

Appendix

Supplementary Table 1. Operationalisation and scoring of the activity-friendly constructs

Items	Median or tertile	Score
Presence of recreational facilities		
Indoor recreational facilities	0%	1
	$\geq 1\%$	2
Outdoor recreational facilities	0-1%	1
	$\geq 2\%$	2
Public parks	0-1%	1
	2-9%	2
	$\geq 10\%$	3
Total score range:		3-7
Features of the active transportation environment		
Sidewalks	2-77%	1
	78-95%	2
	$\geq 96\%$	3
No crossings available	0-69%	1
	70-92%	2
	$\geq 93\%$	3
Well maintained sidewalk	0-24%	1
	25-74%	2
	$\geq 75\%$	3
Street lights	0-99%	1
	100%	2
Bicycle lanes	0-7%	1
	8-22%	2
	$\geq 23\%$	3
No obstacles	0-7%	1

	8-21%	2
	≥ 22%	3
Public bicycle facilities	0%	1
	≥ 1%	2
Total score range:		7-19
Neighbourhood aesthetics		
Graffiti	0-3%	2
	≥ 4%	1
Litter	0-2%	3
	3-18%	2
	≥ 19%	1
Trees	0-87%	1
	88-99%	2
	100%	3
Residential gardens	0-47%	1
	48-83%	2
	≥ 84%	3
Green/water area visible	0-15%	1
	16-49%	2
	≥ 50%	3
Public parks	0-1%	1
	2-9%	2
	≥ 10%	3
Total score range:		6-17

%= the percentage of street segments within neighbourhoods with this physical feature present

Supplementary Table 2. Interaction terms between physical and social factors in the association between the physical neighborhood environment and BMI and overweight status for both unimputed and imputed data as derived from multilevel linear regression analysis (BMI) or multilevel logistic regression analysis (overweight status)

Outcomes	BMI with imputed data (n=5,199)		BMI with unimputed data		Overweight status with imputed data (n=5,199)		Overweight status with unimputed data			
Presence of recreational facilities x social neighbourhood factors										
	B	95%CI	n	B	95%CI	OR	95%CI	n	OR	95%CI
Low social network						ref				
Moderate social network	-0.14	-0.44; 0.17	4,239	-0.18	-0.47; 0.11	0.91	0.77; 1.06	4,239	0.86	0.74; 1.01
High social network	0.04	-0.32; 0.40	4,239	0.02	-0.33; 0.37	0.93	0.77; 1.12	4,239	0.91	0.76; 1.09
Low social cohesion						ref				
Moderate social cohesion	0.23	-0.05; 0.50	4,212	0.32	0.06; 0.57	1.00	0.88; 1.13	4,212	0.98	0.87; 1.10
High social cohesion	0.05	-0.33; 0.43	4,212	0.01	-0.28; 0.49	0.92	0.78; 1.09	4,212	0.90	0.76; 1.07
Lowest social trust	ref									
Low social trust	-0.14	-0.95; 0.68	4,322	-0.06	-0.99; 0.87	0.95	0.90; 1.36	4,322	0.98	0.66; 1.45
Neutral social trust	-0.29	-1.10; 0.52	4,322	-0.17	-1.05; 0.72	0.85	0.61; 1.20	4,322	0.89	0.61; 1.30
High social trust	-0.30	-0.99; 0.39	4,322	-0.20	-0.93; 0.53	0.81	0.61; 1.07	4,322	0.81	0.60; 1.01
Highest social trust	-0.27	-0.99; 0.44	4,322	-0.11	-0.87; 0.65	0.91	0.61; 1.29	4,322	0.98	0.67; 1.43
Low SES						ref				
High SES	-0.16	-0.56; 0.24	4,369	-0.02	-0.39; 0.36	0.87	0.73; 1.04	4,369	0.92	0.77; 1.09
Lowest perceived crime						ref				
Low perceived crime	-0.25	-0.62; 0.12	4,043	-0.26	-0.60; 0.08	0.91	0.79; 1.07	4,043	0.93	0.83; 1.03
Neutral perceived crime	-0.20	-0.61; 0.22	4,043	-0.19	-0.61; 0.24	0.99	0.83; 1.19	4,043	1.03	0.88; 1.21
High perceived crime	-0.26	-0.79; 0.27	4,043	-0.35	-0.86; 0.16	1.05	0.81; 1.37	4,043	1.06	0.84; 1.34
Highest perceived crime	-0.08	-0.67; 0.51	4,043	0.03	-0.51; 0.58	1.08	0.85; 1.37	4,043	1.15	0.88; 1.51
Features of the active transportation environment x social neighbourhood factors										
	B	95%CI	n	B	95%CI	OR	95%CI	n	OR	95%CI
Low social network						ref				

