

Supplementary tables

Supplementary table S1 Body mass index reference for screening overweight and obesity in Chinese children and adolescents¹ (kg/m²)

Age (years)	Males		Females	
	Overweight	Obese	Overweight	Obese
8	18.1	20.3	18.1	19.9
9	18.9	21.4	19.0	21.0
10	19.6	22.5	20.0	22.1
11	20.3	23.6	21.1	23.3
12	21.0	24.7	21.9	24.5
13	21.9	25.7	22.6	25.6
14	22.6	26.4	23.0	26.3
15	23.1	26.9	23.4	26.9
16	23.5	27.4	23.7	27.4
17	23.8	27.8	23.8	27.7
18	24.0	28.0	24.0	28.0

1. Ji CY; Working Group on Obesity in China. Report on childhood obesity in China

(1)--body mass index reference for screening overweight and obesity in Chinese

school-age children. Biomed Environ Sci. 2005;18:390-400.

Supplementary table S2 Primer sequences used in methylation analysis

Name	PCR primers (5'→3')	PCR position in gene sequence
Test 1	Forward:aggaagagagTGTTTGTTTATTTGGGTTTTGTTTT	
	Reverse:cagtaatacgactcactatagggagaaggctCCTACCAAACTCTCTTCCTACCTC	-1430 to -831
Test 2	Forward:aggaagagagGGAGTAATTTTAGTGGATGGGTT	
	Reverse:cagtaatacgactcactatagggagaaggctAAAAACAAAAAAAATATCCTCCCAC	-757 to -312
Test 3	Forward:aggaagagagTTAGAGGGTTTGTTGAGGATGATAG	
	Reverse:cagtaatacgactcactatagggagaaggctAACAATAAAAATAAAACCCTAATACCC	-439 to +93

Supplementary table S3 Basic characteristics of participants in this study

	All	Obese	Lean	<i>P</i> Value
n	98	59	39	
Male (%)	52	45.8	61.5	0.13
Age (years)	12.4±2.9	13.8±3.0	10.3±1.1	<0.001
Body mass index (kg/m ²)	28.7±12.0	37.8±5.4	14.9±1.1	<0.001
Fat mass percentage (%)	34.1±19.8	49.6±6.2	10.6±1.9	<0.001
Systolic blood pressure (mmHg)	115.9±16.6	126.2±12.5	100.4±7.3	<0.001
Diastolic blood pressure (mmHg)	70.2±14.2	78.4±12.0	57.7±5.6	<0.001
Fasting plasma glucose (mmol/L)	5.7±0.5	5.6±0.5	5.8±0.4	0.23
Triglycerides (mmol/L)	1.2±0.7	1.5±0.8	0.8±0.3	<0.001
High-density lipoprotein cholesterol (mmol/L)	1.4±0.4	1.2±0.2	1.7±0.3	<0.001
Low-density lipoprotein cholesterol (mmol/L)	2.6±0.7	2.7±0.7	2.4±0.6	0.03
Total cholesterol (mmol/L)	4.4±0.8	4.4±0.8	4.5±0.7	0.47

Categorical data were expressed as percentage; continuous variables were expressed as mean ± SD.

Supplementary table S4 Associations between the methylation levels of the *FAIM2*

