Supplementary Online Content

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eTable 1. Database Search Strategies

eTable 2. Summary of Participant Characteristics by Study

eTable 3. Summary of Intervention Characteristics by Study

eFigure 1. Risk of Bias Assessments Study-by-Study

eFigure 2. Forest Plot of Accelerometer vs Pedometer Use

eFigure 3. Forest Plot of Pedometer Use on Mean Difference Scale

eFigure 4. Cumulative Forest Plot of PA Performance Based on Total PA Engagement Time (Combined by Total Minutes)

eFigure 5. Forest Plot of Secondary Physical Activity Measures

eFigure 6. Individual Funnel Plots of Accelerometer and Pedometer

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eTable 1 – Database search strategies

CENTRAL

1	Cardiovascular Diseases/	6666
2	(cardiovascular adj1 disease$).tw.	13433
3	cardiovascular risk factor$.tw.	3887
4	exp heart diseases/	45369
5	exp Coronary Artery Bypass/	5197
6	exp Myocardial Revascularization/	8863
7	exp heart transplantation/	644
8	Percutaneous Coronary Intervention/ or Angioplasty, Balloon, Coronary/	4942
9	Heart Valve Prosthesis/	508
10	Pulmonary embolism/	837
11	((myocardial or cardiac or heart) adj2 (infarct* or isch?emi*)).tw.	26477
12	(coronary adj2 (syndrome* or disease* or event* or occlusion* or stenos* or thrombo*)).tw.	20888
13	(myocard* adj2 revasculari?ation).tw.	846

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14	(STEMI or NSTEMI).tw.	2624
15	(ST adj2 (elevat* or depress*)).tw.	5979
16	"heart transplant*".tw.	1057
17	angina.tw.	8967
18	(heart adj2 (failure or attack or bypass or disease*)).tw.	29448
19	((heart or cardiac or myocard*) adj2 (fail* or insufficien* or decomp*)).tw.	19588
20	(HFpEF or HFrEF or left ventricular ejection fraction or ((preserved or reduced) adj ejection fraction)).tw.	5359
21	(LV dysfunction or (diastolic adj (dysfunction* or failure*)) or (systolic adj (dysfunction* or failure*))).tw.	1801
22	pulmonary embolism*.tw.	2259
23	CABG.tw.	3948
24	(coronary adj2 bypass).tw.	7925
25	PTCA.tw.	942
26	angioplast*.tw.	4529
27	PCI.tw.	5751
28	(Percutaneous adj2 intervention*).tw.	6769

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29	(stent* adj3 (heart or cardiac*)).tw.	192
30	(heart valve adj1 (device* or artificial or prosthesis)).tw.	23
31	cardiomyopath*.tw.	2561
32	cardiovascular disease*.tw.	13341
33	or/1-32	104233
34	Diabetes mellitus/	6971
35	diabet*.ti.	39648
36	exp Diabetes Mellitus, Type 2/	14550
37	((type 2 or type ii) adj2 diabet*).ti,ab.	24572
38	((non insulin* depend* or non insulin* depend* or non-insulin?depend* or non insulin?depend*) adj1 diabet*).ti,ab.	1299
39	(T2DM or T2D or TIIDM or TIID or NIDDM or MODY or MODM or AODM).ti,ab.	7104
40	((obes* or overweight) adj5 diabet*).ti,ab.	4094
41	prediabetic state/	676
42	(prediabetes or pre diabetes or raised glucose intolerance or impaired glucose level$ or impaired glucose tolerance or IGT or impaired fasting glucose or IFT or FPG or fasting plasma glucose or impaired glucose regulation or impaired glucose metabolism or raised glycated haemoglobin or raised glycated hemoglobin or high glycated Hb or hyperglycaemia or hyperglycemia).tw.	10228

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43	((prevent* or avoid* or delay* or decreas* or reduc*) adj2 (type II diabetes or type 2 diabetes or T2D or DM or diabetes)).ti,ab.	3002
44	or/34-43	52660
45	exp Obesity/	11511
46	Obese.tw.	16888
47	exp Overweight/	12889
48	(BMI or body mass index).af.	38142
49	Weight gain/	2192
50	(Overweight or over weight or obesity or adipose).af.	32039
51	exp Obesity/pc	70
52	(body mass index or BMI).mp.	38140
53	or/45-52	59193
54	Randomized Controlled Trial/	139
55	Clinical Trial/	36
56	randomized controlled trial.pt. or randomised controlled trial.mp. [mp=title, original title, abstract, mesh headings, heading words, keyword]	475978
57	controlled clinical trial.pt.	90577

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58	trial*.ti,ab.	461899
59	or/54-58	792878
60	pedomet*.mp.	1158
61	((step* or walk*) adj2 (count* or sensor or meter)).ti,ab.	1023
62	Accelerometry/ or (accelerom* or actimeter or actigraph or actiwatch or GT3X).ti,ab.	2916
63	((activit* or move* or motion or energy or exercise) adj2 (monitor* or sens* or detect* or count*)).tw.	4904
64	or/60-63	8948
65	33 or 44 or 53	190184
66	59 and 64 and 65	1235
67	limit 66 to (yr="2000 -Current")	955

MEDLINE

1	Cardiovascular Diseases/	133684
2	(cardiovascular adj1 disease$).tw.	126766
3	cardiovascular risk factor$.tw.	27611
4	exp heart diseases/	1054821
5	exp Coronary Artery Bypass/	50410

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6	exp Myocardial Revascularization/	88324
7	exp heart transplantation/	33677
8	Percutaneous Coronary Intervention/ or Angioplasty, Balloon, Coronary/	47242
9	Heart Valve Prosthesis/	32984
10	Pulmonary embolism/	36617
11	((myocardial or cardiac or heart) adj2 (infarct* or isch?emi*)).tw.	220446
12	(coronary adj2 (syndrome* or disease* or event* or occlusion* or stenos* or thrombo*)).tw.	163423
13	(myocard* adj2 revasculari?ation).tw.	5030
14	(STEMI or NSTEMI).tw.	8127
15	(ST adj2 (elevat* or depress*)).tw.	26366
16	"heart transplant*".tw.	19363
17	angina.tw.	46983
18	(heart adj2 (failure or attack or bypass or disease*)).tw.	263874
19	((heart or cardiac or myocard*) adj2 (fail* or insufficien* or decomp*)).tw.	148299
20	(HFpEF or HFrEF or left ventricular ejection fraction or ((preserved or reduced) adj ejection fraction)).tw.	23398
21	(LV dysfunction or (diastolic adj (dysfunction* or failure*)) or (systolic adj (dysfunction* or failure*))).tw.	15648
22	pulmonary embolism*.tw.	26641
23	CABG.tw.	14577
24	(coronary adj2 bypass).tw.	40893

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25	PTCA.tw.	6155
26	angioplast*.tw.	38670
27	PCI.tw.	18356
28	(Percutaneous adj2 intervention*).tw.	27045
29	(stent* adj3 (heart or cardiac*)).tw.	713
30	(heart valve adj1 (device* or artificial or prosthesis)).tw.	640
31	cardiomyopath*.tw.	56776
32	cardiovascular disease*.tw.	126481
33	or/1-32	1431773
34	Diabetes mellitus/	110003
35	diabet*.ti.	275754
36	exp Diabetes Mellitus, Type 2/	118032
37	((type 2 or type ii) adj2 diabet*).ti,ab.	104502
38	((non insulin* depend* or non insulin* depend* or non-insulin?depend* or non insulin?depend*) adj1 diabet*).ti,ab.	9765
39	(T2DM or T2D or TIIDM or TIID or NIDDM or MODY or MODM or AODM).ti,ab.	24874
40	((obes* or overweight) adj5 diabet*).ti,ab.	33363
41	prediabetic state/	5828

