

Table S1 Risks of life-style variables for physical activity-related injury (PARI) among university students in China

Characteristics	All (N=4758) mean ± SD	Non-PARI (N=3677) mean ± SD	PARI (N=1081) mean ± SD	Adjusted OR	95% CI
Domestic/work/study					
<u>VPA¹</u>					
Frequency, d/week	0.76±1.421	0.70±1.365	0.99±1.576	1.168***	1.111~1.228
Duration, min/d	15.38±35.438	13.69±31.560	23.14±45.522	1.008***	1.006~1.010
Volume, min/week	41.50±110.929	35.14±99.929	63.13±140.018	1.002***	1.001~1.002
<u>MPA²</u>					
Frequency, d/week	1.48±1.849	1.39±1.818	1.81±1.917	1.124***	1.082~1.167
Duration, min/d	23.49±40.429	20.80±35.704	32.64±52.486	1.005***	1.004~1.007
Volume, min/week	64.85±147.661	55.46±120.500	96.80±212.822	1.001***	1.001~1.002
<u>MVPA³</u>					
Volume, min/week	106.35±213.513	90.60±181.366	159.93±291.752	1.001***	1.001~1.002
Transportation					
<u>MPA²</u>					
Frequency, d/week	4.06±2.671	3.98±2.691	4.33±2.584	1.030*	1.003~1.059
Duration, min/d	35.29±43.228)	34.08±39.866	39.42±52.909	1.002**	1.001~1.004
Volume, min/week	184.92±279.290	176.48±254.442	213.61±349.498	1.002***	1.001~1.003
Sports and leisure-time					
<u>VPA¹</u>					
Frequency, d/week	0.87±1.477	0.78±1.414	1.19±1.634	1.171***	1.116~1.229
Duration, min/d	20.09±36.454	17.37±33.594	29.34±43.604	1.008***	1.006~1.011
Volume, min/week	49.90±118.395	41.10±101.766	79.79±159.167	1.002***	1.001~1.003
<u>MPA²</u>					
Frequency, d/week	1.39±1.819	1.30±1.786	1.73±1.892	1.125***	1.082~1.169
Duration, min/d	22.87±34.299	20.90±32.247	29.58±39.802	1.006***	1.004~1.008
Volume, min/week	60.48±118.560	53.41±103.125	84.56±158.007	1.002***	1.001~1.002
<u>MVPA³</u>					
Volume, min/week	110.39±200.961	94.52±172.085	164.35±270.769	1.001***	1.001~1.002
Total VPA¹					
Volume, min/week	91.40±198.722	76.25±173.784	142.92±260.208	1.001***	1.001~1.002
Total MPA²					
Volume, min/week	310.25±401.051	285.35±344.310	394.98±543.731	1.001***	1.001~1.001
Total MVPA³					
Volume, min/week	401.65±516.546	361.60±439.591	537.90±702.472	1.001***	1.000~1.001
	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>		
Sedentary behaviors					
<4.00 h/d	590 (12.4)	459 (77.8)	131 (22.2)	1 (ref.)	
4.00-5.99 h/d	869 (18.3)	664 (76.4)	205 (23.6)	1.119	0.859~1.459
6.00-8.99 h/d	1453 (30.5)	1119 (77.0)	334 (23.0)	0.983	0.769~1.258
9.00-11.99 h/d	978 (20.6)	752 (76.9)	226 (23.1)	0.940	0.721~1.225

≥12.00 h/d	868 (18.2)	683 (78.7)	185 (21.3)	0.795	0.604~1.045
Sleep duration					
7.00-7.99 h/d	1882 (39.6)	1493 (79.3)	389 (20.7)	1 (ref.)	
<6.00 h/d	287(6.0)	223 (77.7)	64 (22.7)	1.428*	1.032~1.977
6.00-6.99 h/d	969 (20.4)	708 (73.0)	261 (27.0)	1.425***	1.175~1.729
8.00-8.99 h/d	1186 (24.9)	916 (77.2)	270 (22.8)	1.131	0.939~1.361
≥ 9.00 h/d	434 (9.1)	337 (77.6)	97 (22.4)	1.020	0.782~1.331

#: $P < 0.10$; *: $P < 0.05$; **: $P < 0.01$; ***: $P < 0.001$.

¹: VPA, vigorous-intensity physical activity.

²: MPA, moderate-intensity physical activity.

³: MVPA, moderate- and vigorous-intensity physical activity.

