

Appendix

A: Search strategies for Chinese and English databases

English database

Pubmed

#5 (((#1) AND (#2)) AND (#3)) AND (#4)

#4 (((((((("randomized controlled trial"[Title/Abstract]) OR ("controlled trial"[Title/Abstract]))OR ("randomised controlled study"[Title/Abstract])) OR (controlled[Title/Abstract])) OR (randomized[Title/Abstract])) OR ("control group"[Title/Abstract])) OR (placebo[Title/Abstract]))

#3 ((((((((((balance) OR ("body equilibrium")) OR (equilibrium)) OR ("postural balance")) OR ("postural control")) OR ("postural equilibrium")) OR (falling)) OR (accidental falls)) OR ("slip and fall")) OR (musculoskeletal equilibrium)) OR (fall)

#2 (((Baduanjin) OR ("eight section brocades")) OR (qigong)) OR ("Traditional Chinese exercise")

#1 (((((Old) OR (senior)) OR (aged)) OR (elderly)) OR (middle aged)) OR (elder)

Embase

(old OR senior OR 'aged'/exp OR 'aged' OR 'aged patient' OR 'aged people' OR 'aged person' OR 'aged subject' OR 'elderly' OR 'elderly patient' OR 'elderly people' OR 'elderly person' OR 'elderly subject' OR 'senior citizen' OR 'senium' OR 'middle aged'/exp OR elder OR aged OR 'middle aged') AND ('baduanjin'/exp OR 'eight section brocades' OR 'qigong exercise'/exp OR 'traditional chinese exercise'/exp OR baduanjin OR qigong OR 'traditional chinese exercise') AND ('balance'/exp OR 'body equilibrium'/exp OR 'body sway' OR 'equilibrium, body' OR 'musculoskeletal equilibrium' OR 'postural balance' OR 'postural equilibrium' OR 'postural control'/exp OR 'falling'/exp OR 'fall' OR 'falling' OR 'slip and fall' OR balance OR fall OR 'body equilibrium' OR falling OR 'postural control' OR 'accidental falls') AND ('randomized controlled trial'/exp OR 'controlled trial, randomized' OR 'randomised controlled study' OR 'randomised controlled trial' OR 'randomized controlled study' OR 'randomized controlled trial' OR 'trial, randomized controlled' OR 'control group'/exp OR controlled:ti OR randomized:ti OR controlled:ab OR 'randomized controlled trial':ti)

Web of Science

#1: (((((ALL=(old)) OR ALL=(senior)) OR ALL=(aged)) OR ALL=(elderly)) OR ALL=(middle aged)) OR ALL=(elder)

#2: (((ALL=(baduanjin)) OR ALL=(eight section brocades)) OR ALL=(qigong)) OR ALL=(Traditional Chinese exercise)

#3: ((((((((((ALL=(balance)) OR ALL=(body equilibrium)) OR ALL=(equilibrium)) OR ALL=(postural balance)) OR ALL=(postural control)) OR ALL=(postural equilibrium)) OR

ALL=(falling)) OR ALL=(accidental falls)) OR ALL=(slip and fall)) OR ALL=(musculoskeletal equilibrium)) OR ALL=(fall)

#4: ((((((TS=(randomized controlled trial)) OR TS=(controlled trial)) OR TS=(randomized controlled study)) OR TS=(controlled)) OR TS=(randomized)) OR TS=(control group)) OR TS=(placebo)

#5: #1AND #2 AND #3AND #4

Google Scholar (top 200 items)

(“old” OR “senior” OR “aged” OR “elderly” OR “middle aged” OR “elder”) AND (“baduanjin” OR “eight section brocades” OR “qigong” OR “Traditional Chinese exercise”) AND (“balance” OR “body equilibrium” OR “equilibrium” OR “postural balance” OR “postural control” OR “postural equilibrium” OR “falling” OR “accidental falls” OR “slip and fall” OR “musculoskeletal equilibrium” OR “fall”) AND (“randomized controlled trial” OR “controlled trial” OR “randomised controlled study” OR “controlled” OR “randomized” OR “control group” OR “placebo”)

Cochrane Library

(old OR senior OR aged OR elderly OR middle aged OR elder) AND (baduanjin OR eight section brocades OR qigong OR Traditional Chinese exercise) AND (balance OR body equilibrium OR equilibrium OR postural balance OR postural control OR postural equilibrium OR falling OR accidental falls OR slip and fall OR musculoskeletal equilibrium OR fall) AND (randomized controlled trial OR controlled trial OR randomized controlled study OR controlled OR randomized OR control group OR placebo):ti,ab,kw (Word variations have been searched)

Chinese Database

China National Knowledge Infrastructure (CNKI)

1#: 老年人 + 老年群体 + 中老年人 + 中年人 + 高龄

2#: 八段锦 + 八段锦气功 + 气功 + 中国传统运动

3#: 平衡能力 + 身体功能 + 运动功能 + 姿态控制 + 姿态平衡 + 跌倒 + 滑倒

4#: 随机对照试验 + 随机对照研究 + 随机对照 + 对照组 + 控制组

5#: 1# * 2# * 3# * 4#

Chinese biomedical literature database (SinoMed)

("老年人"[全部字段:智能] OR "老年群体"[全部字段:智能] OR "中老年人"[全部字段:智能] OR "中年人"[全部字段:智能] OR "高龄"[全部字段:智能]) AND("八段锦"[全部字段:智能] OR "八段锦气功"[全部字段:智能] OR "气功"[全部字段:智能] OR "中国传统运动"[全部字段:智能]) AND("平衡能力"[全部字段:智能] OR "身体功能"[全部字段:智能] OR "运动功能"[全部字段:智能] OR "姿态控制"[全部字段:智能] OR "姿态平衡"[全部字段:智能] OR "跌倒"[全部字段:智能] OR "滑倒"[全部字段:智能]) AND("随机对照试验"[常用字段:智能] OR "随机对照研究"[常用字段:智能] OR "随机对照"[常用字段:智能] OR "对照组"[常用字段:智能] OR "控制组"[常用字段:智能])

Wanfang med online

(((((老年人 OR 老年群体 OR 中老年人 OR 中年人 OR 高龄))) AND (八段锦 OR 八段锦气功 OR 气功 OR 中国传统运动)) AND (平衡能力 OR 身体功能 OR 运动功能 OR 姿态控制 OR 姿态平衡 OR 跌倒 OR 滑倒)) AND 主题=(随机对照试验 OR 随机对照研究 OR 随机对照 OR 对照组 OR 控制组)