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42	(prediabetes or pre diabetes or raised glucose intolerance or impaired glucose level$ or impaired glucose tolerance or IGT or impaired fasting glucose or IFT or FPG or fasting plasma glucose or impaired glucose regulation or impaired glucose metabolism or raised glycated haemoglobin or raised glycated hemoglobin or high glycated Hb or hyperglycaemia or hyperglycemia).tw.	66538
43	((prevent* or avoid* or delay* or decreas* or reduc*) adj2 (type II diabetes or type 2 diabetes or T2D or DM or diabetes)).ti,ab.	10576
44	or/34-43	413403
45	exp Obesity/	190772
46	Obese.tw.	98427
47	exp Overweight/	196089
48	(BMI or body mass index).af.	215384
49	Weight gain/	29152
50	(Overweight or over weight or obesity or adipose).af.	359886
51	exp Obesity/pc	17490
52	(body mass index or BMI).mp.	214547
53	or/45-52	512732
54	Randomized Controlled Trial/	471246
55	Clinical Trial/	512920
56	randomized controlled trial.pt. or randomised controlled trial.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	474589
57	controlled clinical trial.pt.	92735

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58	trial*.ti,ab.	782813
59	or/54-58	1314824
60	pedomet*.mp.	2066
61	((step* or walk*) adj2 (count* or sensor or meter)).ti,ab.	2186
62	Accelerometry/ or (accelerom* or actimeter or actigraph or actiwatch or GT3X).ti,ab.	12575
63	((activit* or move* or motion or energy or exercise) adj2 (monitor* or sens* or detect* or count*)).tw.	57550
64	or/60-63	71232
65	33 or 44 or 53	2151515
66	59 and 64 and 65	1221
67	limit 66 to (abstracts and english language and yr="2000 -Current")	884

EMBASE

1	Cardiovascular Diseases/	27934
2	(cardiovascular adj1 disease$).tw.	210253
3	cardiovascular risk factor$.tw.	48502
4	exp heart diseases/	1574118
5	exp Coronary Artery Bypass/	65821
6	exp Myocardial Revascularization/	28857

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7	exp heart transplantation/	58769
8	Percutaneous Coronary Intervention/ or Angioplasty, Balloon, Coronary/	90210
9	Heart Valve Prosthesis/	17362
10	Pulmonary embolism/	16190
11	((myocardial or cardiac or heart) adj2 (infarct* or isch?emi*)).tw.	316111
12	(coronary adj2 (syndrome* or disease* or event* or occlusion* or stenos* or thrombo*)).tw.	255427
13	(myocard* adj2 revasculari?ation).tw.	6419
14	(STEMI or NSTEMI).tw.	26241
15	(ST adj2 (elevat* or depress*)).tw.	49357
16	"heart transplant*".tw.	33742
17	angina.tw.	64386
18	(heart adj2 (failure or attack or bypass or disease*)).tw.	419907
19	((heart or cardiac or myocard*) adj2 (fail* or insufficien* or decomp*)).tw.	258415
20	(HFpEF or HFrEF or left ventricular ejection fraction or ((preserved or reduced) adj ejection fraction)).tw.	49745
21	(LV dysfunction or (diastolic adj (dysfunction* or failure*)) or (systolic adj (dysfunction* or failure*))).tw.	35292
22	pulmonary embolism*.tw.	42992
23	CABG.tw.	29163
24	(coronary adj2 bypass).tw.	57224
25	PTCA.tw.	8314

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26	angioplast*.tw.	57039
27	PCI.tw.	49938
28	(Percutaneous adj2 intervention*).tw.	55644
29	(stent* adj3 (heart or cardiac*)).tw.	1414
30	(heart valve adj1 (device* or artificial or prosthesis)).tw.	676
31	cardiomyopath*.tw.	96522
32	cardiovascular disease*.tw.	209710
33	or/1-32	2034903
34	Diabetes mellitus/	478943
35	diabet*.ti.	392808
36	exp Diabetes Mellitus, Type 2/	222272
37	((type 2 or type ii) adj2 diabet*).ti,ab.	193955
38	((non insulin* depend* or non insulin* depend* or non-insulin?depend* or non insulin?depend*) adj1 diabet*).ti,ab.	11477
39	(T2DM or T2D or TIIDM or TIID or NIDDM or MODY or MODM or AODM).ti,ab.	54243
40	((obes* or overweight) adj5 diabet*).ti,ab.	59023
41	prediabetic state/	10060
42	(prediabetes or pre diabetes or raised glucose intolerance or impaired glucose level$ or impaired glucose tolerance or IGT or impaired fasting glucose or IFT or FPG or fasting plasma glucose or impaired glucose regulation or impaired glucose metabolism or raised glycated haemoglobin or raised glycated hemoglobin or high glycated Hb or hyperglycaemia or hyperglycemia).tw.	111078

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43	((prevent* or avoid* or delay* or decreas* or reduc*) adj2 (type II diabetes or type 2 diabetes or T2D or DM or diabetes)).ti,ab.	17475
44	or/34-43	852436
45	exp Obesity/	446884
46	Obese.tw.	170709
47	exp Overweight/	446884
48	(BMI or body mass index).af.	383309
49	Weight gain/	88145
50	(Overweight or over weight or obesity or adipose).af.	568723
51	exp Obesity/pc	14621
52	(body mass index or BMI).mp.	380105
53	or/45-52	902769
54	Randomized Controlled Trial/	520242
55	Clinical Trial/	941000
56	randomized controlled trial.pt. or randomised controlled trial.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]	26730
57	controlled clinical trial.tw.	14567
58	trial*.ti,ab.	1244572
59	or/54-58	1968678
60	pedomet*.mp.	3611

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61	((step* or walk*) adj2 (count* or sensor or meter)).ti,ab.	4310
62	Accelerometry/ or (accelerom* or actimeter or actigraph or actiwatch or GT3X).ti,ab.	20037
63	((activit* or move* or motion or energy or exercise) adj2 (monitor* or sens* or detect* or count*)).tw.	75480
64	or/60-63	98146
65	33 or 44 or 53	3254734
66	59 and 64 and 65	1119
67	limit 66 to (yr="2000 -Current")	896

PsycINFO

1	(cardiovascular adj1 disease$).tw.	10610
2	cardiovascular risk factor$.tw.	2127
3	((myocardial or cardiac or heart) adj2 (infarct* or isch?emi*)).tw.	5502
4	(coronary adj2 (syndrome* or disease* or event* or occlusion* or stenos* or thrombo*)).tw.	6968
5	(myocard* adj2 revasculari?ation).tw.	27
6	(STEMI or NSTEMI).tw.	43
7	(ST adj2 (elevat* or depress*)).tw.	178
8	"heart transplant*".tw.	357

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9	angina.tw.	1043
10	(heart adj2 (failure or attack or bypass or disease*)).tw.	13745
11	((heart or cardiac or myocard*) adj2 (fail* or insufficien* or decomp*)).tw.	3754
12	(HFpEF or HFrEF or left ventricular ejection fraction or ((preserved or reduced) adj ejection fraction)).tw.	263
13	(LV dysfunction or (diastolic adj (dysfunction* or failure*)) or (systolic adj (dysfunction* or failure*))).tw.	135
14	pulmonary embolism*.tw.	248
15	CABG.tw.	424
16	(coronary adj2 bypass).tw.	954
17	PTCA.tw.	52
18	angioplast*.tw.	338
19	PCI.tw.	552
20	(Percutaneous adj2 intervention*).tw.	214
21	(stent* adj3 (heart or cardiac*)).tw.	6
22	(heart valve adj1 (device* or artificial or prosthesis)).tw.	1
23	cardiomyopath*.tw.	740

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24	cardiovascular disease*.tw.	10571
25	Diabetes mellitus/	4974
26	diabet*.ti.	12939
27	((type 2 or type ii) adj2 diabet*).ti,ab.	7099
28	((non insulin* depend* or non insulin* depend* or non-insulin?depend* or non insulin?depend*) adj1 diabet*).ti,ab.	185
29	(T2DM or T2D or TIIDM or TIID or NIDDM or MODY or MODM or AODM).ti,ab.	1278
30	((obes* or overweight) adj5 diabet*).ti,ab.	2401
31	(prediabetes or pre diabetes or raised glucose intolerance or impaired glucose level$ or impaired glucose tolerance or IGT or impaired fasting glucose or IFT or FPG or fasting plasma glucose or impaired glucose regulation or impaired glucose metabolism or raised glycated haemoglobin or raised glycated hemoglobin or high glycated Hb or hyperglycaemia or hyperglycemia).tw.	3307
32	((prevent* or avoid* or delay* or decreas* or reduc*) adj2 (type II diabetes or type 2 diabetes or T2D or DM or diabetes)).ti,ab.	998
33	exp Obesity/	22507
34	Obese.tw.	15153
35	exp Overweight/	23747
36	(BMI or body mass index).af.	51999
37	Weight gain/	2873

