Supplementary file

Table S1. Sample socio-demographic characteristics by intervention group across timepoints (N=342; sample with valid accelerometer data at baseline)

	Intervention groups			
Characteristic	C	PA-I	SB-I	PA + SB-I
Baseline				
n	89	97	81	75
Sex, %				
Male	44.1	42.3	35.8	49.3
Female	56.0	57.7	64.2	50.7
Age (years), mean (SD)	8.2 (0.5)	8.3 (0.5)	8.3 (0.5)	8.4 (0.5)
School socio-economic status, %				
Low	40.5	31.0	34.6	30.7
Medium/High	59.5	69.0	65.4	69.3
18-months				
n	38	53	43	41
Sex, %				
Male	42.1	35.9	34.9	46.3
Female	57.9	64.1	65.1	53.7
Age @ baseline (years), mean (SD)	8.2 (0.5)	8.2 (0.5)	8.1 (0.5)	8.3 (0.5)
School socio-economic status, %				
Low	48.6	28.3	34.9	29.3
Medium/High	51.4	71.7	65.1	70.7
30-months				
n	44	47	33	31
Sex, %				
Male	45.4	31.9	21.2	48.4
Female	54.6	68.1	78.8	51.6
Age @ baseline (years), mean (SD)	8.2 (0.5)	8.2 (0.5)	8.2 (0.6)	8.1 (0.3)
School socio-economic status, %				
Low	43.2	25.5	48.5	29.0
Medium/High	56.8	74.5	51.5	71.0

Notes. C=control; PA = physical activity; SB = sedentary behaviour

Table S2. Descriptive statistics of physical activity and sedentary behavior outcomes by intervention group and time of assessment (N=342; sample with valid accelerometer data at baseline)

	Intervention group			
Sedentary time (min/day) in the week				
	C	PA-I	SB-I	PA + SB-I
Baseline	334 (67)	339 (63)	351 (63)	344 (71)
18-months	347 (60)	359 (67)	343 (56)	346 (72)
30-months	387 (81)	396 (96)	361 (58)	370 (70)
Sedentary time (min/day) on weekdays				
	C	PA-I	SB-I	PA + SB-I
Baseline	327 (72)	322 (64)	342 (57)	328 (74)
18-months	346 (62)	349 (68)	333 (64)	323 (71)
30-months	371 (80)	381 (88)	347 (60)	369 (70)
Moderate-to-vigorous physical activity (min/day) in the week				
	C	PA-I	SB-I	PA + SB-I
Baseline	69 (27)	64 (20)	67 (19)	66 (19)
18-months	57 (21)	51 (19)	56 (19)	55 (26)
30-months	53 (24)	52 (21)	40 (13)	51 (14)
Moderate-to-vigorous physical activity (min/day) on weekdays				
	C	PA-I	SB-I	PA + SB-I
Baseline	69 (19)	62 (21)	69 (21)	64 (18)
18-months	57 (19)	51 (19)	55 (21)	54 (27)
30-months	53 (22)	53 (20)	41 (13)	56 (17)
Sedentary breaks (frequency/day) in the week				
	C	PA-I	SB-I	PA + SB-I
Baseline	313 (39)	310 (34)	315 (47)	316 (41)
18-months	321 (42)	325 (43)	323 (44)	323 (45)
30-months	309 (49)	319 (44)	325 (44)	312 (44)
Sedentary breaks (frequency/day) on weekdays				
	C	PA-I	SB-I	PA + SB-I
Baseline	313 (41)	311 (39)	318 (48)	318 (45)
18-months	333 (46)	325 (44)	328 (49)	326 (43)
30-months	312 (53)	326 (44)	334 (58)	322 (41)

Notes. C=control; PA = physical activity; SB = sedentary behaviour

Table S3. Mean baseline blood biomarker outcomes (±SD), modelled changes (95% CI) from baseline for each group, interaction p-value and the main effects (95% CI) at 18 months