B: Characteristics of included studies

Author,year	Types/Design	Research area	Subject characteristics				EG/CG	Intervention programs	Outcome measure	Results
			Numbers	Aged	Genders(M: FM)	Health status				
Dai et al.,2023[37]	Article/RCT	China,Community	EG:20	EG:60.5±3.9	0:1	GH	EG:Baduanjin	12-week	SBT: Maximum displacement of the center of pressure in the anterior-posterior (AP) direction and in the mediallylateral (ML) direction, as well as average velocity DBT: Maximum rotation speed, rotation speed, Balance Score, Balance Rating	SBT:Sd(P<0.05)* DBT:Sd(P<0.05)*
			CG:20	CG:60.2±3.2			CG:NI	intervention, 45-60 minutes 3-5 times per week		
				All:60.35±3.57						
Duan et al.,2024[38]	Article/RCT	China,Multi-Center	EG:523	EG:65.36±4.62	0.29:0.71	GH	EG:BDJ+Fall	21-week	SBT: OLST,TST	SBT:Sd(P<0.05)*
			CG:505	CG:70.44±5.68			prevention education	intervention, 60 minutes 4 times per week	DBT: MTEC PBT: TUG BTB: BBS	DBT:Sd(P<0.05)* PBT:Sd(P<0.05)* BTB:Sd(P<0.05)*
				All:69.87±5.67			CG:Fall prevention education			
ER,YL.2017[39]	Thesis/RCT	China,Community	EG:66	EG:67.23±4.54	0:1	GH	EG:BDJ+Fall	12-week	SBT: OLST,TST	SBT:Sd(P>0.05)**
			CG:73	CG:67.22±4.72			prevention education	intervention, 60 minutes 5 times per week	DBT: MTEC BTB: BBS	DBT:Sd(P<0.05)* BTB:Sd(P<0.05)*
				All:67.22±4.64			CG:Fall prevention education			
Gao,ZP,2020[40]	Thesis/RCT	China,Community	EG:34	EG:79.79±4.18	0.5:0.5	IH	EG:BDJ	12-week	SBT: OLST	SBT:Sd(P<0.05)*
			CG:34	CG:78.88±4.66			CG:HD	intervention, 30 minutes 5 times per week	DBT: FTSST PBT: TUG,FSST Fall: FOF	DBT:Sd(P<0.05)* PB:Sd(P<0.05)* Fall:Sd(P<0.05)*
				All:79.34±4.45						

Guan,F.2023[41]	Article/RCT	China,Hospitals	EG:50 CG:50	EG:79. 19±6.52 CG:70.07±6.45 All:74.63±7.93	0.57:0.43	IH	EG: BDJ+Routine rehabilitation or treatment CG:Routine rehabilitation or treatment	12-week intervention, 15 minutes 7 times per week	BTB: BBS	BTB: Sd(P<0.05)*
Lui,ST.2015[42]	Thesis/RCT	China,Hospitals	EG:7 CG:8	EG:82. 14±1.68 CG:84. 15±2.95 All:83.21±2.64	NR	GH	EG:BDJ CG:NI	12-week intervention, 60 minutes 10 times per week	SBT: PST PBT: TUG	SBT: Trajectory length, peripheral area, left and right maximal swing: Sd(P>0.05)** Maximum front/rear swing: Sd(P<0.05)* PB: Sd(P<0.05)*
Wu et al.,2017[43]	Article/RCT	China,Community	EG:60 CG:60	EG:70.63±4.52 CG:70.55±4.26 All:70.59±4.39	0.3:0.7	IH	EG:BDJ CG:NI	4-week intervention, 60 minutes 14 times per week	PBT: TUG BTB: BBS Fall: Morse	BTB: Sd(P<0.05)* PB: Sd(P<0.05)* Fall: Sd(P<0.05)*
Xie,DL.2023[44]	Thesis/RCT	China,Community	EG:83 CG:83	EG:69.663±3.3 69 CG:69.386±3.4 74 All:69.52±1.42	0.43:0.57	IH	EG:BDJ CG:NI	52-week intervention, 60 minutes 3 times per week	BTB: SPPB	BTB: Sd(P<0.05)*
Yao,Y.2021[45]	Article/RCT	China,Community	EG:50 CG:50	EG:71.37±4.90 CG:72.58±4.83 All:71.975±4.9 0	0.6:0.4	NR	EG:BDJ CG:NI	NR, 30 minutes 3 times per week	PBT: TUG,Balance beam walking,Enhanced Romberg Test SBT: OLST DBT: MTEC	SBT: Sd(P<0.05)* DBT: Sd(P<0.05)* PB: Sd(<0.05)*

Yu et al.,2020[46]	Article/RCT	China,Community	EG:122	EG:67.40±4.47	0.23:0.77	GH	EG:BDJ	26-week	Fall:FES-I	Fall:Sd(P<0.05)*
			CG:152	CG:68.70±5.04			CG:NI	intervention, 60		
				All:68.12±4.84				minutes 5 times per week		
Zhang,LF.2012[47]	Thesis/RCT	China,Community	EG:30	EG:64.60±2.30	0.5:0.5	GH	EG:BDJ	26-week	SBT:Postural Equa	Fall:Sd(P<0.06)*
			CG:30	CG:65.10±1.90			CG:NI	intervention, 60		
				All:64.85±2.12				minutes 4 times per week		
Zhang LL and Huang CX.,2021[48]	Article/RCT	China,Hospitals	EG:41	EG:71.29±4.51	0.57:0.73	IH	EG:BDJ+Routine	8-week	DBT:6WMT	DBT:Sd(P<0.05)*
			CG:41	CG:70.45±4.29			rehabilitation or treatment	intervention, 60		
				All:70.87±4.42			CG:Routine rehabilitation or treatment	minutes 5 times per week		
Zhao,L.2021[49]	Thesis/RCT	China,Community	EG:17	EG:65.82±3.88	NR	GH	EG:BDJ	12-week	SBT:OLST	SBT:Sd(P<0.05)*
			CG:17	CG:64.35±3.62			CG:NI	intervention, 60	PBT: TUG	DBT:Sd(P<0.05)*
				All:65.08±3.82				minutes 3 times per week	DBT:FTSST,MTEC	PB:Sd(<0.05)*
Zheng et al.,2024[50]	Article/RCT	China,Hospitals	EG:30	EG:64.97±6.67	0.23:0.77	IH	EG:BDJ+Routine	12-week	SBT:OLST	SBT:Sd(P<0.05)*
			CG:31	CG:64.39±6.63			rehabilitation or treatment+HD	intervention, 30	DBT:FTSST	DBT:Sd(P<0.05)*
				All:64.68±6.66			CG:Routine rehabilitation or treatment+HD	minutes 5 times per week	PBT: TUG	PB:Sd(<0.05)*
									Fall:MFES	Fall:Sd(P<0.05)*

Zhou et al.,2021[51]	Article/RCT	China,Hospitals	EG:35 CG:35	EG:69.1±8.5 CG:69.5±8.3 All:69.3±8.40	0.6:0.4	IH	EG: BDJ+Routine rehabilitation or treatment CG:Routine rehabilitation or treatment	12-week intervention, 60 minutes 5 times per week	BTB :BBS	BTB :Sd(P<0.05)*
Zhou et al.,2020[52]	Article/RCT	China,Community	EG:30 CG:31	EG:59.70±6.23 CG:61.13±6.04 All:60.43±6.18	0.41:0.59	GH	EG:BDJ CG:Walking	12-week intervention, 30 minutes 5 times per week	PBT : TUG SBT :OLST BTB :Tinetti Balance and Gait Assessment Scale	PB :Sd(<0.05)* SBT :Sd(<0.05)* BTB :Sd(P<0.05)*
Hua,Q.2021[53]	Article/RCT	China,Hospitals	EG:40 CG:40	EG:66.64±10.68 CG:65.69±9.14 All:66.16±9.95	0.5625:0.4375	IH	EG: BDJ+Routine rehabilitation or treatment CG:Routine rehabilitation or treatment	12-week intervention, 40 minutes 3 times per week	PBT : TUG DBT :6WMT	PB :Sd(<0.05)* DBT :Sd(P<0.05)*
Li et al.,2019[54]	Article/RCT	China,Hospitals	EG:44 CG:44	EG:65.1±5.1 CG:65.5±5.1 All:65.3±5.10	0.32:0.67	IH	EG: BDJ+Routine rehabilitation or treatment CG:Routine rehabilitation or treatment	26-week intervention, 35 minutes 7 times per week	PBT : TUG SBT :OLST BTB :BBS Fall :Morse	PBT :Sd(<0.05)* SBT :Sd(P<0.05)* BTB :Sd(P<0.05)* Fall :Sd(P<0.05)*
Li,QS.2018[55]	Thesis/RCT	China,Community	EG:10 CG:10	EG:61.40±1.84 CG:62.10±2.08 All:61.75 ±1.99	NR	GH	EG:BDJ CG:NI	16-week intervention, 60 minutes 5 times per week	BTB :Community Mobility-Parkinson's Disease Progression Markers Test SBT :Velocity and velocity moment between two-legged and one-legged stance	BTB :Sd(P<0.01)* SBT :Sd(P<0.05)*

