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*The figures and tables below present the results of the data extraction, primary analyses and component network meta-analyses excluding post-hoc analyses. For results including post-hoc analyses, please contact the corresponding author.

Supplementary Appendix S1. Characteristics of the 220 included studies

Supplementary Table S1. Characteristics of the 220 included studies with community-dwelling participants

First author, year ^a	Country	Comparison(s) ^b	Outcome(s) ^c	Sample size	Mean age (years)	Female (%)	Duration of treatment (weeks)	Duration of follow- up (weeks)	Fallers ^d (%)
Aloia, 2019 ¹	United States	Med; ph_pbo	FALL, FX	184	68.2	100	144	144	14
Ansai, 2016 ²	Brazil	Exerc; exerc; uc	FALL	69	82.4	68	16	16	44;30;35*
Arantes, 2015^3	Brazil	Exerc; non-ph_pbo	FALL	28	73.9;72.2*	100	12	52	100
Arkkukangas, 2019 ⁴	Sweden	Exerc+qualt; uc	FALL, FRATE	107	83	70	12	12	42
Ashari, 2016 ⁵	Malaysia	Exerc; uc	FALL	68	63.7	57	16	16	21
Ballard, 2004 ⁶	United States	Exerc; non-ph_pbo	FALL, FRATE	39	73.4; 72.4*	100	15	52	100
Barker, 2016 ⁷	Australia	Exerc+brisk; brisk	FALL, FRATE	49	69.3	88	12	24	65;52*
Barnett, 2003 ⁸	Australia	Exerc+qualt; qualt	FALL, RFALL	163	74.9	67	52	52	43;41*
Barr, 2005 ⁹	United Kingdom	Brisk; uc	FALL, FX, HIP, FRATE	2686	77.1	100	111	103	26;29*
Beck, 2010 ¹⁰	Australia	Vibr; uc	FALL, FRATE	47	71.5	100	35	35	NR
Beck 2016 ¹¹	Denmark	Exerc+nutr+qualt; qualt	FALL, FRATE	95	86.6	75	11	11	NR
Beling, 2009 ¹²	United States	Exerc; uc	FRATE	19	79; 87*	36; 50*	12	12	36;65*
Bernardelli, 2019 ¹³	Italy	Exerc; uc	FALL	149	75.6	80	16	16	NR
Bernocchi, 2019 ¹⁴	Italy	Exerc+qualt; qualt	FALL	283	79	59	24	26	73;65*
Bischoff-Ferrari, 2006 ¹⁵	United States	Med; ph_pbo	FALL	445	70.8	55	156	156	NR
Blalock, 2010 ¹⁶	United States	Brisk+qualt; qualt	FALL, FRATE	186	74.8	71	NR	42;47*	43;48*
Boongird, 2017 ¹⁷	Thailand	Exerc+qualt; qualt	FALL, FRATE	427	74.1; 73.9*	84; 81*	52	52	NR
Boyé, 2016 ¹⁸	The Netherlands	Brisk; uc	FALL	580	76	62	NA	52	100
Brown, 2002 ¹⁹	Australia	Social; exerc+qualte; uc	FALL	149	80.7	NR	16	32	49;38;44*
Buchner, 1997 ²⁰	United States	Exerc; uc	FALL, FRATE	105	75	52;50*	24	24	22
Bunout, 2005 ²¹	Chile	Exerc; uc	FALL, FRATE	298	75	71	52	52	NR
Cameron, 2003 ²²	Australia	Assist+qualt; uc	FX, RFALL, HIP, FXRATE, FRATE	600	NR	100	104	104	100
Cameron, 2011 ²³	Australia	Assist+qualt; assist; qualt	FALL, FX, FRATE, FXRATE	171	83;84;82*	72;78; 72*	26	26	NR
Carpenter, 1990 ²⁴	United Kingdom	Social; uc	FRATE	539	NR	65	156	72	NR
Chapuy, 2002 ²⁵	France	Med; ph_pbo	FALL, FX, HIP	583	85.2	100	104	104	NR
Choi, 2005 ²⁶	South Korea	Exerc; uc	FALL	68	77.9	75	12	12	66;57*

Chu, 2017 ²⁷	China	Envir+assist+brisk+qualt; non-ph_pbo	FALL, RFALL	204	78.3	71	<1	52	NR
Ciaschini, 2009 ²⁸	Canada	Exerc+envir+qualt+hypot +brisk; uc	FALL	201	71.9	94	NR	52	43;40*
Clemson, 2004 ²⁹	Australia	Exerc+brisk+qualt; social	FALL, RFALL, FRATE	310	78.4	74	20	60	65;65*
Clemson, 2010 ³⁰	Australia	Exerc+qualt; uc	FALL, RFALL, FRATE	34	81.5	47	26	26	100
Clemson, 2012 ³¹	Australia	Exerc; non-ph_pbo	FALL, FX, RFALL, FRATE	317	83.4	55	52	52	100
Close, 1999 ³²	United Kingdom	Assist+envir+qualt+hypot +brisk; uc	FALL, FRATE	397	78.2	68	NR	52	100
Cohen, 2015 ³³	United States	Qualt+brisk; qualt	FALL	5310	81	59	52	52	NR
Coleman, 1999 ³⁴	United States	Qualt+brisk; uc	FALL	169	77.3	49	104	104	NR
Conroy, 2010 ³⁵	United Kingdom	Exerc+envir+assist+hypot +brisk; qualt	FALL, FRATE	364	79	60	NR	52	59;56*
Cornillon, 2002 ³⁶	France	Exerc+qualt+hypot+brisk; uc	FALL, FRATE	298	71.3;70.9*	83	12	52	75; 76*
Cumming, 1999 ³⁷	Australia	Envir; uc	FALL, FRATE	530	76.8	57	2	52	39;39*
Cumming, 2007 ³⁸	Australia	Envir+assist; uc	FALL, FX, HIP, FRATE	616	80.6	68	<1	52	54;55*
Dadgari, 2016 ³⁹	Iran	Exerc; uc	FALL, RFALL	317	70.3	NR	26	26	NR
Dangour, 2011 ⁴⁰	Chile	Exerc+nutr; exerc; nutr; uc	FALL, FX	2002	66.2	68	104	104	NR
Dapp, 2011 ⁴¹	Switzerland	Qualt+brisk; uc	RFALL	1963	71.9;71.8*	62;63*	52	52	NR
Davison, 2005 ⁴²	United Kingdom	Exerc+envir+assist+hypot +brisk; uc	FALL, FX, FRATE	313	77	72	NR	52	100
Day, 2015 ⁴³	Australia	Exerc+qualt; non-ph_pbo	FALL, RFALL, FRATE	503	77.7	70	48	48	29;30*
De Vries, 2010 ⁴⁴	The Netherlands	Exerc+med+envir+assist+ hypot+brisk; uc	FALL, RFALL, FX	217	79.8	71	NR	52	100
Dhesi, 2004 ⁴⁵	United Kingdom	Med; ph_pbo	FALL, FRATE	139	76.8	78	26	26	100
Dorresteijn, 2016 ⁴⁶	The Netherlands	Psych+qualt; uc	FALL, RFALL, FRATE	389	78.3	70	17	52	NR
Dukas, 2004 ⁴⁷	Switzerland	Med; ph_pbo	FALL, FRATE	378	75.0	52	36	36	5;13*
Dyer, 2004 ⁴⁸	United Kingdom	Exerc+assist+envir+qualt +brisk; uc	FALL, FX, FRATE	196	87.3	78	13	13	NR
Ebrahim, 1997 ⁴⁹	United Kingdom	Exerc+qualt; qualt	FALL, FX, FRATE	165	67.2	100	104	104	59;56*
El-Khoury, 2015 ⁵⁰	France	Exerc+qualt; qualt	FALL, FRATE	706	79.7	100	104	104	39;45*

Elley, 2008 ⁵¹	New Zealand	Exerc+envir+assist+brisk; qualt	FALL, RFALL, FRATE	312	80.8	69	52	52	100
Fabacher, 1994 ⁵²	United States	Envir+qualt+hypot+brisk;	FALL						17;14*
		uc		195	73.5;71.8*	2	52	52	
Fairhall, 2014 ⁵³	Australia	Exerc+incont+nutr+psych +envir+qualt+brisk; uc	FALL, FX, FRATE	241	83.3	68	52	52	NR
Ferrer, 2014 ⁵⁴	Spain	Exerc+nutr+envir+assist+ brisk; uc	FALL, FX, FRATE	328	85	62	104	104	30;27*
Fitzharris, 2010 ⁵⁵	Australia	Exerc+envir+assist; envir+assist; exerc+envir; exerc+assist; envir; assist; exerc; uc	FALL, RFALL, FRATE	1107	76.1	60	15	76	6
Fox, 2010 ⁵⁶	United States	Exerc+incont+envir+assis t+qualt+brisk; brisk	FALL	552	76.8	67	NR	52	58;42*
Freiberger, 2012 ⁵⁷	Germany	Exerc+psych+qualt; exerc; exerc; uc	FRATE	280	76.1	44	16	104	NR
Gallagher, 200158	United States	Med; uc	FX	489	72	100	156	156	NR
Gawler, 2016 ⁵⁹	United Kingdom	Exerc; uc	FALL, FRATE	791	73	62	24	104	22
Giangregorio, 2018 ⁶⁰	Canada, Australia	Exerc; non-ph_pbo	FALL						
				141	76;77*	100	52	52	37;30*
Gianoudis, 2014 ⁶¹	Australia	Exerc+qualt; qualt	FALL, RFALL, FX, FRATE	162	67.5	73	52	52	100
Gill, 2016 ⁶²	United States	Exerc; exerc+qualt	HIP, FXRATE	1635	78.9	67	104 - 183	180	50;49*
Giusti, 2013 ⁶³	Italy	Vibr; non-ph_pbo	FALL	41	85.2	93	<1	4	NR
Glendenning, 2012 ⁶⁴	Australia	Med+qualt; qualt	FALL, RFALL, FX	686	76.7	100	36	36	33;25*
Grahn Kronhed, 200965	Sweden	Exerc; uc	FALL	65	71.4	100	17	52	23;44*
Grant, 2005 ⁶⁶	United Kingdom	Med; ph_pbo	FALL	5292	NR	85	194	268	NR
Gschwind, 2015 ⁶⁷	Germany, Spain, Australia	Exerc+qualt; qualt	FALL, FRATE	153	74.7	61	16	16	33; 36*
Guse, 2015 ⁶⁸	United States	Exerc+qualt; uc	FALL, FRATE	516	79.2;78.8*	87;79*	104	104	13;18*
Haines, 200969	Australia	Exerc+qualt; uc	FALL, FX, FRATE	53	80.6	60	8	26	NR
Halvarsson, 2013 ⁷⁰	Sweden	Exerc; uc	FALL	59	77	71	12	64	90
Harper, 2017 ⁷¹	Australia	Qualt; uc	FALL, FRATE	378	79.3;79.1*	64;66*	1	24	45;40*
Harwood, 2004 ⁷²	United Kingdom	Med; uc	FALL	150	81.2	100	<1	52	NR
Hendriks, 2008 ⁷³	The Netherlands	Envir+assist+qualt+brisk; uc	FALL, RFALL	333	74.9	68	15	52	100
Hill, 2013 ⁷⁴	Australia	Qualt; uc	FALL, FX, HIP, FRATE	50	78.3	66	2	4	NR

