

## Supplementary material A: Characteristics of the included trials

Clinically and statistically significant reduction in falls (point estimate is less than 0.75 and the confidence interval does not cross 1)															
Author, year, Trial Design	Cont <sup>1</sup>	RACF	N, Rand	Trial Location	Age, mean	Gender % women	Mean number co-morb.	Cognitive Impair. at baseline	Mobility criteria at enrollment	Adherence <sup>2</sup>	Severe Adverse events <sup>3</sup>	Summary of exercise intervention (frequency, session length, planned trial dose)	Falls rate ratio	Falls risk ratio	Other effect data
Arrieta, 2019, RCT, 2 arms	Y	HC	112	Spain	84.9	71	2	Mild	Walk without staff assistance	Yes	Nil	26/52 tailored, progressive strength, gait, balance and functional group program, EP led, moderate intensity. (2/wk, 60min/session, 52hrs)	26/52 0.45 (0.29, 0.69)	26/52 0.86 (0.52, 1.41)	NR
Brett, 2021, RCT, 3 arms	Y	HC	60	Australia	85	65	9	Mild, moderate or severe	All level of mobility	Yes	Nil	12/52 tailored, progressive group strength, balance, endurance and flexibility program., PT led, moderate intensity. Intervention A: (1/wk, 45 min/session, 9 hrs.) Intervention B: (3/wk, 15min/session, 9hrs)	12/52 0.23 (0.14, 0.37)	12/52 0.48 (0.27, 0.87)	NR
Fu, 2015, RCT, 2 arms	N	HC	60	China	82.3	65	NR	NR	Walk with staff assistance	Yes	NR	6/52 progressive Wii Fit balance program, PT led, intensity NR. (3/wk, 60min/session, 18 hrs)	52/52 0.35 [0.19, 0.63]	NR	NR
Hewitt, 2018, Cluster RCT, 2 arms	Y	HC	221	Australia	86	65	3	Mild to moderate	Stand with staff assistance	Yes in 6/12 active section  No in maintenance	Nil	25/52 tailored and progressive strength using HUR Health and Fitness equipment, functional and balance group program, PT led, moderate intensity. (2/wk, 60min/session, 50 hrs); followed by 6/12 maintenance program	52/52 0.45 [0.17, 0.74]	52/52 0.66 (0.47, 0.93)	Fall-related fracture risk ratio:  0.76 (0.21 to 2.74)
Irez, 2011, RCT, 2 arms	Y	IC	60	Turkey	75.4	100	NR	NR	NR	Yes	NR	12/52 tailored, progressive group Pilates program (strength and balance components), TNP led, moderate intensity. (3/wk, 60min/session, 36 hrs)	12/52 0.28 [0.15, 0.54]	NR	NR

Jahanpeyma, 2020 RCT, 2 arms	Y	HC	71	Turkey	75.2	75	NR	Nil	Walk without staff assistance	NR	NR	12/52 tailored, progressive Otago Exercise Program, TNP led, moderate intensity (3/wk,45min/session, 27 hrs) + walking prescription (3/wk, 30 min/session, 18 hrs)	12/52 0.39 [0.23, 0.66]	NR	NR
Saravanakumar, 2014, RCT, 2/3arms Yoga	Y	M	11 / 33	Australia	85.2	88	10	Mild to moderate	Stand with support	Yes	Yes	14/52 group yoga program, TNP led, low intensity. (2/wk, 30min/session, 14 hrs)	26/52 0.47 [0.24, 0.91]	NR	NR
Saravanakumar, 2014, RCT, 2/3arms Tai Chi	Y	M	11 / 33	Australia	83.3	63.6	10	Mild to moderate	Stand with support	Yes	Yes	14/52 group tai chi program, TNP led, low intensity. (2/wk, 30min/session, 14 hrs)	26/52 0.52 [0.28, 0.98]	NR	NR
Sihvonen, 2004, RCT, 2 arms	NR	IC	28	Finland	81.7	100	2.6	Nil	Stand without staff assistance	Yes	NR	4/52 individual tailored and progressive balance exercise program using force platform. Moderate intensity. Program lead NR. (3/wk,30min/session, 6 hrs)	52/52 0.40 (0.17, 0.93)	52/52 0.77 (0.42, 1.42)	NR
<b>Clinically but not statistically significant reduction in falls</b>															
Cadore, 2014, RCT, 2 arms	Y	M	32	Spain	91.9	70	NR	Nil	Walk with and without staff assistance	Yes	NR	12/52 Individual, tailored, progressive strength, gait, balance and functional program. TNP led, moderate intensity. (2/wk, 40 min/session, 16 hrs)	NR	NR	IG: 0 fall, CG: 0.8/pt/mnth Time*group interaction P<.001
Serra-Rexach, 2011, RCT, 2 arms	Y	HC	40	Spain	92	80	1.4	Mild to moderate	Walk with or without staff assistance	Yes	Nil	8/52 individual tailored, progressive strength, flexibility, cycling exercise, EP led, low to moderate intensity. (3/wk, 45min/session, 18 hrs)	NR	NR	IG:1.2 95% CI: 0-.3 fewer than control P.03
Toulotte, 2003, RCT, 2 arms	Y	M	20	France	81.4	NR	NR	Mild to moderate	Walk with or without staff assistance	NR	NR	16/52 progressive, tailored balance and seated strengthening, flexibility group program. GP led, low intensity. (2/wk, 45min/session, 24 hrs)	NR	NR	IG 0 fall, CG Part. 6 falls, no p value