Liao,Y.2018[56]	Thesis/RCT	China,Community	EG:61 CG:59	EG:69.67±5.15 CG:70.03±4.79 All:69.85±4.98	0:1	GH	EG:BDJ+HD CG:HD	26-week intervention, 60 minutes 5 times per week	PBT: TUG SBT: OLST, TST BTB: BBS	PBT: Sd(<0.05)* SBT: Sd(P<0.05)* BTB: Sd(P<0.05)*
Chen et al., 2016[57]	Article/RCT	China,Hospitals	EG:50 CG:50	EG:68.1±6.1 CG:67.2±5.2 All:67.65±5.69	0.5:0.5	GH	EG:BDJ CG:Walking	24-week intervention, 30 minutes 5 times per week	Fall: FROP-Com	Fall: Sd (P<0.05)*
Zhou,JT.2022[58]	Thesis/RCT	China,Community	EG:9 CG:13	EG:82.22±3.59 CG:80.85±3.63 All:81.41±3.68	0:1	IH	EG:BDJ CG:HD	12-week intervention, 60 minutes 3 times per week	PBT: TUG DBT: 6MWT BTB: SPPB	PB: Sd(<0.05)* DBT: Sd(P<0.05)* BTB: Sd(P<0.05)*
Zhou S et al.,2020[59]	Article/RCT	China,Community	EG:20 CG:20	EG:72.67±9.56 CG:73.25±8.54 All:72.96±9.07	0.425:0.575	IH	EG:BDJ CG:HD	8-week intervention, 40 minutes 5 times per week	PBT: TUG BTB: BBS Fall: Falls Risk Index	PB: Sd(<0.05)* BTB: Sd(P<0.05)* Fall: Sd(P<0.05)*
Zhuang et al.,2019[60]	Article/RCT	China,Hospitals	EG:37 CG:35	EG:67.85±3.85 CG:69.02±2.41 All:68.42±3.28	0.475:0.525	IH	EG: BDJ+Routine rehabilitation or treatment CG:Routine rehabilitation or treatment	12-week intervention, 50 minutes 7 times per week	BTB: BBS	BTB: Sd(P<0.05)*

Kuang,XW.2019[61]	Article/RCT	Cnina, NR	EG:41 CG:41	EG:68.68±3.22 CG:70.33±3.34 All:69.51±3.38	NR	IH	EG: BDJ+Routine rehabilitation or treatment CG:Routine rehabilitation or treatment	12-week intervention, 60 minutes 14 times per week	BTB :BBS	BTB :Sd(P<0.06)*
He et al.,2011[62]	Article/RCT	Cnina, NR	EG:40 CG:40	EG:62.2±2.1 CG:63.4±1.5 All:62.8±1.92	0:1	GH	EG:BDJ CG:NI	20-week intervention, 45 minutes 7 times per week	SBT :OLST	SBT :Sd(P<0.05)*
Li,RL.2017[63]	Article/RCT	China,Hospitals	EG:30 CG:30	EG:69.24±6.56 CG:66.56±5.31 All:67.9±6.12	0.63:0.37	IH	EG:BDJ+general nursing CG:Walking+gene ral nursing	NR	DBT :6WMT	DBT :Sd(P<0.05)*
Shi,XY.2017[64]	Article/RCT	China,Hospitals	EG:52 CG:52	EG:64.7±6.3 CG:65.5±6.5 All:65.1±6.41	0.51:0.49	IH	EG:BDJ CG:Walking	12-week intervention, 35 minutes 2 times per week	PBT :TUG BTB :BBS SBT :Triangle stand with eyes closed Fall :MFES	BTB :Sd(P<0.06)* PB :Sd(<0.05)* SBT :Sd(P<0.05)* Fall :Sd(P<0.05)*

Xu et al.,2022[65]	Article/RCT	China,Hospitals	EG:29 CG:27	EG:74.90±8.45 CG:76.11±8.34 All:75.48±8.42	0.52:0.48	IH	EG: BDJ+Routine rehabilitation or treatment CG:Routine rehabilitation or treatment	8-week intervention, 30 minutes 5 times per week	DBT :6WMT	DBT :Sd(P<0.05)*
Wang et al.,2019[66]	Article/RCT	China,Hospitals	EG:42 CG:42	EG:66.40±4.90 CG:66.60±4.70 All:66.5±4.80	0.55:0.45	IH	EG:BDJ CG:Walking	12-week intervention, 30 minutes 10 times per week	BTB :BBS DBT :MTEC Fall :MFES	BTB :Sd(P<0.06)* DBT :Sd(P<0.05)* Fall :Sd(P<0.05)*
Carcelén-Fraile, M. del C. et al., 2021[67]	Article/RCT	Spain,Community	EG:57 CG:60	EG:69.70±6.15 CG:69.75±6.76 All:69.73±6.44	NR	GH	EG:BDJ CG:HD	12-week intervention, 60 minutes 2 times per week	SBT :mean velocity of the center of pressure displacements,sway area covered by the center of pressure,mediolateral,anteroposterior	SBT : SEO: Sd(P>0.05)** XEO: Sd(P>0.05)** SEC: Sd(P>0.05)** YEC: Sd(P>0.05)** YEO: Sd(P<0.05)* XEC: Sd(P<0.05)*

Liu et al., 2016[68]	Article/QED	China,Community	EG:47	EG:66.63±5.98	0.79:0.21	GH	EG:BDJ+HD	12-week	PBT: TUG	PB:Sd(<0.05)*
			CG:48	CG:67.1±6.18			CG:Wlking+HD	intervention, 40	SBT:OLST	SBT:Sd(P<0.05)*
				All:66.87±6.09				minutes 7 times	BTB:BBS	BTB:Sd(P<0.06)*
							per week	Fall:MFES	Fall:Sd(P<0.05)*	
Xiao et al., 2017[69]	Article/RCT	China,Community	EG:47	All:66.6±7.5	0.43:0.57	GH	EG:BDJ	26-week	DBT: 6MWT,30CST	PB:Sd(<0.05)*
			CG:47				CG:NI	intervention, 60	PBT: TUG	SBT:Sd(P<0.05)*
						minutes 7 times	BTB:BBS	BTB:Sd(P<0.06)*		
							per week			
Xiao et al., 2015[70]	Article/RCT	China,Hospitals	EG:45	EG:68.17±2.27	0.73:0.27	IH	EG:BDJ	26-week	PBT: TUG	PB:Sd(<0.05)*
			CG:44	CG:66.52±2.13			CG:Walking	intervention, 45	SBT:6MWT	SBT:Sd(P<0.05)*
				All:67.35±2.35				minutes 4 times	BTB:BBS	BTB:Sd(P<0.05)*
							per week			