Moderate social network	-0.02	-0.32; 0.27	4,239	-0.06	-0.34; 0.23	0.96	0.81; 1.13	4,239	0.95	0.80; 1.13
High social network	-0.01	-0.30; 0.29	4,239	-0.05	-0.35; 0.23	0.96	0.84; 1.10	4,239	0.96	0.84; 1.10
Low social cohesion	ref									
Moderate social cohesion	0.13	-0.14; 0.41	4,212	0.16	-0.12; 0.43	0.99	0.84; 1.15	4,212	1.00	0.84; 1.19
High social cohesion	0.03	-0.32; 0.38	4,212	0.01	-0.32; 0.34	0.94	0.80; 1.10	4,212	0.94	0.81; 1.10
Lowest social trust	ref									
Low social trust	0.38	-0.61; 1.37	4,322	0.30	-0.75; 1.35	0.94	0.63; 1.39	4,322	0.90	0.59; 1.37
Neutral social trust	0.54	-0.49; 1.56	4,322	0.41	-0.72; 1.54	1.00	0.71; 1.42	4,322	0.96	0.66; 1.41
High social trust	0.35	-0.57; 1.27	4,322	0.18	-0.81; 1.16	0.90	0.66; 1.23	4,322	0.84	0.60; 1.17
Highest social trust	0.47	-0.48; 1.42	4,322	0.23	-0.77; 1.23	0.94	0.63; 1.40	4,322	0.85	0.57; 1.27
Low SES	ref									
High SES	0.05	-0.33; 0.42	4,369	0.08	-0.30; 0.45	1.05	0.89; 1.24	4,369	1.06	0.90; 1.26
Lowest perceived crime	ref									
Low perceived crime	0.16	-0.13; 0.46	4,043	0.22	-0.04; 0.49	1.04	0.90; 1.28	4,043	1.08	0.95; 1.21
Neutral perceived crime	0.02	-0.35; 0.39	4,043	-0.06	-0.43; 0.32	1.08	0.90; 1.40	4,043	1.09	0.93; 1.30
High perceived crime	0.20	-0.23; 0.64	4,043	0.23	-0.19; 0.66	1.13	0.90; 1.40	4,043	1.16	0.94; 1.43
Highest perceived crime	-0.15	-0.67; 0.38	4,043	-0.24	-0.72; 0.24	0.87	0.68; 1.11	4,043	0.84	0.86; 1.04
Neighbourhood aesthetics x social neighbourhood factors										
	B	95%CI	n	B	95%CI	OR	95%CI	n	OR	95%CI
Low social network	ref									
Moderate social network	0.29	0.00; 0.57	4,239	0.28	0.04; 0.53	1.21	1.04; 1.41	4,239	1.23	1.06; 1.42
High social network	0.15	-0.20; 0.51	4,239	0.14	-0.25; 0.53	1.01	0.91; 1.28	4,239	1.09	0.91; 1.29
Low social cohesion	ref									
Moderate social cohesion	0.05	-0.18; 0.28	4,212	0.03	-0.22; 0.29	0.96	0.83; 1.11	4,212	0.92	0.79; 1.07
High social cohesion	0.04	-0.30; 0.38	4,212	0.04	-0.35; 0.42	0.99	0.83; 1.18	4,212	0.97	0.81; 1.17
Lowest social trust	ref									
Low social trust	-0.13	-1.17; 0.90	4,322	-0.19	-1.47; 1.08	1.05	0.73; 1.51	4,322	0.95	0.56; 1.59
Neutral social trust	-0.19	-1.08; 0.70	4,322	-0.14	-1.25; 0.97	0.83	0.60; 1.15	4,322	0.76	0.49; 1.19

