



Supplementary Fig.1. Associations of physical activity with CSF tau/A β 42 and p-tau/ A β 42 ratios.

(A) Participants who were physically active had lower CSF tau/A β 42 compared to those who had a lack of physical activity ($p=0.006$). (B)

Participants who were physically active had lower p-tau/A β 42 levels compared to those who had a lack of physical activity ($p < 0.001$).

Supplementary Table 1. Association between lifestyle categories and CSF AD biomarkers

	CSF A β 42			CSF tau			CSF p-tau		
	β	<i>p</i>	<i>p</i> for trend	β	<i>p</i>	<i>p</i> for trend	β	<i>p</i>	<i>p</i> for trend
All participants			0.39			<0.01			<0.01
Unfavorable lifestyle	Reference	-		Reference	-		Reference	-	
Intermediate lifestyle	-0.0003	0.10		-0.0048	0.02		-0.0055	0.05	
Favorable lifestyle	0.0003	0.16		-0.0120	<0.01		-0.0150	<0.01	
APOE ϵ 4 carriers			0.96			<0.01			0.02
Unfavorable lifestyle	Reference	-		Reference	-		Reference	-	
Intermediate lifestyle	-0.0004	0.32		-0.0156	<0.01		-0.0129	0.06	
Favorable lifestyle	0.0001	0.92		-0.0182	<0.01		-0.0214	0.03	
APOE ϵ 4 non-carriers			0.48			<0.01			<0.01
Unfavorable lifestyle	Reference	-		Reference	-		Reference	-	
Intermediate lifestyle	-0.0002	0.18		-0.0026	0.27		-0.0043	0.15	
Favorable lifestyle	0.0004	0.14		-0.0107	<0.01		-0.0137	<0.01	

Supplementary Table 2. Association of lifestyle categories with CSF A β 42/A β 40, tau/A β 42 and p-tau/A β 42 ratios

	CSF A β 42/A β 40			CSF tau/A β 42			CSF p-tau/A β 42		
	β	<i>p</i>	<i>p</i> for trend	β	<i>p</i>	<i>p</i> for trend	β	<i>p</i>	<i>p</i> for trend
All participants			0.99			<0.01			<0.01
Unfavorable lifestyle	Reference	-		Reference	-		Reference	-	
Intermediate lifestyle	-2.6E-3	0.15		-0.08	0.09		-0.00	0.72	
Favorable lifestyle	1.7E-3	0.52		-0.24	<0.01		-0.04	<0.01	
APOE ϵ 4 carriers			0.99			0.02			0.15
Unfavorable lifestyle	Reference	-		Reference	-		Reference	-	
Intermediate lifestyle	1.1E-3	0.72		-0.23	0.07		-0.01	0.71	
Favorable lifestyle	7.4E-4	0.86		-0.37	0.04		-0.05	0.11	
APOE ϵ 4 non-carriers			0.85			<0.01			<0.01
Unfavorable lifestyle	Reference	-		Reference	-		Reference	-	
Intermediate lifestyle	-3.3E-3	0.15		-0.06	0.24		-0.00	0.89	
Favorable lifestyle	1.2E-3	0.72		-0.29	<0.01		-0.04	<0.01	

Supplementary Table 3. Association between lifestyle categories (defined by physical activity and social engagement) and CSF AD biomarkers

	CSF A β 42			CSF tau			CSF p-tau		
	β	<i>p</i>	<i>p</i> for trend	β	<i>p</i>	<i>p</i> for trend	β	<i>p</i>	<i>p</i> for trend
All participants			0.38			<0.01			<0.01
Unfavorable lifestyle	Reference	-		Reference	-		Reference	-	
Intermediate lifestyle	-0.0002	0.26		-0.0038	0.15		-0.0063	0.05	
Favorable lifestyle	0.0002	0.46		-0.0102	<0.01		-0.0171	<0.01	

Supplementary Table 4. Interaction analysis between physical activity and social engagement.

	CSF A β 42		CSF tau		CSF p-tau	
	B	<i>p</i>	β	<i>p</i>	β	<i>p</i>
Age	-0.0000	0.87	0.0008	<0.01	0.0007	<0.01
Sex	0.0001	0.34	-0.0009	0.63	-0.0019	0.46
Education	0.0000	0.87	-0.0001	0.74	-0.0004	0.15
APOE	-0.0004	0.04	0.0020	0.43	0.0069	0.03
Physical activity	0.0004	0.31	0.0019	0.71	0.0052	0.45
Absence of social isolation	-0.0002	0.41	-0.0028	0.31	-0.0045	0.19
Physical activity \times Absence of social isolation	0.0000	0.95	-0.0078	0.17	-0.0152	0.04

Questionnaire used in the evaluation of healthy lifestyles

Smoking status	
Do you smoke?	Yes/No
How many cigarettes do you smoke in one day?	
Do you quit smoke?	Yes/No
Alcohol consumption	
Do you drink alcohol?	Yes/No
How often do you drink?	times/week
What kind of alcohol do you drink? How much do you drink in one day?	Wine: g/day Liquor: g/day Beer: bottle/day
Social engagement	
What is your marital status?	Single/married/separated/divorced/widowed
Do you live alone?	Yes/No
Do you have intimate relationship with your relatives?	Yes/No
Do you have intimate friends who can support you?	Yes/No
Do you have intimate relationship with your neighbors?	Yes/No
Physical activity	
Do you have physical exercise regularly?	Yes/No
What kind of physical exercise do you do?	
What is the frequency of your physical exercise?	times/week