

The effectiveness and cost-effectiveness of a very brief pedometer-based intervention (Step it Up) delivered as part of the NHS Health Check: The VBI trial

Jo Mitchell¹, Sally Pears¹, Wendy Hardeman², Joana Vasconcelos³, Toby Prevost³, Vijay GC², Ed Wilson¹, Stephen Sutton¹ on behalf of the VBI programme team.
University of Cambridge¹, University of East Anglia², Imperial College, London³

Context:

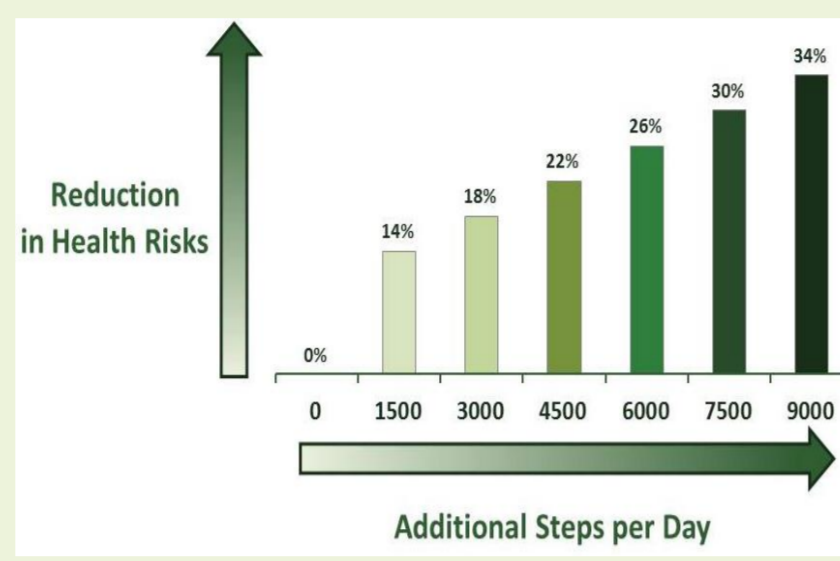
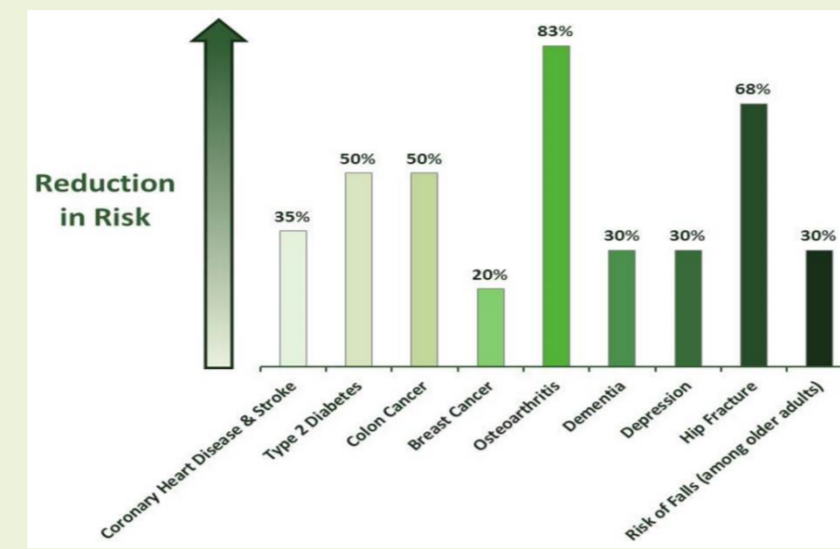
Regular physical activity reduces the risk of developing a number of health problems.