High social trust	-0.22	-1.00; 0.57	4,322	-0.20	-1.20; 0.81	0.92	0.70; 1.21	4,322	0.81	0.55; 1.20
Highest social trust	-0.49	-1.42; 0.44	4,322	-0.37	-1.49; 0.77	0.77	0.52; 1.14	4,322	0.69	0.41; 1.16
Low SES	ref									
High SES	-0.17	-0.52; 0.18	4,369	-0.20	-0.52; 1.13	0.93	0.80; 1.08	4,369	0.91	0.79; 1.06
Lowest perceived crime	ref									
Low perceived crime	-0.19	-0.50; 0.13	4,043	-0.17	-0.45; 0.11	0.92	0.78; 1.10	4,043	0.92	0.79; 1.08
Neutral perceived crime	-0.12	-0.47; 0.22	4,043	-0.08	-0.42; 0.26	0.91	0.76; 1.09	4,043	0.92	0.75; 1.11
High perceived crime	-0.38	-0.82; 0.06	4,043	-0.43	-0.85; 0.02	0.91	0.70; 1.19	4,043	0.92	0.71; 1.12
Highest perceived crime	-0.11	-0.84; 0.63	4,043	-0.11	-0.89; 0.67	0.96	0.66; 1.40	4,043	0.96	0.66; 1.41
*mRFEI x social neighbourhood factors										
	B	95%CI	n	B	95%CI	OR	95%CI	n	OR	95%CI
Low social network	ref									
Moderate social network	0.00	-0.01; 0.02	4,017	0.00	-0.01; 0.02	1.00	1.00; 1.01	4,017	1.00	1.00; 1.01
High social network	0.00	-0.02; 0.02	4,017	0.00	-0.02; 0.02	1.00	1.00; 1.01	4,017	1.00	1.00; 1.01
Low social cohesion	ref									
Moderate social cohesion	-0.00	-0.02; 0.01	3,990	-0.00	-0.02; 0.02	1.00	0.99; 1.01	3,990	1.00	0.99; 1.00
High social cohesion	-0.00	-0.02; 0.01	3,990	-0.00	-0.02; 0.02	1.00	0.99; 1.01	3,990	1.00	1.00; 1.01
Lowest social trust	ref									
Low social trust	-0.02	-0.05; 0.01	4,096	-0.02	-0.06; 0.02	1.00	0.99; 1.01	4,096	0.99	0.98; 1.01
Neutral social trust	-0.02	-0.05; 0.02	4,096	-0.02	-0.06; 0.01	1.00	0.99; 1.01	4,096	1.00	0.98; 1.01
High social trust	-0.02	-0.04; 0.01	4,096	-0.02	-0.05; 0.01	1.00	0.99; 1.01	4,096	0.99	0.99; 1.00
Highest social trust	-0.02	-0.05; 0.01	4,096	-0.02	-0.06; 0.01	0.99	0.98; 1.00	4,096	0.99	0.98; 1.00
Low SES	ref									
High SES	0.01	-0.00; 0.03	4,141	0.01	-0.00; 0.03	1.01	1.00; 1.01	4,141	1.01	1.00; 1.01
Lowest perceived crime	ref									
Low perceived crime	-0.00	-0.02; 0.01	3,825	0.00	-0.02; 0.02	0.99	0.99; 1.00	3,825	0.99	0.99; 1.00
Neutral perceived crime	-0.01	-0.03; 0.01	3,825	-0.01	-0.03; 0.01	0.99	0.99; 1.00	3,825	1.00	0.99; 1.00
High perceived crime	0.01	-0.02; 0.03	3,825	0.01	-0.01; 0.03	1.00	0.99; 1.01	3,825	1.00	0.99; 1.01

Highest perceived crime	-0.01	-0.03; 0.01	3,825	-0.01	-0.03; 0.01	1.00	0.99; 1.01	3,825	1.00	0.99; 1.01
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*N= 4,942

Physical neighbourhood factors are operationalised as z-scores, except for mRFEI

All analyses were adjusted for age, sex, educational level, length of residency, RAD and SES

N = number of participants; B = unstandardized coefficients; 95%CI = 95% confidence interval; BMI= body mass index measured in kg/m²; OR = odds ratio; mRFEI = modified retail food environment index calculated by dividing the number of healthy food outlets by the total number of healthy and unhealthy food outlets and multiplying this by 100

Bold numbers represent significant associations (two-sided p-value < 0.05)

Supplementary Table 3. Statistically significant moderating effects by social factors in the association between physical factors and BMI/overweight status as derived from multilevel linear regression analysis (BMI) or multilevel logistic regression analysis (overweight status)

Physical environmental factors	BMI		Overweight status	
	B	95%CI	OR	95%CI
Presence of recreational facilities				
Low social cohesion	-0.17	-0.43; 0.11	1.00	0.89; 1.12
Moderate social cohesion	0.02	-0.21; 0.24	0.98	0.88; 1.10
High social cohesion	-0.18	-0.47; 0.12	0.90	0.78; 1.04
Neighbourhood aesthetics				
Low social networks	-0.23	-0.48; 0.03	0.91	0.80; 1.04
Moderate social networks	0.10	-0.14; 0.33	1.07	0.96; 1.18
High social networks	0.03	-0.25; 0.31	1.00	0.89; 1.14

Physical neighbourhood factors are operationalised as z-scores, except for mRFEI

All analyses were adjusted for age, sex, educational level, length of residency, RAD and SES

N = number of participants; B = unstandardized coefficients; 95%CI = 95% confidence interval; BMI= body mass index measured in kg/m²; OR = odds ratio