promoter and sedentary behavior

CpG site	Sedentary behavior (mean±SD)			
	<60 minutes/day (n=32)	≥60 minutes/day (n=45)	P Value	β (95%CI)
-1319	87.06±2.71	86.50±2.44	0.12	-0.030((-0.068)-0.008)
-1172	91.22±10.41	93.48±8.27	0.71	0.002((-0.009)-0.013)
-1157	89.34±3.35	88.16±7.85	0.29	-0.008((-0.024)-0.007)
-1106	89.66±2.51	88.23±4.44	0.02	-0.029((-0.054)-(-0.004))
-1061,-1059	84.72±10.81	77.18±19.08	0.03	-0.006((-0.012)-(-0.001))
-975	84.00±5.29	84.59±2.34	0.40	0.012((-0.016)-0.039)
-931	96.44±2.21	95.86±4.25	0.41	-0.012((-0.040)-0.016)
-878	67.41±5.18	66.18±6.39	0.40	-0.007((-0.024)-0.009)
-859	77.50±4.58	74.34±8.78	0.06	-0.013((-0.026)-0.000)
-500	13.78±2.50	13.78±3.07	0.39	0.015((-0.019)-0.049)
-413	3.59±2.99	3.31±1.64	0.59	-0.012((-0.054)-0.031)
-399, -397, -390	6.50±3.74	8.00±3.62	0.03	0.027(0.002-0.052)
-371	4.06±1.61	4.44±1.79	0.12	0.044((-0.012)-0.100)
-362, -360	1.19±2.87	1.38±1.92	0.50	-0.015((-0.060)-0.029)
-353, -349	3.03±3.68	2.58±2.55	0.05	-0.031((-0.063)-0.000)
-338, -336	10.63±2.69	11.98±3.61	0.02	0.033(0.005-0.061)
-312, -307,-305	4.06±5.63	4.45±3.01	0.55	0.007((-0.016)-0.029)
-289	12.68±4.00	14.42±8.43	0.35	0.007((-0.008)-0.023)
-272, -269	16.71±11.83	20.54±15.01	0.32	0.004((-0.004)-0.011)
-259	15.03±5.57	15.93±7.36	0.67	0.003((-0.011)-0.018)
-225, -222, -219	1.71±4.55	1.68±3.53	1.00	0.000((-0.026)-0.026)
-209	2.94±4.76	1.74±3.36	0.47	-0.009((-0.033)-0.015)
-203, -201	9.65±11.88	13.05±11.03	0.21	0.005((-0.003)-0.014)
-195, -190	9.42±16.12	18.71±23.09	0.23	0.003((-0.002)-0.008)
-183	5.35±3.76	5.74±4.62	0.59	0.006((-0.017)-0.029)
-164	3.90±4.70	3.68±2.66	0.93	0.001((-0.026)-0.028)
-147, -145, -142	9.47±9.96	13.88±13.42	0.55	0.002((-0.006)-0.011)
-134, -132, -129	4.61±8.30	3.24±2.65	0.69	-0.003((-0.021)-0.014)
-124	23.97±21.99	27.93±22.19	0.77	0.001((-0.004)-0.005)
-115	5.35±3.76	5.74±4.62	0.59	0.006((-0.017)-0.029)
-56	2.32±5.47	4.55±9.71	0.85	0.001((-0.011)-0.013)
-44, -36	9.03±7.19	8.05±8.64	0.61	-0.003((-0.016)-0.009)
-14, -7	5.13±5.48	4.29±3.95	0.98	0.000((-0.021)-0.021)
19	4.61±3.77	4.36±2.02	0.91	-0.002((-0.036)-0.032)
54	28.87±14.36	27.49±16.96	0.35	-0.003((-0.010)-0.003)
61	11.39±5.01	13.80±5.03	0.15	0.014((-0.005)-0.034)

P values adjusted for age, gender, and BMI. Those highlighted in bold indicate that the associations showed statistically significant.

Supplementary table S5 Associations between the methylation levels of the *FAIM2*

promoter and high physical activity

CpG site	High physical activity level (mean±SD)			
	<30 minutes/day (n=41)	≥30 minutes/day (n=15)	P Value	β (95%CI)
-1319	86.93±2.38	86.86±2.21	0.90	0.003((-0.047)-0.054)
-1172	94.66±8.15	92.64±7.68	0.77	-0.002((-0.018)-0.013)
-1157	88.56±7.56	88.57±3.94	0.70	-0.003((-0.021)-0.014)
-1106	88.78±4.11	88.93±4.57	0.62	-0.007((-0.035)-0.021)
-1061,-1059	79.95±16.98	77.00±18.43	0.52	-0.002((-0.009)-0.005)
-975	84.20±4.83	85.21±2.67	0.79	-0.004((-0.033)-0.025)
-931	96.10±3.71	96.14±2.51	0.65	-0.008((-0.045)-0.029)
-878	66.71±6.38	67.57±5.60	0.56	0.006((-0.013)-0.024)
-859	74.95±8.38	75.07±7.09	0.89	-0.001((-0.016)-0.014)
-500	13.02±3.04	14.53±2.45	0.11	0.031((-0.008)-0.069)
-413	3.51±2.82	3.27±1.44	0.82	0.005((-0.041)-0.052)
-399, -397, -390	7.95±4.09	7.80±3.84	0.74	0.005((-0.024)-0.034)
-371	4.22±1.68	4.20±1.97	0.86	0.006((-0.061)-0.073)
-362, -360	1.20±2.53	2.21±3.09	0.22	0.029((-0.018)-0.075)
-353, -349	2.61±2.65	4.27±5.11	0.12	0.025((-0.007)-0.058)
-338, -336	11.59±3.33	11.93±3.63	0.18	0.023((-0.011)-0.058)
-312, -307,-305	4.79±3.25	4.64±7.74	0.89	-0.002((-0.028)-0.024)
-289	14.22±8.52	11.45±2.54	0.41	-0.007((-0.023)-0.010)
-272, -269	18.66±10.70	23.73±20.04	0.21	0.005((-0.003)-0.014)
-259	15.39±6.39	15.87±6.94	0.81	0.002((-0.017)-0.021)
-225, -222, -219	2.18±4.16	0.57±1.16	0.04	-0.033((-0.066)-(-0.001))
-209	2.32±4.04	1.47±3.58	0.36	-0.015((-0.046)-0.017)
-203, -201	13.58±12.60	10.73±10.61	0.11	-0.008((-0.018)-0.002)
-195, -190	17.47±22.12	14.00±22.06	0.39	-0.002((-0.008)-0.003)
-183	6.55±4.65	4.73±2.94	0.37	-0.013((-0.042)-0.016)
-164	4.03±2.94	3.93±6.07	0.79	-0.004((-0.036)-0.027)
-147, -145, -142	12.03±11.44	13.43±16.71	0.80	-0.001((-0.011)-0.008)
-134, -132, -129	3.84±5.79	2.93±1.87	0.33	-0.012((-0.036)-0.012)
-124	27.92±22.02	22.80±11.80	0.02	-0.008((-0.014)-(-0.001))
-115	6.55±4.65	4.73±2.94	0.37	-0.013((-0.042)-0.016)
-56	2.42±4.89	3.87±7.14	0.95	0.001((-0.022)-0.024)
-44, -36	8.59±9.08	7.69±6.69	0.55	-0.004((-0.019)-0.010)
-14, -7	4.74±4.59	5.27±5.65	0.52	0.008((-0.017)-0.034)
19	4.11±2.02	5.27±3.92	0.22	0.028((-0.017)-0.072)
54	28.19±13.13	30.60±22.60	0.95	0.000((-0.007)-0.008)
61	12.76±5.69	13.50±4.86	0.97	0.000((-0.023)-0.022)