Outcome	**n**	**Control group**	**n**	**PA-I group**	**n**	**SB-I group**	**n**	**PA + SB-I group**	**PA * SB Interaction** (p-value)	**Main effects (if interaction not significant) or intervention effects (comparison between each experimental group and the control group) if interaction significant**		
										PA intervention	**SB intervention**	**PA + SB intervention**
LDL cholesterol (mmol/L)												
Baseline	46	2.47 ± 0.54	70	2.69 ± 0.70	51	2.60 ± 0.85	51	2.49 ± 0.56				
Change at 18 months	26	0.14 (-0.04, 0.32)	41	-0.13 (-0.27, 0.01)	30	-0.12 (-0.28, 0.04)	28	-0.10 (-0.27, 0.07)	p=0.078	-0.13 (-0.30, 0.04)	-0.10 (-0.26, 0.07)	NA
HDL cholesterol (mmol/L)												
Baseline	46	1.60 ± 0.37	70	1.65 ± 0.35	51	1.71 ± 0.33	51	1.62 ± 0.34				
Change at 18 months	26	-0.04 (-0.14, 0.06)	41	-0.03 (-0.10, 0.04)	30	-0.14[b] (-0.23, -0.05)	28	-0.02 (-0.11, 0.07)	p=0.233	0.06 (-0.02, 0.15)	-0.03 (-0.12, 0.05)	NA
Total cholesterol (mmol/L)												
Baseline	46	4.44 ± 0.64	70	4.64 ± 0.77	51	4.65 ± 0.91	51	4.44 ± 0.63				
Change at 18 months	26	0.08 (0.11, 0.27)	41	-0.13 (-0.27, 0.02)	30	-0.17 (-0.34, 0.00)	28	-0.12 (-0.29, 0.06)	p=0.134	-0.08 (-0.26, 0.10)	-0.11 (-0.29, 0.07)	NA
Triglycerides (mg/dL)[§]												
Baseline	46	0.75 ± 0.34 [0.70 ± 0.40]	70	0.67 ± 0.25 [0.60 ± 0.30]	51	0.72 ± 0.24 [0.70 ± 0.30]	51	0.71 ± 0.32 [0.60 ± 0.40]				
Change at 18 months	26	1.15 (0.93, 1.41)	41	1.10 (1.00, 1.20)	30	1.16 (0.98, 1.38)	28	0.93 (0.80, 1.08)	p=0.263	0.87 (0.74, 1.03)	0.89 (0.76, 1.03)	NA
Glucose (mmol/L)												
Baseline	46	4.69 ± 0.54	70	4.54 ± 0.41	51	4.56 ± 0.43	50	4.59 ± 0.32				
Change at 18 months	26	-0.22[a] (-0.39, -0.04)	42	-0.02 (-0.16, 0.12)	30	-0.07 (-0.24, 0.09)	28	-0.06 (-0.23, 0.11)	p=0.282	0.11 (-0.06, 0.27)	0.04 (-0.12, 0.21)	
Insulin (uU/mL) [§]												
Baseline	46	6.87 ± 4.37 [5.75 ± 4.80]	70	5.86 ± 4.35 [4.80 ± 3.70]	51	5.94 ± 3.06 [5.60 ± 4.70]	51	6.40 ± 3.85 [5.90 ± 5.10]				