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38	(Overweight or over weight or obesity or adipose).af.	115429
39	(body mass index or BMI).mp.	24864
40	Clinical Trial/	11150
41	randomized controlled trial.pt. or randomised controlled trial.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	3123
42	trial*.ti,ab.	166288
43	pedomet*.mp.	801
44	((step* or walk*) adj2 (count* or sensor or meter)).ti,ab.	647
45	Accelerometry/ or (accelerom* or actimeter or actigraph or actiwatch or GT3X).ti,ab.	3449
46	((activit* or move* or motion or energy or exercise) adj2 (monitor* or sens* or detect* or count*)).tw.	11302
47	or/43-46	15379
48	or/1-39	167632
49	or/40-42	167428
50	47 and 48 and 49	387
51	limit 50 to (yr="2000 -Current")	377

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eTable 2 - Summary of participant characteristics by study

	Study author	No. of participants in trial	Location	Age of participants (mean (SD)) years	Gender of participants (%)	Ethnicity	Target population for study recruitment	Multimorbidity or other health issues at baseline
Pedometer:	Anderson 2015	38	US	57 (10.8)	Int: 3/18 (17% F) Con: 8/20 (40% F)	57% white	Coronary artery disease	No
	Araiza 2006	30	Mexico	Int: 49 (11); Con: 51 (10)	NR	NR	Type 2 diabetes mellitus diagnosed	No
	Borland 2014	48	Sweden	Int: 70 (6) Con: 71 (9)	Int: 20/5 (M/F) Con: 18/5 (M/F)	NA	Chronic heart failure class II-III	Yes
	Bjorgaas 2008	48	Norway	Int: 56.4 (11); Con: 61.2 (9.7)	Int: 9/14 (F/M); Con: 8/17 (F/M)	NR	Type 2 diabetes diagnosed (Under 80 years)	Int (6/23), Con (8/25) had other metabolic disease(s) but were none reported
	Cayir 2015	84	Turkey	Int: 41.1 (9.3); Con: 38.8 (11.2)	100% Female	NR	Obese	No
	Cupples 2013	45	UK	Int: 61.6 (11.3); Con: 59.2 (8.9)	91% Male	NR	Cardiac rehabilitated participants	No
	Dasgupta 2017	347	Canada	Int: 60 (11.2); Con: 59.4 (11.4)	Int: 56.9%F Con: 52.6%F	Int: 63.6% white; Con: 57% white	Type 2 diabetes or hypertension or both	No
	De Greef 2010	41	Belgium	NR	68% Male	NR	Type 2 diabetes diagnosed over 6 months	No
	De Greef 2011*	47	Belgium	Overall: 67.4 (9.3)	70.1% Male; 29.9% Female	NR	Type 2 diabetes diagnosed	No

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	Diedrich 2010	32	US	Int: 56.68 (13.62); Con: 54.88 (9.79)	NR	NR	Type 2 diabetes diagnosed	No
	Engel 2006	50	Australia	Int: 60.5 (7.34); Con: 64 (6.76)	Int: 13M, 11F; Con: 15M, 15F	NR	Type 2 diagnosed	High number of obese participants included
	Fayehun 2018	46	Nigeria	NR	63% Female; 37% Male	91.3% Yoruba, 8.7% others	Type 2 diabetes mellitus diagnosed	No
	Izawa 2012	126	Japan	Int: 59.2 (8.2) Con: 59.1 (12.8)	Int: 79%, Con: 82% Male	NA	Cardiac rehabilitation	No
	Katzmarzyk 2011	43	US	Int: 52.7 (8.8); Con: 50.3 (7.7)	Int: 20%M; Con: 13%M	Int: 70% White; Con: 73.9% white	Overweight/Obese (BMI 25-35)	No
	Reid 2011	223	Canada	56.4 (9)	188/223 (84.3%) Male	NR	Acute coronary syndromes	Yes
	Tudor-Locke 2004	47	Canada	Overall: 52.7 (5.2)	26 male; 11 female	NR	Type 2 diagnosed (BMI 33.3 +/- 5.6)	No
	Van Dyck 2013	92	Belgium	Overall: 62 (9)	69% male	NR	Type 2 diagnosed > 5 years and BMI 30 +/- 2.8	Yes
Accelerometer:	Baillot 2018	25	Canada	Int: 44.5 (8.8); UC: 41.1 (10.3)	Int: 84.6%F; UC: 75%F	NR	Obese patients (BMI > 35 kg/m2) and comorbidities	Yes
	Christle 2017	70	Germany	70 (9)	28/70 (39)F	NR	Cardiac disease	Yes
	Cowie 2011	60	UK (Scotland)	66 (Range: 35-85)	51 (85%)/9 (15%) M/F	NR	Chronic heart failure class II-III	Yes
	De Greef 2011	67	Belgium	Overall: 62 (IQR 9)	69% Male	NR	Type 2 diabetes diagnosed	No
	Devi 2014	94	UK	Int: 66.3 (8.3) Con: 66.2 (10.1)	Int: 14/35 (39%)F Con: 14/35 (39%)F	Int: 92% Con: 91%	Coronary heart disease	No
	Frederix 2015	139	Belgium	61 (9)	25/139 (18%) F	No	Coronary artery disease or heart failure	Yes

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	Greaney 2017	181	US	Int: 36.62 (5.07); UC: 35.62 (5.76)	100% female	100% Black	Overweight/Obese (Low SES black women)	No
	Guiraud 2012	29	France	57.4 (12.4)	5/29 (17%)F	NR	Coronary artery disease or heart failure	Yes
	Holliday 2018	19	UK	Overall: 41 (2)	100% Female	NR	Overweight/Obese	No
	Houle 2011/12	65	Canada	Int: 58 (8) Con: 59 (9)	14/65 (21.5%)F	NR	Acute coronary syndrome	No
	Kirk 2009	127	UK	Int1: 60.9 (9.6); Int2: 63.2 (10.6); UC: 59.2 (10.4)	Int1: 53%M/47%F; Int2: 42%/58%; UC: 51%/49%	NA	Type 2 diabetes	No
	Miyamoto 2017	31	Japan	LPA: 61.7 (1.9); N-LPA: 60 (3.1); Con: 60.2 (3)	LPA: 9M/2F; N-LPA: 9M/3F; Con: 8M/2F	NA	More than 1 year after diagnosis of type 2 diabetes	No
	Paschali 2005	26	US	Int: 48.8 (6.1); Con: 47 (7.2)	53% female in each group	NR	Obese adults with type 2 diabetes	No
	Pekmezi 2017	76	US	Overall: 57 (4.7)	100% Female	100% African American women	Overweight/Obese	No
	Ribeiro 2017	138	Portugal	Int: 54 (9) Con: 58 (9)	Int: 23/71 (32%)F Con: 20/67 (30%)F	NR	Myocardial infarction	Yes
	Unick 2016	1763	US	Overall: 59.3 (6.85)	55.8% Female	19.6% African American, 0.75% native American, 0.71% Asian/pacific islander, 5.04% Hispanic/Latino, 71.6% non-Hispanic white,	Diabetes type 2 diagnosed	15.2% had a history of CVD

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						2.29% other/multiple		
	Unick 2017	235	US	Overall: 59.7 (6.8)	55% female	76% Caucasian	Diabetes type 2 and BMI (35.5 +/- 5.9)	No
	Yates 2017	571	UK	Overall: 62.6 (8.2)	65.5% Male	86.8% White European	Individuals aged between 18 and 74 years of age were inclusive if they score above the 90th percentile on the risk calculator (a non-invasive risk calculator for risk of developing type 2 dm in subjects)	Unclear
	Young 2016	105	US (Nebraska)	70.2 (12.2)	70/105 (67%)F	95% White	Heart failure (Class II-IV)	Yes