Ye et al., 2020[71]	Article/RCT	China,Hospitals	EG:28 CG:28	EG:65.11±6.57 CG:63.61±2.63 All:64.36±5.06	0.34:0.66	IH	EG:BDJ+Routine rehabilitation or treatment CG:Routine rehabilitation or treatment	12-week intervention, 40 minutes 3 times per week	SBT :Sway area covered by the center of pressure,Center of pressure swing perimeter	SBT : OP perimeter:Sd(P>0.05)** OP ellipse area:Sd(P<0.05)* CP perimeter:Sd(P>0.05)** CP ellipsearea:Sd(P>0.05)**
Yuen et al., 2021[72]	Article/RCT	China,Hospitals+Home	EG:29 CG:29	EG:63.1±10.6 CG:62.0±13.1 All:62.5±11.8	0.5:0.5	IH	EG:BDJ CG:Routine rehabilitation or treatment	16-week intervention, 50 minutes 3 times per week	PBT :TUG DBT :FTSST SBT :Mini-BESTest Fall :FES-I	PB :Sd(P<0.05)* SBT :Sd(P<0.05)* DBT :Sd(P<0.05)* Fall :Sd(P>0.05)**
Ye et al., 2022[73]	Article/RCT	China,Hospitals	EG:24 CG:24	EG:61.63±9.21 CG:62.75±6.41 All:62.19±7.87	0.85:0.15	IH	EG:BDJ+HD CG:HD	24-week intervention, 40 minutes 3 times per week	BTB :BBS,Fugl-Meyer	BTB :Sd(P<0.05)*
Ye et al.,2019[74]	Article/RCT	China,Hospitals	EG:25 CG:25	EG:64.48±7.81 CG:63.08±3.65 All:63.78±6.14	0.4:0.6	IH	EG:BDJ CG:NI	12-week intervention, 40 minutes 3 times per week	SBT :Degree of standing body sway	SBT : CPAP:Sd(P<0.05)* CPML:Sd(P>0.05)** OPAP:Sd(P>0.05)** OPML:Sd(P>0.05)**

Tou et al.,2024[75]	Article/RCT	Singapore,Community	EG:29	EG:72.9±8.0	0.05:0.95	IH	EG:BDJ	16-week intervention, 60 minutes 3 times per week	PBT:TUG	PBT:Sd(P>0.05)**
			CG:27	CG:72.6±5.7			CG:HD		DBT:30CST	DBT:Sd(P>0.05)**
				All:72.76±6.46					Fall:Fal lefficacy	Fall:Sd(P>0.05)**
Jiao,MJ.2024[76]	Thesis/RCT	China,NR	EG:26	EG:69±3.92	0.38:0.62	GH	EG:BDJ	8-week intervention, 60 minutes 2 times per week	DBT:MTEC	DBT:Sd(P<0.01)*
			CG:26	CG:70±5.24			CG:NI		PBT:TUG	PBT:Sd(P<0.05)*
				All:69.5±4.65					BTB:BBS	BTB:Sd(P<0.05)*

Generally health(GH): basic physical and mental health, no cognitive and psychiatric disorders, basic normal balance function, no serious acute illnesses; Imperfect health(IH): elderly people with mental or cognitive disorders, with certain diseases that affect balance disorders, in a period of frailty; EG:experimental group; CG:control group; M:male; FM:female; NI:non-intervention; HD:health education; MTEC:mark time with eyes closed; OLST:One leg stand test with eyes closed or open; TST:Tandem stance test with eyes closed or open; PST:Parallel Stance test with eyes closed or open; TUG:Timed up and go test; BBS:Berg balance scale; FTSST:Five times sit to stand test; FSST:Four square step test; FOF:Fear of falling scale; Morse:Morse fall scale; SPPB:Short physical performance battery; FES-I:Falls efficacy scale-international; 6WMT:6-Minute walk distance test; MFES:Modified Falls Efficacy Scale; FROP-Com:Modifications falls risk for older people in the community; 30CST:30 Seconds sit to stand test; Sd:Mean and standard deviation; *:Significantly different from the control group; **:No significant difference compared to control group;