Change at 18 months	26	1.20 (0.92, 1.56)	40	1.54[c] (1.28, 1.86)	30	1.24 (1.98, 1.58)	28	1.12 (0.88, 1.42)	p=0.130	1.09 (0.86, 1.38)	0.84 (0.67, 1.07)	NA
Vitamin D (nmol/L)												
Baseline	46	74.3 ± 29.9	70	71.7 ± 23.4	51	75.4 ± 30.0	51	69.3 ± 20.8				
Change at 18 months	26	-14.3[b] (-22.7, -5.8)	40	-16.4[c] (-22.8, -10.0)	29	-9.2[a] (-16.9, -1.5)	28	-2.4 (-10.2, 5.3)	p=0.248	2.3 (-5.2, 9.9)	**10.1[b] (2.6, 17.5)**	NA
C-reactive protein (mg/L) [§]												
Baseline	46	0.84 ± 1.68 [0.40 ± 0.70]	69	0.74 ± 1.38 [0.20 ± 0.60]	51	0.61 ± 0.69 [0.30 ± 0.60]	51	0.69 ± 1.37 [0.20 ± 0.60]				
Change at 18 months	25	1.33 (0.69, 2.58)	42	1.94[c] (1.46, 2.57)	28	0.93 (0.56, 1.55)	28	3.17[c] (1.98, 5.08)	p=0.128	**1.53[a] (1.07, 2.20)**	1.22 (0.85, 1.75)	NA
BDNF (pg/ml) [§]												
Baseline	44	20.4 ± 6.64 [21.2 ± 8.4]	66	20.6 ± 6.6 [21.1 ± 7.1]	48	22.7 ± 6.5 [22.2 ± 8.5]	48	20.3 ± 8.0 [18.9 ± 9.6]				
Change at 18 months	25	1.03 (0.80, 1.32)	40	1.17[b] (1.05, 1.31)	28	0.94 (0.77, 1.14)	27	0.87 (0.73, 1.04)	p=0.279	1.02 (0.85, 1.24)	**0.79[a] (0.66, 0.95)**	NA
sE-Selectin (ng/ml) [§]												
Baseline	44	63.9 ± 28.3 [57.9 ± 39.7]	66	62.7 ± 28.9 [51.9 ± 32.7]	48	71.2 ± 28.8 [75.7 ± 40.4]	48	76.9 ± 36.8 [67.8 ± 51.2]				
Change at 18 months	25	1.06 (0.89, 1.27)	40	1.00 (0.93, 1.07)	28	0.93 (0.82, 1.06)	27	0.96 (0.86, 1.07)	p=0.438	0.98 (0.87, 1.11)	0.94 (0.84, 1.05)	NA
sVCAM (pg/ml) [§]												
Baseline	44	1502 ± 277 [1473 ± 351]	66	1501 ± 251 [1487 ± 316]	48	1584 ± 290 [1560 ± 412]	48	1523 ± 311 [1438 ± 413]				
Change at 18 months	25	0.95 (0.87, 1.04)	40	0.94[b] (0.90, 0.99)	28	0.90[b] (0.84, 0.97)	27	0.93[a] (0.87, 0.99)	p=0.734	1.01 (0.95, 1.08)	0.97 (0.91, 1.04)	NA
sICAM (pg/ml) [§]												
Baseline	44	151.9 ± 38.0 [146.5 ± 53.4]	66	154.0 ± 49.0 [145.7 ± 45.7]	48	149.4 ± 41.4 [147.8 ± 45.4]	48	155.2 ± 86.7 [143.5 ± 55.1]				
Change at 18 months	25	0.92 (0.79, 1.06)	40	1.05 (0.96, 1.15)	28	0.96 (0.84, 1.09)	27	0.99 (0.88, 1.11)	p=0.401	1.09 (0.97, 1.23)	0.98 (0.87, 1.10)	NA
Adiponectin (pg/ml) [§]												
Baseline	44	28.5 ± 20.3 [24.0 ± 15.7]	66	30.8 ± 15.0 [27.6 ± 20.0]	48	29.4 ± 12.6 [28.7 ± 14.4]	48	24.6 ± 12.6 [22.9 ± 14.1]				
Change at 18 months	25	0.89 (0.71, 1.11)	39	0.88[c] (0.82, 0.95)	28	0.84[a] (0.73, 0.97)	26	0.96 (0.86, 1.08)	p=0.345	1.09 (0.94, 1.26)	1.07 (0.95, 1.21)	NA