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eTable 3 – Summary of intervention characteristics by study

	Study author	Aims of intervention	Theoretical approach	Intervention components	Control components	Delivery method (including format and provider)	Number of sessions (time of each session)	Length of intervention (weeks)	Goals setting and uptake
Pedometer:	Anderson 2015	To evaluated the effect of pedometer tracking on exercise adherence among post-Cardiac rehabilitation patients in a randomized study with control participants engaging in usual care	NR	Pedometer worn daily with log book use to record steps	NR	Unsupervised pedometer tracking after CR is complete. By specialist staff	1 at the beginning of the study	12	NA NR
	Araiza 2006	Determine whether a recommendation to accumulate 10,000 steps per day would result in significant improvements in parameters of glycaemic	NA	Each participants wore a pedometer throughout the day and was trained how to use it. Pedometers were	Instructed to maintain their normal activity habits throughout the 6 week intervention	In active group participants were instructed to walk 10,000 steps on 5 or more days of the week for 6 weeks.	NA - self monitored	6	NA NR

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		control, insulin sensitivity, cardiovascular risk and oxidative stress in sedentary patients with type 2 diabetes		positioned on the waist. Steps were recorded in an activity log.					
	Borland 2014	To investigate the impact of group-based exercise on physical activity levels in patients with coronary heart failure (CHF)	NA	Participants instructed to wear the pedometer throughout the day an register the steps on a log sheet at bedtime	Participants asked to continue with usual lives	Device attached at waist for 7 days at baseline and at 3 months	Group-based exercise programme comprised 60-min sessions twice a week for 3 months	12 weeks	NA NR
	Bjorgaas 2008	Determine whether regular used of pedometers increases walking and/or enhances health related beneficial effect in type 2 diabetic participants	NA	Pedometer and log book 3 weekdays twice per month	Participants were encouraged to increase the average daily time spent walking from one visit to another, guided by logbook	Participants meet FTF with study nurse baseline, 1 month, 3 months and 6 months	NR	26	Goals were set at every nurse meeting after baseline 68% completion rate amongst participants
	Cayir 2015	Whether or not pedometers as a motivational	NA	Intervention group given a low-calorie	Control group given a low-calorie diet	Face-to-face interviews with	NR	13	NA

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		technique can increase the levels of physical activity in Obese women and impact on weight loss		diet and exercise with pedometer. Daily steps were recorded through interviews at a 5-day intervals	and exercise (no pedometer)	facilitators at 15 day intervals			84% completion rate amongst participants
	Cupples 2013	Examine the use of pedometer step count goals to promote physical activity for cardiac rehabilitation patients	NA	Pedometer, dairy to record step counts with feedback from facilitator	Facilitator recorded baseline pedometer data but no feedback information was given	Face-to-face or by telephone, facilitator contact made weekly	Weekly contact with the facilitator	6	Gradual 10% increase in average daily count aiming for 10,000 steps/day 93% completion rate
	Dasgupta 2017	Impact of intervention on physical activity, but also gauge biological effects by evaluating several cardio-metabolic measures	NA	To achieve a net increase over baseline of 3000 steps/day over 1 year using a pedometer, step count log and step	Received advice to engage in 30 to 60 mins of activity daily, consistent with usual care	Participants were typically seen by their physician in a clinical setting 3-4 times over a 12-15 month period.	3-4 times over a 12-15 month period. Time per session unclear for intervention group, in control group they were engaged in	52	3000 steps/day increase over 1 year 79% completion rate

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				count prescription			30-40 mins of activity		
	De Greef 2010	Investigate the benefits of a pedometer and a cognitive behavioural intervention for promoting PA in type 2 diabetes patients	Cognitive-behavioural therapy	Received pedometer and a pedometer diary during intervention as motivational tools.	Received usual care from their endocrinologist and a single education session about type 2 diabetes and PA which was the same as the first session of the intervention group	Group meetings which involved motivational interviewing, then an implementation plan were developed with coaches.	90-min group meetings, first three given every 2 weeks, the last two sessions were given over interval of 3 and 4 weeks.	12	At each session coaches set new goals 75% compliance rate
	De Greef 2011*	Investigate whether a 12-week pedometer based PA intervention delivered by a trained GP individually can be as effective as group delivery by behavioural expert	NA	Pedometer and dairy to keep log of type of PA, duration and number of steps/day	No intervention, only received general care from GP	face-to-face delivery by GP or behaviour expert	90-min group counselling sessions over a 12 week period 9one session every 3 weeks). Participant in the GP delivered group received three 15-min FTF consultations	12	NA NR

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	Diedrich 2010	To see whether the self-help Manpo-Kei program can be a solution to promoting exercise in people with diabetes without adding significant content and activities to a diabetes self-management education (DSME) program	NR	Received a copy of the Manpo-Kei (guide to steps) book and concise handout summarizing the key points of the book and a pedometer	Attended usual DSME programs only	Initial FTF assessment by certified diabetes educators prior to attending first DSME program session. Questionnaires mailed out at 3 months. Telephone calls also made to participants to set up the follow-up appointment	DSME includes a 2 - hour assessment and 8 hours of group classes	13	NA 62% completion rate
	Engel 2006	Investigate the impact of using a pedometer on time spent walking	NR	Pedometer and exercise log to record the number of steps each day	Health-related coaching including behaviour change strategies to improve self efficiency like goal setting	6 face-to-face visits or contacts by facilitator during the 6 months of study	6 visits each the time varied	26	6000-8500 steps/d for healthy older adults and 3500-5500 steps/d for older adults with chronic illnesses were considered as goals

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	Fayehun 2018	To evaluate whether 10,000 steps per day is believed to be a reasonable estimate of daily activity for healthy adults	NA	Pedometer and manual record for recording daily step counts	Continued with typical daily activities	Face-to-face and telephone	Face-to-face counselling each week until they reached 10,000 steps per day, telephone follow-up was also given at weeks 2, 6 and 10.	10	To accumulate 10,000 steps per day for 10 weeks. 85% completion rate
	Izawa 2012	To evaluate the effect of a self-monitoring approach on physical activity begun during an acute phase I CR program and continued until the beginning of a phase II CR program	Trans theoretical model of exercise behaviour change	The Kenz Lifecorder EX records number of steps taken and after 8 days of continuous wear, the device was retrieved, and the data were downloaded into a computer	Usual daily physical activity measured	Self-monitoring meet with interventionist at beginning and end of trial	Results collected after 7 days of recording PA	1	NA 82% completion rate
	Katzmarzyk 2011	To assess whether a pedometer-based educational intervention	NA	Received the same educational materials, but were given the YAMAX	Education group only received a brochure detailing the importance of	Self-monitored daily with instructions to engage in usual activity then to	Participants recorded their daily steps in a log sheet	2	NA 80% completion rate

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		could increase MVPA in short term and to assess whether change in steps/day is associated with change in MVPA		Digi-Walker SW-200 pedometer to record steps	physical activity for maintaining health and guidance on how to increase physical activity	increase. Facilitator not involved in delivery of intervention			
	Reid 2011	To investigated whether patients who used the CardioFit programme were more physically active 6 and 12 months following hospitalization for CHD than patients who received physical activity advice from their cardiologist.	NA	Visited in hospital by exercise specialist, who present personal PA advice and how to use the CardioFit system	Received PA guidance from their attending cardiologist and an education booklet	Participant were asked to log daily activity on website and complete 5 online tutorials (at weeks 2, 4, 8, 14 and 20)	Online tutorials took place (at weeks 2, 4, 8, 14 and 20). Tutorial took about 10-20 mins to complete. Between tutorial participants received emails for motivation	52	NR 69% completion rate
	Tudor-Locke 2004	To assess if first step program is associate with improvements in physical activity (steps per day) and whether increased	Program based on theoretical principles of self-efficacy and social support	Pedometers provided and the program manual containing goal setting and problem solving	Received postcards thanking participants for taking part in the study.	Face-to-face assessments at meeting	Initial 4 weeks participants were asked to attend four weekly group meetings, remaining 12 weeks	16	Increase PA > 3000 steps/day 78% completion rate

