

Supplementary materials

Table S1: Baseline characteristics of participants included and excluded in the study.

	Participants included (n=4309)	Participants excluded (n=13666)
Age (years)	58.12(9.12)	59.34(10.41)
Sex (n, %)		
missing	0(0.0)	16(0.1)
Female	1989(49.2)	7229(52.9)
Male	2050(50.8)	6421(47.0)
area (n, %)		
missing	1397(34.6)	6086(44.5)
rural	2053(50.8)	5662(41.4)
urban	589(14.6)	1918(14.0)
Education (n, %)		
missing	0(0.0)	55(0.4)
Primary	2536(62.8)	9217(67.4)
Secondary	1421(35.2)	4047(29.6)
Third	82(2.0)	347(2.5)
Marriage (n, %)		
missing	0(0.0)	33(0.2)
married	3613(89.5)	11884(87.0)
other	426(10.5)	1749(12.8)
BMI (kg/m2)	23.49(4.00)	23.47(3.95)
smoking status (n, %)		
missing	0(0.0)	151(1.1)
current	1298(32.1)	4225(30.9)
former	365(9.0)	1075(7.9)
never	2376(58.8)	8215(60.1)
drinking status (n, %)		
missing	0(0.0)	158(1.2)
≤once a month	335(8.3)	1049(7.7)
>once a month	1115(27.6)	3268(23.9)
no current drinking	2589(64.1)	9191(67.3)
Health conditions (n, %)		
Hypertension	918(22.7)	3366(24.6)
Diabetes	223(5.5)	770(5.6)
Dyslipidemia	366(9.1)	1229(9.0)
heart diseases	447(11.1)	1646(12.0)
CES-D score	6.00[3.00,11.00]	7.00[3.00,13.00]

Data are the mean (SD), median [IQR] or number (%), as appropriate.

Table S2: Baseline characteristics of participants according to the PA intensity.

	none (n=468)	mild (n=1002)	moderate (n=1263)	vigorous (n=1306)	P value
Age (years)	59.89(10.07)	60.20(9.68)	57.44(8.97)	56.55(8.03)	<0.001
Sex, Male (n,%)	211(45.1)	471(47.0)	577(45.7)	791(60.6)	<0.001
Residence (n, %)					
urban	82(27.2)	246(36.1)	205(25.8)	56(6.5)	<0.001
rural	219(72.8)	435(63.9)	591(74.2)	808(93.5)	
Education level (n, %)					
primary	284(60.7)	622(62.1)	742(58.7)	888(68.0)	<0.001
secondary	178(38.0)	345(34.4)	487(38.6)	411(31.5)	
third	6(1.3)	35(3.5)	34(2.7)	7(0.5)	
Married (n, %)	402(85.9)	844(84.2)	1144(90.6)	1223(93.6)	<0.001
BMI (kg/m ²)	23.63(4.38)	23.70(3.86)	23.48(4.22)	23.29(3.72)	0.085
smoking (n, %)					
current	135(28.8)	284(28.3)	348(27.6)	531(40.7)	<0.001
former	40(8.5)	106(10.6)	114(9.0)	105(8.0)	
never	293(62.6)	612(61.1)	801(63.4)	670(51.3)	
drinking (n, %)					
>once a month	110(23.5)	220(22.0)	330(26.1)	455(34.8)	<0.001
≤once a month	31(6.6)	75(7.5)	113(8.9)	116(8.9)	
no current drinking	327(69.9)	707(70.6)	820(64.9)	735(56.3)	
Hypertension (n, %)	133(28.6)	298(29.9)	283(22.4)	215(16.6)	<0.001
Diabetes (n, %)	27(5.8)	84(8.4)	71(5.6)	42(3.3)	<0.001
Dyslipidemia (n, %)	48(10.4)	128(12.9)	129(10.4)	61(4.8)	<0.001
Heart (n, %)	61(13.1)	162(16.2)	152(12.1)	72(5.6)	<0.001
CES-D score	7.00 [3.00,12.00]	6.00 [3.00,11.00]	6.00 [3.00,11.00]	7.00 [3.00,12.00]	0.06

Data are the mean (SD), median [IQR] or number (%), as appropriate.

Table S3: Full regression results in terms of global cognition, episodic memory and mental intactness.