Walking an extra 1,500 steps a day could result in a 14% reduction in health risks.¹

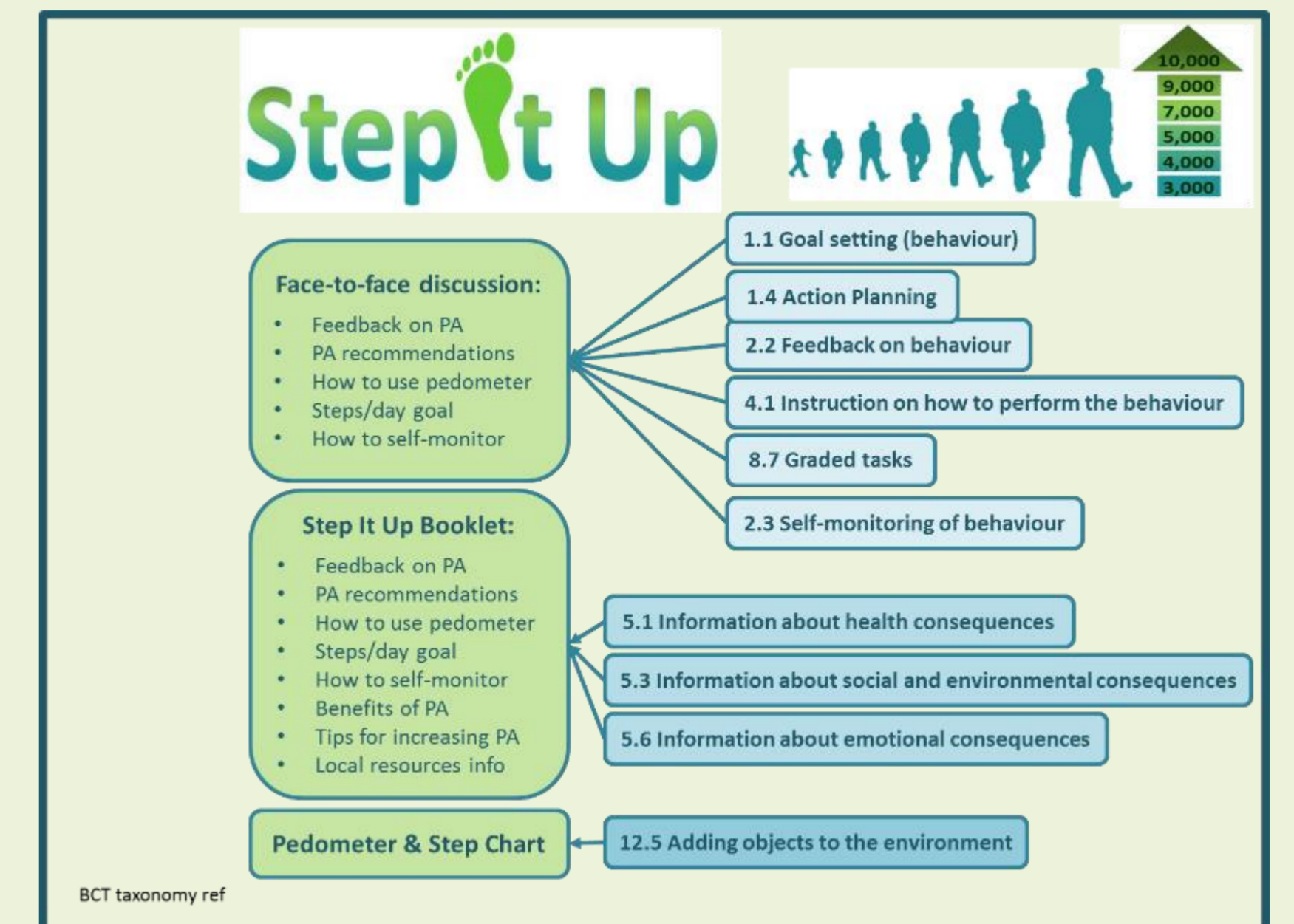
Indirect and direct costs of physical inactivity amount to £1.06 billion annually.²

Interventions can be effective in increasing physical activity³ but not much is known about very brief interventions of 5 minutes or less and whether they could be effective in general health settings such as the NHS Health Check.