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		physical activity was related to improvements in cardiovascular health, glycaemic control and lipid profiles		exercises, as well as calendars for self-monitoring steps/day			participants asked to use pedometers and calendars for goal setting and self-monitoring		
	Van Dyck 2013	Examine the effects of physical activity program were mediated by theoretical constructs targeted by the intervention, both post-intervention and at 1 year	Intervention based on self-determination theory and the transtheoretical model	Accelerometer, pedometer and IPAQ. Pedometer and accelerometer were worn at the waist during waking hours for 7 days. Activity log was used to record step taken and the type duration of walking activities	Unclear	Face-to-face session, pedometer use and seven phone calls (tailored motivational interviewing)	Telephone calls ranged from 15 to 20 min spread over a 24 week period	24	NA 96% completion rate
Accelerometer:	Baillot 2018	To compare changes from baseline to 1 year after bariatric surgery (BS) in PA, physical fitness, PA barriers, and	NR	Objectively measured PA was assessed with a accelerometer attached to the right hip during all	Non supervised exercise training before BS	Counselling sessions every 6-8 weeks before BS during at least 6 months with a dietitian and PA specialist.	The PreSET group underwent three weekly 80-min sessions consisting of 10-min of	12	NA 83% completion rate

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		quality of life between the pre-surgical exercise training (PreSET) and usual care groups		waking hours 7 days after the 1 years assessment. This data were collected in a diary completed daily by participants and then extracted using active life software.		IPAQ-SF questionnaire used to record number of minutes of walking, MVPA and sitting time during the last 7 days a self-reported by participants.	warm-up, 30 min of endurance activity at 55 to 85% heart rate, 20 to 30 min of strength exercises with small equipment and 10 min of a cool-down period, with monthly aqua-gym session, which lasted until 2 weeks before BS		
	Christle 2017	To compare 6-month individualised combined exercise (ICE) versus cardiac rehabilitation maintenance programs (CMP) on the effects on leisure and PA and HRQoL in elderly patients	NR	Accelerometer worn on the hip to measure number of steps and moderate PA over time	Performed exercise in a state-sanctioned cardiac rehabilitation group. This form of exercise-based secondary prevention is considered	Daily physical activity level was determined using the International Physical Activity Questionnaire (IPAQ) and triaxial accelerometry	ICE performed for approx. 60 mins and include 30 min of MVPA	26	NA 100% completion rate

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		with cardiac disease and low exercise capacity			phase III aftercare				
	Cowie 2011	To compare immediate and long-term effects of home and hospital-based aerobic exercise training upon PA level in heart failure, as measured by an accelerometer	NA	Accelerometer (ActivePal) attached to front thigh for one week. Participant encourage to do shuttle walk test	Advised to adhere to their usual heart failure nursing care and daily routines	The session was physiotherapist –led, while DVD and booklet was created for home group	1 hour aerobic exercise sessions for active intervention groups.	8	NR Training adherence: 86% hospital based and 77% home-based
	De Greef 2011	To promote PA and decreasing sedentary behaviour	Cognitive-behavioural therapy, the diabetes prevention program, the first step program and motivational interviewing	face-to-face session, a pedometer and telephone support	No intervention	face-to-face sessions and telephone support	Seven call into total and one interview	24	>10,000 steps/day 96% completion rate
	Devi 2014	To assess the clinical effectiveness of this independent Internet-delivered self-managed “rehabilitation”	MacNew: social and emotional scores	Primary outcome measured using an accelerometer	Continued with treatment as usual from their GP and received no further contact from researcher	Delivered via internet	Each session lasted 40 minutes.	6	Tailored goals focused on exercise 89% completed the 6-week follow-up

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		program in a population with chronic stable angina in a primary care setting			until the 6 week follow-up.				
	Frederix 2015	To assess medium-term effectiveness of a patient-specific, comprehensive cardiac tele-rehabilitation program in addition to standard ambulatory cardiac rehabilitation	NA	Yorbody accelerometer motion sensor used, internet-based tele-rehabilitation in addition to Centre-based rehabilitation	Centre-based rehabilitation alone	Psychologist aimed to improve patient self-efficiency to change prior lifestyle. SMS message sent out to provide motivational content	At least 2 exercise training sessions per week. Patients instructed to exercise for 45 to 60 mins per session	24	Predefined exercise training goal disseminated via SMS 90% complete the study as planned
	Greaney 2017	Examine the impact of the shape program, a weight gain prevention program designed for black overweight or obese women living in the rural South	Social cognitive theory with self-efficacy as primary mediator	Individuals randomized received, a) tailored behaviour change goals to promote the prevention of weight gain, skills training materials, weekly	Participants were mailed semi-annual newsletters during the intervention period. The newsletter covered general wellness topics but not	Coaching calls and motivational interviewing. Printed skills training material were provided to participants with assigned behaviour r change goals.	Measurements taken at baseline and 12 months. Sessions of PA were summaries into 1- and 10-min bouts of MVPA	52	Tailored behaviour change goals and step goals 62% completion rate

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				interactive voice response (IVR) telephone calls for self-monitoring, monthly telephone coaching from a registered dietitian and a no-cost 12 month membership to a YMCA facility of their choice	PA, nutrition of weight				
	Guiraud 2012	Assess the efficacy of a strategy, based on telephone support oriented by accelerometer measurements, on the adherence to PA recommendations in cardiac patients not achieving PA recommendations	NR	Accelerometer used to measure all PA outcomes	PA measured with accelerometer during the 8th week of testing period	PA measurements were recorded during a period of 2 months. Kinesiologist insisted on the importance of wearing the accelerometer. Each session was monitored by a physiotherapist	Patients participated in 45-minute fitness, gymnastics, relaxation, Qi Gong, or aquatic training sessions.	8	Goal setting for 2 weeks for EE outcome 69% of participants complete the trial

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						or kinesiologist and supervised by a cardiologist			
	Holliday 2018	Investigate the effect of a points based approach to PA on body weight and composition in inactive women who are overweight	NR	StructEx group undertake 5 x 30 min of moderate intensity exercise per week. PBPA group were provided with a table of examples of different activities each allocated a point's score. Point values were derived from MET scores	CONT condition were instructed to maintain their current lifestyle for 24 week study period	Self-report PA was recorded by participants using hard copy activity diary. PA points and minutes of exercise were recorded by those in both interventions groups with weekly totals calculated for monitoring. Objectively measured PA was assessed using the GT3X accelerometer (acti-graph, FL)	NR	24	NA 76% completion rate
	Houle 2011/12	To evaluate the impact of a home-based cardiac rehabilitation program led by a clinical nurse	Social cognitive theory framework	Participants given pedometer (Yamax Digiwalker SW-200), diary and	Provided with standard advice on PA at discharge	Intervention delivered FTF by clinical nurse specialist before hospital discharge	Follow-up sessions included one phone call within 2 weeks after discharge and	52	Intervention includes a goal setting element with target > 3,000

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		specialist on PA behaviour at 3, 6, 9 and 12 months after an acute coronary syndrome		information regarding PA after an acute coronary syndrome			5 FTF consultations (at 6 weeks and 3, 6, 9 and 12 months after the event). Sessions lasted between 30-60 mins		steps/d at baseline 69% completed the trial
	Kirk 2009	To assess whether those randomised to PA consultation delivered by a person or in written form increase PA levels over 6 and 12 months	Transtheoretical model of behaviour change	Self-instructional workbook included a pedometer	Received a two page information leaflet by Tayside Diabetes network.	FTF consultation, workbook, follow-up phone calls	30 min FTF consultation with trained researcher at baseline and 6 months	52	NA 87% completion rate
	Miyamoto 2017	Whether the use of tri-axial accelerometer can reduce sedentary time and increase non locomotive physical activity (LPA) and to investigate the effect of this intervention on	NA	All participants wore a tri-axial accelerometer during intervention period and were given verbal instruction regarding	No instruction given in control group regarding physical activity, they wore a accelerometer but display was turned off so they could not receive	Visual feedback given to intervention groups and encouragement was provided by physical therapist to increase PA	Face-to-face meeting at start of intervention and at 4- and 8- week follow-up examinations. Time at meetings unreported	12	NA 97% completion rate

