ strategies which make substantial demands on individuals to initiate and sustain behaviour change. Research is needed into alternative approaches which target the environmental conditions that influence health behaviours and make healthier choices easier for individuals.

OP110 BODY MASS INDEX TRAJECTORIES AND PROSTATE CANCER RISK IN THE EPICAP STUDY

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Background High body mass index (BMI) has been inconsistently associated with prostate cancer (PCa) risk. Recent studies suggest that BMI trajectory modeling provides a more robust substitute method to predict cancer risk compared to static measures of BMI. However, only four studies have investigated lifetime BMI and PCa risk. We analyzed the effects of life course BMI trajectories on PCa risk based on data from the Epidemiological study of Prostate Cancer (EPICAP).

Methods EPICAP is a French population-based case-control study that enrolled 819 incident cases of PCa diagnosed in 2012 and 2013, aged less than 75 years old and residing in the d  partement of H  rault, France. Controls were 879 age-matched men living in the same geographic area. Face to face interviews, using a standardized computerized questionnaire, gathered information about socio-demographic characteristics, medical history, lifestyle factors, physical activity, residential and occupational history. Anthropometric indicators have been collected through the questionnaire (self-report of height at 18 years old and weight every decades) or anthropometric measures at time of interview (height, weight, waist and hip circumferences). BMI trajectories were determined using group-based trajectory modeling to identify groups of men with similar patterns of BMI change through adulthood. Logistic regression models were used to assess odds ratios (ORs) for the associations between BMI trajectories and PCa risk. Analyses were systematically adjusted for age, family history of PCa and ethnicity. Stratified analyses were conducted by PCa aggressiveness according to the Gleason score. Seeking for relevant interaction between smoking status and BMI trajectories and given that smoking is a major risk factor for many types of cancer, known to decrease obesity, we performed stratified analyses according to smoking status.

Results We identified four BMI trajectories groups: ‘stable normal BMI’ (29.7%), ‘normal BMI to overweight’ (50.7%), ‘normal BMI to obesity’ (17.4%) and ‘overweight to obesity’ (2.2%). Men who had a BMI in the normal range at age 20