Adjusted ORs and 95% CIs of each life-style variable were calculated after controlling for the significant socio-demographic variables in Table 1, including city, study year, gender, university/other sports team member, and any chronic disease/symptom.

Table S2 Comparison of all PA indicators between-gender among university students in China (N=4758)

Characteristics	Male	Female	Z	P-value
	(N=1343)	(N=3415)		
	mean ± SD	mean ± SD		
Domestic/work/study				
<u>VPA¹</u>				
Frequency, d/week	1.19±1.691	0.60±1.260	-13.763	<0.001
Duration, min/d	25.96±43.060	11.85±31.061	-14.181	<0.001
Volume, min/week	72.85±150.714	29.17±87.625	-14.336	<0.001
<u>MPA²</u>				
Frequency, d/week	1.81±1.897	1.36±1.814	-9.007	<0.001
Duration, min/d	29.63±40.040	21.08±40.332	-10.488	<0.001
Volume, min/week	85.94±166.422	56.56±138.744	-10.352	<0.001
<u>MVPA³</u>				
Volume, min/week	158.80±267.748	85.72±183.939	-13.226	<0.001
Transportation				
<u>MPA²</u>				
Frequency, d/week	4.30±2.700	3.97±2.654	3.867 ^a	<0.001
Duration, min/d	36.96±45.340	34.64±42.358	-1.571	0.116
Volume, min/week	201.67±291.588	178.33±274.065	-3.496	<0.001
Sports and leisure-time				
<u>VPA¹</u>				
Frequency, d/week	1.34±1.698	0.69±1.338	-15.195	<0.001
Duration, min/d	32.05±44.364	15.39±31.618	-15.473	<0.001
Volume, min/week	83.45±153.156	36.71±98.458	-15.846	<0.001
<u>MPA²</u>				
Frequency, d/week	1.67±1.883	1.29±1.782	-7.851	<0.001

Duration, min/d	28.64±37.019	20.61±32.889	-8.601	<0.001
Volume, min/week	78.74±140.188	53.31±108.066	-8.766	<0.001
MVPA³				
Volume, min/week	162.19±257.836	190.01±169.320	-13.808	<0.001
Total VPA¹				
Volume, min/week	156.30±262.926	65.87±159.819	-17.387	<0.001
Total MPA²				
Volume, min/week	366.36±431.825	288.19±386.119	-10.616	<0.001
Total MVPA³				
Volume, min/week	522.66±608.699	354.06±467.024	-12.527	<0.001

¹: VPA, vigorous-intensity physical activity.

²: MPA, moderate-intensity physical activity.

³: MVPA, moderate- and vigorous-intensity physical activity.

^a: t-value, the between-group difference was tested by *t*-test.

Table S3 Comparison of all PA indicators between-gender among university students in China (N=4758)

Characteristics	Male (N=1343) median (IQR)	Female (N=3415) median (IQR)	Z	P-value
Domestic/work/study				
VPA¹				
Frequency, d/week	0 (0, 2)	0 (0, 1)	-13.763	<0.001
Duration, min/d	0 (0, 30)	0 (0, 10)	-14.181	<0.001
Volume, min/week	0 (0, 90)	0 (0, 10)	-14.336	<0.001
MPA²				
Frequency, d/week	1 (0, 3)	1 (0, 2)	-9.007	<0.001
Duration, min/d	20 (0, 40)	10 (0, 30)	-10.488	<0.001
Volume, min/week	40 (0, 120)	10 (0, 60)	-10.352	<0.001
MVPA³				
Volume, min/week	60 (0, 180)	20 (0, 90)	-13.226	<0.001
Transportation				
MPA²				
Frequency, d/week	5 (2, 7)	5 (1, 7)	3.867 ^a	<0.001
Duration, min/d	30 (12, 50)	30 (10, 40)	-1.571	0.116
Volume, min/week	135 (40, 240)	120 (30, 210)	-3.496	<0.001
Sports and leisure-time				
VPA¹				
Frequency, d/week	1 (0, 2)	0 (0, 1)	-15.195	<0.001
Duration, min/d	15 (0, 60)	0 (0, 20)	-15.473	<0.001
Volume, min/week	20 (0, 100)	0 (0, 30)	-15.846	<0.001
MPA²				

Frequency, d/week	1 (0, 3)	0 (0, 2)	-7.851	<0.001
Duration, min/d	20 (0, 40)	0 (0, 30)	-8.601	<0.001
Volume, min/week	40 (0, 100)	0 (0, 75)	-8.766	<0.001
MVPA³				
Volume, min/week	90 (0, 210)	30 (0, 120)	-13.808	<0.001
Total VPA¹				
Volume, min/week	60 (0, 180)	0 (0, 60)	-17.387	<0.001
Total MPA²				
Volume, min/week	250 (120, 450)	180 (80, 340)	-10.616	<0.001
Total MVPA³				
Volume, min/week	360 (170, 645)	230 (105, 420)	-12.527	<0.001

¹: VPA, vigorous-intensity physical activity.