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		parameters of glucose and fat metabolism in type 2 diabetes		their objectives	any visual feedback				
	Paschali 2005	To assess whether giving activity feedback to obese, sedentary adults with type 2 diabetes would improve their adherence to a home based walking program	NA	Home-based intervention where participants received a manual containing instructions on self-regulation of exercise intensity and on behavioural self-management. Focus on accelerometer data which was processed by computer	Counselling session has the same structure as intervention, but review of the past months exercise relied upon data in the subject diary	Participant received a manual at start of intervention. Individual counselling sessions with behaviour therapist structured sessions we provided	8 counselling sessions, length not reported	12	NA NR
	Pekmezi 2017	To assess whether women assigned to the Home-based, Individually-tailored Physical activity Print (HIPP)	Social cognitive theory and the transtheoretical model	Accusplit pedometers and activity logs provided to encourage self-monitoring of	Received mailings with cancer prevention information on topics other than PA. These were	For self-reported data participants wore accelerometers on their hip for 7 consecutive	Accelerometer worn at all times over the 7 days baseline. Contact time at 6 months not reported	26	Goal setting used to measure self-regulation nature of intervention

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		intervention would greater increase PA and related psychosocial variables at 6 months when compared with the control group		exercise behaviour.	received at time points identical to those of the intervention group	days at baseline and 6 months (contact with trial investigators). Accelerometers were mailed to participants			61% returned at least three of the four updated surveys
	Ribeiro 2017	Assess the effects of an exercise-based cardiac rehabilitation programme on daily physical activity levels of patients following MI.	NA	PA objectively measured with accelerometer (Actigraph GT1M) over 7 days. This device was attached to right hip with elastic band	Regular appointment with cardiologist and optimised medication	Education counselling provided by cardiologist and in the exercise programme via the physician and a physiotherapist	3 supervised sessions per week for 8 weeks each 50 mins (10 min worm-up, 30 mins aerobic exercise on cycle or treadmill and 10 min cool-down)	8	NA 93% completion rate
	Unick 2016	Examine the MVPA differences between participants who received intensive lifestyle intervention (ILI) vs. Diabetes	NA	Accelerometer used to record PA	Participants provided with diabetes support and education.	1 Face-to-face counselling session, group sessions and individual contact made via telephone and email by the interventionist	During months 1 to 6, participants attend three weekly group sessions and one individual counselling session per month during	204	Unclear, but national campaign challenged participants to meet specific goals.

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		support and education (DSE)					months 7 to 12. During years 2 to 4, participants attended one in-person meeting (20-30 mins) with interventionist each month, second contact was via phone (10-15 mins) or email 2 weeks later		59% completion rate (but 4 year intervention)
	Unick 2017	Examine the MVPA differences between participants who maintain and do not maintain their magnitude of weight loss	NA	Prescribes calorie goal of 1,200 to 1,800 kcal/d dependant on body weight. Participants we given home based PA regimen designed to gradually increase structured activity.	Participants provided with diabetes support and education.	1 Face-to-face counselling session with their interventionist, group sessions were offered later in the trial. Individual contact was made via telephone and email by the interventionist	During months 1 to 6, participants attend three weekly group sessions and one individual counselling session per month during months 7 to 12. During years 2 to 4, participants attended one in-person meeting (20-	204	Homebase PA designed to gradually increase structured activity to greater than 175 min/wk for first 6 months, then further increase to greater than 200 min/wk for those who initially

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							30 mins) with interventionist each month, second contact was via phone (10-15 mins) or email 2 weeks later		met the goal. NR
	Yates 2017	To investigate whether an established behavioural intervention, Walking Away from Type 2 diabetes mellitus, is effective at promoting and sustaining increased walking activity when delivered within primary care.	Protection motivation theory in which an association between perceived disease severity and the intention to be physically active in those with Type 2 diabetes mellitus has been demonstrated	Walking Away from Type 2 diabetes mellitus, a pragmatic 3-h group-based structured education programme incorporating pedometer use with annual follow-on refresher sessions were offered to the participants	Control participants received a standardized booklet detailing information on Type 2 diabetes mellitus risk informed by Leventhal's common sense model and how physical activity and lifestyle change can be used to prevent or delay the disease	The participants in the intervention group were provided with pedometer and step/day diary provided free. They were encouraged to increase their physical activity levels up to 3000 step/day over baseline levels depending on individual preference and ability. Participants set an action	2 follow up session: 12 and 24 months	52	Increasing PA by 500 steps/day every fortnight 71% completion rate

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						plan detailing where, when and how their first proximal goal would be reached and were encouraged to repeat this process for each new goal.			
	Young 2016	To test a home-based intervention to enhance patient activation and lead to improved SM adherence for heart failure patients	Bandura's conceptualization of self-efficacy, Hibbard's patient activation theory and chronic disease self-management	Received both usual care and the 12-week PATCH intervention (FTF in hospital SM training session and post discharge sessions deliver by telephone)	Received written and verbal information about HF self-care and scheduled follow-up doctor appointments	Intervention present in variety of formats (verbal, written, visual) with interactive ability.	Each intervention session lasted about 45-50 mins.	26	NA 95% completed the trial

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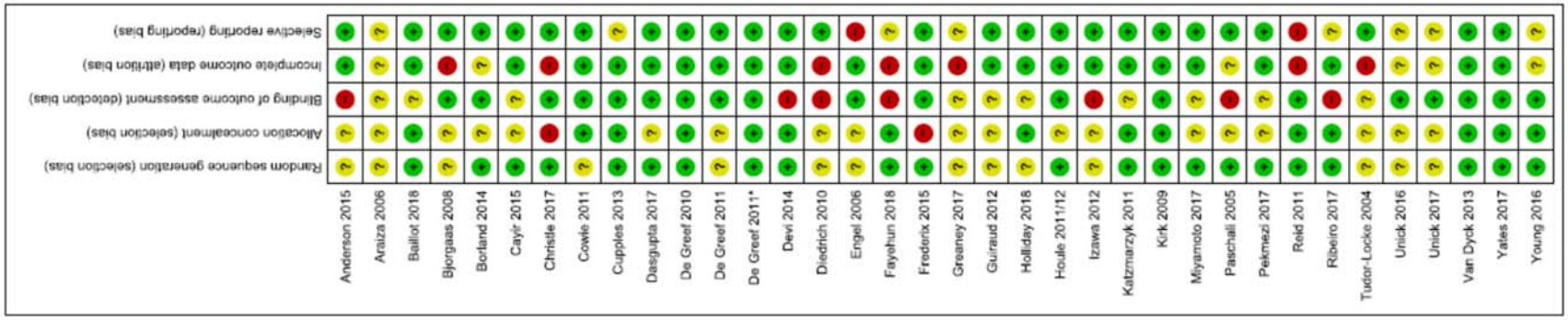
eFigure 1: Risk of bias assessments study-by-study