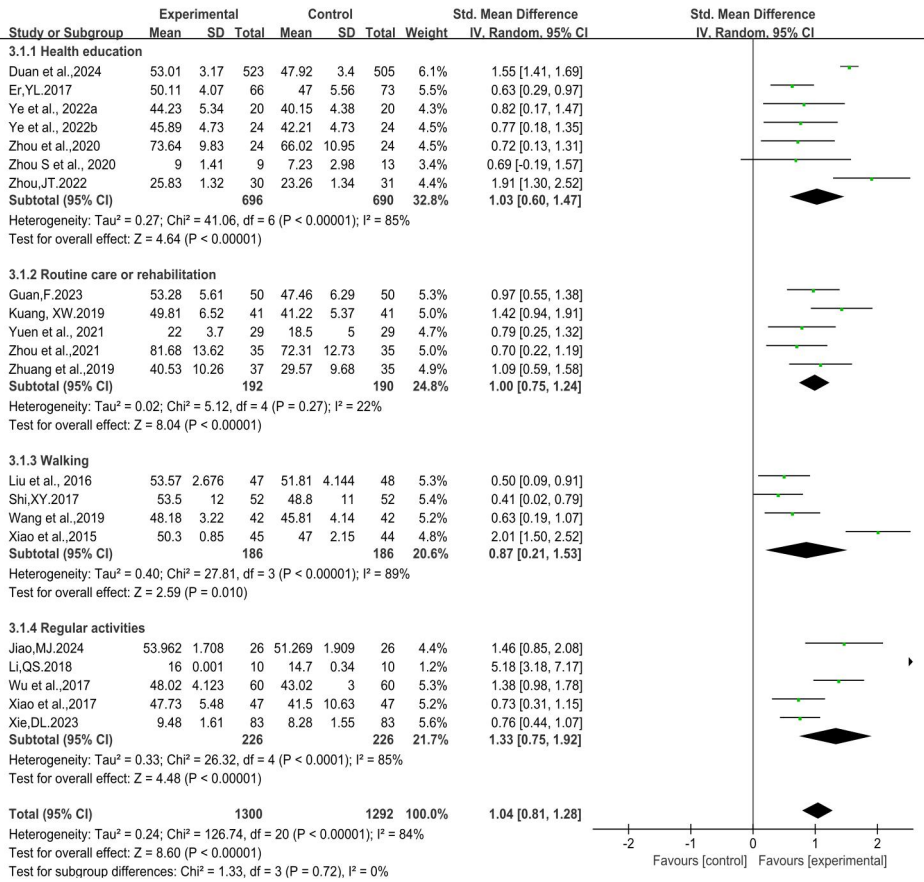
C: Results of the quality assessment

<i>Author,year</i>	<i>Item 1</i>	<i>Item 2</i>	<i>Item 3</i>	<i>Item 4</i>	<i>Item 5</i>	<i>Item 6</i>	<i>Item 7</i>	<i>Item 8</i>	<i>Item 9</i>	<i>Item 10</i>	<i>Item 11</i>
Dai et al.,2023[37]	Y	Y	N	N	N	N	N	N	Y	Y	Y
Duan et al.,2024[38]	Y	Y	N	Y	N	N	N	Y	Y	Y	Y
ER,YL.2017[39]	Y	Y	N	Y	N	N	N	Y	Y	Y	Y
Gao,ZP,2020[40]	Y	Y	N	Y	N	N	N	Y	Y	Y	Y
Guan,F.2023[41]	Y	Y	N	Y	N	N	N	N	Y	Y	Y
Lui,ST.2015[42]	Y	Y	N	N	N	N	N	Y	Y	Y	Y
Wu et al.,2017[43]	Y	Y	N	Y	N	N	N	Y	N	Y	Y
Xie,DL.2023[44]	Y	Y	N	Y	N	N	N	Y	Y	Y	Y
Yao,Y.2021[45]	N	Y	N	N	N	N	N	N	Y	Y	Y
Yu et al.,2020[46]	Y	N	N	Y	N	N	N	Y	Y	Y	Y
Zhang,LF.2012[47]	Y	N	N	Y	N	N	N	Y	Y	Y	Y
Zhang & Huang ,2021[48]	Y	Y	N	Y	N	N	N	Y	Y	Y	Y
Zhao,L.2021[49]	Y	Y	N	Y	N	N	N	Y	N	Y	Y
Zheng et al.,2024[50]	Y	Y	N	N	N	N	N	Y	N	Y	Y
Zhou et al.,2021[51]	Y	Y	N	Y	N	N	N	Y	Y	Y	Y
Zhou et al.,2020[52]	Y	Y	N	Y	N	N	N	Y	Y	Y	Y
Hua,Q.2021[53]	Y	Y	N	Y	N	N	N	Y	Y	Y	Y
Li et al.,2019[54]	Y	Y	N	Y	N	N	N	Y	N	Y	Y
Li,QS.2018[55]	Y	Y	N	Y	N	N	N	Y	Y	Y	Y
Liao,Y.2018[56]	Y	Y	N	Y	N	N	N	Y	Y	Y	Y
Chen et al., 2016[57]	Y	Y	N	Y	N	N	N	Y	Y	Y	Y
Zhou,JT.2022[58]	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y
Zhou S et al.,2020[59]	Y	Y	N	Y	N	N	N	Y	Y	Y	Y
Zhuang et al.,2019[60]	Y	N	N	Y	N	N	N	Y	N	Y	Y
Kuang,XW.2019[61]	Y	Y	N	Y	N	N	N	Y	N	Y	Y
He et al.,2011[62]	Y	Y	N	N	N	N	N	N	N	Y	Y
Li,RL.2017[63]	Y	Y	N	N	N	N	N	Y	Y	Y	Y
Shi,XY.2017[64]	N	Y	N	Y	N	N	N	Y	Y	Y	Y

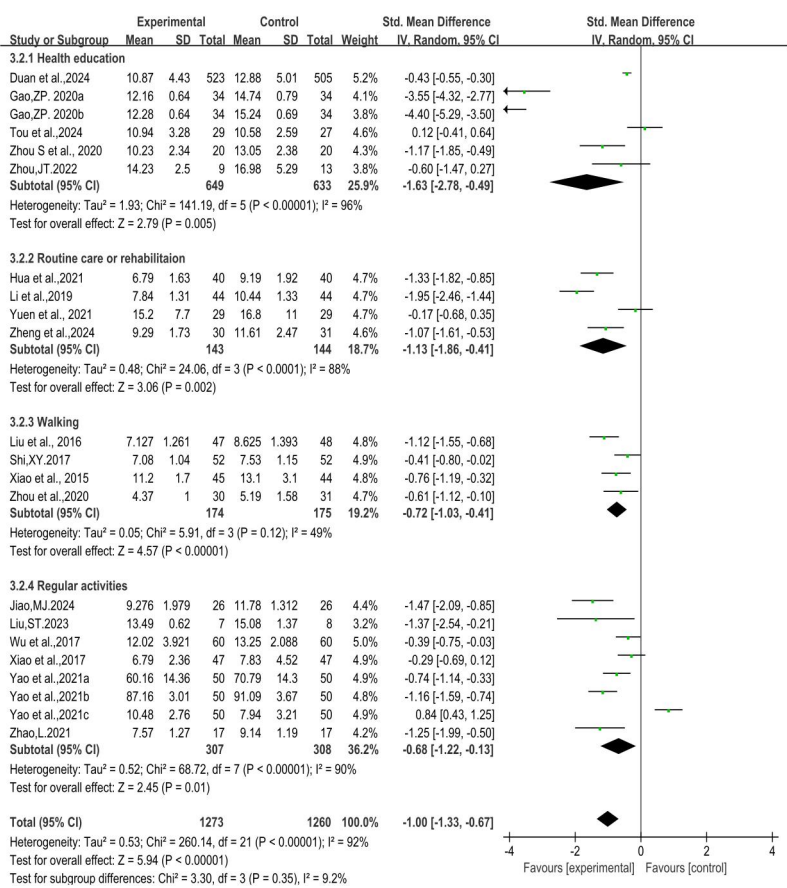
Xu et al.,2022[65]	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>Y</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>Y</i>	<i>N</i>	<i>Y</i>	<i>Y</i>
Wang et al.,2019[66]	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>Y</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>Y</i>	<i>N</i>	<i>Y</i>	<i>Y</i>
Carcelén-Fraile, M. del C. et al., 2021[67]	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>N</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>
Liu et al., 2016[68]	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Xiao et al., 2017[69]	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>Y</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>Y</i>	<i>N</i>	<i>Y</i>	<i>Y</i>
Xiao et al., 2015[70]	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>Y</i>	<i>N</i>	<i>N</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>
Ye et al., 2020[71]	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>
Yuen et al., 2021[72]	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>Y</i>	<i>N</i>	<i>N</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>
Ye et al., 2022[73]	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>N</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>
Ye et al.,2019[74]	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>Y</i>	<i>N</i>	<i>N</i>	<i>Y</i>	<i>N</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>
Tou et al.,2024[75]	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>N</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>
Jiao,MJ.2024[76]	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>Y</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>Y</i>	<i>N</i>	<i>Y</i>	<i>Y</i>

Item 1: eligibility criteria were specified; Item 2:subjects were randomly allocated to groups (in a crossover study, subjects were randomly allocated an order in which treatments were received) ; Item 3:allocation was concealed; Item 4:the groups were similar at baseline regarding the most important prognostic indicators; Item 5:there was blinding of all subjects; Item 6:there was blinding of all therapists who administered the therapy ; Item 7: there was blinding of all assessors who measured at least one key outcome; Item 8: measures of at least one key outcome were obtained from more than 85% of the subjects initially allocated to groups; Item 9: all subjects for whom outcome measures were available received the treatment or control condition as allocated or, where this was not the case, data for at least one key outcome was analysed by “intention to treat”; Item 10:the results of between-group statistical comparisons are reported for at least one key outcome; Item 11:the study provides both point measures and measures of variability for at least one key outcome; NA:Not applicable