Hill, 2019 ⁷⁵	Australia	Qualt; non-ph pbo	FALL, RFALL, FX,						73; 69*
			FRATE	382	77.4;78.1	60;63	1	24	,
Hin, 2017 ⁷⁶	England	Med; ph_pbo	FALL	305	72	49	52	52	NR
Hogan, 2001 ⁷⁷	Canada	Exerc+envir+assist+hypot	FALL, FX, HIP,	163	77.7	72	NR	52	100
		+brisk; social	FRATE						
Holt, 2016 ⁷⁸	New Zealand	Chiro; uc	FALL	60	72	60	12	12	18
Hornbrook, 199479	United States	Exerc+envir+qualt; qualt	FALL, FX	3182	73.4	62	4	104	14;15*
Houston, 2015 ⁸⁰	United States	Med; ph_pbo	FALL, FRATE	68	77.9	72	22	20	63;59*
Huang, 1998 ⁸¹	Taiwan	Envir+qualt+brisk; qualt	FALL	120	72.4;71.6*	38;53*	16	8	17;15*
Huang, 2010 ⁸²	Taiwan	Qualt; exerc; exerc+qualt; uc	FALL	163	71.5	49	20	52	24;13;38;1 7
Huang, 2011 ⁸³	Taiwan	Exerc+psych+qualt; psych+qualt; qualt	FALL	186	NR	59	8	20	NR
Imhof, 2012 ⁸⁴	Switzerland	Qualt+brisk; uc	FALL	461	85	73	39	40	34;44
Iwamoto, 2009 ⁸⁵	Japan	Exerc; uc	FALL	68	76.4	90	22	22	NR
Kamei, 2015 ⁸⁶	Japan	Exerc+envir+qualt+brisk; exerc+qualt+brisk	FALL	130	75.7;75.8*	84;86*	4	52	28;29*
Kamide, 200987	Japan	Exerc+qualt; uc	FALL	57	71	100	26	52	NR
Karinkanta, 2015 ⁸⁸	Finland	Exerc; exerc; exerc; uc	FX, HIP, FXRATE	149	NR	100	52	52	NR
Kärkkäinen, 2010 ⁸⁹	Finland	Med; uc	FALL, RFALL	750	67.4	100	156	156	NR
Kemmler, 2010 ⁹⁰	Germany	Exerc+med; med	FX, FRATE	246	NR	100	77	77	NR
Kerse, 2005 ⁹¹	New Zealand	Exerc+qualt; uc	FALL	270	71.6	63	52	52	NR
Kerse, 2008 ⁹²	New Zealand	Exerc+qualt; non-ph_pbo	FALL	682	84.3	74	26	52	NR
Khaw, 2017 ⁹³	New Zealand	Med; ph_pbo	FALL, RFALL	5056	65.9	42	177	NR	NR
Kim, 2014 ⁹⁴	Japan	Exerc; qualt	FALL, RFALL, FX	105	77.8	100	13	52	100
Kingston, 200195	United Kingdom	Qualt+brisk; uc	FALL	193	71.9	100	52	52	100
Korpelainen, 200696	Finland	Exerc; uc	FX, HIP, FRATE, FXRATE	160	NR	100	129	128	NR
Kovacs, 2013 ⁹⁷	Hungary	Exerc; uc	FALL	72	68.5;68.3	100	25	26	NR
Lamb, 2018 ⁹⁸	United Kingdom	Exerc; qualt	FALL, FX, FRATE,						32
			FXRATE	418	78.4;76.9*	36;41*	16	52	
Lee, 2007 ⁹⁹	Canada	Assist+qualt; uc	FALL	86	79.7	72	9	9	100
Lee, 2013 ¹⁰⁰	Taiwan	Exerc+envir+assist+qualt +brisk; qualt+brisk	FALL, FRATE	616	75.7	55	13	52	41;29*
Lehtola, 2000 ¹⁰¹	Finland	Exerc; uc	FALL, FRATE	131	72.3;72.4*	80	26	42	10;9*
Leung, 2014 ¹⁰²	China	Vibr; uc	FALL, RFALL, FX, FRATE	710	72.9	100	78	78	NR
Li, 2005 ¹⁰³	United States	Exerc; non-ph_pbo	FALL, RFALL	256	77.5	70	26	26	NR

Li, 2018 ¹⁰⁴	United States	Exerc; exerc; non-ph_pbo	FALL, RFALL,						72
			FRATE	670	77.7	65	24	24	
Lightbody, 2002 ¹⁰⁵	United Kingdom	Exerc+envir+assist+qualt +hypot+brisk; uc	FALL, FRATE	348	75	74	4	26	42
Lips, 1996 ¹⁰⁶	The Netherlands	Med; ph_pbo	FX, HIP	2578	NR	74	208	208	NR
Liu-Ambrose, 2005 ¹⁰⁷	Canada	Exerc; exerc; non-ph_pbo	FALL, RFALL,		79.6; 78.9;				16;18;19*
			FRATE	97	79.5*	100	25	52	
Liu-Ambrose, 2008 ¹⁰⁸	Canada	Exerc+qualt+brisk; brisk	FALL, RFALL,	59	82.2	69	52	52	100
X 2 24 2100	XX 1. 1 X71 1		FRATE	204			-		
Logan, 2010 ¹⁰⁹	United Kingdom	Exerc+envir+qualt+brisk;	FALL, FRATE	204	82.5	65	6	52	NR
x a a a a 110		uc					1.2		
Logghe, 2009 ¹¹⁰	The Netherlands	Exerc+qualt; qualt	FALL, FRATE	269	77.2	71	13	52	64;60*
Lord, 1995 ¹¹¹	Australia	Exerc; uc	FALL, RFALL	197	71.6	100	52	52	28;29*
Lord, 2003 ¹¹²	Australia	Exerc; non-ph_pbo, uc	FALL, FRATE	551	79.5	86	52	52	35;33;34*
Lord, 2005 ¹¹³	Australia	Exerc+surg+assist+qualt;	FALL, RFALL,						NR
		uc	FRATE	403	80.4	66	52	52	
Lurie, 2013 ¹¹⁴	United States	Exerc; exerc	FALL	64	80.0	59	12	12	NR
Luukinen, 2007 ¹¹⁵	Finland	Exerc+qualt+brisk; uc	FALL, FRATE	437	88	79	69	68	NR
MacRae, 1994 ¹¹⁶	United States	Exerc+qualt; qualt	FALL	59	72.4;70.0*	100	52	52	32;26*
Madureira, 2010 ¹¹⁷	Brazil	Exerc; qualt	FALL, FRATE	66	74.0	100	52	52	NR
Mahoney, 2007 ¹¹⁸	United States	Exerc+psych+envir+assist	FRATE						100
-		+qualt+brisk; envir		282	79.6;80.3*	79;78	NA	52	
Markle-Reid, 2010 ¹¹⁹	Canada	Qualt+brisk; qualt	FRATE	109	NR	72	26	26	NR
Matchar, 2017 ¹²⁰	Singapore	Exerc+envir+assist+qualt	FALL	354	77.8	77	13	36	46;37*
		+brisk; qualt							
McKiernan, 2005 ¹²¹	United States	Assist+qualt; qualt	FALL, FRATE	109	74.2	60	NR	14	100
McMurdo, 1997 ¹²²	United Kingdom	Exerc; uc	FALL, FX	118	65	100	104	104	NR
McMurdo, 2000 ¹²³	United Kingdom	Exerc+envir+assist+hypot	FALL, FX, FRATE	133	84	81	26	52	NR
	_	+brisk; social							
McMurdo, 2009 ¹²⁴	United Kingdom	Nutr; ph_pbo	FALL	253	81.8	61	16	16	NR
Means, 2005 ¹²⁵	United States	Exerc; social	FALL	338	73.5	57	6	26	NR
Merom, 2016 ¹²⁶	Australia	Exerc+qualt; qualt	FALL, FRATE	530	78	85	52	52	27;28*
Miko, 2018 ¹²⁷	Hungary	Exerc; uc	FALL, FRATE	97	69.3;69.1*	100	52	52	NR
Mikolaizak, 2017 ¹²⁸	Australia	Exerc+envir+assist+qualt	FRATE		,				70;64*
,		+brisk; brisk		163	83.3	64	52	52	,
Möller, 2014 ¹²⁹	Sweden	Exerc+envir+qualt+brisk;	FALL, RFALL,	153	77.8	67	52	52	NR
·		uc	FRATE, FXRATE						
Morgan, 2004 ¹³⁰	United States	Exerc; uc	FALL	229	80.6	71	8	52	39;33*

Morris, 2008 ¹³¹	United States	Exerc; exerc; qualt	FALL, RFALL	18	73.5;74.8; 81.4*	100	8	25	50
Mott, 2016 ¹³²	United States	Brisk; qualt	FALL, RFALL	80	74.9;76.3*	77:81*	NA	26	NR
Newbury, 2001 ¹³³	Australia	Brisk; uc	FALL	100	79.3	63	<1	52	27; 39*
Ng, 2015 ¹³⁴	Singapore	Exerc+psych+nutr; exerc; nutr; psych; ph_pbo	FALL	246	70	61	24	52	NR
Nikolaus, 2003 ¹³⁵	Germany	Envir+assist+brisk; brisk	RFALL, FX, HIP, FRATE	360	NR	73	52	52	NR
Nowalk, 2001 ¹³⁶	United States	Exerc+psych+qualt; exerc+qualt; exerc+qualt	FALL	110	84.7	87	89	104	61
Ohtake, 2013 ¹³⁷	Japan	Exerc+qualt; qualt	FALL	182	83.6	84	8	9	27; 22*
Okubo, 2016 ¹³⁸	Japan	Exerc+social+qualt; exerc+social+qualt	FRATE	75	70.1	60;65*	12	61	30;18*
Oliveira, 2019 ¹³⁹	Australia	Qualt+brisk; qualt	FALL, FX, FRATE	114	71;72*	43;50	24	52	17;30*
Olsen, 2014 ¹⁴⁰	Norway	Exerc+qualt; uc	FALL	89	71.1	100	13	52	62;38*
Pai, 2014 ¹⁴¹	United States	Exerc; non-ph_pbo	FALL, RFALL, FX	212	73.3	28	NR	52	NR
Palvanen, 2014 ¹⁴²	Finland	Exerc+med+surg+nutr+en vir+assist+qualt+brisk; qualt	FALL, FX, FRATE, FXRATE	1314	77.5; 77.7*	86	52	52	NR
Pardessus, 2002 ¹⁴³	France	Ênvir+qualt; qualt	FALL, FRATE	60	83.2	78	52	52	NR
Park, 2008 ¹⁴⁴	Korea	Exerc; uc	FALL	50	68.4	100	48	48	20;18*
Parry, 2016 ¹⁴⁵	United Kingdom	Psych+qualt; uc	FALL, FRATE	415	75.5	NR	26	26	NR
Patil, 2015 ¹⁴⁶	Finland	Exerc; uc	FALL, RFALL, FX, FRATE	409	74.4;74.0*	100	104	104	100
Peel, 2000 ¹⁴⁷	Australia	Envir; non-ph_pbo	FRATE	195	69	79	52	52	34
Pekkarinen, 2013 ¹⁴⁸	Finland	Exerc+mde+qualt; uc	HIP	2178	65.3	100	1	520	NR
Perry, 2008 ¹⁴⁹	Canada	Assist; uc	FALL	40	69	48	12	12	NR
Pérula, 2012 ¹⁵⁰	Spain	Exerc+envir+qualt; qualt	FALL, FX	404	76.4	53	52	52	33;30*
Pighills, 2011 ¹⁵¹	United Kingdom	Envir; uc	FALL, FRATE	238	79	67	52	52	100
Pit, 2007 ¹⁵²	Australia	Qualt+brisk; uc	FALL	849	NR	60	NR	52	22;29*
Porthouse, 2005 ¹⁵³	United Kingdom	Med; qualt	FALL	2838	77.0;76.7*	100	100	100	34
Rantz, 2017 ¹⁵⁴	United States	Assist; uc	FALL	171	83.6;86.0*	74;73*	55;50*	52	NR
Reinsch, 1992 ¹⁵⁵	United States	Exerc+psych; exerc; psych; qualt	FALL, RFALL	230	74.4	80	52	52	19;37;26;3 6*
Robertson, 2001 ¹⁵⁶	New Zealand	Exerc+qualt; uc	FALL, FRATE	240	80.9	100	52	52	36;38*
Robson, 2003 ¹⁵⁷	Canada	Exerc+qualt+brisk; uc	FALL	660	73	81	17	46;44*	32;26*
Rubenstein, 2000 ¹⁵⁸	United States	Exerc; uc	FALL	59	75.5	0	12	12	NR

Rubenstein, 2007 ¹⁵⁹	United States	Incont+psych+assist+qual	FALL						40;39*
		t; uc		673	74.6;74.3*	4;3*	NA	156	
Russell, 2010 ¹⁶⁰	Australia	Exerc+nutr+envir+assist+	FALL, FRATE	712	75.4	70	NR	52	100
		qualt+brisk; qualt+brisk							
Ryan, 1996 ¹⁶¹	United States	Qualt; uc	FALL, FRATE	30	78	100	1	12	NR
Sakamoto, 2013 ¹⁶²	Japan	Exerc; uc	FALL, FX	1788	80.4	81	26	26	35;31*
Sales, 2017 ¹⁶³	Australia	Exerc; social	FALL	48	71.4	70	18	52	62;63*
Salminen, 2009 ¹⁶⁴	Finland	Exerc+psych+envir+assist	FALL, FX, HIP,	591	72.8	84	52	52	100
		+qualt+brisk; qualt	FRATE						
Sambrook, 2012 ¹⁶⁵	Australia	Med; qualt	FALL, FX, FRATE,	602	86.4	71	52	52	42;40*
			FXRATE						
Sanders, 2010 ¹⁶⁶	Australia	Med; ph_pbo	FALL, RFALL, FX,	2256	76.1	100	205	154	NR
			HIP, FRATE,						
			FXRATE						
Sattin, 2005 ¹⁶⁷	United States	Exerc; qualt	FALL, RFALL	311	80.9	94	48	48	100
Schoene, 2015 ¹⁶⁸	Australia	Exerc+qualt; qualt	FALL	90	81.5	67	16	16	38;28*
Schoon, 2018 ¹⁶⁹	The Netherlands	Exerc; uc	FALL, FRATE	78	80.3	65	24	24	NR
Serra-Prat, 2017 ¹⁷⁰	Spain	Exerc+nutr; uc	FALL	133	77.9;78.8*	57	NR	52	NR
Sherrington, 2014 ¹⁷¹	Australia	Exerc+qualt; qualt	FALL, RFALL, FX	340	81.2	74	52	52	72;69*
			FRATE, FXRATE						
Shigematsu, 2008 ¹⁷²	Japan	Exerc; exerc	FALL, FRATE	68	69.1	63	12	32	26;15*
Shigematsu, 2008 ¹⁷³	Japan	Exerc; exerc	FALL, FRATE	39	69	46	12	60	NR
Shimada, 2004 ¹⁷⁴	Japan	Exerc; exerc	FALL, FRATE	32	82.4	78	26	26	11;10*
Shumway-Cook, 2007 ¹⁷⁵	United States	Exerc+qualt+brisk; qualt	FALL, RFALL,	453	75.6	77	52	52	NR
			FRATE						
Siegrist, 2016 ¹⁷⁶	Germany	Exerc+qualt; uc	FALL, FRATE	378	78.1	75	16	52	54;51*
Sihvonen, 2004 ¹⁷⁷	Finland	Exerc; uc	FALL, RFALL,	27	81.3	100	4	52	35;29*
			FRATE						
Skelton, 2005 ¹⁷⁸	United Kingdom	Exerc+assist; non-ph_pbo	FALL, FRATE	81	72.8	100	36	50	100
Smith, 2007 ¹⁷⁹	United Kingdom	Med; ph_pbo	FALL, FX, HIP	9440	79.1	54	156	156	NR
100			FRATE, FXRATE						
Smulders, 2010 ¹⁸⁰	The Netherlands	Exerc+qualt; uc	FALL, FX, FRATE	96	71	94	6	52	100
Spice, 2009 ¹⁸¹	United Kingdom	Exerc+med+envir+assist+	FALL, FX	505	82.2	74	NR	52	100
102		qualt+hypot+brisk; uc							
Stam, 2018 ¹⁸²	The Netherlands	Exerc+psych+brisk; uc	FALL	150	78.8	69	52	52	52;54*
Stanmore, 2019 ¹⁸³	United Kingdom	Exerc; qualt	FALL, RFALL,						
101			FRATE	92	77.9;77.8 *	80;76*	12	12	43;58*
Steadman, 2003 ¹⁸⁴	United Kingdom	Exerc+qualt; exerc+qualt	FALL	198	82.7	80	6	26	NR