NHS Health Checks offer vascular risk assessment and appropriate risk management to the adult population between the ages of 40 and 74 years.⁴

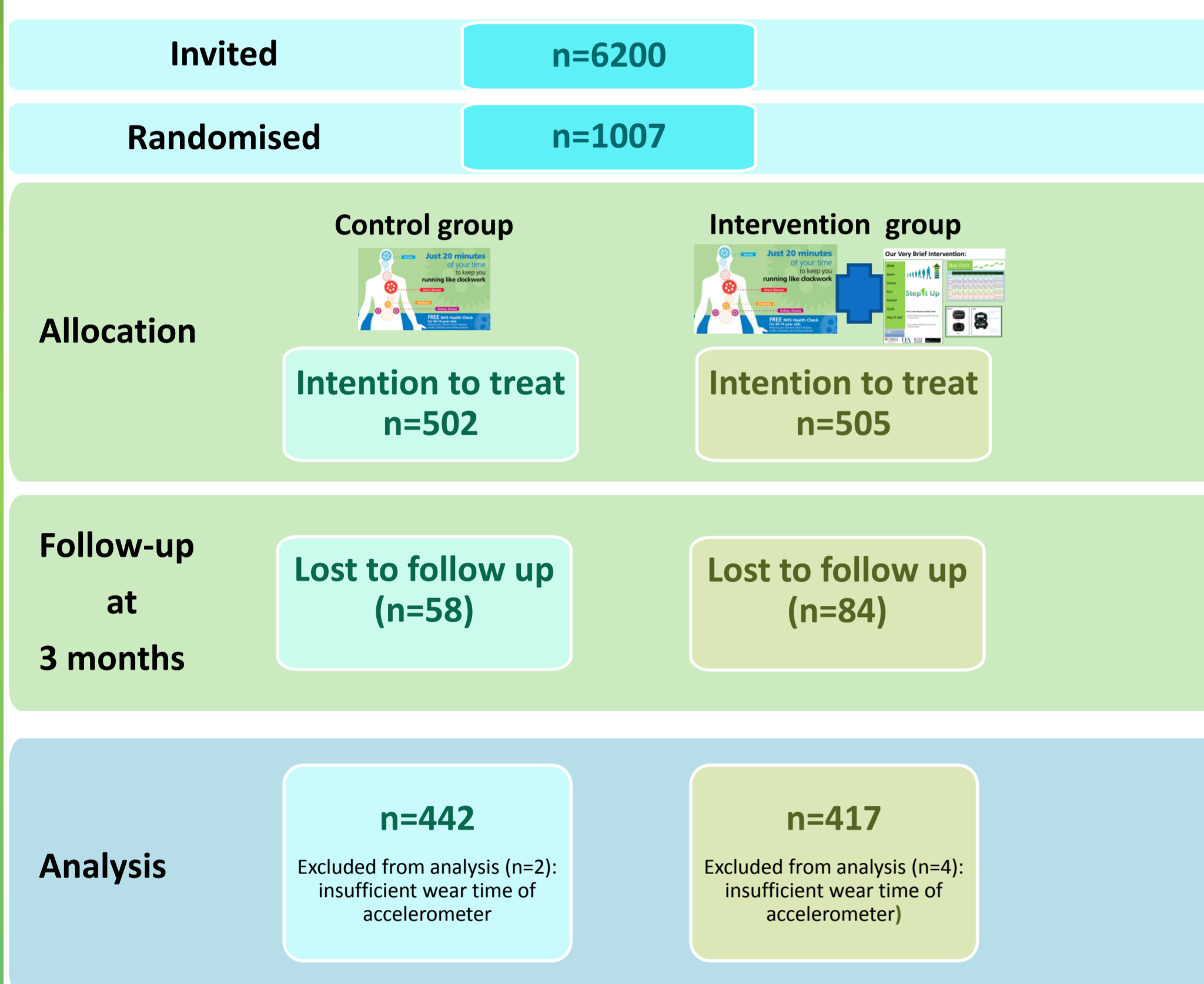


Behaviour Change Techniques (BCTs)⁵ of the Step it Up Intervention



Results:

The CONSORT Diagram:



Baseline characteristics of participants allocated to intervention or control (values are percentages (numbers) unless otherwise stated)