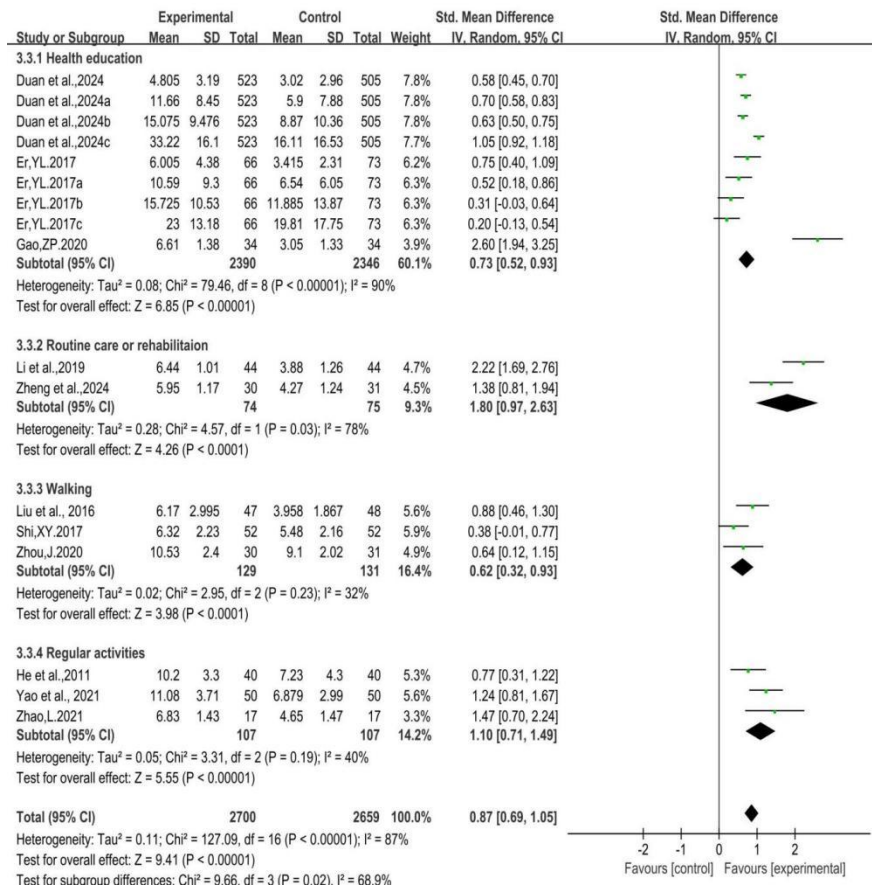
D: Control group subgroup results



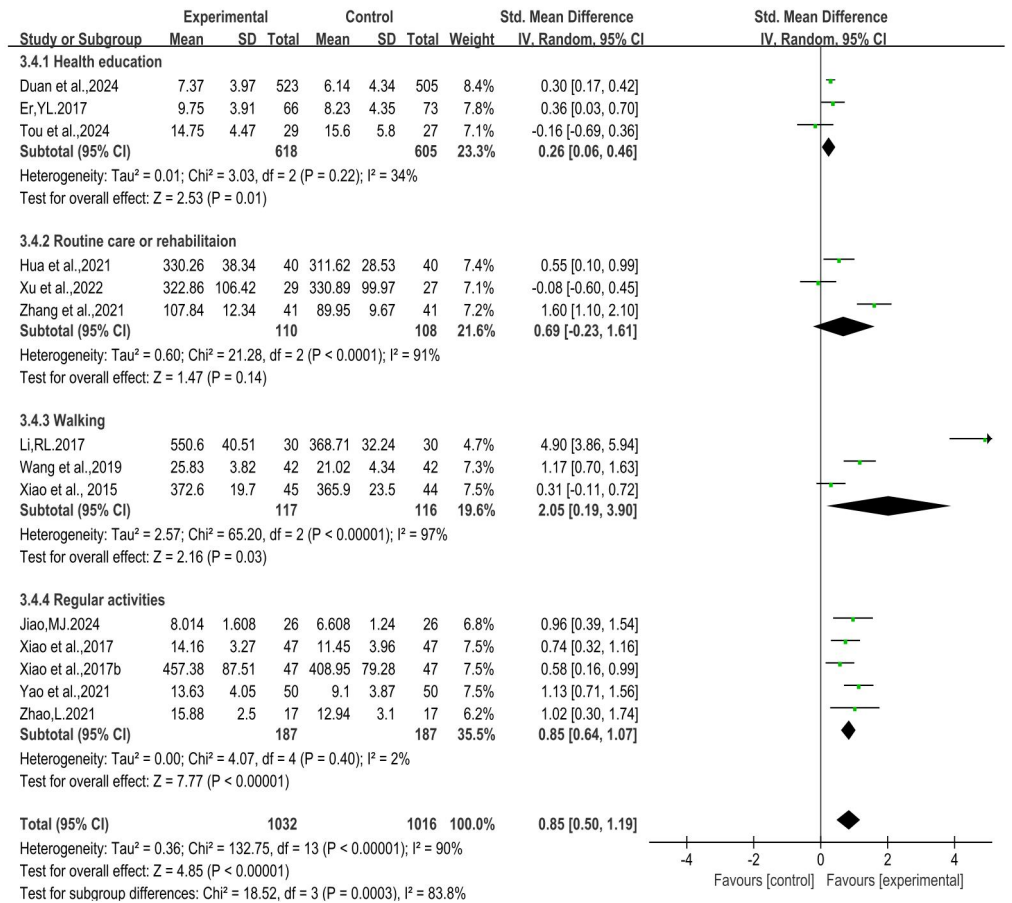
A-BTB



B-PBT



C-SBT



D-DBT

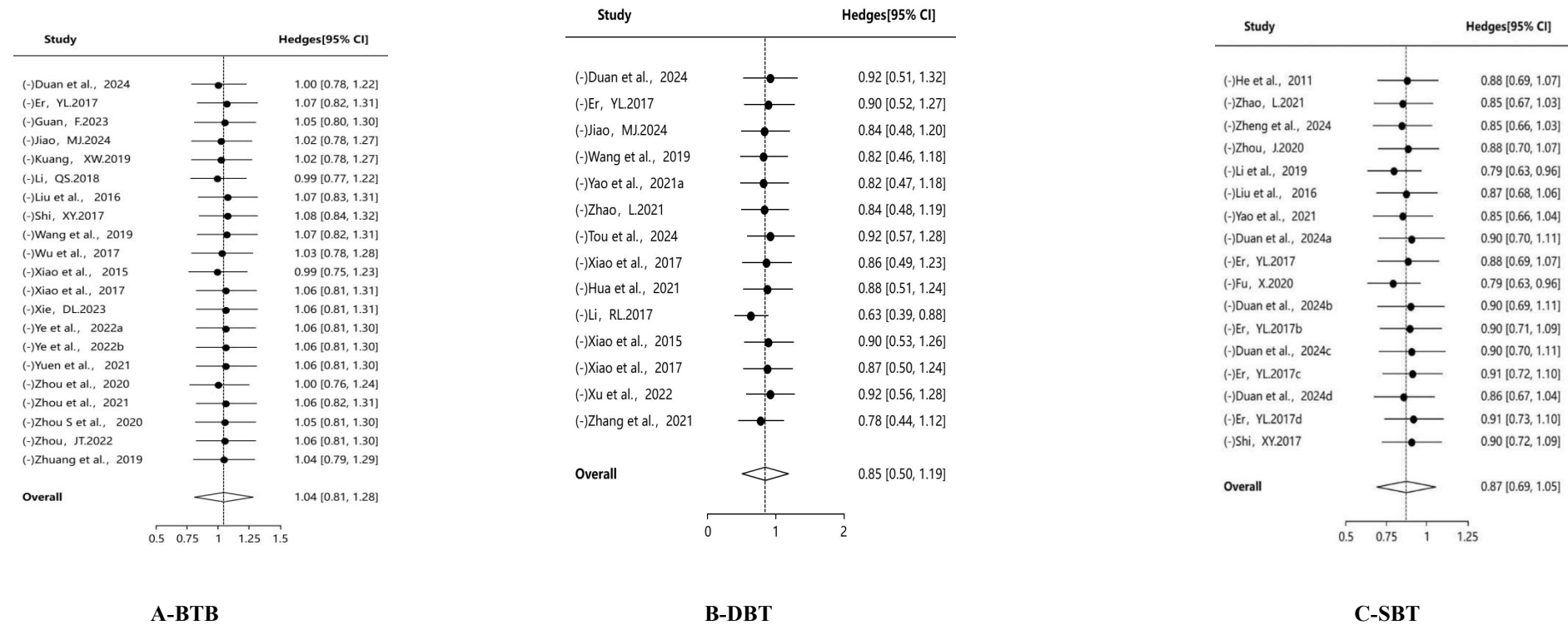
E: Dosage subgroup results

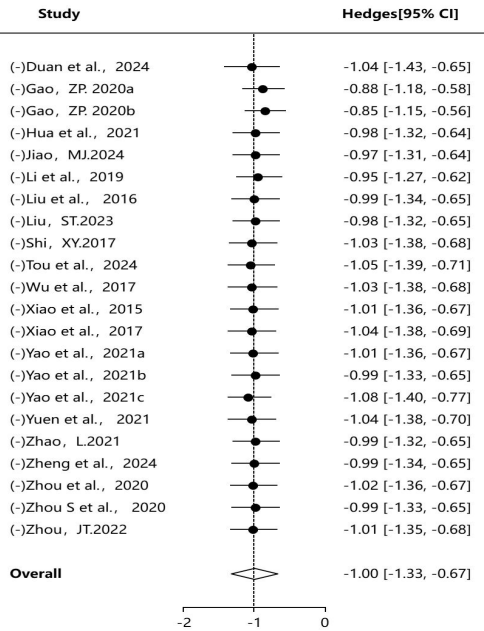
		BTB				PBT				SBT				DBT			
		<i>SMD</i> <i>95%CI</i>	<i>Heterogeneity</i> <i>y</i>	<i>S</i>	<i>N</i>	<i>SMD</i> <i>95%CI</i>	<i>Heterogeneity</i>	<i>S</i>	<i>N</i>	<i>SMD</i> <i>95%CI</i>	<i>Heterogeneity</i>	<i>S</i>	<i>N</i>	<i>SMD</i> <i>95%CI</i>	<i>Heterogeneity</i>	<i>S</i>	<i>N</i>
	ALL	1.04 [0.81, 1.28]	I ² =84%	21	2592	-1.10 [-1.45,-0.76]	I ² =91%	19	2233	0.87 [0.69, 1.05]	I ² =87%	17	5359	0.64 [0.32,0.79]	I ² =80%	11	1832
TT	4-8 week	1.52 [1.22,1.81]	I ² =3%	3	233	-0.97 [-1.69,-0.25]	I ² =81%	3	212	NI	I ² =NI	NI	NI	1.30 [0.68,1.92]	I ² =62%	2	134
	12-16 week	0.84 [0.59, 1.10]	I ² =68%	12	886	-1.27 [-1.87,-0.67]	I ² =92%	12	722	0.85 [0.50, 1.20]	I ² =85%	10	979	0.57 [0.13,1.00]	I ² =76%	5	393
	20-26 week	1.18 [0.69, 1.66]	I ² =86%	5	1307	-0.82 [-1.40,-0.24]	I ² =91%	4	1299	0.89 [0.65, 1.13]	I ² =92%	6	4280	0.42 [0.22,0.63]	I ² =43%	4	1305
	>27 week	0.76 [0.44, 1.07]	I ² =NA	1	166	NI	I ² =NI	NI	NI	NI	I ² =NI	NI	NI	NI	I ² =NI	NI	NI
FPW	<3 times	1.46 [0.85,2.08]	I ² =NI	1	52	-0.91 [-1.95,0.13]	I ² =88%	2	156	NI	I ² =NI	NI	NI	0.96 [0.39,1.54]	I ² =NI	1	52
	3 times	0.67 [0.48,0.86]	I ² =0%	6	446	-0.52 [-1.11,0.06]	I ² =91%	8	550	0.98 [0.30, 1.67]	I ² =82%	3	238	0.63 [0.05, 1.21]	I ² =81%	4	270