Stevens, 2001 ¹⁸⁵	Australia	Envir+assist+qualt; non-	FALL, FRATE						26;27*
		ph_pbo		1615	76	54;52*	NA	52	
Suttanon, 2013 ¹⁸⁶	Australia	Exerc+social+qualt; qualt	FALL, FRATE	40	81.9	63	26	26	53;19*
Suttanon, 2018 ¹⁸⁷	Thailand	Exerc+envir+assist; uc	FALL, FRATE	277	72.2;72.9*	74;73	12	52	20;19*
Suzuki, 2004 ¹⁸⁸	Japan	Exerc; qualt	FALL, FRATE	52	78.0	100	26	84	14;17*
Tan, 2018 ¹⁸⁹	Malaysia	Exerc+surg+envir+assist+	FALL, FRATE						
		qualt+hypot+brisk; uc		268	75.3	67	52	52	100
Taylor, 2012 ¹⁹⁰	New Zealand	Exerc; non-ph_pbo	FALL, RFALL,	684	74.5	73	20	20	60;61*
			FRATE						
Tchalla, 2013 ¹⁹¹	France	Assist+brisk; brisk	FALL, RFALL	96	86.6	77	52	52	74
Thomas, 2018 ¹⁹²	United States	Nutr; uc	FALL	265	77.3;75.7*	NR	15	15	NR
Tinetti, 1994 ¹⁹³	United States	Exerc+envir+hypot+brisk; social	FALL, FRATE	301	77.9	69	26	52	41;44*
Tousignant, 2013 ¹⁹⁴	Canada	Exerc+nutr+envir+brisk;	FALL, FRATE	152	79.9	73	15	52	NR
T 1 2011195		exerc+nutr+envir	EALL DEALL	124	75.5	0.6	25		
Trombetti, 2011 ¹⁹⁵	Switzerland	Exerc; uc	FALL, RFALL,	134	75.5	96	25	52	56;54*
U. 1. 2017 ¹⁹⁶	T		FRAIE	<i>c</i> 0	75.0	60	4	1	100
Ueda, 2017^{190}	Japan	Exerc+envir+qualt; exerc	FALL	60	/5.9	68	4	4	100
Uusi-Rasi, 2015	Finland	Med+exerc;	FRAIE, FXRAIE		74 1.74 9.				100
		ph_pbo+exerc; Med;		270	74.1;74.8;	100	104	104	100
uan dar Maar 2018 ¹⁹⁸	The Netherlands	Prieku no	EALI	570	/4.1,/3.0	100	104	104	
vali del Mieer, 2018	The Neulerlands	DIISK, UC	FALL	136	75.7;76.6*	69;72*	>1	12	NR
van Haastregt, 2000 ¹⁹⁹	The Netherlands	Psych+envir+brisk; uc	FALL, RFALL	316	77.2	66	52	78	61;52*
Verrusio, 2017 ²⁰⁰	Italy	Exerc+assist; exerc	FALL	150	64.8	47	52	52	NR
Vetter, 1992 ²⁰¹	United Kingdom	Exerc+nutr+envir+qualt+ brisk; qualt	FALL, FX	674	NR	NR	208	208	NR
Villar, 1998 ²⁰²	United Kingdom	Assist; uc	FALL	141	NR	100	12	12	NR
Vind, 2010 ²⁰³	Denmark	Exerc+assist+qualt+brisk; uc	FALL, FX, HIP	392	74.4	74	13	52	100
Vogler, 2009 ²⁰⁴	Australia	Exerc; exerc; social	FALL	180	80	79	12	12	68;67;75*
von Stengel, 2011 ²⁰⁵	Germany	Exerc+vibr; exerc; non-	FRATE	141	68.5	100	78	78	NR
-		ph_pbo							
Voukelatos, 2007 ²⁰⁶	Australia	Exerc+qualt; uc	FALL, RFALL, FRATE	702	69	84	16	26	31;36*
Voukelatos, 2015 ²⁰⁷	Australia	Exerc+qualt; uc	FALL, RFALL,	386	73.2	74	48	48	23
			FRATE						
Wagner, 1994 ²⁰⁸	United States	Exerc+envir+assist+qualt	FALL		72.5;72.6;	60;57;			
		+brisk; qualt; uc		924	72.5*	59*	NA	104	35;31;33*

Weber, 2008 ²⁰⁹	United States	Qualt+brisk; uc	FALL	620	76.9	79	NR	64	NR
Weerdesteyn, 2006 ²¹⁰	The Netherlands	Exerc; uc	FALL, FRATE		73.7;73.2;	82;77;			57;60;32*
				106	74.9*	68*	5	24	
Wesson, 2013 ²¹¹	Australia	Exerc+envir+social+qualt;	FALL, FRATE	22	79.8	41	12	12	64;82*
		qualt							
Whitehead, 2003 ²¹²	Australia	Exerc+envir+qualt+brisk;	FALL	140	77.8	71	26	22	100
		uc							
Whitehead, 2016 ²¹³	United Kingdom	Envir; uc	FALL	22	82.9;82.0*	73;40*	24	24	NR
Whitehead, 2018 ²¹⁴	United Kingdom	Envir; uc	FALL, FRATE	54	77	58	7-19	12	58;55*
Wolf, 2003 ²¹⁵	United States	Exerc; qualt	FALL, RFALL	311	80.9	94	48	48	NR
Woo, 2007 ²¹⁶	China	Exerc; exerc; uc	FALL	180	68.9	50	52	52	NR
Yokoi, 2015 ²¹⁷	Japan	Exerc; uc	FALL	105	80.2;78.5*	65;56*	26	52	NR
Zieschang, 2017 ²¹⁸	Germany	Exerc; non-ph_pbo	FALL, RFALL,						
_			FRATE	96	82.1;82.2*	73;75*	12	52	58;64*
Zijlstra, 2009 ²¹⁹	The Netherlands	Exerc+psych+qualt; uc	FALL, RFALL,	540	77.9	72	8	60	56;55*
			FRATE						
Zijlstra, 2012 ²²⁰	The Netherlands	Psych; uc	FALL, RFALL,						
			FRATE	540	77.9;77.8*	73;71*	8	54	54;56*

^a Citations correspond to the references of included studies

^b Abbreviations: **exerc**, exercise; **med**, medication; **surg**, surgery; **incont**, management of urinary incontinence; **nutr**, fluid or nutrition therapy; **psych**, psychological interventions; **envir**, environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **hypot**, management of orthostatic hypotension; **brisk**, basic falls risk assessment; **vibr**, whole-body vibration; **chiro**, chiropractic care; **uc**, usual care; **ph_pbo**, pharmacological placebo; **non-ph_pbo**, non-pharmacological placebo.

^c Outcomes abbreviations:

FALL = Number of fallers, FX = Number of fractures, RFALL = Number of repeated fallers, HIP = Number of hip fractures

FRATE = Falls rate, FXRATE = Fracture rate

^d Percentage of participants who suffered a fall in the preceding 12 months

* Data reported per study arm

NR = not reported, NA = not applicable



Supplementary Appendix S2. Aggregate and individual risk of bias results

Supplementary Figure S1. Aggregate risk of bias results according to the Effective Practice and Organisation of Care (EPOC) version of Cochrane's Risk of Bias tool (n = 220 studies)

Supplementary Table S2. Risk of bias assessment of the 220 included studies

First author, vear ^a	Random sequence	Allocation concealment	Similar baseline	Similar baseline characteristics	Incomplete outcome	Blinding	Contamination	Selective outcome	Other bias
5	generation		outcome		data			reporting	
	0		measures					1 0	
Aloia, 2019 ¹									Unclear
	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	risk
Ansai, 2016 ²	Low risk	Low risk	High risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Unclear
									risk
Arantes, 2015 ³	Low risk	Unclear risk	High risk	Low risk	Low risk	Low risk	Low risk	High risk	Low risk
Arkkukangas,		- · · ·		.	.	*** * * * *		*** * * * *	· · ·
20194	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	High risk	Low risk
Ashari, 2016 ³	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	Low risk
Ballard, 2004 ⁶	x · 1	TT 1 · 1	T · 1	TT 1 · 1	x · 1	T . 1	T · 1	Unclear	x · 1
D 1 20167	Low risk	Unclear risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	risk	Low risk
Barker, 2016'	Low risk	Low risk	Low risk	Low risk	High risk	High risk	High risk	Low risk	Low risk
Barnett, 2003°	Unclear risk	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	Unclear risk	Low risk
Barr, 2005 ⁹	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Unclear risk	Unclear risk
Beck, 2010 ¹⁰	Low risk	Unclear risk	Unclear	Unclear risk	Low risk	High risk	Unclear risk	Unclear	High risk
			risk					risk	
Beck 2016 ¹¹	Unclear risk	Low risk	Unclear risk	High risk	Unclear risk	High risk	Low risk	Unclear risk	Low risk
Beling, 2009 ¹²								Unclear	
	Unclear risk	Unclear risk	High risk	Low risk	High risk	High risk	Low risk	risk	Low risk
Bernardelli,			Unclear					Unclear	
2019 ¹³	Low risk	Low risk	risk	Low risk	High risk	High risk	Low risk	risk	Low risk
Bernocchi,									
2019 ¹⁴	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Bischoff-	Unclear risk	Unclear risk	Unclear	Low risk	Low risk	Low risk	Unclear risk	Unclear	Low risk
Ferrari, 2006 ¹⁵			risk					risk	
Blalock, 2010 ¹⁶	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	High risk	Low risk
Boongird,		- · · ·	Unclear	.	.	*** * * * *	- · ·		· · ·
2017^{17}	Low risk	Low risk	risk	Low risk	Unclear risk	High risk	Low risk	Low risk	Low risk
Boyé, 2016 ¹⁸	low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	Low risk
Brown, 2002 ¹⁹	Low risk	Unclear risk	Low risk	Unclear risk	Low risk	High risk	Unclear risk	Unclear risk	Unclear risk

Buchner, 1997 ²⁰								Unclear	
	Unclear risk	Unclear risk	Low risk	Low risk	High risk	High risk	Low risk	risk	Low risk
Bunout, 2005 ²¹	Low risk	Unclear risk	Unclear	Unclear risk	High risk	High risk	Unclear risk	Unclear	Unclear
			risk		-	-		risk	risk
Cameron,	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	Unclear	Unclear
2003 ²²						-		risk	risk
Cameron,	Low risk	Low risk	Unclear	Low risk	Low risk	High risk	Unclear risk	Unclear	Low risk
2011 ²³			risk					risk	
Carpenter,	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk	Unclear risk	Unclear	Low risk
1990 ²⁴								risk	
Chapuy, 2002 ²⁵	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	Unclear	Unclear
								risk	risk
Choi, 2005 ²⁶	Low risk	Unclear risk	Unclear	Low risk	Low risk	High risk	Low risk	Unclear	Unclear
			risk					risk	risk
Chu, 2017 ²⁷	Low risk	Low risk	Unclear	Low risk	Low risk	Low risk	Unclear risk	Unclear	Low risk
			risk					risk	
Ciaschini,	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Unclear
2009^{28}									risk
Clemson,	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Unclear	Unclear
2004 ²⁹						_		risk	risk
Clemson,	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk	Unclear risk	Unclear	High risk
2010 ³⁰						_		risk	
Clemson,	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	Unclear risk	Low risk	Low risk
201231									
Close, 1999 ³²	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Unclear	Low risk
22								risk	
Cohen, 2015 ³³	Unclear risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Unclear	Low risk
								risk	
Coleman,	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	Unclear	Low risk
1999 ³⁴								risk	
Conroy, 2010 ³³	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Unclear	Unclear
								risk	risk
Cornillon,	· · ·	** • • •		.	× · · ·	··· · · ·		Unclear	· · ·
200230	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	risk	Low risk
Cumming,	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Unclear	Low risk
19993		.						risk	
Cumming,	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	High risk	Unclear	Low risk
200750	· · · ·							risk	
Dadgari, 2016 ³⁹	Low risk	Low risk	Low risk	Low risk	High risk	High risk	Low risk	Low risk	Low risk