	CONTROL n=502	INTERVENTION n=505
Median (IQR) cardiovascular disease risk score	6.45% (2.76%, 11.34%)	6.30% (2.40%, 10.89%)
Physical Activity status (GPPAQ)		
Inactive	12.5 (63)	13.7 (69)
Moderately inactive	19.3 (97)	16 (81)
Moderately active	35.1 (176)	35.2 (178)
Active	33.1 (166)	35 (177)

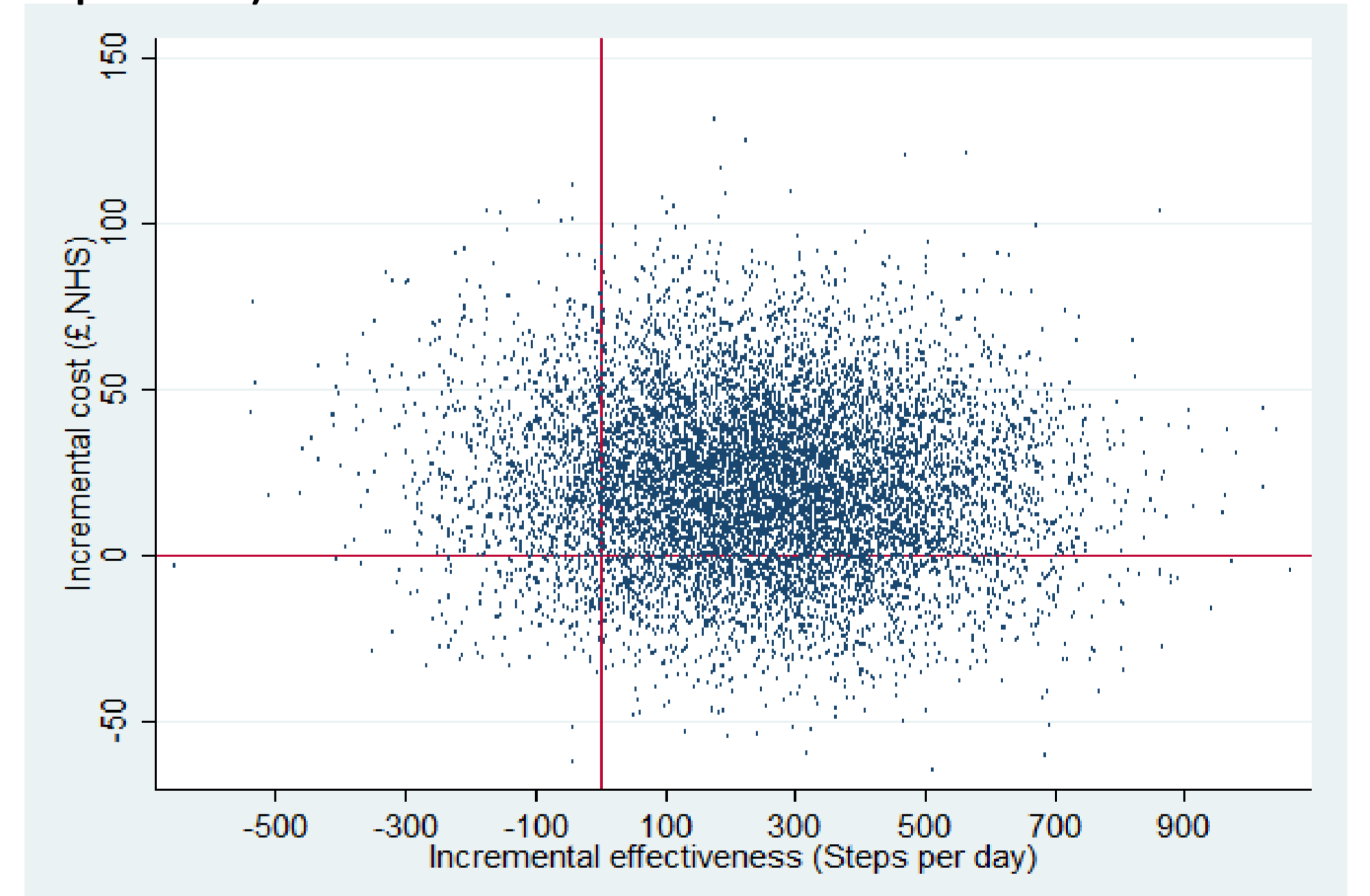
Study group and between-group differences at three-months follow-up of objectively measured physical activity and cost-effectiveness