	4 times	1.71 [1.28,2. 14]	I ² =65%	2	1117	-0.52 [-0.82,-0.23]	I ² =52%	2	1117	0.74 [0.53,0.94]	I ² =90%	4	4212	0.30 [0.18,0.41]	I ² =0%	2	1117
	5 times	1.38 [0.63,2. 13]	I ² =87%	5	330	-2.13 [-3.44,-0.81]	I ² =95%	5	298	0.86 [0.40, 1.32]	I ² =89%	7	746	0.97 [-0.24, 2.18]	I ² =94%	2	221
	7 times	0.80 [0.55, 1.06]	I ² =27%	5	361	-1.11 [-2.03,-0. 18]	I ² =92%	3	277	1.28 [0.43,2. 12]	I ² =90%	3	263	0.81 [0.48, 1.15]	I ² =44%	3	272
	≥10times	1.14 [0.64, 1.65]	I ² =74%	3	286	-0.72 [-1.63,0. 19]	I ² =60%	2	135	NI	I ² =NI	NI	NI	NI	I ² =NI	NI	NI

DPS	<30 min	0.97 [0.55,1.38]	I ² =NA	1	100	NI	I ² =NI	NI	NI	NI	I ² =NI	NI	NI	NI	I ² =NI	NI	NI
	30-39 min	0.51 [0.21,0.80]	I ² =0%	3	188	-1.40 [-2.22,-0.58]	I ² =96%	9	750	1.39 [0.72,2.05]	I ² =91%	6	482	1.15 [0.84,1.46]	I ² =0%	2	184
	40-49 min	1.17 [0.52,1.82]	I ² =87%	5	341	-1.07 [-1.32,-0.81]	I ² =9%	4	304	0.83 [0.52,1.14]	I ² =0%	2	175	0.42 [0.11,0.72]	I ² =0%	2	169
	50-60 min	1.09 [0.80,1.38]	I ² =84%	13	1963	-0.53 [-0.79,-0.26]	I ² =67%	9	1479	0.65 [0.48,0.82]	I ² =84%	9	4702	0.64 [0.32,0.96]	I ² =82%	8	1579
TPW	≤150 min	0.95 [0.63,1.26]	I ² =73%	9	687	-1.23 [-1.90,-0.56]	I ² =95%	11	852	1.22 [0.54,1.89]	I ² =89%	5	394	0.90 [0.52,1.24]	I ² =47%	3	232
	151-250 min	1.60 [1.35,1.84]	I ² =20%	2	1089	-0.85 [-1.32,-0.37]	I ² =87%	7	1357	0.96 [0.70,1.21]	I ² =92%	6	4234	0.30 [0.00,0.60]	I ² =56%	4	1207
	251-350 min	0.86 [0.48,1.24]	I ² =74%	7	520	-1.12 [-1.55,-0.68]	I ² =NA	1	95	0.55 [0.33,0.77]	I ² =53%	6	731	1.03 [0.27,1.78]	I ² =89%	3	305
	> 350 min	1.17 [0.73,1.62]	I ² =68%	3	296	-0.43 [-0.78,-0.07]	I ² =33%	3	229	NI	I ² =NI	NI	NI	0.66 [0.36,0.95]	I ² =0%	2	188