Dangour, 2011 ⁴⁰	Unclear risk	Low risk	Unclear risk	Low risk	Low risk	High risk	Low risk	Low risk	Low risk
Dapp, 2011 ⁴¹			Unclear						Unclear
	Unclear risk	Low risk	risk	Low risk	Low risk	High risk	High risk	Low risk	risk
Davison, 2005 ⁴²	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	High risk	Unclear risk	Low risk
Day, 2015 ⁴³	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Low risk
De Vries, 2010 ⁴⁴	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Unclear risk
Dhesi, 2004 ⁴⁵	Low risk	Unclear risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Low risk
Dorresteijn, 2016 ⁴⁶	Low risk	High risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	Low risk
Dukas, 2004 ⁴⁷								Unclear	
	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	risk	Low risk
Dyer, 2004 ⁴⁸	Low risk	Low risk	Low risk	Unclear risk	Low risk	High risk	Low risk	Unclear risk	Low risk
Ebrahim, 1997 ⁴⁹	Low risk	Low risk	Low risk	Low risk	High risk	High risk	Unclear risk	Unclear risk	Low risk
El-Khoury, 2015 ⁵⁰	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Elley, 2008 ⁵¹	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	Low risk
Fabacher,								Unclear	
1994 ⁵²	Low risk	Low risk	Low risk	Low risk	High risk	High risk	Low risk	risk	Low risk
Fairhall, 2014 ⁵³	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Ferrer, 2014 ⁵⁴	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Fitzharris, 2010 ⁵⁵	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Unclear risk	Low risk
Fox, 2010 ⁵⁶	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	Unclear risk	Unclear risk
Freiberger, 2012 ⁵⁷	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Unclear risk	Low risk
Gallagher, 2001 ⁵⁸	Unclear risk	Unclear risk	Unclear risk	Low risk	Low risk	High risk	Unclear risk	Unclear risk	Unclear risk
Gawler, 2016 ⁵⁹	Low risk	Low risk	Low risk	Low risk	High risk	High risk	Low risk	Low risk	Low risk
Giangregorio, 2018 ⁶⁰	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk

Gianoudis, 2014 ⁶¹	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Gill, 2016 ⁶²	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Giusti, 2013 ⁶³	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	High risk
Glendenning, 2012 ⁶⁴	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	Low risk
Grahn Kronhed, 2009 ⁶⁵	Unclear risk	Unclear risk	High risk	Low risk	Low risk	High risk	Unclear risk	Unclear risk	Unclear risk
Grant, 2005 ⁶⁶	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Gschwind, 2015 ⁶⁷	Low risk	Unclear risk	Low risk	High risk	Low risk	High risk	Unclear risk	Low risk	Unclear risk
Guse, 2015 ⁶⁸									Unclear
	Unclear risk	Unclear risk	High risk	Low risk	Low risk	High risk	Low risk	Low risk	risk
Haines, 2009 ⁶⁹	Low risk	Low risk	High risk	High risk	Low risk	High risk	Unclear risk	Unclear risk	Low risk
Halvarsson, 2013 ⁷⁰	Unclear risk	Unclear risk	Low risk	High risk	High risk	High risk	Unclear risk	Unclear risk	Low risk
Harper, 2017 ⁷¹	Low risk	High risk	Low risk	Low risk	Low risk	High risk	High risk	Low risk	High risk
Harwood, 2004 ⁷²	Low risk	Low risk	Low risk	Low risk	High risk	High risk	Unclear risk	Unclear risk	Unclear risk
Hendriks, 2008 ⁷³	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	Unclear risk	Low risk
Hill, 2013 ⁷⁴	Low risk	Low risk	Low risk	Unclear risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Hill, 2019 ⁷⁵									Unclear
	Low risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	risk
Hin, 2017 ⁷⁶	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Hogan, 2001 ⁷⁷	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Unclear risk	Low risk
Holt, 2016 ⁷⁸	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	High risk	Low risk
Hornbrook, 1994 ⁷⁹	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	Unclear risk	Low risk
Houston, 2015 ⁸⁰	Low risk	Unclear risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Huang, 1998 ⁸¹	Unclear risk	Unclear risk	Low risk	Low risk	Unclear risk	High risk	Low risk	Unclear risk	Unclear risk
Huang, 2010 ⁸²			1	1				Unclear	Unclear
	Unclear risk	Unclear risk	High risk	High risk	High risk	High risk	Low risk	risk	risk
Huang, 2011 ⁸³	Low risk	Low risk	Low risk	High risk	Low risk	High risk	Unclear risk	Unclear risk	Unclear risk

Imhof, 2012 ⁸⁴								Unclear	
,	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	Low risk
Iwamoto,								Unclear	
200985	Unclear risk	Unclear risk	Low risk	High risk	Low risk	High risk	Unclear risk	risk	Low risk
Kamei, 2015 ⁸⁶	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	Unclear	Low risk
,						8		risk	
Kamide, 2009 ⁸⁷								Unclear	
	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk	Unclear risk	risk	Low risk
Karinkanta.			Unclear		0	8		Unclear	
2015 ⁸⁸	Low risk	Unclear risk	risk	Low risk	Low risk	High risk	Unclear risk	risk	Low risk
Kärkkäinen	2011 11511		Unclear	2011 1101	2011111	- ingli ingli			2011 11011
2010 ⁸⁹	Unclear risk	Unclear risk	risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Kemmler		enereur nok	IISK	Low link	Low Hok	Ingiribit		Low Hok	Unclear
2010^{90}	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	risk
Kerse 2005 ⁹¹	2011 11511		20111011	2011 1101	2011111	- ingli ingli		Unclear	11011
110150, 2005	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	risk	Low risk
Kerse 2008 ⁹²	Low risk	Unclear risk	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Khaw 2017 ⁹³	Low risk	Low risk	Low risk	Low risk	L ow risk	Low risk	Low risk	Low risk	Low risk
Kim $201/^{94}$	LOWIISK	LOW H3K	Low lisk	LOW H3K	Low Hisk	LOWINSK	Low Hisk	Unclear	LOWIISK
Kiiii, 2014	Low risk	Unclear risk	Low risk	Unclear risk	Low risk	High risk	Unclear risk	risk	Low risk
Kingston	LOW HSK	Olicical Hisk	Unclear		LOW HSK	Ingii lisk		Unclear	Unclear
2001^{95}	Unclear risk	Unclear risk	risk	Unclear risk	High risk	High risk	Unclear risk	risk	risk
Korpelainen	Onelear Hisk	Oncical Hisk	IISK	Cheledi Hisk	Ingillisk	mgnmsk	Cheledi HSK	Unclear	115K
2006^{96}	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	Low risk
Kowace 2013 ⁹⁷	LOW HSK	LOW HSK	LOW HSK	LOW HSK	LOW HSK	Tingii Tisk		Unclear	Unclear
Kovaes, 2015	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	rick	risk
Lamb 201898	LOW HSK	LOW HSK	LOW IISK	LOW IISK	LOW HSK	1 light lisk		IISK	Uncloar
Laino, 2018	Low risk	Low risk	Lowrick	Low rick	Low risk	Uigh rick	Low risk	Low risk	risk
Log 2007 ⁹⁹	LOW IISK	LOW HSK	LOW IISK	LOW IISK	LOW IISK	Tingii Tisk	LOW IISK	LUw IISK	Uncloar
Lee, 2007	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk	Unclear risk	risk	risk
L ap. 2013 ¹⁰⁰	LOW HSK	Ulicical HSK	LOW IISK	LOW HSK	Ingiinsk	1 light lisk		Uncloar	115K
Lee, 2015	Low risk	Uncloar risk	Lowrick	Low rick	Low risk	Uigh rick	Uncloar risk	risk	Low risk
Lahtala 2000 ¹⁰¹	LOW IISK	Ulicical IISK	LOW IISK	LOW IISK	LOW IISK	Tingii Tisk		Lingleer	Low IISK
Lentoia, 2000	Uncloar risk	Uncloar risk	Lowrick	Uncloar rick	Low risk	Uigh rick	Uncloar risk	rick	risk
Launa 2014102	Unclear fisk	Unclear HSK	LUW IISK	Unclear fisk	LOW IISK	riigii 118k	Unclear fisk	IISK	115K
Leung, 2014 ¹⁰²	Un alage might	Low male	vicle	L orre mistr		Iliah miale	L ou mielt	High wight	
L: 2005103	Unclear fisk	LOW IISK	118K	LOW IISK	LOW IISK	riigii fisk	LOW IISK	Linglage	LOW IISK
LI, 2005 ¹⁰⁵	T and sints	I In alson aial	T and wight	T	L and minte	L and sight	Lin ala an miala	Unclear	Unclear
I: 2010104	LOW TISK	Unclear risk	Low risk	LOW FISK	Low risk	Low risk	Unclear fisk	TISK	TISK
L1, 2018 ¹⁰⁴	Low risk	Unclear risk	LOW TISK	Low risk	LOW r 1SK	Low risk	Low risk	LOW r 1SK	Low risk

Lightbody,								Unclear	
2002 ¹⁰⁵	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	Low risk
Lips, 1996 ¹⁰⁶			Unclear					Unclear	Unclear
	Low risk	Low risk	risk	Low risk	Low risk	Low risk	Unclear risk	risk	risk
Liu-Ambrose,								Unclear	
2005^{107}	Unclear risk	Unclear risk	High risk	Low risk	Low risk	Low risk	Low risk	risk	Low risk
Liu-Ambrose,									
2008 ¹⁰⁸	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Logan, 2010 ¹⁰⁹	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Logghe, 2009 ¹¹⁰	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Lord, 1995 ¹¹¹								Unclear	
	Unclear risk	Unclear risk	Low risk	Low risk	High risk	High risk	Unclear risk	risk	Low risk
Lord, 2003 ¹¹²								Unclear	Unclear
	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	risk	risk
Lord, 2005 ¹¹³								Unclear	Unclear
	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	risk
Lurie, 2013 ¹¹⁴			Unclear						
	Unclear risk	Low risk	risk	High risk	High risk	Low risk	Unclear risk	Low risk	High risk
Luukinen,								Unclear	Unclear
2007 ¹¹⁵	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	risk
MacRae,			Unclear					Unclear	Low risk
1994 ¹¹⁶	Unclear risk	Unclear risk	risk	Unclear risk	Unclear risk	High risk	Low risk	risk	
Madureira,								Unclear	
2010 ¹¹⁷	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	Low risk
Mahoney,								Unclear	
2007 ¹¹⁸	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	risk	Low risk
Markle-Reid,									Unclear
2010 ¹¹⁹	Low risk	Low risk	Low risk	Low risk	High risk	High risk	Unclear risk	Low risk	risk
Matchar,									
2017 ¹²⁰	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	Low risk
McKiernan,			Unclear					Unclear	Unclear
2005 ¹²¹	Unclear risk	Unclear risk	risk	Unclear risk	Low risk	High risk	Unclear risk	risk	risk
McMurdo,								Unclear	
1997 ¹²²	Unclear risk	Unclear risk	Low risk	Low risk	High risk	High risk	Unclear risk	risk	High risk
McMurdo,			Unclear					Unclear	High risk
2000 ¹²³	Unclear risk	Unclear risk	risk	Low risk	Low risk	High risk	Low risk	risk	
McMurdo,									
2009 ¹²⁴	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Low risk

Means, 2005 ¹²⁵								Unclear	Unclear
	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk	Unclear risk	risk	risk
Merom, 2016 ¹²⁶	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	Low risk
Miko, 2018 ¹²⁷			Unclear					Unclear	
	Unclear risk	Unclear risk	risk	Unclear risk	Low risk	High risk	Low risk	risk	Low risk
Mikolaizak,									
2017 ¹²⁸	Low risk	Low risk	Low risk	Low risk	High risk	High risk	Low risk	Low risk	Low risk
Möller, 2014 ¹²⁹					-			Unclear	
	Unclear risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	High risk
Morgan, 2004 ¹³⁰								Unclear	
-	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	High risk
Morris, 2008 ¹³¹	Unclear risk	Unclear risk	Unclear	Unclear risk	High risk		Unclear risk	Unclear	High risk
			risk			High risk		risk	-
Mott, 2016 ¹³²	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	High risk
Newbury,			Unclear					Unclear	
2001133	Low risk	Unclear risk	risk	Low risk	Low risk	High risk	Unclear risk	risk	Low risk
Ng, 2015 ¹³⁴			Unclear						
-	Low risk	Low risk	risk	High risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Nikolaus,								Unclear	Unclear
2003135	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	risk
Nowalk, 2001 ¹³⁶								Unclear	
	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	risk	Low risk
Ohtake, 2013 ¹³⁷								Unclear	
	Unclear risk	Unclear risk	Low risk	Low risk	High risk	High risk	Low risk	risk	Low risk
Okubo, 2016 ¹³⁸								Unclear	
	Low risk	Unclear risk	High risk	Low risk	Low risk	Low risk	Low risk	risk	Low risk
Oliveira,									
2019 ¹³⁹	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	Low risk
Olsen, 2014 ¹⁴⁰	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Pai, 2014 ¹⁴¹									Unclear
	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	High risk	risk
Palvanen,	Low risk	Low risk	Low risk	Low risk	Low risk		Unclear risk	Low risk	Low risk
2014 ¹⁴²						High risk			
Pardessus,								Unclear	Unclear
2002 ¹⁴³	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	risk
Park, 2008 ¹⁴⁴								Unclear	Unclear
	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	risk
Parry, 2016 ¹⁴⁵	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk

Patil, 2015 ¹⁴⁶			Unclear						
	Unclear risk	Unclear risk	risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Peel, 2000 ¹⁴⁷								Unclear	
	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	Low risk	Low risk	risk	Low risk
Pekkarinen,	Unclear risk	Low risk	Low risk	Low risk	Low risk		Low risk	Unclear	Unclear
2013148						High risk		risk	risk
Perry, 2008 ¹⁴⁹			Unclear					Unclear	
	Unclear risk	Unclear risk	risk	Low risk	Low risk	High risk	Unclear risk	risk	High risk
Pérula, 2012 ¹⁵⁰	Low risk	Low risk	Low risk	High risk	Low risk	High risk	Low risk	Low risk	High risk
Pighills, 2011 ¹⁵¹	Low risk	Low risk	Low risk	High risk	Low risk	High risk	Unclear risk	Low risk	High risk
Pit, 2007 ¹⁵²	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk	Low risk	Low risk	Low risk
Porthouse,								Unclear	
2005 ¹⁵³	Low risk	Low risk	Low risk	Low risk	Unclear risk	High risk	Low risk	risk	High risk
Rantz, 2017 ¹⁵⁴			Unclear					Unclear	
	Unclear risk	Unclear risk	risk	Unclear risk	Unclear risk	High risk	Low risk	risk	High risk
Reinsch,								Unclear	High risk
1992 ¹⁵⁵	Unclear risk	Unclear risk	Low risk	Low risk	High risk	High risk	Low risk	risk	
Robertson,								Unclear	
2001 ¹⁵⁶	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	risk	Low risk
Robson, 2003 ¹⁵⁷								Unclear	Unclear
	Unclear risk	Unclear risk	Low risk	Low risk	High risk	High risk	Low risk	risk	risk
Rubenstein,								Unclear	
2000 ¹⁵⁸	Low risk	Unclear risk	Low risk	Low risk	Unclear risk	High risk	Unclear risk	risk	Low risk
Rubenstein,								Unclear	
2007 ¹⁵⁹	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	risk	High risk
Russell, 2010 ¹⁶⁰	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	High risk	Low risk	Low risk
Ryan, 1996 ¹⁶¹								Unclear	
	Unclear risk	Unclear risk	High risk	Unclear risk	Low risk	High risk	Unclear risk	risk	High risk
Sakamoto,								Unclear	High risk
2013 ¹⁶²	Low risk	Low risk	Low risk	Low risk	High risk	High risk	Low risk	risk	
Sales, 2017 ¹⁶³	Low risk	High risk	Low risk	High risk	High risk	High risk	Low risk	Low risk	Low risk
Salminen,									
2009 ¹⁶⁴	Unclear risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Sambrook,									Low risk
2012 ¹⁶⁵	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	
Sanders, 2010 ¹⁶⁶			Unclear						
	Low risk	Low risk	risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Low risk
Sattin, 2005 ¹⁶⁷								Unclear	
	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	risk	Low risk

Schoene,									
2015 ¹⁶⁸	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	High risk	Low risk
Schoon, 2018 ¹⁶⁹			Unclear						
	Low risk	Low risk	risk	Low risk	High risk	High risk	Low risk	Low risk	High risk
Serra-Prat,									
2017 ¹⁷⁰	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	High risk	Low risk	Low risk
Sherrington,									
20141/1	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Shigematsu,								Unclear	Unclear
20081/2	Low risk	Unclear risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	risk	risk
Shigematsu,			Unclear					Unclear	
2008173	Unclear risk	Unclear risk	risk	Low risk	Low risk	Low risk	Unclear risk	risk	High risk
Shimada,								Unclear	
20041/4	Unclear risk	Unclear risk	Low risk	Low risk	High risk	Low risk	Unclear risk	risk	High risk
Shumway-								Unclear	
Cook, 2007 ¹⁷⁵	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	Low risk
Siegrist, 2016 ¹⁷⁶	Low risk	Low risk	Low risk	High risk	High risk	High risk	Low risk	Low risk	Low risk
Sihvonen,			_					Unclear	
20041/7	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	High risk
Skelton, 2005 ¹⁷⁸								Unclear	
	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	risk	Low risk
Smith, 2007 ¹⁷⁹								Unclear	Unclear
	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	risk	risk
Smulders,			Unclear						
2010 ¹⁸⁰	Unclear risk	Low risk	risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Spice, 2009 ¹⁸¹	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	Low risk
Stam, 2018 ¹⁸²	Low risk	Low risk	Low risk	Low risk	High risk	High risk	Low risk	Low risk	Low risk
Stanmore,									
2019 ¹⁸³	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	Low risk
Steadman,								Unclear	
2003 ¹⁸⁴	Low risk	High risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	risk	Low risk
Stevens, 2001 ¹⁸⁵								Unclear	
	High risk	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	risk	High risk
Suttanon,									
2013186	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	High risk
Suttanon,								Unclear	
2018187	Low risk	Low risk	Low risk	Low risk	High risk	High risk	Low risk	risk	Low risk
Suzuki, 2004 ¹⁸⁸								Unclear	
	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	Low risk

Tan, 2018 ¹⁸⁹	Low risk	Low risk	Low risk	Low risk	High risk	High risk	Low risk	Low risk	Low risk
Taylor, 2012 ¹⁹⁰	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	Unclear risk	Low risk	Low risk
Tchalla, 2013 ¹⁹¹	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Thomas,									
2018 ¹⁹²	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	Low risk
Tinetti, 1994 ¹⁹³								Unclear	High risk
	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	risk	
Tousignant,									
2013 ¹⁹⁴	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	Unclear risk	Low risk	Low risk
Trombetti,									
2011 ¹⁹⁵	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Ueda, 2017 ¹⁹⁶			Unclear					Unclear	Unclear
	Low risk	Low risk	risk	Low risk	High risk	High risk	Low risk	risk	risk
Uusi-Rasi,									
2015 ¹⁹⁷	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
van der Meer,			Unclear						
2018 ¹⁹⁸	Low risk	Low risk	risk	Low risk	Low risk	High risk	High risk	Low risk	Low risk
van Haastregt,								Unclear	
2000 ¹⁹⁹	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	Low risk
Verrusio,			Unclear					Unclear	Unclear
2017 ²⁰⁰	Low risk	Unclear risk	risk	Low risk	Low risk	High risk	Unclear risk	risk	risk
Vetter, 1992 ²⁰¹								Unclear	Unclear
	Low risk	Unclear risk	Low risk	Unclear risk	Low risk	High risk	Low risk	risk	risk
Villar, 1998 ²⁰²			Unclear					Unclear	Unclear
	Unclear risk	Unclear risk	risk	Unclear risk	High risk	High risk	Unclear risk	risk	risk
Vind, 2010 ²⁰³	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Vogler, 2009 ²⁰⁴	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	High risk	Low risk
von Stengel,	Low risk	Unclear risk	Unclear	Low risk	Low risk	Low risk	Unclear risk	Unclear	Low risk
2011 ²⁰⁵			risk					risk	
Voukelatos,								Unclear	
2007^{206}	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	Low risk
Voukelatos,									
2015 ²⁰⁷	Low risk	Low risk	Low risk	Low risk	High risk	High risk	Unclear risk	Low risk	Low risk
Wagner, 1994 ²⁰⁸								Unclear	
_	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	risk	High risk
Weber, 2008 ²⁰⁹								Unclear	High risk
	Unclear risk	Unclear risk	Low risk	Low risk	Unclear risk	High risk	Low risk	risk	-
Weerdesteyn,								Unclear	
2006 ²¹⁰	High risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Low risk	risk	Low risk

Wesson, 2013 ²¹¹			Unclear						
	Low risk	Low risk	risk	Low risk	Low risk	High risk	Unclear risk	Low risk	High
Whitehead,								Unclear	
2003 ²¹²	Unclear risk	Low risk	Low risk	Low risk	High risk	High risk	Unclear risk	risk	Low risk
Whitehead,			Unclear						
2016 ²¹³	Low risk	Low risk	risk	High risk	High risk	High risk	Low risk	Low risk	Low risk
Whitehead,									
2018 ²¹⁴	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	High risk
Wolf, 2003 ²¹⁵			Unclear					Unclear	Low risk
	Unclear risk	Unclear risk	risk	Low risk	Low risk	High risk	Low risk	risk	
Woo, 2007 ²¹⁶								Unclear	
	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Unclear risk	risk	Low risk
Yokoi, 2015 ²¹⁷	Low risk	Low risk	Low risk	Low risk	Low risk		Low risk	Unclear	Low risk
						High risk		risk	
Zieschang,									
2017 ²¹⁸	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Zijlstra, 2009 ²¹⁹	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk	Unclear risk	Low risk	Low risk
Zijlstra, 2012 ²²⁰	Unclear risk	Unclear risk	Low risk	Low risk	High risk	High risk	Low risk	High risk	Low risk

^a Citations correspond to the references of included studies

Supplementary Appendix S3. Additional results for number of fallers



Supplementary Figure S2. Connected network plot for number of fallers including 189 studies and 61 interventions

Abbreviations: **exerc**, exercise; **med**, medication; **surg**, surgery; **incont**, management of urinary incontinence; **nutr**, fluid or nutrition therapy; **psych**, psychological interventions; **envir**, environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **hypot**, management of orthostatic hypotension; **brisk**, basic falls risk assessment; **vibr**, whole-body vibration; **chiro**, chiropractic care; **uc**, usual care; **ph_pbo**, pharmacological placebo; **non-ph_pbo**, non-pharmacological placebo.

A network plot provides an overview of the interventions investigated in all included randomized control trials. Interventions connected by a line were directly compared in one or more studies (direct evidence), e.g. exercise + nutrition versus usual care. Each node represents an intervention addressed in the included studies. The nodes are sized according to the number of participants who have received this intervention. The thickness of the line is according to the number of studies addressing this comparison.

_	Comparison: other vs 'uc'			
Treatment	(Random Effects Model)	RR	95%-CI	P-score
envir+qualt+brisk		0.11	[0.01; 1.94]	0.92
chiro		0.40	0.08; 1.94	0.81
exerc+envir+social+qualt		0.45	0.10; 2.03	0.78
exerc+nutr+psych		0.49	0.11.2.11	0.76
assist+brisk	+	0.52	0 30 0 90	0.89
assist+nualt	_ + _	0.58	0 41 0 81	0.89
envir+qualt+hypot+brisk		0.60	0 31 1 171	0.80
vibr		0.00	0.31, 1.17	0.86
onvirt-assist+qualt+bypot+brick		0.61	0.42, 0.05	0.86
evere instruction		0.02	0.43, 0.00	0.65
exerc+nut+quait		0.00	0.17, 2.54	0.05
exerc+envir+quait		0.74	0.57; 0.97	0.75
exerc+med+surg+nutr+envir+assist+quait+brisk		0.76	0.57, 1.01	0.72
exerc+assist	-*-	0.77	0.62; 0.95	0.73
exerc+psych+envir+assist+qualt+brisk	-+-	0.78	0.57; 1.08	0.68
envir+qualt	+	0.78	0.43; 1.44]	0.62
psych		0.80	[0.61; 1.05]	0.66
exerc+brisk	 +	0.81	[0.33; 2.00]	0.56
exerc+envir+hypot+brisk	_++_	0.82	0.54; 1.24	0.61
exerc+qualt+hypot+brisk		0.82	0.53; 1.27	0.60
exerc+envir+assist+gualt+brisk	-	0.83	0.69; 0.98	0.64
exerc+envir+assist		0.83	0 65 1 05	0.62
exerc	+	0.83	0.77 0.90	0.65
qualt+brisk	+	0.84	0 73 0 961	0.62
everc+envir		0.85	0.65 1 111	0.58
exerciterivii	-	0.05	0.03, 1.11	0.58
envir	-	0.00	0.72, 1.02	0.56
nuu everet guelt	<u> </u>	0.07		0.56
exerc+quait	-	0.07	0.00, 0.96	0.50
envir+assist+qualt+brisk		0.87	0.63; 1.21	0.55
exerc+quait+brisk	*	0.89	0.75; 1.05	0.52
exerc+nutr		0.89	0.71; 1.13	0.51
exerc+psych+qualt	-+	0.90	0.63; 1.28	0.50
exerc+med+envir+assist+qualt+hypot+brisk	-+-	0.90	0.68; 1.18]	0.50
qualt	+	0.90	[0.83; 0.99]	0.49
Non-ph_pbo	4	0.90	[0.80; 1.02]	0.49
exerc+envir+assist+hypot+brisk		0.91	[0.75; 1.10]	0.49
exerc+med+envir+assist+hypot+brisk		0.93	0.65; 1.32	0.45
assist	*	0.93	0.78; 1.11	0.44
exerc+envir+gualt+brisk		0.93	0.75: 1.17	0.44
exerc+nutr+envir+assist+gualt+brisk		0.94	0.67: 1.30	0.44
psych+qualt	+	0.97	0.78: 1.21	0.38
med+qualt	4	0.98	0 68 1 40	0.39
exerc+envir+assist+brisk	4	0.99	0 72 1 35	0.36
med	+	0.99	0.82 1.20	0.34
lic		1.00	[0.02, 1.20]	0.31
everc+envir+assist+qualt+hypot+hrisk		1.00	0 65: 1 551	0.37
nh nho		1.00	0.82 1.24	0.32
pri_poo	<u> </u>	1.01	0.02, 1.24	0.34
briek	T	1.01	0.75, 1.50	0.31
Drisk evere Leura Lessiet Lauelt	Ť	1.01	0.04, 1.22	0.32
exerc+surg+assisi+quait	T	1.05	0.74, 1.45	0.27
envir+assist	Ť	1.05	0.00, 1.27	0.26
exerc+incont+nutr+psycn+envir+quait+prisk		1.08	0.78; 1.51	0.20
exerc+psych		1.09	0.73; 1.62	0.27
exerc+assist+qualt+brisk		1.09	0.80; 1.49	0.23
social	*	1.09	0.90; 1.31	0.22
psych+envir+brisk	- - -	1.13	0.78; 1.64	0.22
incont+psych+assist+qualt	- 1	1.14	0.78; 1.66]	0.22
exerc+social+qualt	— ++ —	1.28	0.57; 2.90]	0.23
exerc+nutr+envir+qualt+brisk	+	1.30	[0.85; 1.96]	0.13
exerc+nutr+envir+assist+brisk	++	1.35	[0.91; 2.01]	0.10
exerc+envir+qualt+hypot+brisk	++	1.51	[0.83; 2.76]	0.10
exerc+incont+envir+assist+qualt+brisk		1.58	[1.01; 2.48]	0.05
	0.40.71 1.6			