	Global cognition		Episodic memory		Mental intactness	
	β	P value	β	P value	β	P value
Age	-0.0648	<0.0001	-0.0325	<0.0001	-0.0323	<0.0001
BMI	0.0040	0.7470	0.0002	0.9706	0.0038	0.6918
physical activity (ref: none)						
mild	0.4208	0.0175	0.2040	0.0195	0.2167	0.1110
moderate	0.5906	0.0006	0.2476	0.0034	0.3430	0.0091
vigorous	0.1325	0.4468	0.1283	0.1353	0.0041	0.9754
urban (ref: rural)	0.8153	<0.0001	0.2736	0.0007	0.5418	<0.0001
Male (ref: female)	0.7578	<0.0001	-0.0528	0.4607	0.8106	<0.0001
Education (ref: primary)						
Secondary	1.9909	<0.0001	0.7331	<0.0001	1.2577	<0.0001
Third	3.1047	<0.0001	1.4389	<0.0001	1.6658	<0.0001
Married (ref: others)	0.4090	0.0203	0.1359	0.1181	0.2732	0.0435
Hypertension	1.2266	0.1449	0.4853	0.2424	0.7412	0.2514
Dyslipidemia	0.4768	0.3277	0.4033	0.0935	0.0736	0.8441
Diabetes	0.6831	0.3670	-0.1581	0.6722	0.8412	0.1481
Heart diseases	-0.8029	0.3115	-0.1036	0.7912	-0.6993	0.2511
smoking status (ref: smoke)						
former	0.2512	0.1827	-0.0056	0.9521	0.2568	0.0762
never	0.0121	0.9330	-0.0404	0.5702	0.0525	0.6354
current drinking (ref: >once per month)						
≤once per month	0.3268	0.0999	0.1861	0.0576	0.1407	0.3562
no current drinking	0.2778	0.0323	0.0924	0.1490	0.1854	0.0629
CES-D	-0.0997	<0.0001	-0.0334	0.0000	-0.0663	<0.0001

Table S4: Association of volume of physical activity intensity with cognition scores.

	Vigorous PA			Moderate PA			Mild PA		
	β	95% CI	P	β	95% CI	P	β	95% CI	P
Global cognition									
none (reference)									
1-2 days/week	0.211	-0.183-0.779	0.468	-0.059	-0.755-0.873	0.901	-0.269	-0.812-0.426	0.448
3-5 days/week	0.516	0.269-0.91	0.010	0.789	0.577-1.485	0.026	0.734	0.473-1.277	0.008
6-7 days/week	-0.119	-1.051-0.129	0.347	-0.001	-0.695-0.211	0.995	0.073	-0.198-0.334	0.583
Episodic memory									
none (reference)									
1-2 days/week	0.078	-0.109-0.349	0.570	-0.020	-0.351-0.423	0.930	-0.064	-0.323-0.266	0.704
3-5 days/week	0.163	0.046-0.351	0.087	0.341	0.241-0.672	0.043	0.101	-0.023-0.359	0.446
6-7 days/week	-0.014	-0.457-0.103	0.810	-0.063	-0.394-0.037	0.219	0.009	-0.416-0.133	0.891
Mental intactness									
none (reference)									
1-2 days/week	0.132	-0.161-0.557	0.541	-0.039	-0.558-0.656	0.912	-0.205	-0.61-0.313	0.438
3-5 days/week	0.353	0.168-0.646	0.018	0.448	0.29-0.967	0.091	0.633	0.439-1.038	0.002
6-7 days/week	-0.104	-0.8-0.08	0.268	0.062	-0.456-0.22	0.438	0.064	0.064-0.259	0.516