²: MPA, moderate-intensity physical activity.

³: MVPA, moderate- and vigorous-intensity physical activity.

^a: t-value, the between-group difference was tested by *t*-test.

Table S4 Comparison of all related variables among university students in three Chinese cities (N=4758)

Characteristics	Shantou	Jinan	Hong Kong	χ^2 ^b	P-value
	(N=2123) mean \pm SD	(N=1267) mean \pm SD	(N=1368) mean \pm SD		
Domestic/work/study					
VPA¹					
Frequency, d/week	0.49 \pm 1.211	0.65 \pm 1.360	1.30 \pm 1.618	430.847	<0.001
Duration, min/d	9.54 \pm 30.385	11.95 \pm 26.858	29.20 \pm 44.886	459.346	<0.001
Volume, min/week	26.26 \pm 97.002	29.63 \pm 84.260	76.13 \pm 141.237	451.585	<0.001
MPA²					
Frequency, d/week	1.37 \pm 1.794	1.39 \pm 1.818	1.35 \pm 1.630	41.561	<0.001
Duration, min/d	22.04 \pm 46.981	20.96 \pm 28.376	28.09 \pm 38.545	54.763	<0.001
Volume, min/week	62.81 \pm 179.510	65.11 \pm 110.745	67.79 \pm 120.332	37.396	<0.001
MVPA³					
Volume, min/week	89.07 \pm 233.198	94.75 \pm 157.456	143.92 \pm 221.951	162.353	<0.001
Transportation					
MPA²					
Frequency, d/week	4.19 \pm 2.677	4.19 \pm 2.719	3.75 \pm 2.593	13.264 ^a	<0.001
Duration, min/d	33.48 \pm 37.862	36.06 \pm 36.294	37.40 \pm 55.204	12.776	0.002
Volume, min/week	183.04 \pm 243.689	184.01 \pm 229.371	188.67 \pm 361.267	13.614	0.001
Sports and leisure-time					
VPA¹					
Frequency, d/week	0.66 \pm 1.330	0.91 \pm 1.590	1.16 \pm 1.532	167.345	<0.001
Duration, min/d	13.43 \pm 28.847	18.12 \pm 30.861	32.26 \pm 47.221	215.755	<0.001
Volume, min/week	33.30 \pm 90.518	43.20 \pm 93.836	81.88 \pm 162.518	196.872	<0.001

MPA²					
Frequency, d/week	1.29±1.789	1.73±2.029	1.25±1.610	53.535	<0.001
Duration, min/d	19.49±31.618	25.21±39.452	25.96±39.452	48.271	<0.001
Volume, min/week	53.45±115.262	67.89±107.243	64.54±132.276	52.548	<0.001
MVPA³					
Volume, min/week	86.75±170.705	111.09±161.263	146.42±262.774	89.474	<0.001
Total VPA¹					
Volume, min/week	59.56±164.161	72.83±155.848	158.01±258.381	428.887	<0.001
Total MPA²					
Volume, min/week	299.29±378.162	317.01±334.969	321.00±483.178	15.821	<0.001
Total MVPA³					
Volume, min/week	358.85±469.466	389.84±408.753	479.01±650.137	41.574	<0.001
	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>		
Study year				147.006	<0.001
Year 1	698 (32.9)	453 (35.8)	345 (25.2)		
Year 2	691 (32.5)	443 (35.0)	328 (24.0)		
Year 3	734 (34.6)	371 (29.3)	695 (50.8)		
University sports team member				99.654	<0.001
No	1977 (93.1)	1153 (91.0)	1132 (82.7)		
Yes	146 (6.9)	114 (9.0)	236 (17.3)		
Other sports team member				0.732	0.694
No	1989 (93.7)	1196 (94.4)	1287 (94.1)		
Yes	134 (6.3)	71 (5.6)	81 (5.9)		
Sleep duration				338.655	<0.001
7.00-7.99 h/d	69 (3.3)	29 (2.3)	189 (13.8)		
<6.00 h/d	406 (19.1)	187 (14.8)	376 (27.5)		
6.00-6.99 h/d	841 (39.6)	608 (48.0)	433 (31.7)		
8.00-8.99 h/d	563 (26.5)	353 (27.9)	270 (19.7)		
≥ 9.00 h/d	244 (11.5)	90 (7.1)	100 (7.3)		

¹: VPA, vigorous-intensity physical activity.