	Control		Intervention		Intervention relative to control	
	N	Mean (95% CI)*	N	Mean (95% CI)	Comparison of means**	p-value
Accelerometer counts per minute	442	660 (641, 679)	417	668 (648, 689)	8.8 (-18.7, 36.3)	0.53
Step counts per day	442	8191 (7911, 8471)	417	8419 (8110, 8729)	242 (-172, 656)	0.25
Time (min/day) in moderate or vigorous activity	442	77.0 (73.8, 80.3)	417	77.1 (73.7, 80.6)	0.9% (-4.9%, 7.2%)	0.76
Time (min/day) in vigorous activity	442	2.9 (2.6, 3.2)	417	3.2 (2.9, 3.6)	11.9% (-2.9%, 28.8%)	0.12
Time (min/day) in moderate activity	442	71.8 (68.9, 74.8)	417	72.0 (68.8, 75.2)	0.3% (-5.4%, 6.5%)	0.91
Cost per participant	440	£ 101.45	417	£120.84	£ 21.55 (-25 to 69)	0.37
Incremental cost-effectiveness ratio (additional cost per 1000 steps)	£ 89.05 (incremental cost / incremental step counts × 1000)					

Recall of the very brief intervention

	Control n=442	Intervention n=420	p-value
Physical activity was mentioned in my Health Check	82% (359/437)	95% (392/415)	p<0.001
I was given advice about how to become more active	39% (168/434)	72% (296/410)	p<0.001
At my Health Check I was given a booklet called 'Step it Up' and a pedometer	6% (27/437)	93% (379/406)	p<0.001
If yes, I read the booklet	51% (28/55)	90% (346/385)	p<0.001
If yes, I still have the booklet	37% (20/54)	80% (306/383)	p<0.001
Since my Health Check I have used a pedometer to count steps	15% (64/435)	88% (368/417)	p<0.001
Since my Health Check I have written down my step counts	5% (24/437)	68% (281/415)	p<0.001
Since my Health Check I have set myself goals to increase my physical activity	31% (134/435)	49% (202/415)	p<0.001
Since my Health Check I have thought about the benefits of physical activity	82% (357/437)	90% (376/416)	p<0.001

Bootstrap results on the cost-effectiveness plane (based on 10,000 replications)



Discussion:

This was a high-quality trial: well-balanced sample, 85% retention, no differential dropout, objective measure.

Step it Up did not result in higher levels of objective and self-reported physical activity at three months than the NHS Health Check alone even though recall of physical activity discussions were higher in the intervention group than in the control group. The cost of delivering the Step it Up intervention was £18 per participant. There was no significant difference in NHS resource use between study groups.

Potential explanations:

- Insufficient fidelity of delivery, however process evaluation of the same VBI in the preliminary trial⁶ suggests that feasibility, acceptability and fidelity are unlikely to explain the findings of this trial) – fidelity assessment for the main trial is ongoing.
- We recruited an already physically active sample:
 - Based on the physical activity assessment during the NHS Health Check, only 31% of our participants were reported to be (moderately) inactive.
 - Compared to the PACE-Lift trial⁷ (a trial of a pedometer-based intervention in primary care) our participants were more active.
 - Our control group is the best estimate of baseline physical activity in our cohort; the average person walks between 3,000 and 4,000 steps per day.⁸

Based on the objective physical activity measures, our findings do not support commissioning of a very brief pedometer-based intervention as part of NHS Health Checks. There is also no significant difference in costs but the 'most plausible' point estimate of the Incremental Cost Effectiveness Ratio is slightly in favour of Step it Up, thus doing something could be better than doing nothing.

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