Clinically significant but statistically non-significant reduction in falls (point estimate is 0.75 or less but the confidence interval crosses 1)															
Choi, 2005, Quasi RCT, 2 arms	Y	IC	59	Korea	77.	75	NR	Mild to moderate	Walk with and without staff assistance	Yes	NR	12/52 Tai Chi group exercise program. TNP led, low intensity. (3/wk, 35min/session, 21 hrs)	NR	52/52 0.6 (0.19, 1.87)	NR
Dhargrave 2020, RCT, 2 arms	Y	IC	163	India	74.6	53	NR	Mild	Walk without staff assistance	NR	NR	12/52 tailored, progressive flexibility, gait, balance, functional program and walking, PT led, moderate intensity. (7/wk., 30min/session, 42 hrs.)	12/52 0.72 (0.44, 1.17)	12/52 0.72 (0.39, 1.32)	NR
Imaoka, 2016, RCT, 4 arms	N	HC	91	Japan	84.3	76	NR	NR	NR	NR	NR	12/52 (1) strength and balance ex, x2/wk of individualised exercise, x1/wk group exercise (14 hrs) (2) the low exercise group control group minus group program (8 hrs) (3) nutrition group was given oral vitamin D, no ex. (4) low-level exercise and received vitamin (8 hrs)		12/52 0.48, (0.17, 1.3)	NR
Kovacs, 2012, 2 arms	N	IC	41	Hungary	69.2	100	2.3	NR	Walk with staff assistance	Yes	Nil	26/52 progressive tailored multimodal exercise program. PT led, moderate intensity (x2/wk, 30 min/session, 26 hrs)	NR	26/52 0.54 [0.29, 1.01]	NR
Kovacs, 2013, RCT, 2 arms	Y	IC	86	Hungary	77.8	81	2.4	Mild to moderate	Walk without staff assistance	Yes	NR	52/52 tailored, progressive gait, balance, functional and strength group program. PT led, moderate intensity. (2/wk, 60min/session, 104 hrs)	52/52 0.77 [0.37, 1.62]	52/52 0.67 (0.37, 1.23)	NR
Shimada 2004, RCT, 2 arms	N	IC	32	Japan	83.4	78	NR	Nil	Walk without staff assistance	NR	NR	26/52 Ind treadmill program lead NR, mod intensity (2/wk, 10min/session, 9 hrs)	26/52 0.42 (0.08, 2.06)	NR	NR
Tuunainen, 2013, RCT, 2/3 arms Gait, Bal., functional	N	HC	18 / 55	Finland	85	89	3.8	Mild, moderate, severe	Stand without staff assistance	NR	NR	13/52 Progressive gait, balance and functional group program, PT led, intensity NR. (2/wk, 60min/session, 26 hrs)	156/52 0.65 [0.4, 1.06]	NR	NR
Tuunainen, 2013, RCT, 2/3 arms Strength	N	HC	18 / 55	Finland	84.7	67	3.8	Mild, moderate, severe	Stand without staff assistance	NR	NR	13/52 Progressive strengthening group exercise program. PT led, intensity NR. (2/wk, 60min/session, 26 hrs)	156/52 0.74 [0.5, 1.1]	NR	NR