P values adjusted for age, gender, and BMI. Those highlighted in bold indicate that the associations showed statistically significant.

Supplementary table S6 Associations between the methylation levels of the *FAIM2*

promoter and high or moderate physical activity

CpG site	High or moderate physical activity level (mean±SD)			
	<150 minutes/week (n=42)	≥150 minutes/week (n=28)	P Value	β (95%CI)
-1319	86.57±2.52	86.22±2.28	0.81	-0.006((-0.058)-0.046)
-1172	93.12±10.30	91.93±8.48	0.98	0.000((-0.013)-0.013)
-1157	87.29±7.81	89.85±3.35	0.18	0.012((-0.006)-0.031)
-1106	88.31±4.02	89.00±3.78	0.64	0.007((-0.024)-0.038)
-1061,-1059	78.67±18.33	80.07±15.78	0.81	0.001((-0.006)-0.008)
-975	83.67±4.79	85.00±2.27	0.48	0.011((-0.021)-0.043)
-931	95.44±4.43	96.78±2.21	0.25	0.019((-0.014)-0.051)
-878	65.98±6.36	67.67±5.30	0.32	0.010((-0.010)-0.030)
-859	74.26±8.60	76.48±5.92	0.35	0.007((-0.008)-0.023)
-500	13.60±2.96	13.75±2.78	0.94	0.002((-0.040)-0.043)
-413	3.40±2.72	3.21±1.37	0.95	0.002((-0.051)-0.055)
-399, -397, -390	7.29±3.63	7.75±4.10	0.50	0.011((-0.021)-0.042)
-371	4.50±1.69	4.07±1.68	0.21	-0.045((-0.116)-0.026)
-362, -360	1.32±2.44	1.38±2.55	0.81	0.007((-0.046)-0.059)
-353, -349	2.60±2.60	3.04±3.99	0.43	0.015((-0.023)-0.053)
-338, -336	11.62±3.52	11.32±3.14	0.98	0.000((-0.036)-0.036)
-312, -307,-305	4.16±2.98	4.12±5.80	0.79	-0.004((-0.033)-0.026)
-289	13.97±8.17	13.23±4.97	0.84	-0.002((-0.020)-0.016)
-272, -269	17.11±9.36	22.39±18.57	0.10	0.007((-0.001)-0.016)
-259	15.47±6.36	15.82±5.88	0.92	0.001((-0.020)-0.022)
-225, -222, -219	1.68±3.50	1.44±4.06	0.64	-0.008((-0.043)-0.027)
-209	2.13±3.46	1.75±3.78	0.43	-0.014((-0.049)-0.021)
-203, -201	11.26±11.28	11.14±11.29	0.56	-0.003((-0.015)-0.008)
-195, -190	15.18±21.12	12.79±20.46	0.73	-0.001((-0.007)-0.005)
-183	6.08±4.38	5.07±4.05	0.54	-0.009((-0.039)-0.021)
-164	3.47±2.29	3.74±4.93	0.98	0.000((-0.035)-0.035)
-147, -145, -142	11.26±11.09	13.12±14.02	0.60	0.003((-0.008)-0.013)
-134, -132, -129	3.71±5.56	4.00±6.31	0.93	-0.001((-0.023)-0.021)
-124	27.22±22.13	21.43±15.90	0.07	-0.006((-0.012)-0.001)
-115	6.08±4.38	5.07±4.05	0.54	-0.009((-0.039)-0.021)
-56	2.66±4.83	2.68±5.92	0.66	-0.006((-0.031)-0.019)
-44, -36	7.86±8.32	10.42±8.33	0.32	0.008((-0.008)-0.023)
-14, -7	4.05±3.72	5.68±5.99	0.24	0.015((-0.010)-0.041)
19	4.53±2.29	4.46±3.51	0.70	-0.008((-0.052)-0.035)
54	27.42±16.60	27.73±15.57	0.88	-0.001((-0.009)-0.007)
61	12.37±5.37	13.22±5.30	0.69	0.005((-0.019)-0.029)