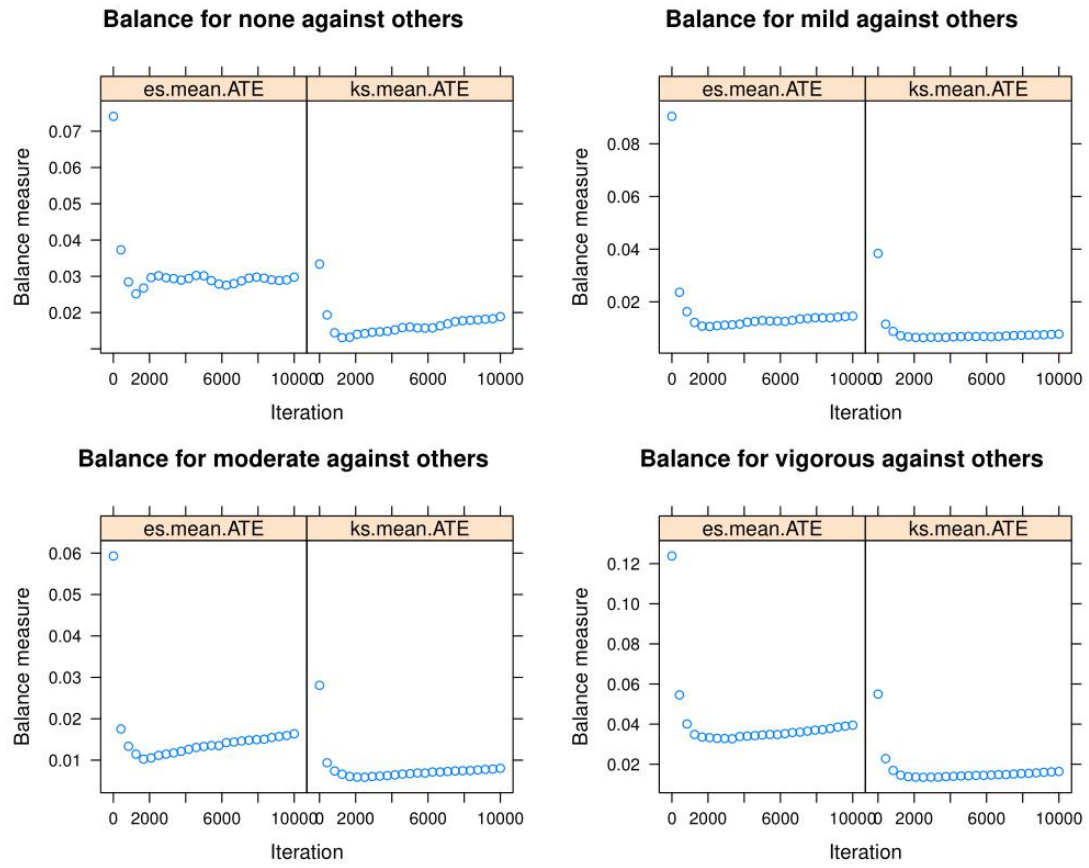


Figure S1: The balance measures of interest at different interactions.