²: MPA, moderate-intensity physical activity.

³: MVPA, moderate- and vigorous-intensity physical activity.

^a: *F*-value, tested by one-way ANOVA.

^b: The between-group differences of study year, university/other sports team member, and sleep duration were tested by Pearson chi-square tests, and 20 PA-related variables were tested by Kruskal-Wallis H tests.

Table S5 Comparison of all related variables among university students in three Chinese cities (N=4758)

Characteristics	Shantou (N=2123) median (IQR)	Jinan (N=1267) median (IQR)	Hong Kong (N=1368) median (IQR)	χ^2 ^b	<i>P</i> -value
Domestic/work/study					

<u>VPA</u>¹					
Frequency, d/week	0 (0, 0)	0 (0, 1)	1 (0, 2)	430.847	<0.001
Duration, min/d	0 (0, 0)	0 (0, 10)	10 (0, 40)	459.346	<0.001
Volume, min/week	0 (0, 0)	0 (0, 10)	15 (0, 90)	451.585	<0.001
<u>MPA</u>²					
Frequency, d/week	1 (0, 2)	1 (0, 3)	1 (0, 2)	41.561	<0.001
Duration, min/d	10 (0, 30)	15 (0, 30)	20 (0, 40)	54.763	<0.001
Volume, min/week	10 (0, 60)	30 (0, 90)	30 (0, 90)	37.396	<0.001
<u>MVPA</u>³					
Volume, min/week	20 (0, 80)	40 (0, 120)	60 (0, 180)	162.353	<0.001
Transportation					
<u>MPA</u>²					
Frequency, d/week	5 (2, 7)	5 (2, 7)	4 (1, 6)	13.264 ^a	<0.001
Duration, min/d	30 (10, 40)	30 (15, 50)	30 (10, 40)	12.776	0.002
Volume, min/week	140 (40, 210)	120 (40, 210)	100 (30, 210)	13.614	0.001
Sports and leisure-time					
<u>VPA</u>¹					
Frequency, d/week	0 (0, 1)	0 (0, 1)	1 (0, 2)	167.345	<0.001
Duration, min/d	0 (0, 15)	0 (0, 30)	10 (0, 60)	215.755	<0.001
Volume, min/week	0 (0, 20)	0 (0, 60)	10 (0, 90)	196.872	<0.001
<u>MPA</u>²					
Frequency, d/week	0 (0, 2)	1 (0, 3)	1 (0, 2)	53.535	<0.001
Duration, min/d	0 (0, 30)	20 (0, 30)	10 (0, 30)	48.271	<0.001
Volume, min/week	0 (0, 80)	30 (0, 90)	15 (0, 78.75)	52.548	<0.001
<u>MVPA</u>³					
Volume, min/week	30 (0, 100)	60 (0, 150)	60 (0, 180)	89.474	<0.001
Total VPA¹					
Volume, min/week	0 (0, 60)	0 (0, 90)	60 (0, 180)	428.887	<0.001
Total MPA²					
Volume, min/week	200 (90, 360)	210 (100, 420)	190 (80, 375)	15.821	<0.001
Total MVPA³					
Volume, min/week	230 (110, 440)	270 (125, 500)	286.5 (120, 570)	41.574	<0.001
	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>		
Study year				147.006	<0.001
Year 1	698 (32.9)	453 (35.8)	345 (25.2)		
Year 2	691 (32.5)	443 (35.0)	328 (24.0)		
Year 3	734 (34.6)	371 (29.3)	695 (50.8)		
University sports team member				99.654	<0.001
No	1977 (93.1)	1153 (91.0)	1132 (82.7)		
Yes	146 (6.9)	114 (9.0)	236 (17.3)		
Other sports team member				0.732	0.694
No	1989 (93.7)	1196 (94.4)	1287 (94.1)		
Yes	134 (6.3)	71 (5.6)	81 (5.9)		

Sleep duration				338.655	<0.001
7.00-7.99 h/d	69 (3.3)	29 (2.3)	189 (13.8)		
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