Abbreviations: **exerc**, exercise; **med**, medication; **surg**, surgery; **incont**, management of urinary incontinence; **nutr**, fluid or nutrition therapy; **psych**, psychological interventions; **envir**, environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **hypot**, management of orthostatic hypotension; **brisk**, basic falls risk assessment; **vibr**, whole-body vibration; **chiro**, chiropractic care; **uc**, usual care; **ph_pbo**, pharmacological placebo; **non-ph_pbo**, non-pharmacological placebo.

The boxes and error bars represent the risk ratios and its 95% confidence interval.

Supplementary Figure S3. Summary risk ratios (RR) with 95% confidence intervals (95%-CI) and P-scores resulting from the network meta-analysis for every intervention consisting of one or more components versus usual care for the outcome number of fallers

Component	Risk ratio	95% CI
assist	0.98	0.90-1.06
brisk	1.03	0.94-1.12
chiro	0.40	0.08-1.95
envir	1.01	0.92-1.11
vibr	0.61	0.42-0.90
exerc	0.92	0.88-0.97
nutr	1.02	0.90-1.16
med	1.00	0.88-1.15
hypot	0.97	0.84-1.12
incont	1.39	1.08-1.79
non_ph_pbo	0.98	0.87-1.11
ph_pbo	1.03	0.88-1.22
psych	0.96	0.84-1.09
qualt	0.94	0.89-1.01
social	1.14	0.97-1.34
surg	1.06	0.86-1.31

Supplementary Table S3. Risk ratios with 95% confidence intervals (95% CI) resulting from the component network meta-analysis for every intervention component versus usual care for the outcome number of fallers

Abbreviations: **exerc**, exercise; **med**, medication; **surg**, surgery; **incont**, management of urinary incontinence; **nutr**, fluid or nutrition therapy; **psych**, psychological interventions; **envir**, environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **hypot**, management of orthostatic hypotension; **brisk**, basic falls risk assessment; **vibr**, whole-body vibration; **chiro**, chiropractic care; **ph_pbo**, pharmacological placebo; **non-ph_pbo**, non-pharmacological placebo.

Supplementary Appendix S4. Additional results for number of fallers, subgroup age 75+



Abbreviations: **exerc**, exercise; **surg**, surgery; **nutr**, fluid or nutrition therapy; **envir**, environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **brisk**, basic falls risk assessment; **uc**, usual care; **non-ph_pbo**, non-pharmacological placebo.

A network plot provides an overview of the interventions investigated in all included randomized control trials. Interventions connected by a line were directly compared in one or more studies (direct evidence), e.g. exercise + nutrition versus usual care. Each node represents an intervention addressed in the included studies. The nodes are sized according to the number of participants who have received this intervention. The thickness of the line is according to the number of studies addressing this comparison.

Supplementary Figure S4. Network plot for number of fallers, subgroup age 75+



Abbreviations: **exerc**, exercise; **surg**, surgery; **nutr**, fluid or nutrition therapy; **envir**, environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **brisk**, basic falls risk assessment; **uc**, usual care; **non-ph_pbo**, non-pharmacological placebo.

The boxes and error bars represent the risk ratios and its 95% confidence interval.

Supplementary Figure S5. Summary risk ratios (RR) with 95% confidence intervals (95%-CI) and P-scores resulting from the network meta-analysis for every intervention consisting of one or more components versus usual care for the outcome number of fallers, subgroup age 75+

Supplementary Table S4. Risk ratios with 95% confidence intervals (95% CI) resulting from the component network meta-analysis for every intervention component versus usual care for the outcome number of fallers, subgroup age 75+

Component	Risk ratio	95% CI
assist	1.31	0.86-1.99
brisk	0.93	0.79-1.09
envir	1.04	0.79-1.36
exerc	0.85	0.72-1.00
nutr	1.27	0.78-2.06
med	1.00	0.92-1.08
non_ph_pbo	1.51	0.60-3.78
ph_pbo	1.00	0.93-1.09
qualt	0.96	0.78-1.17
social	0.90	0.70-1.16
surg	0.97	0.54-1.75

Abbreviations: **exerc**, exercise; **med**, medication; **surg**, surgery; **nutr**, fluid or nutrition therapy; **envir**,

environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **brisk**, basic falls risk assessment; **uc**, usual care; **ph_pbo**, pharmacological placebo; **non-ph_pbo**, non-pharmacological placebo



Supplementary Appendix S5. Additional results for number of fallers, subgroup multimorbidity

Abbreviations: **exerc**, exercise; **med**, medication; **surg**, surgery; **nutr**, fluid or nutrition therapy; **envir**, environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **brisk**, basic falls risk assessment; **uc**, usual care; **non-ph_pbo**, non-pharmacological placebo.

A network plot provides an overview of the interventions investigated in all included randomized control trials. Interventions connected by a line were directly compared in one or more studies (direct evidence), e.g. exercise + nutrition versus usual care. Each node represents an intervention addressed in the included studies. The nodes are sized according to the number of participants who have received this intervention. The thickness of the line is according to the number of studies addressing this comparison.

Supplementary Figure S6. Network plot for number of fallers, subgroup multimorbidity

Treatment	Comparison: other vs 'uc' (Random Effects Model)	RR	95%-CI	P-score
exerc+envir+social+qualt		0.17	[0.01; 3.17]	0.78
exerc+envir+qualt		0.23	[0.02; 2.77]	0.73
non ph pbo		0.27	[0.02; 3.86]	0.65
exerc+med+surg+nutr+envir+assist+qualt+brisk		0.28	[0.02; 3.58]	0.64
exerc+qualt -		0.31	[0.03; 3.76]	0.58
qualt -		0.33	[0.03; 3.52]	0.55
exerc+envir+assist+brisk -		0.37	[0.03; 4.69]	0.52
exerc+social+qualt -		0.47	[0.03; 6.78]	0.42
exerc		0.58	[0.19; 1.76]	0.46
exerc+envir+qualt+brisk		0.75	[0.25; 2.26]	0.36
exerc+nutr		0.93	[0.28; 3.09]	0.29
envir+assist+qualt+brisk		0.97	[0.36; 2.67]	0.27
uc		1.00		0.24
	0407116			

Abbreviations: **exerc**, exercise; **med**, medication; **surg**, surgery; **nutr**, fluid or nutrition therapy; **envir**, environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **brisk**, basic falls risk assessment; **uc**, usual care; **non-ph_pbo**, non-pharmacological placebo.

The boxes and error bars represent the risk ratios and its 95% confidence interval.

Supplementary Figure S7. Summary risk ratios (RR) with 95% confidence intervals (95%-CI) and P-scores resulting from the network meta-analysis for every intervention consisting of one or more components versus usual care for the outcome number of fallers, subgroup multimorbidity

Supplementary Table S5. Risk ratios with 95% confidence intervals (95% CI) resulting from the component network meta-analysis for every intervention component versus usual care for the outcome number of fallers, subgroup multimorbidity

Component	Risk ratio	95% CI
assist	1.00	0.21-4.74
brisk	1.48	0.33-6.55
envir	0.76	0.32-1.85
exerc	0.83	0.46-1.52
nutr	1.11	0.29-4.19
med	0.89	0.38-2.09
non_ph_pbo	0.57	0.13-2.43
qualt	0.80	0.39-1.63
social	1.32	0.44-4.02
incont	0.89	0.38-2.09

Abbreviations: **exerc**, exercise; **med**, medication; **incont**, management of urinary incontinence; **nutr**, fluid or nutrition therapy; **envir**, environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **brisk**, basic falls risk assessment; **non-ph_pbo**, non-pharmacological placebo.



Supplementary Appendix S6. Additional results for number of fall-related fractures

Abbreviations: **exerc**, exercise; **med**, medication; **surg**, surgery; **incont**, management of urinary incontinence; **nutr**, fluid or nutrition therapy; **psych**, psychological interventions; **envir**, environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **hypot**, management of orthostatic hypotension; **brisk**, basic falls risk assessment; **uc**, usual care; **ph_pbo**, pharmacological placebo; **non-ph_pbo**, non-pharmacological placebo.

A network plot provides an overview of the interventions investigated in all included randomized control trials. Interventions connected by a line were directly compared in one or more studies (direct evidence), e.g. exercise + nutrition versus usual care. Each node represents an intervention addressed in the included studies. The nodes are sized according to the number of participants who have received this intervention. The thickness of the line is according to the number of studies addressing this comparison.

Supplementary Figure S8. Connected network plot for number of fall-related fractures

	Comparison: other vs 'uc'			
Treatment	(Random Effects Model)	RR	95%-CI	P-score
qualt+brisk	·	0.14	[0.01; 3.02]	0.87
exerc+med		0.41	[0.13; 1.28]	0.83
exerc+nutr		0.48	[0.18; 1.28]	0.77
exerc+med+surg+nutr+envir+assist+qualt+brisk		0.52	[0.24; 1.12]	0.79
brisk		0.60	[0.39; 0.94]	0.72
exerc		0.62	[0.42; 0.90]	0.71
med+qualt		0.63	[0.22; 1.84]	0.66
qualt		0.67	[0.36; 1.25]	0.65
exerc+envir+qualt	+	0.68	[0.06; 8.10]	0.57
exerc+qualt		0.70	[0.32; 1.53]	0.61
nutr		0.71	[0.29; 1.71]	0.61
exerc+psych+envir+assist+qualt+brisk		0.71	[0.32; 1.58]	0.61
exerc+nutr+envir+qualt+brisk		0.71	[0.28; 1.81]	0.60
ph_pbo		0.77	[0.40; 1.47]	0.57
envir+assist+brisk		0.79	[0.17; 3.73]	0.54
med		0.84	[0.44; 1.59]	0.49
exerc+med+envir+assist+qualt+hypot+brisk		0.87	[0.58; 1.30]	0.50
Non-ph_pbo		0.89	[0.35; 2.27]	0.48
uc		1.00		0.40
assist+qualt		1.04	[0.73; 1.49]	0.38
exerc+med+envir+assist+hypot+brisk	}	1.05	[0.31; 3.51]	0.42
exerc+incont+nutr+psych+envir+qualt+brisk		1.09	[0.52; 2.30]	0.38
exerc+envir+assist+qualt+brisk		1.24	[0.29; 5.39]	0.37
exerc+assist+qualt+brisk		1.50	[0.82; 2.74]	0.23
envir+assist		1.71	[0.98; 2.99]	0.18
exerc+envir+assist+hypot+brisk		1.92	[0.79; 4.68]	0.18
exerc+nutr+envir+assist+brisk		3.09	[0.67; 14.21]	0.12
assist		- 3.31	[0.30; 36.76]	0.17
social		3.94	[0.89; 17.39]	0.08
	0.4 0.71 1.6			

Abbreviations: **exerc**, exercise; **med**, medication; **surg**, surgery; **incont**, management of urinary incontinence; **nutr**, fluid or nutrition therapy; **psych**, psychological interventions; **envir**, environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **hypot**, management of orthostatic hypotension; **brisk**, basic falls risk assessment; **uc**, usual care; **ph_pbo**, pharmacological placebo; **non-ph_pbo**, non-pharmacological placebo.