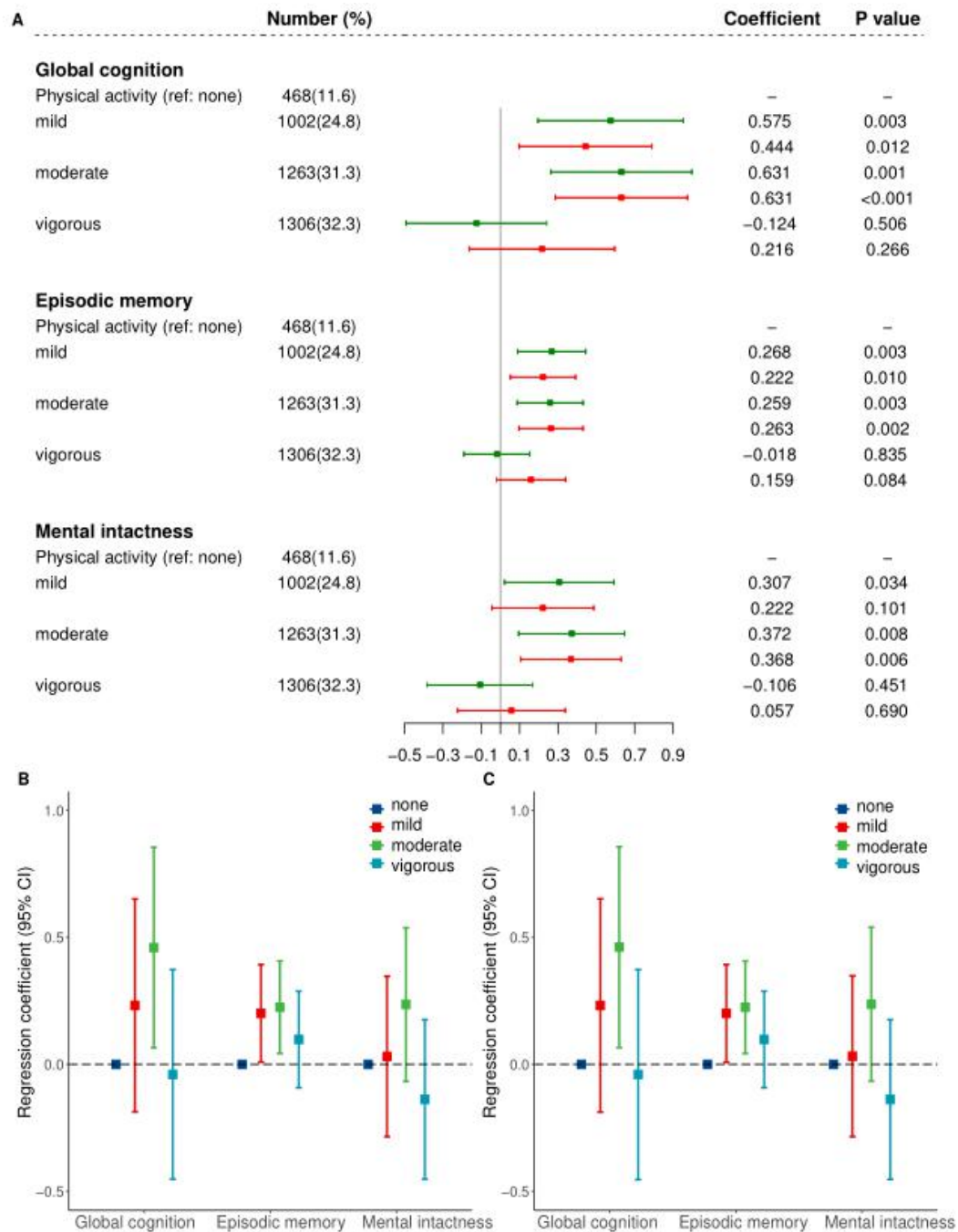


Figure 2: Results of sensitivity analyses.

A: the pooled association of PA intensity with cognitive after data imputation. the green line refers to the results in model 1; the red line refers to the results in model 2;

B, C: the association between PA intensity and cognitive after the multinomial propensity score weighting procedure using the ‘es.mean’ and ‘ks.mean’ as the stopping rule parameters, respectively.

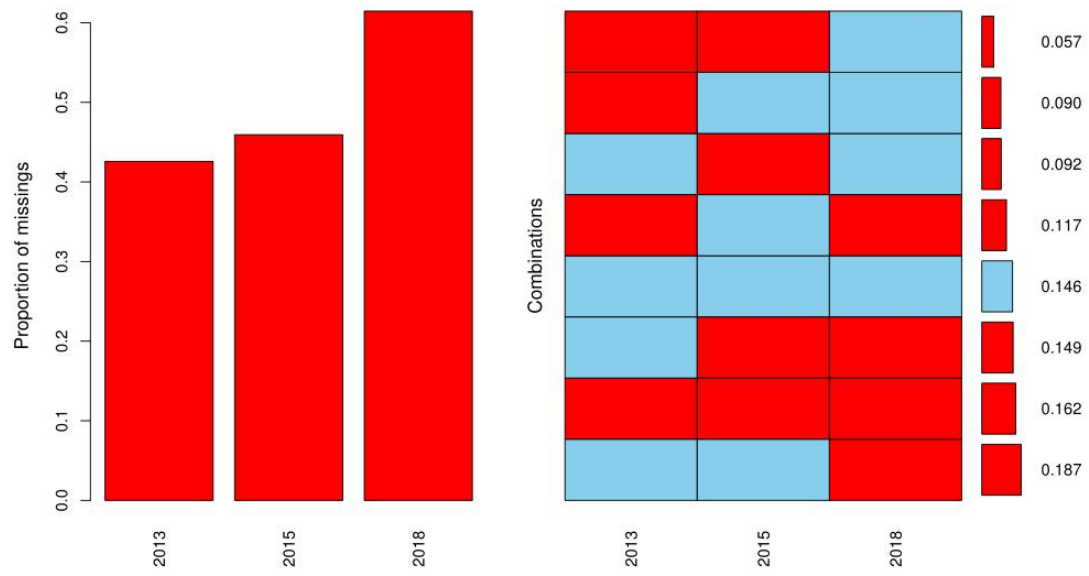


Figure S3: The missing pattern of cognition function tests during follow-up.