

Supplementary Table 1: Baseline characteristics of included trials

Aerobic exercise type	study	region	Participants	intervene							
				Sample size	age	female	manner	frequency	strength	MMSE	MoCA
multi-component aerobic exercise	Li, L (2021) ¹²	Asia/China	Experimenta l group	42	60–69 (47.6%)、 70–79 (47.6%)、 80 and above (4.8%)	64%	5 minutes warm-up, 5 minutes aerobic training, 5 minutes strength training, 5 minutes balance training, 5 minutes coordination training, 5 minutes sensitivity training	30 minutes × 5 times × 24 weeks (6 months).	The warm-up is a 3–4/10 Perceptual Nu (RPE) level, and the rest of the workout is 4–5/10 RPE	26.50 ± 1.33	21.52 ± 2.05
			Control group	42	60–69 (42.9%)、 70–79 (50.0%)、 80 and above (7.1%)	57%	General community health guidance			26.62 ± 1.46	21.14 ± 1.97
	Bademli (2019) ¹⁵	Asian/Turkey	Experimenta l group	30	72.24 ± 7.16	60%	10 minutes of warm-up, 20 minutes of rhythmic exercise (including 22 simple exercises), 10 minutes of cooling exercise (low-intensity exercise), 40 minutes of free walking.	80 minutes × 20 weeks, 4/3/7 days per week	3–6 metabolic equivalents (ME).	23.27 ± 2.17	
			Control group	30	70.67 ± 8.34	57%	Continue with your daily activities			23.42 ± 1.07	
	De Oliveira (2019) ¹⁴	Euro-America n/ Brazil	Experimenta l group	7	71.85 ± 5.69	85.71%	5 minutes of balance training, 30 minutes of aerobic training, 20 minutes of strength training, 5 minutes of stretching exercises	60 minutes × 2 times × 12 weeks	The intensity of the main training is 70% of the maximum oxygen consumption (VO ₂ max) or 80% of the predicted maximum heart rate (HR _{max}).	29 ± 0.61	
			Control group	12	78.20 ± 5.26	41.66%	Clinical follow-up without any physical training			27.8 ± 2.57	
	Langoni (2019) ¹³	Euro-America n/ Brazil	Experimenta l group	26	72.6 ± 7.8	76.9%	Strength training takes about 30 minutes (with equipment including ankle weight, resistance latex tape and dumbbells) and aerobic training (20–30 minutes of walking).	60 minutes × 2 times × 24 weeks	Aerobic training to walk at a maximum heart rate of 60% to 75%.	21.9 ± 4.8	
			Control group	26	71.9 ± 7.9	76.9%	Do not initiate any form of physical or cognitive activity and keep in touch by phone			25.0 ± 4.7	
	Lam (2015) ¹⁶	Asia/China	Experimenta l group	147	75.5 ± 6.7	76.9%	Stretching and conditioning exercises, mind-body exercises (such as tai chi) and aerobic exercises (such as static cycling).	120 minutes × 3 × 48 weeks (12 months).	Unknown	25.8 ± 2.3	

			Control group	131	75.4±6.1	77.9%	Social activities (e.g., tea parties, movie watching).			25.6 ± 2.4	
mind-body exercise	Li,F (2022)	Euro-America/ United States	Experimental group	22	74.5 ±5.6	36.4%	Traditional Tai Chi training	60 minutes× 2 times × 16 weeks	The metabolic equivalent of Tai Chi exercise is 3.5-4.3 MET	25.09 ± 2.43	
			Control group	24	74.9±6.3	62.5%	Stretching exercises			25.13 ± 2.19	
	Tao,J (2019) ¹⁰ ①	Asia/ China	Experimental group	20	66.17±4.17	75%	15 minutes to warm up, 40 minutes to eight danjin training and 5 minutes to cool down	60 minutes × 3 times × 24 weeks	The Batdan Nishiki Movement MET is 2.68	22.45 ± 2.16	
			Control group	20	65.97±5.66	70%	Maintain their original level of physical activity, do not receive any specific exercise interventions, health education			21.00 ± 2.36	
	Qi,M (2019) ¹⁸	Asia/ China	Experimental group	16	70.6±6.2	69%	35 minutes of moderate intensity aerobic dance (5 minutes of warm-up, 25 minutes of target heart rate dance and 5 minutes of music cooling).	35 minutes × 3 times× 12 weeks (three months).	60-80% maximum heart rate as the target heart rate for aerobic dance	27.3 ± 1.3	22.6 ± 2.1
			Control group	16	69.1±8.1	75%	Routine care			27.1 ± 1.2	22.9 ± 1.7
	Zhu,Y (2018) ¹⁹	Asia/ China	Experimental group	29	70.3±6.7	51.7%	5 minutes of warm-up, 25 minutes of target heart rate dance and 5 minutes of cooling	35 minutes × 3 times× 12 weeks (three months)	The target heart rate is set at 60%-80% of your maximum heart rate	23.2 ± 1.9	
			Control group	31	69.0±7.3	67.7%	Routine care			22.9 ± 2.1	
	Lazarou, (2017) ²⁰	Euro-America/ n/ Greece	Experimental group	66	65.89±10.76	80%	International Ballroom Dance (5 minutes of warm-up, review of previous dance lessons, 45 minutes of new material (tricks/dances), and 10 minutes of cooling time).	60 minutes× 2 times× 40 weeks (10 months).	Dancing About 6 METs	27.60 ± 2.19	24.70 ± 2.25
			Control group	33	67.92±9.47	76%	No intervention was accepted, the educational meeting was received			26.88 ± 2.1	23.81 ± 3.1
	Doi,T (2017) ²¹	Asia/ Japan	Experimental group	67	75.7±4.1	50.7%	The dance program is based on ballroom dances, including salsa, rumba, waltz, cha-cha, bruce, kitba and tango	60 minutes × once × 40 weeks	Dancing About 6 METs	26.0 ± 2.6	
			Control group	67	76.0±4.9	46.3%	Health education class			25.8 ± 2.4	
	Lam (2014) ²²	Asia/ China	Experimental group	171	77.2±6.3	73%	24 Styles of Tai Chi " Training.	During the introductory phase, the coaching process is 4 to 6 weeks.	The metabolic equivalent of Tai Chi exercise is 3.5-4.3 MET	25.1 ± 3.0	