The boxes and error bars represent the risk ratios and its 95% confidence interval.

Supplementary Figure S9. Summary risk ratios (RR) with 95% confidence intervals (95%-CI) and P-scores resulting from the network meta-analysis for every intervention consisting of one or more components versus usual care for the outcome number of fall-related fractures

Supplementary Table S6. Risk ratios with 95% confidence intervals (95% CI) resulting from the component network meta-analysis for every intervention component versus usual care for the outcome number of fall-related fractures

Component	Risk ratio	95% CI
assist	1.66	1.07-2.59
brisk	0.88	0.61-1.26
envir	1.19	0.68-2.07
exerc	0.83	0.64-1.07
nutr	1.07	0.60-1.90
med	0.85	0.56-1.27
hypot	1.01	0.48-2.10
incont	2.20	0.64-7.57
non_ph_pbo	1.00	0.44-2.30
ph_pbo	0.77	0.51-1.17
psych	0.73	0.36-1.50
qualt	0.73	0.50-1.07
social	2.98	0.79-11.31
surg	0.60	0.26-1.34

Abbreviations: **exerc**, exercise; **med**, medication; **surg**, surgery; **incont**, management of urinary incontinence; **nutr**, fluid or nutrition therapy; **psych**, psychological interventions; **envir**, environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **hypot**, management of orthostatic hypotension; **brisk**, basic falls risk assessment; **uc**, usual care; **ph_pbo**, pharmacological placebo; **non-ph_pbo**, non-pharmacological placebo.



Supplementary Appendix S7. Additional results for number of repeated fallers

Abbreviations: **exerc**, exercise; **med**, medication; **surg**, surgery; **psych**, psychological interventions; **envir**, environmental assessment and modifications; **assist**, assistive technology; **qualt**, quality improvement strategies; **hypot**, management of orthostatic hypotension; **brisk**, basic falls risk assessment; **vibr**, whole-body vibration; **uc**, usual care; **non-ph_pbo**, non-pharmacological placebo.

A network plot provides an overview of the interventions investigated in all included randomized control trials. Interventions connected by a line were directly compared in one or more studies (direct evidence), e.g. exercise + nutrition versus usual care. Each node represents an intervention addressed in the included studies. The nodes are sized according to the number of participants who have received this intervention. The thickness of the line is according to the number of studies addressing this comparison.

Supplementary Figure S10. Network plot for number of repeated fallers

Treatment	Comparison: other vs 'uc' (Random Effects Model)	RR	95%-CI	P-score
vibr		0.33 [0.12; 0.91]	0.94
exerc+assist		0.48 [0.25; 0.93]	0.88
exerc+envir		0.60	0.32; 1.14]	0.77
exerc+envir+assist		0.62	0.33; 1.17]	0.75
qualt+brisk		0.69 [0.35; 1.37]	0.67
exerc+psych		0.70 [0.29; 1.69]	0.65
exerc		0.71 [0.53; 0.95]	0.71
exerc+envir+qualt+brisk		0.75 [0.35; 1.64]	0.61
psych		0.76 [0.44; 1.31]	0.62
envir+assist		0.81 [0.44; 1.49]	0.56
exerc+qualt+brisk		0.84 [0.43; 1.61]	0.55
envir		0.84 [0.46; 1.54]	0.53
exerc+qualt		0.86	0.56; 1.32]	0.53
envir+assist+qualt+brisk		0.86 [0.45; 1.67]	0.51
assist		0.88 [0.48; 1.60]	0.50
psych+qualt		0.89 [0.47; 1.70]	0.49
qualt		0.94 [0.64; 1.38]	0.44
exerc+envir+assist+hypot+brisk		0.95 [0.43; 2.11]	0.44
non_ph_pbo		0.97 [0.66; 1.42]	0.41
uc		1.00		0.37
assist+qualt		1.05 [0.57; 1.92]	0.36
exerc+surg+assist+qualt		1.08 [0.55; 2.14]	0.35
exerc+med+envir+assist+hypot+brisk		1.11 [0.55; 2.21]	0.33
psych+envir+brisk		1.12 [0.54; 2.30]	0.33
envir+assist+brisk		1.15 [0.48; 2.74]	0.33
exerc+envir+assist+brisk		1.22 [0.58; 2.57]	0.27
brisk		1.39 [0.78; 2.48]	0.17
med+qualt		1.44 [0.57; 3.62]	0.20
assist+brisk	*	1.48 [0.47; 4.67]	0.23
	0.4 0.7 1 1.3 1.9 2.53.1 4 4.9			

Abbreviations: **exerc**, exercise; **med**, medication; **surg**, surgery; **psych**, psychological interventions; **envir**, environmental assessment and modifications; **assist**, assistive technology; **qualt**, quality improvement strategies; **hypot**, management of orthostatic hypotension; **brisk**, basic falls risk assessment; **vibr**, whole-body vibration; **uc**, usual care; **non-ph_pbo**, non-pharmacological placebo.

The boxes and error bars represent the risk ratios and its 95% confidence interval.

Supplementary Figure S11. Summary risk ratios (RR) with 95% confidence intervals (95%-CI) and P-scores resulting from the network meta-analysis for every intervention consisting of one or more components versus usual care for the outcome number of repeated fallers

Supplementary Table S7. Risk ratios with 95% confidence intervals (95% CI) resulting from the component network meta-analysis for every intervention component versus usual care for the outcome number of repeated fallers

Component	Risk ratio	95% CI
assist	0.99	0.82-1.18
brisk	1.17	0.93-1.47
envir	0.97	0.79-1.19
vibr	0.33	0.13-0.81
exerc	0.79	0.69-0.90
med	1.36	0.82-2.26
hypot	0.99	0.59-1.66
non_ph_pbo	1.01	0.80-1.29
ph_pbo	1.33	0.75-2.34
psych	0.87	0.67-1.14
qualt	0.92	0.78-1.07
surg	1.53	0.87-2.69

Abbreviations: **exerc**, exercise; **med**, medication; **surg**, surgery; **psych**, psychological interventions; **envir**, environmental assessment and modifications; **assist**, assistive technology; **qualt**, quality improvement strategies; **hypot**, management of orthostatic hypotension; **brisk**, basic falls risk assessment; **vibr**, whole-body vibration; **ph_pbo**, pharmacological placebo; **non-ph_pbo**, non-pharmacological placebo.

Supplementary Appendix S8. Additional results for number of hip fractures

For the outcome of number of hip fractures, the performance of primary analysis was not possible due to the lack of a connected network. Analysis at the component level (C-NMA) was possible.

Supplementary Table S8. Risk ratios with 95% confidence intervals (95% CI) resulting from the component network meta-analysis for every intervention component versus usual care for the outcome number of hip fractures

Component	Risk ratio	95% CI
assist	1.16	0.44-3.12
brisk	0.83	0.28-2.48
envir	1.48	0.30-7.26
exerc	0.79	0.21-3.02
med	0.79	0.14-4.33
hypot	0.79	0.23-2.67
ph_pbo	0.69	0.12-3.89
psych	0.89	0.10-7.87
qualt	0.78	0.37-1.65
social	1.27	0.37-4.29

Abbreviations: **exerc**, exercise; **med**, medication; **psych**, psychological interventions; **envir**, environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **hypot**, management of orthostatic hypotension; **brisk**, basic falls risk assessment; **ph_pbo**, pharmacological placebo.



Supplementary Appendix S9. Additional results for falls rate

Abbreviations: **exerc**, exercise; **med**, medication; **surg**, surgery; **incont**, management of urinary incontinence; **nutr**, fluid or nutrition therapy; **psych**, psychological interventions; **envir**, environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **hypot**, management of orthostatic hypotension; **brisk**, basic falls risk assessment; **vibr**, whole-body vibration; **chiro**, chiropractic care; **uc**, usual care; **ph_pbo**, pharmacological placebo; **non-ph_pbo**, non-pharmacological placebo.

A network plot provides an overview of the interventions investigated in all included randomized control trials. Interventions connected by a line were directly compared in one or more studies (direct evidence), e.g. exercise + nutrition versus usual care. Each node represents an intervention addressed in the included studies. The nodes are sized according to the number of participants who have received this intervention. The thickness of the line is according to the number of studies addressing this comparison.

Supplementary Figure S12. Network plot for falls rate

	Comparison: other vs 'uc'			
Treatment	(Random Effects Model)	IRR	95%-CI	P-score
envir+assist+qualt+hypot+brisk		0.42	[0.30; 0.58]	0.99
exerc+envir+social+qualt		0.60	[0.27; 1.34]	0.79
exerc+envir+hypot+brisk		0.67	[0.43; 1.03]	0.81
exerc+assist	-+	0.68	[0.54; 0.86]	0.85
exerc+med		0.68	[0.47; 0.98]	0.81
envir+qualt+brisk		0.69	[0.44; 1.07]	0.78
envir+assist+brisk		0.72	[0.49; 1.06]	0.75
exerc+envir+assist+hypot+brisk	-+	0.73	[0.59; 0.92]	0.78
vibr		0.74	[0.54; 1.01]	0.74
exerc+envir		0.76	[0.57; 1.00]	0.73
exerc+nutr+qualt -		0.78	[0.14; 4.36]	0.55
exerc	+	0.79	[0.73; 0.87]	0.70
social		0.81	[0.59; 1.10]	0.62
exerc+envir+qualt+brisk		0.81	[0.64; 1.03]	0.65
exerc+med+surg+nutr+envir+assist+qualt+brisk		0.82	[0.61; 1.12]	0.60
exerc+envir+assist+qualt+brisk		0.84	[0.68; 1.04]	0.59
exerc+envir+assist+qualt+hypot+brisk		0.85	[0.59; 1.21]	0.56
med		0.85	[0.68; 1.07]	0.57
exerc+psych+envir+assist+qualt+brisk		0.88	[0.69; 1.11]	0.52
envir+qualt		0.88	[0.59; 1.30]	0.51
brisk		0.88	[0.71; 1.09]	0.51
exerc+qualt+brisk		0.88	[0.72; 1.08]	0.51
exerc+envir+assist		0.88	[0.71; 1.10]	0.50
envir+assist+qualt	+	0.90	[0.66; 1.21]	0.48
exerc+nutr+envir+assist+qualt+brisk		0.90	[0.63; 1.29]	0.47
ph_pbo		0.90	[0.68; 1.20]	0.46
envir		0.91	[0.77; 1.08]	0.45
exerc+qualt		0.93	[0.84; 1.03]	0.41
exerc+envir+assist+brisk		0.93	[0.67; 1.30]	0.41
psych		0.94	[0.69; 1.27]	0.41
psych+qualt		0.94	[0.75; 1.17]	0.39
exerc+brisk		0.94	[0.54; 1.64]	0.42
exerc+social+qualt		0.95	[0.59; 1.53]	0.41
qualt	-	0.95	[0.86; 1.05]	0.36
qualt+brisk		0.96	[0.80; 1.16]	0.35
Non_ph_pbo		0.97	[0.85; 1.12]	0.32
exerc+psych+qualt		1.00	[0.79; 1.25]	0.30
uc		1.00		0.26
assist		1.00	[0.78; 1.29]	0.30
exerc+surg+assist+qualt		1.01	[0.75; 1.37]	0.30
assist+qualt		1.01	[0.81; 1.27]	0.27
envir+assist	-+	1.02	[0.83; 1.25]	0.26
exerc+incont+nutr+psych+envir+qualt+brisk		1.05	[0.76; 1.45]	0.26
exerc+surg+envir+assist+qualt+hypot+brisk		1.07	[0.78; 1.45]	0.23
exerc+nutr+envir+assist+brisk		1.84	[1.14; 2.97]	0.03
exerc+qualt+hypot+brisk		2.08	[1.34; 3.25]	0.01
0.1	0.4 0.7 1 1.3 1.61.9 2.5 3.13.7 4.6			

Abbreviations: **exerc**, exercise; **med**, medication; **surg**, surgery; **incont**, management of urinary incontinence; **nutr**, fluid or nutrition therapy; **psych**, psychological interventions; **envir**, environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **hypot**, management of orthostatic hypotension; **brisk**, basic falls risk assessment; **vibr**, whole-body vibration; **chiro**, chiropractic care; **uc**, usual care; **ph_pbo**, pharmacological placebo; **non-ph_pbo**, non-pharmacological placebo.

The boxes and error bars represent the rate ratios and its 95% confidence interval.