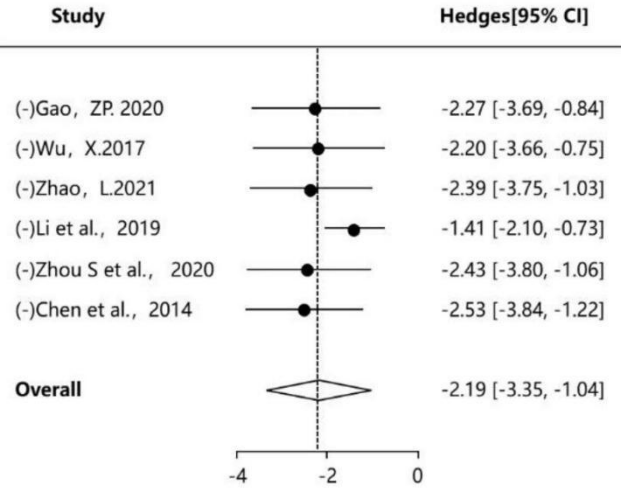
TT: Total weeks of intervention; FPW: Frequency of per-week interventions; DPS: Duration of training per time; TPW: Training duration per week; NI: No information; NA: Not applicable; S: Sample size; N: Number of participants

F: Sensitivity analysis results

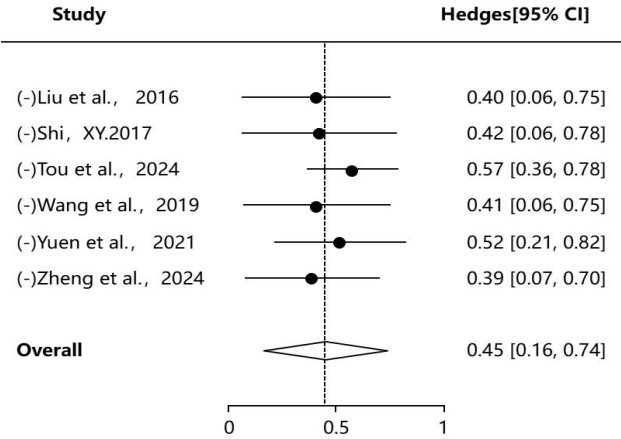




D-PBT

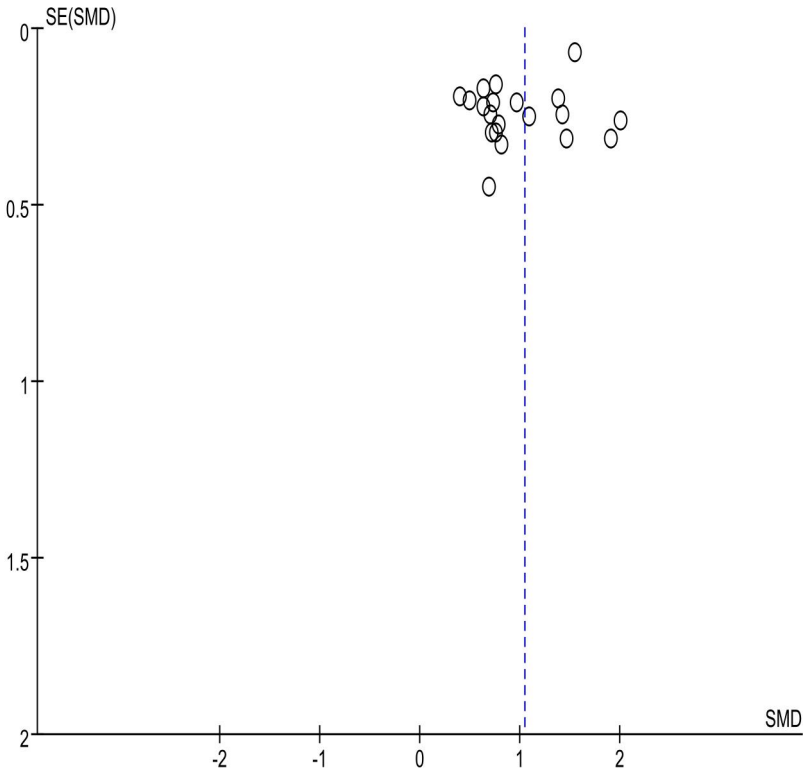


E-Fall risk

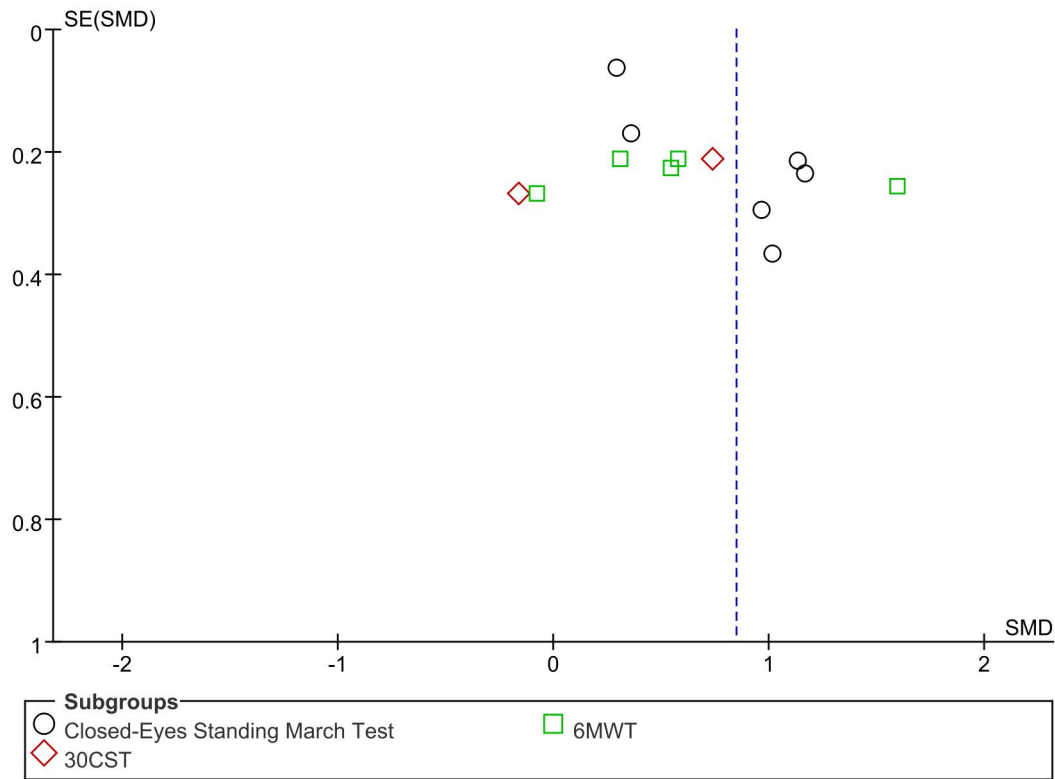


F-Falls effectiveness

G: Funnel plots



BTB



DBT