Conventional aerobic exercise	Tomoto, (2021) ²³	Euro-America /USA	Control group	218	78.3±6.6	79%	Stretching and relaxation exercises	During the maintenance phase, the frequency of interventions was ≥ 30 minutes per day and ≥ 3 days a week. Until the 1st month of the 2nd month			24.4 ± 2.9
			Experimental group	22	64.8 ± 6.4	55%	Treadmill running	1-10 weeks: 25-30 minutes × 3 times. 11-25 weeks: 30-35 minutes × 3 or 4 times. 26 weeks - 1 year: 30-40 minutes × 4-5 times	The intensity is 75%-85% of the maximum heart rate (HR).	29.0 ± 1.5	
	Song, D (2019) ²⁴	Asia/China	Control group	30	66.1 ± 6.8	53%	Stretching and conditioning interventions				28.8 ± 1.4
			Experimental group	60	76.22 ± 5.76	80%	Aerobic tread exercises	60 minutes × 3 times × 16 weeks	For moderate-intensity workouts using the Borg Scale, the Borg score is 12-14	22.03 ± 1.81	
	Tao, J (2019) ¹⁰ ②	Asia/China	Control group	60	75.33 ± 6.78	70%	Health education class				22.10 ± 1.92
			Experimental group	17	64.32 ± 2.60	59%	Warm up for 15 minutes, walk fast for 40 minutes, cool down for 5 minutes.	60 minutes × 3 times × 24 weeks	The participants' heart rate was controlled at 55%-75% of the reserve heart rate	21.47 ± 2.27	
	Choi, W (2018) ²⁵	Asia/South Korea	Control group	20	65.97 ± 5.6	70%	Maintain the original level of physical activity and do not receive any specific exercise interventions, health education				21.00 ± 2.36
			Experimental group	30	74.90 ± 5.10	80%	10min warm-up activity, 40min GKP exercise and 10min cooling activity.	60 minutes × 2 times × 6 weeks	Unknown	21.66 ± 3.24	
	Kohanpour (2017) ²⁶	Asia/Iran	Control group	30	74.23 ± 4.38	83%	Stretching, warm-up and cooling exercises are the same as in the exercise group				20.76 ± 3.02
			Experimental group	10	60-70	0%	8min warm-up, (8-26)min running and cooling down for 5min	21-39 minutes × 3 times × 12 weeks	The intensity is 75% to 85% of the maximum heart rate	22.70 ± 1.63	
Wei, X H (2014) ²⁷	Asia/China	Control group	10	60-70	0%	Habitual lifestyle				24.30 ± 0.94	
		Experimental group	30	66.73 ± 5.48	30%	Handball training	30 minutes × 5 times × 6 months (120 times).	The average intensity of aerobic exercise is about 60% of your maximum heart rate	24.33 ± 1.65		
			Control group	30	65.27 ± 4.63	36.7%	Maintain the original way of life and entertainment			25.00 ± 1.29	

Varela, S (2012) ¹¹ ①	Euro- America n/ Spain	Experimental group	17	79.24± 10.07	Unknown	5 minutes of warm-up, 20 minutes of recumbent bike ride, and 5 minutes of stretching to cool down	30 minutes × 3 times × 12 weeks	Exercise intensity is set at 40% of the participant's reserve heart rate (maximum heart rate - resting heart rate).	19.86 ± 5.12
		Control group	15	79.40 ± 6.72		Social entertainment			21.80 ± 3.23
Varela, S (2012) ¹¹ ②	Euro- America n/ Spain	Experimental group	16	76.44 ± 11.38	Unknown	5 minutes of warm-up, 20 minutes of recumbent bike ride, and 5 minutes of stretching to cool down	30 minutes × 3 times × 12 weeks	The exercise intensity is set at 60% of the participant's reserve heart rate (maximum heart rate - resting heart rate).	20.81 ± 4.69
		Control group	15	79.40 ± 6.72		Social entertainment			21.80 ± 3.23