Resistin (pg/ml) [§]												
Baseline	44	22.1 ± 9.9 [20.7 ± 7.2]	66	21.6 ± 9.1 [20.0 ± 10.4]	48	23.6 ± 11.0 [22.6 ± 12.1]	48	21.7 ± 7.8 [20.6 ± 9.8]				
Change at 18 months	25	1.17 (0.89, 1.55)	39	1.08 (0.99, 1.17)	28	0.95 (0.81, 1.12)	26	1.26[c] (1.10, 1.44)	p=0.052	1.16 (0.98, 1.39)	1.09 (0.95, 1.26)	NA
PAI-1 (pg/ml) [§]												
Baseline	44	258 ± 80 [264 ± 113]	66	238 ± 83 [231 ± 111]	48	276 ± 106 [245 ± 103]	48	247 ± 83 [232 ± 100]				
Change at 18 months	25	1.00 (0.88, 1.15)	40	0.97 (0.90, 1.03)	27	0.88[a] (0.79, 0.99)	27	0.83[c] (0.75, 0.92)	p=0.910	0.95 (0.86, 1.06)	**0.87[b] (0.78, 0.96)**	NA
TNF-α (pg/ml) [§]												
Baseline	44	11.7 ± 5.2 [10.7 ± 7.5]	66	11.5 ± 7.2 [10.3 ± 5.1]	48	12.4 ± 21.0 [9.1 ± 4.6]	48	12.6 ± 9.7 [10.5 ± 5.4]				
Change at 18 months	25	0.86 (0.71, 1.03)	40	0.99 (0.89, 1.10)	28	0.80[b] (0.67, 0.95)	27	0.99 (0.86, 1.14)	p=0.639	**1.20[a] (1.02, 1.40)**	0.97 (0.84, 1.12)	NA
IL-10 (pg/ml) [§]												
Baseline	44	31.1 ± 44.9 [16.6 ± 22.2]	66	31.5 ± 54.4 [13.5 ± 18.2]	48	65.3 ± 278.6 [14.3 ± 18.8]	48	47.6 ± 159.0 [17.7 ± 22.8]				
Change at 18 months	25	0.84 (0.47, 1.48)	40	1.11 (0.87, 1.42)	28	1.00 (0.65, 1.53)	27	1.19 (0.82, 1.70)	p=0.819	1.24 (0.82, 1.88)	1.10 (0.76, 1.59)	NA
IL-8 (pg/ml) [§]												
Baseline	44	26.6 ± 80.3 [6.7 ± 4.4]	66	9.6 ± 20.3 [5.5 ± 2.7]	48	11.2 ± 17.4 [5.8 ± 4.6]	48	11.2 ± 23.3 [4.7 ± 3.8]				
Change at 18 months	25	0.90 (0.56, 1.39)	40	0.98 (0.80, 1.21)	28	0.65[a] (0.45, 0.93)	27	0.80 (0.60, 1.09)	p=0.698	1.17 (0.83, 1.65)	0.80 (0.58, 1.07)	NA
IL-6 (pg/ml) [§]												
Baseline	44	2.47 ± 6.80 [0.57 ± 2.10]	66	2.35 ± 7.41 [0.61 ± 1.20]	48	4.10 ± 16.83 [0.40 ± 1.02]	48	2.45 ± 7.27 [0.45 ± 1.20]				
Change at 18 months	25	0.49[a] (0.27, 0.88)	40	1.23 (0.98. 1.55)	28	1.07 (0.71, 1.61)	27	1.00 (0.71, 1.41)	**0.57[a] (0.37, 0.88**	**1.74[b] (1.25, 2.43)**	**1.50[a] (1.03, 2.19)**	**1.50[a] (1.05, 2.16)**
IL-2 (pg/ml) [§]												
Baseline	44	2.54 ± 5.11 [1.48 ± 4.08]	66	3.25 ± 7.51 [1.17 ± 2.17]	48	5.33 ± 19.36 [1.29 ± 2.67]	48	12.49 ± 45.56 [1.42 ± 3.79]				
Change at 18 months	25	0.92 (0.69, 1.21)	40	1.12 (0.99, 1.27)	28	0.83 (0.66, 1.03)	27	0.95 (0.79, 1.15)	**0.35[c] (0.20, 0.63)**	**3.23[c] (2.04, 5.11)**	0.86 (0.52, 1.44)	0.99 (0.58, 1.67)

Notes. Significant intervention effects bolded. All estimates of group-specific changes from baseline and intervention effects are adjusted for school socio-economic status, child's age and sex, baseline outcome value and season of assessment.
n = number of observations at specific time points; PA-I = physical activity (PA) promotion group; SB-I = reducing sedentary behaviour (SB) group; PA+SB-I = combination of PA-I and SB-I; LDL = low density lipoprotein; HDL = high density lipoprotein; vitamin D = 25(OH)D; BDNF = brain derived neurotrophic factor; sE-selectin = soluble E-selectin; sVCAM-1 = soluble vascular cellular adhesion molecule 1; sICAM 1 = soluble intercellular adhesion molecule 1; PAI-1 = Plasminogen Activator Inhibitor-1; TNF-α = tumor necrosis factor alpha; IL-2, -6, -8, 10 = interleukin-2, -6, -8, 10.
ns interact = interaction effect of PA and SB interventions not significant (p-value of interaction term). Only main effects of PA and SB interventions are reported. These represent the adjusted average difference in change from baseline between participants receiving the PA or SB intervention and those not receiving the interventions.
NA = not applicable. Only main effects of PA and SB are reported because the interaction effect of PA and SB interventions was not significant. If the interaction of PA and SB interventions was significant, intervention effects reported in this table represent the adjusted average difference in change from baseline between participants in a particular intervention group (PA-I, SB-I or PA+SB-I) and the control group.
[§] Baseline median and interquartile range values are also reported [in squared brackets] because the outcome variable was positively skewed. Group-specific changes from baseline and intervention effects for these outcome variables are expressed in the form of proportional changes as they are based on regression models with logarithmic link functions.
[a] $p<.05$; [b] $p<.01$; [c] $p<.001$