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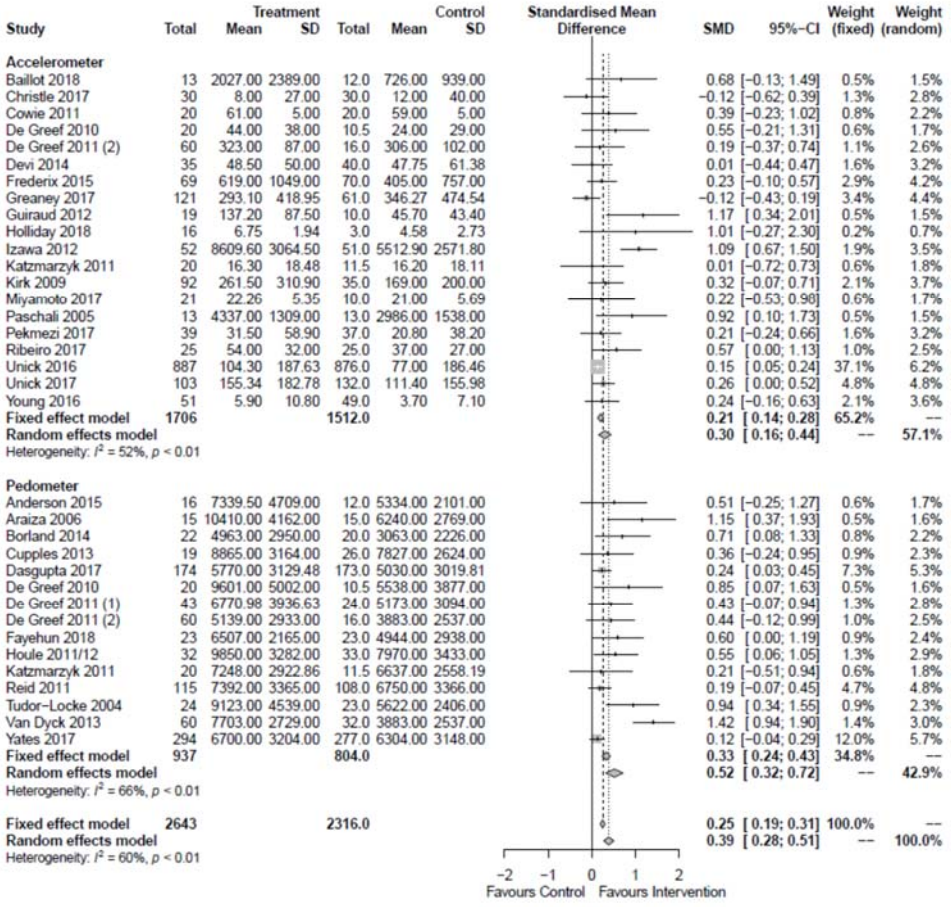
eFigure 2: Forest plot of Accelerometer vs pedometer use



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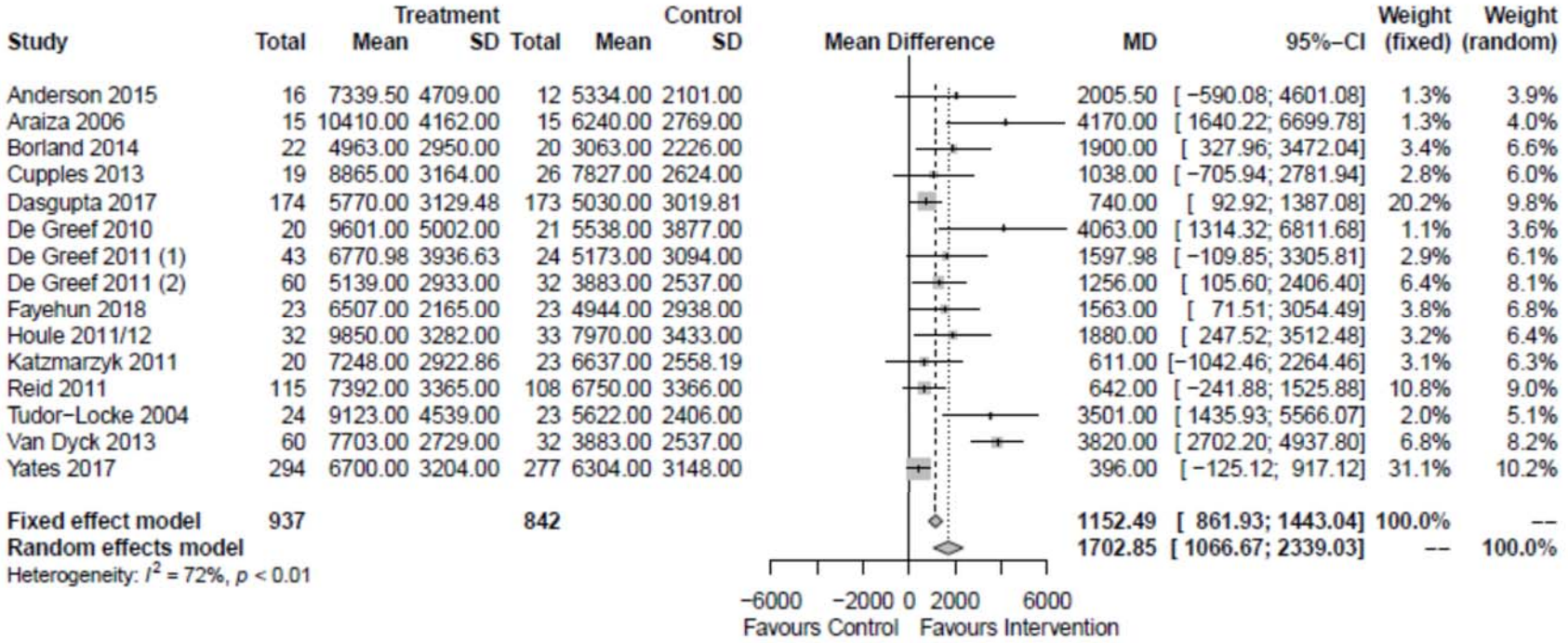
eFigure 3: Forest plot of pedometer use on mean difference scale



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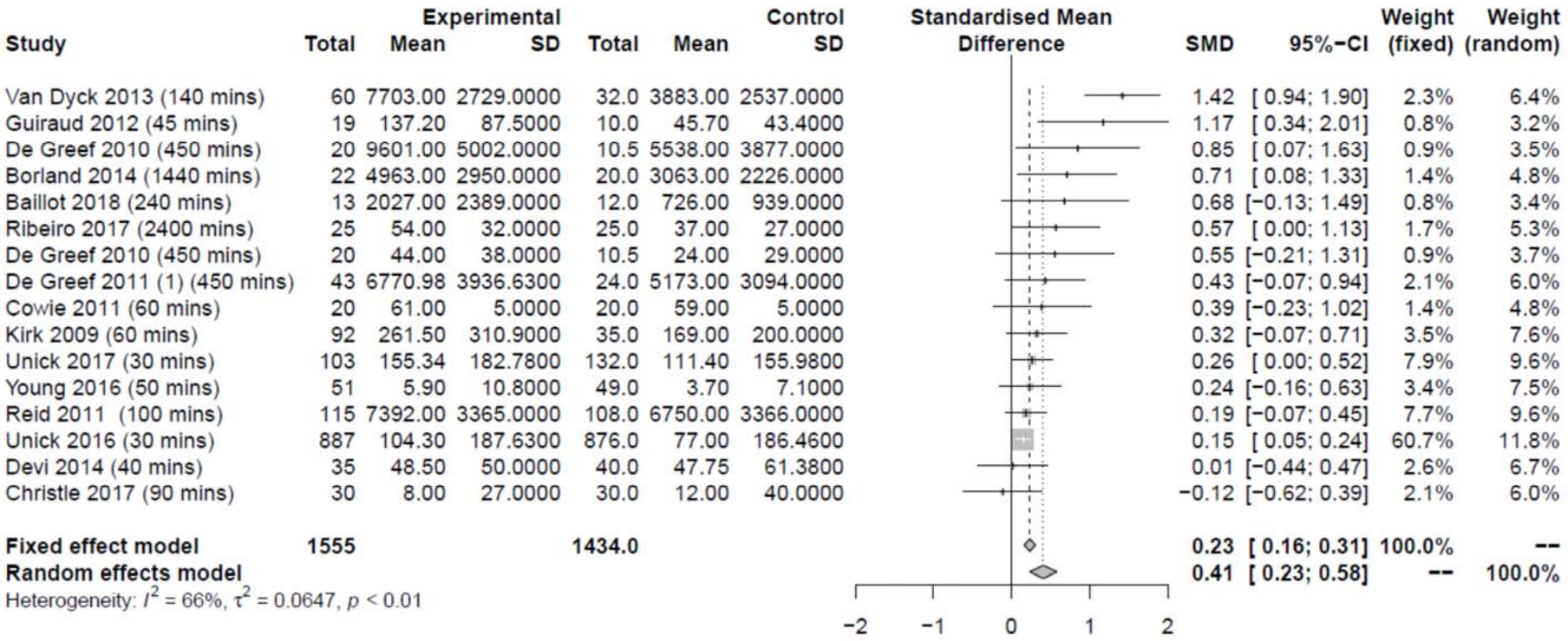
eFigure 4: Cumulative forest plot of PA performance based on total PA engagement time (combined by total minutes)