P values adjusted for age, gender, and BMI.

Supplementary table S7 Interaction between the methylation levels of the *FAIM2* promoter and physical activity regarding the obesity status

CpG site	Obese (n=59)	Lean (n=39)	Sedentary behavior * CpG site (<i>P</i> Value)	High physical activity level * CpG site (<i>P</i> Value)	High or moderate physical activity level * CpG site (<i>P</i> Value)
-1319	86.89±3.29	86.49±2.69	0.11	0.53	0.88
-1172	92.49±9.55	90.56±10.30	0.54	0.40	0.64
-1157	88.07±7.53	89.05±4.35	0.03	0.20	0.65
-1106	88.98±3.80	88.51±3.69	0.85	0.76	0.57
-1061,-1059	12.21±11.25	9.70±11.42	0.16	0.50	0.59
-975	76.81±20.44	82.10±13.55	0.25	0.91	0.52
-931	83.86±4.53	84.49±2.59	0.14	0.18	0.76
-878	95.79±4.05	96.59±3.61	0.42	0.42	0.24
-859	65.63±8.51	66.92±4.47	0.23	0.81	0.49
-500	73.84±9.24	76.36±4.97	0.21	0.44	0.65
-413	13.28±2.63	14.51±2.90	0.08	0.76	0.28
-399, -397, -390	28.02±16.05	26.83±14.49	0.91	0.61	0.36
-371	3.45±2.55	3.26±1.35	0.35	0.58	0.91
-362, -360	4.36±1.99	4.57±3.57	0.13	0.88	0.98
-353, -349	4.73±5.18	4.70±5.58	0.45	0.81	0.62
-338, -336	9.77±14.72	8.08±7.10	0.05	0.93	0.78
-312, -307,-305	4.69±9.03	1.62±4.78	0.01	0.77	0.43
-289	7.24±3.39	7.00±3.71	0.47	0.62	0.94
-272, -269	5.75±4.51	4.89±3.69	0.15	0.45	0.08
-259	3.97±1.64	4.56±1.67	0.02	0.50	0.57
-225, -222, -219	29.06±22.78	21.53±21.51	0.76	1.00	0.22

-209	1.69±2.63	0.69±1.01	0.32	1.00	0.39
-203, -201	3.20±2.45	4.27±7.67	0.32	0.65	0.56
-195, -190	12.93±13.42	8.89±9.46	0.43	0.96	0.09
-183	3.24±3.49	1.97±1.04	0.23	0.84	0.01
-164	11.34±3.21	11.23±3.22	0.12	0.93	0.08
-147, -145, -142	4.04±3.19	4.00±4.37	0.29	0.44	0.44
-134, -132, -129	16.21±21.57	8.62±15.30	0.77	0.57	0.88
-124	4.45±3.55	4.14±5.36	0.29	0.64	0.33
-115	13.75±7.37	12.71±4.32	0.23	0.84	0.01
-56	20.09±15.64	17.43±12.49	0.99	0.85	0.93
-44, -36	13.34±5.24	12.68±6.84	0.84	0.69	0.14
-14, -7	5.75±4.51	4.89±3.69	0.76	0.57	0.34
19	15.84±7.40	14.57±5.32	0.25	0.99	0.34
54	1.83±3.57	1.38±4.19	0.65	0.43	0.59
61	2.32±3.86	2.73±4.95	0.10	0.27	0.13

P values adjusted for age and gender. Those highlighted in bold indicate that the associations showed statistically significant.