Varela, 2018, RCT, 2 arms	Y	HC	74	Spain	81.1	38	NR	Nil	Walk without staff assistance	No	NR	64/52 self-selected intensity cycling. Supervised by physio (7/wk, 15min/session, 112 hrs)	64/52 0.67 [0.3, 1.21]	NR	NR
Yokoi, 2015, Cluster RCT, 2 arms	Y	IC	105	Japan	79.3	60	3.9	Nil	Walk without staff assistance	Yes	Nil	26/52 individual seated physical activity exercise with traditional Japanese 'stick', TNP led, low intensity. (2/wk, 25min/session, 22 hrs)	NR	52/52 0.3 [0.07, 1.28]	NR
<b>Significant effect on falls not detected or not present (point estimate between 0.75 and 1.25 regardless of confidence interval)</b>															
Buckinx, 2014, RCT, 2 arms	Y	IC	62	Belgium	83.2	76	3	Mild to moderate	Stand without staff assistance	Yes	NR	26/52 individual whole body vibration program. PT/TNP led, low intensity. (3/wk, 1.25min/session, 1.5 hrs)	52/52 0.96 [0.58, 1.60]	52/52 0.88 [0.54, 1.43]	NR
Faber, 2006, RCT, 3 arms Tai Chi	Y	M	168	Netherlands	84.4	79	NR	Mild to moderate	Walk without staff assistance	Yes	NR	20/52 Tai Chi group program TNP led, low intensity. (2/wk, 60min/session, 36 hrs)	52/52. 1.11 [0.77, 1.19]	52/52 1.19 (0.79, 1.79)	NR
Kerse, 2008, Cluster RCT, 2 arms	Y	IC	682	New Zealand	84.3	74	4.9	Mild	Walk without staff assistance	No	Nil	26/52 functional exercise program. TNP led, low intensity. (7/wk, 15min/session, 91 hrs)	52/52 1.11 [0.84, 1.45]	52/52 1.19 (0.94, 1.5)	NR
Nowalk, 2001, RCT, 3 arms	Y	M	110	USA	84	86	NR	NR	Walk without staff assistance	No	NR	52-104/52 Progressive, individualised strength ex. and physical activity (cycling, treadmill) or low intensity Tai Chi groups classes led by TNP (3/wk, ?/session, ? dose)	NR	NR	No significant difference p=0.27
Rosendahl, 2008, Cluster RCT, 2 arms	Y	M	191	Sweden	84.7	73	3.1	Mild to moderate	Stand with staff assistance	Yes	NR	12/52 progressive, strength, functional ex. and balance group ex. program based on high-intensity functional ex. PT led, high intensity. (2.5/wk, 45min/session, 22 hrs)	26/52 0.82 [0.44, 1.53]	26/52 1.05 (0.77, 1.44)	NR
Sakamoto, 2006, RCT, 2 arms	Y	IC	533	Japan	81.6	74	≥ 1	Mild to moderate	Stand without staff assistance	NR	NR	26/52 unipedal standing balance exercise. PT led, low intensity. (7/wk, 6min/session, 18 hrs)	26/52 0.82 [0.65, 1.04]	26/52 0.9 [0.65, 1.23]	NR
Toots, 2019, RCT, 2 arms	Y	HC	186	Sweden	85.1	76	3	Mild to moderate	Stand with or without staff assistance	Yes	Nil	16/52 progressive, strength, functional, balance group ex., high intensity, PT led. (2.5/wk, 45min/session, 30 hrs)	64/52 0.9 (0.5, 1.61)	64/52 0.97 (0.76, 1.22)	NR

<b>Clinically and statistically significant increase in falls: point estimate greater than 1.25 and the CI does not cross 1</b>															
Schoenfelder, 2000, RCT, 2 arms	NR <sup>1</sup>	HC	16	USA	82.8	75	NR	Mild	Walk without staff assistance	NR	NR	12/52 ankle strengthening and walking, NP led, low intensity. (3/wk, 20min/session, 12 hrs)	26/52 2.72 [1.42, 5.19]	NR	NR
<b>Clinically significant but statistically non-significant increase in falls: if the point estimate is 1.25 or more but the CI crosses 1</b>															
Faber, 2006, RCT, 3 arms Gait, balance, functional ex.	Y	M	154	Netherlands	85.4	79	NR	Mild to moderate	Walk without staff assistance	Yes	NR	20/52 gait, balance and functional group program, TNP led, moderate intensity. (1-2/wk, 60min/session, 36 hrs)	52/52. 1.32 (1.09, 1.61)	52/52 1.31 (0.87, 1.98)	NR
Mulrow, 1994, 2 arms	Y	HC	194	USA	80.6	71	5.1	Mild to moderate	Walk with and without staff assistance	Yes	Nil	16/52 individual, tailored, progressive strength, balance, gait and functional ex. PT led, mainly low intensity (3/wk, 30 min/session, 24 hrs)	16/52 1.32 [0.95, 1.85]	16/52 1.16 (0.83 to 1.62)	NR
Sitja Rabert, 2015, RCT, 2 arms	N	M	159	Spain	82	67	NR	Nil	Stand with assistance	Yes	Nil	6/52 progressive strength and balance exercise program with vibration platform therapy, low intensity, program lead NR (3/wk, 30min/session, 9 hrs)	NR	1.28 (0.71, 2.31) NB: 6/12 FU	NR
<b>Uncertain: insufficient data to make judgement</b>															
Buettner 2002, RCT, 2 arms	Y	M	27	USA	83.3	48	NR	Severe, moderate or mild	Walk with staff assistance	NR	NR	12/52 group strengthening, balance and gait program. Recreation therapist led, low intensity. (3/wk, 60min, 36 hrs)	NR	NR	NR
Da Silva Borges, 2014, RCT, 2 arms	Y	IC	59	Brazil	67.5	NR	NR	Nil	Walk without staff assistance	NR	NR	12/52 group ball room dancing program. TNP led, high intensity. (3/wk, 50min/session, 30 hrs)	NR	NR	NR

NR = not reported, HC = high care facility, IC = intermediate care facility, M = mixed (IC and HC)

1: Routine or usual care Y = authors described the control group as usual or routine care such as seated range of movement exercises, N = authors described the control group as physical activity and exercise programs that include active exercise beyond routine or usual care

2: Attendance rate exceeded 50% and/or 75% or more of the participants attended 50% or more sessions

3: TNP = trained non-professional, EP = Exercise Professional, PT = Physiotherapist, GP = general practitioner