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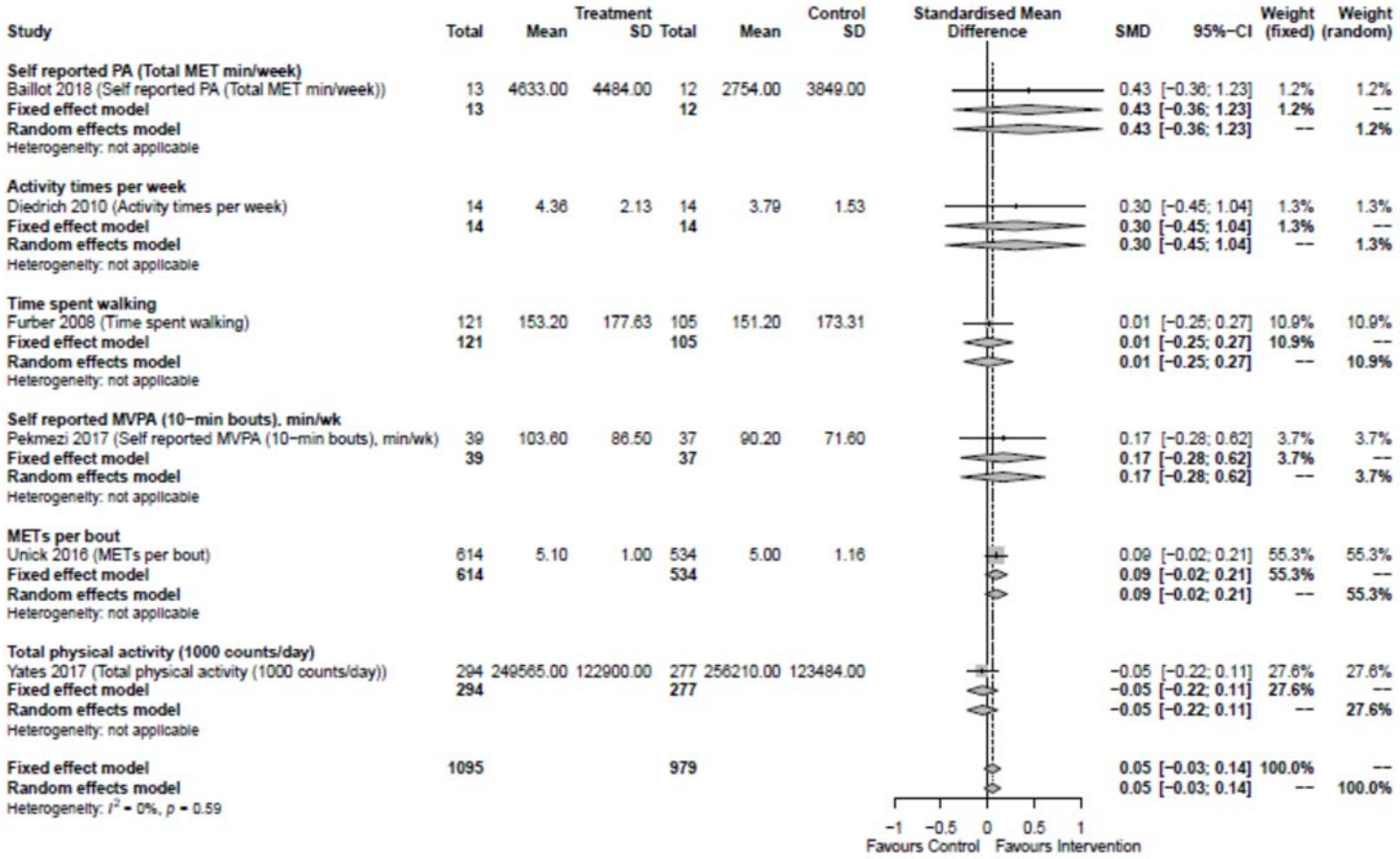
eFigure 5: Forest plot of secondary physical activity measures



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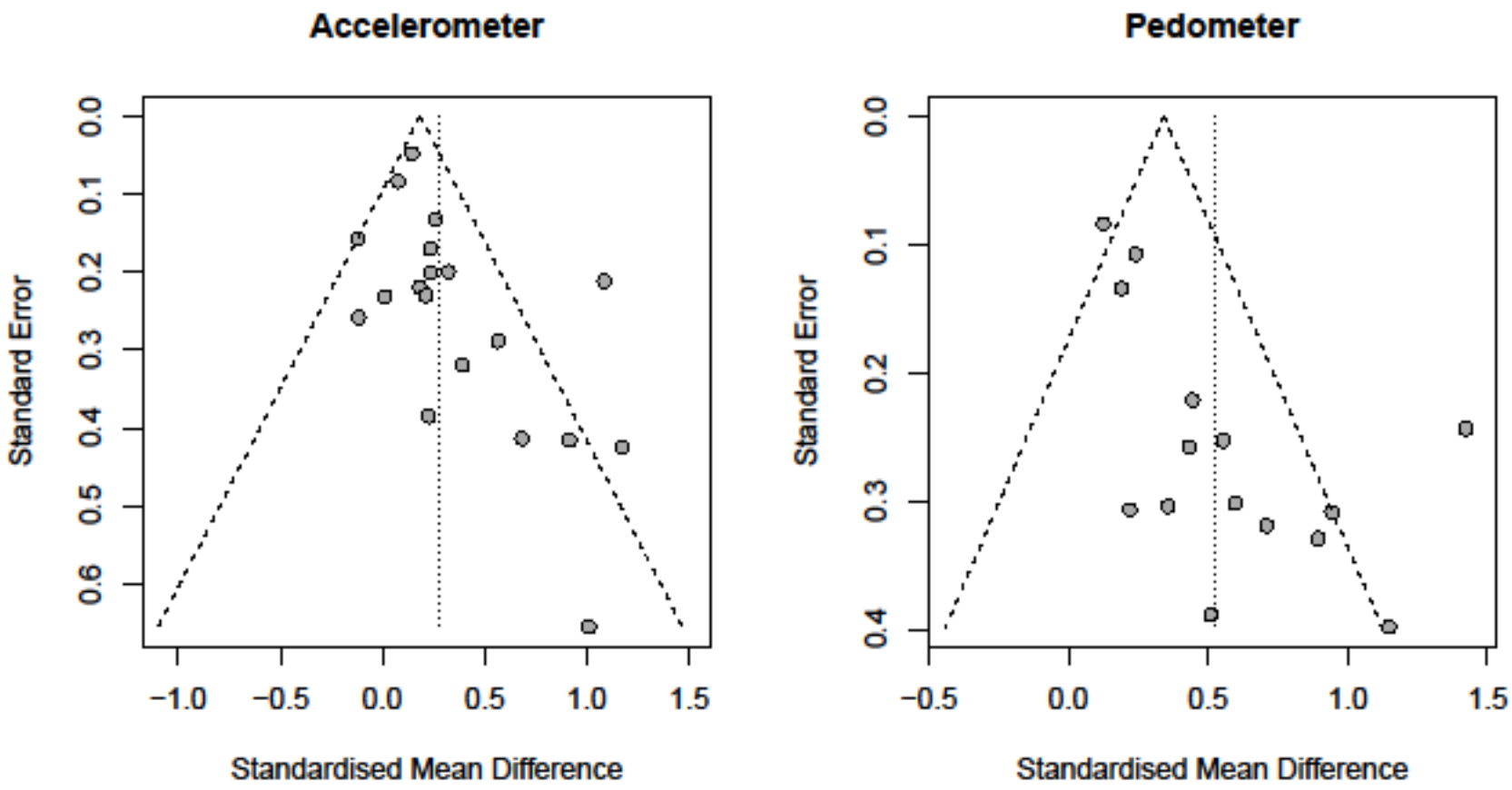
eFigure 6: Individual funnel plots of accelerometer and pedometer



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