Supplementary Figure S13. Summary rate ratios (IRR) with 95% confidence intervals (95%-CI) and P-scores resulting from the network meta-analysis for every intervention consisting of one or more components versus usual care for the outcome falls rate

Supplementary Table S9. Rate ratios with 95% confidence intervals (95% CI) resulting from the component network meta-analysis for every intervention component versus usual care for the outcome falls rate

Component	Rate ratio	95% CI
assist	1.00	0.91-1.10
brisk	0.99	0.90-1.09
envir	0.94	0.85-1.03
vibr	0.74	0.53-1.02
exerc	0.90	0.86-0.95
nutr	1.24	0.97-1.58
med	0.81	0.66-1.00
hypot	0.94	0.80-1.11
incont	0.98	0.63-1.50
non_ph_pbo	1.08	0.96-1.21
ph_pbo	0.87	0.66-1.14
psych	1.02	0.90-1.17
qualt	1.01	0.95-1.08
social	0.95	0.80-1.14
surg	1.14	0.92-1.42

Abbreviations: **exerc**, exercise; **med**, medication; **surg**, surgery; **incont**, management of urinary incontinence; **nutr**, fluid or nutrition therapy; **psych**, psychological interventions; **envir**, environmental assessment and modifications; **assist**, assistive technology; **social**, social engagement; **qualt**, quality improvement strategies; **hypot**, management of orthostatic hypotension; **brisk**, basic falls risk assessment; **vibr**, whole-body vibration; **ph_pbo**, pharmacological placebo; **non-ph_pbo**, non-pharmacological placebo.

Supplementary Appendix S10. Additional results for fracture rate



Abbreviations: **exerc**, exercise; **med**, medication; **incont**, management of urinary incontinence; **nutr**, fluid or nutrition therapy; **envir**, environmental assessment and modifications; **assist**, assistive technology; **qualt**, quality improvement strategies; **brisk**, basic falls risk assessment; **ph_pbo**, pharmacological placebo.

A network plot provides an overview of the interventions investigated in all included randomized control trials. Interventions connected by a line were directly compared in one or more studies (direct evidence), e.g. exercise + nutrition versus usual care. Each node represents an intervention addressed in the included studies. The nodes are sized according to the number of participants who have received this intervention. The thickness of the line is according to the number of studies addressing this comparison.

Supplementary Figure S14. Network plot for fracture rate

Treatment		Comparison: other vs 'uc' (Random Effects Model)	IRR	95%-CI	P-score
exerc+med+incont+nutr+envir+assist+qualt+brisk			0.48	[0.21; 1.14]	0.81
exerc+qualt			0.52	[0.28; 0.96]	0.70
qualt			0.54	[0.24; 1.24]	0.66
ph_pbo		*	0.59	[0.20; 1.68]	0.66
med			0.62	[0.22; 1.76]	0.53
assist+qualt			1.00	[0.70; 1.53]	0.30
assist		+	3.65	[0.34; 38.81]	0.13
exerc+envir+qualt+brisk	[4.56	[0.53; 39.05]	0.09
	0.1	1 1.9 2.8 4.66.4 9.1 13	.621.734.3		

Abbreviations: **exerc**, exercise; **med**, medication; **incont**, management of urinary incontinence; **nutr**, fluid or nutrition therapy; **envir**, environmental assessment and modifications; **assist**, assistive technology; **qualt**, quality improvement strategies; **brisk**, basic falls risk assessment; **uc**, usual care; **ph_pbo**, pharmacological placebo.

The boxes and error bars represent the rate ratios and its 95% confidence interval.

Supplementary Figure S15. Summary rate ratios (IRR) with 95% confidence intervals (95%-CI) and P-scores resulting from the network meta-analysis for every intervention consisting of one or more components versus usual care for the outcome fracture rate

Supplementary Table S10. Rate ratios with 95% confidence intervals (95% CI) resulting from the component network meta-analysis for every intervention component versus usual care for the outcome fracture rate

Component	Rate ratio	95% CI
assist	1.06	0.65 - 1.74
brisk	2.56	0.85 - 7.78
envir	2.56	0.85 - 7.78
exerc	0.69	0.44 - 1.06
nutr	0.40	0.13 - 1.29
med	1.15	0.56 - 2.36
hypot	0.40	0.13 - 1.29
ph_pbo	1.05	0.50 - 2.19
qualt	1.01	0.80 - 1.28

Abbreviations: **exerc**, exercise; **med**, medication; **nutr**, fluid or nutrition therapy; **envir**, environmental assessment and modifications; **assist**, assistive technology; **qualt**, quality improvement strategies; **hypot**, management of orthostatic hypotension; **brisk**, basic falls risk assessment; **ph_pbo**, pharmacological placebo.

Supplementary Appendix S11. eMethods

1.1 Additional information regarding study population, interventions, comparators and outcomes

Supplementary Table S11. Additional information regarding study population, interventions, comparators and outcomes

Population	Community-dwelling (living at home or in residential facilities) adults aged ≥65 years. Included: - Minimal dependence was allowed (e.g. home assistance with housework or showering, delivery of meals) - Patients recruited in hospital and then discharged home for follow-up
	 Studies on specific conditions (e.g. stroke, Parkinson's Disease, severe dementia, spinal cord injury, multiple sclerosis, amputations), where the effects of the interventions cannot be generalized to most community-dwelling older people
Intervention	Any intervention aimed at preventing falls:
	- single
	- multiple (>2 interventions, fixed combination)
	- multifactorial (>2 interventions, personalized according to the results of a pre-
	executed falls risk assessment)
	Included: - Fourteen individual intervention components were identified (manuscript Table
	1).
	Excluded: - Interventions violating the transitivity assumption (i.e. intervention not
	applicable to all participants in all studies included in the NMA)
Comparator	One of the following control groups: usual care, pharmacological placebo, non-
	pharmacological placebo (a sham intervention), and any other type of intervention to prevent falls.
Outcomes	Primary outcomes:
	1. Number of fallers (participants who sustained one or more falls)
	2. Number of fall-related fractures
	Secondary outcomes:
	1. Number of repeated fallers (one individual sustaining at least two falls)
	2. Number of hip fractures
	3. Falls rate (number of falls per person-year of follow-up)
	4. Fracture rate (number of fall-related fractures per person-year of follow-up)

1.2 Electronic search strategy

General limits applied to the search of the updated literature included:

- <u>Studies published between 2015 2019</u>
- Human studies only, i.e. no animal studies

The search strategy for PubMed is presented below. The search strategy for the other databases can be requested from the corresponding author.

Search PubMed:

- 1. "Accidental Falls"[Mesh]
- 2. fall[Title/Abstract]
- 3. falls[Title/Abstract]
- 4. faller*[Title/Abstract]

- 5. fallen[Title/Abstract]
- 6. falling[Title/Abstract]
- 7. fall-related[Title/Abstract]
- 8. near-fall*[Title/Abstract]
- 9. or/1-8
- 10. "Adult"[Mesh]
- 11. "Health Services for the Aged"[Mesh]

12. elder*[Title/Abstract] OR geriatric*[Title/Abstract] OR gerontolog*[Title/Abstract] OR oldage*[Title/Abstract] OR senior*[Title/Abstract]

13. ((older[Title/Abstract] OR adult*[Title/Abstract] OR age[Title/Abstract] OR aged[Title/Abstract]) AND (man[Title/Abstract] OR men[Title/Abstract] OR woman*[Title/Abstract] OR women*[Title/Abstract] OR patient[Title/Abstract] OR patients[Title/Abstract] OR person*[Title/Abstract] OR people*[Title/Abstract] OR population*[Title/Abstract]))

14. or/10-13

- 15. 9 and 14
- 16. controlled clinical trial[Publication Type] OR randomized controlled trial[Publication Type]
- 17. "Clinical Trials as Topic"[Mesh]

18. randomised[Title/Abstract] OR randomized[Title/Abstract] OR randomly[Title/Abstract] OR

RCT*[Title/Abstract] OR placebo*[Title/Abstract]

19. (singl*[Title/Abstract] OR doubl*[Title/Abstract] OR trebl*[Title/Abstract] OR tripl*[Title/Abstract])

- AND (mask*[Title/Abstract] OR blind*[Title/Abstract] OR dumm*[Title/Abstract])
- 20. trial[Title]
- 21. or/16-20
- 22. 15 AND 21
- 23. 22 NOT (animals[MeSH] NOT humans[MeSH])
- 24. "Urinary Incontinence"[Mesh]
- 25. "Enuresis"[Mesh]
- 26. Urinary Incontinence[Title/Abstract]
- 27. Urine Incontinence[Title/Abstract]
- 28. or/24-27
- 29. "Hypotension, Orthostatic"[Mesh]
- 30. Postural hypotension [Title/Abstract]
- 31. Orthostatic Hypotension [Title/Abstract]
- 32. or/29-31
- 33. "Shoes"[Mesh]
- 34. "Braces"[Mesh]
- 35. "Canes"[Mesh]
- 36. "Walkers"[Mesh]
- 37. "Mobility Limitation"[Mesh]
- 38. walking aid* [Title/Abstract]
- 39. walking stick* [Title/Abstract]
- 40. rollator* [Title/Abstract]
- 41. walking frame* [Title/Abstract]
- 42. or/33-41
- 43. 28 OR 32 OR 42
- 44. 23 AND 43

1.3 Additional information on methods systematic review

Screening: Studies from author Yoshihiro Sato were excluded, because a large part of his studies have been officially retracted from PubMed.

Data extraction: When multiple follow-up time points were reported, we chose the time point where we expected the highest clinical impact, e.g. in case of an exercise intervention, we chose the time point closest to the end of the exercise intervention.

When only data on fall frequency was available, we combined data on fall frequency and the general follow-up time duration to estimate falls rates, assuming that each participant was followed for the entire follow-up period.

1.4 Additional information on network meta-analysis

Simplifications

Originally, we had planned to include all the different types of exercise as subgroups (e.g balance, strength, flexibility, endurance training). However, after completion of data extraction, the sample sizes for the subgroups were too small and thus had to be merged into one exercise component. For example, in RCTs with similar intervention arms: exercise (balance training) vs. exercise (strength training) vs. medication, exercise was merged (balance & strength training) vs. medication. For the merging process, the two exercise sample sizes were added together, and for dichotomous outcomes the number of events were added together but for continuous outcomes we computed weighted means and pooled standard deviations.

RCTs where all intervention arms belonged to the same overall component were disregarded, e.g exercise (balance) vs. exercise (strength) vs. exercise (flexibility), since no comparisons could be drawn for the efficacy of one intervention over another.

Data synthesis

At first, we conducted a random-effects meta-analysis using inverse variance weighting for each pairwise comparison.¹ We conducted the analysis in R using the 'meta' package.² DerSimonian-Laird estimator was used for estimating the between-study variance.

Many studies compared interventions consisting of multiple interacting components. The primary NMA followed the standard approach where each distinct combination of components is treated as a separate intervention. To disentangle the effect of each component, we additionally employed statistical models to obtain relative effects for each separate component (component-NMA (C-NMA). For both analyses (standard NMA and (C-NMA),^{3,4} we used the *netmeta* package⁵ in R software (version 3.6.1) which handles the within multi-arm trials correlation by reducing the weight given to each effect size.² A prerequisite for standard NMA is that the network is connected (you can go from any node to any other one). The C-NMA approach allows disconnected networks to be analyzed jointly as long as they include some common components. However, we performed NMA only for connected networks in which the number of studies exceeded the number of treatment nodes. We excluded from the analysis studies comparing identical treatments in the study arms, e.g. exercise (balance) vs. exercise (strength), or not having the necessary arm-level data.

We encountered studies in which participants were randomized to multiple or multifactorial interventions. The main challenge in such a network was to disentangle the effects of each component. We conducted a series of network meta-analyses. We followed the models (below) described in Welton et al. 2009 to estimate relative effects.³

More specifically,

Model A, **pairwise meta-analysis:** Some of the trials compared an active intervention to usual care. Model A lumps all interventions together and compares to the reference treatment (e.g. usual care). Such a model answers the question whether interventions work as a whole.

Model B, standard NMA: Each possible combination of components is considered to be a separate intervention and has its own effect. This was the primary analysis.

Model C, component NMA, additive model: Assumes that each component has a separate effect. The total effect of an intervention is equal to the sum of the relative component effects (additivity assumption).

Model D, component NMA, interaction model: Extension of Model C with extra terms for combinations of pairs of components. Allows pairs of components to have a bigger or smaller effect than would be expected from the sum of their individual components

In the network meta-analysis, we used models A, B and where appropriate model C.

For models A and B, we presented relative effects for each treatment, whereas for model C we placed emphasis on the absolute effects of components. Along with effects we also ranked interventions using P-scores.⁶

Assessment of heterogeneity

For each comparison we assessed statistical heterogeneity by visually inspecting the forest plot. We computed the chi-square test for heterogeneity, the I^2 index and the actual estimated value of heterogeneity (τ^2) both in each pairwise comparison and in the network.⁷ For dichotomous outcomes, magnitude of heterogeneity variance was compared with the empirical distribution as derived by Turner et al 2012.⁸ Both in standard pairwise meta-analyses and in network meta-analysis we assumed that heterogeneity is the same for all treatment comparisons to increase power in estimation. We estimated heterogeneity using restricted maximum likelihood both in pairwise and network meta-analysis.

Assessment of Inconsistency

Assessment of statistical inconsistency

A key assumption in NMA is that of transitivity. This assumption implies that the distribution of effect modifiers is similar across treatment comparisons. In order to get a valid indirect estimate for B vs C via A, the distribution of all characteristics that may influence the relative effect for B vs C must be similar in A vs B and A vs C studies. Alternative interpretations of transitivity can be found in Salanti 2012.⁹ Intransitivity may manifest itself statistically through large discrepancies between direct and indirect evidence. This is called inconsistency.

Local approaches for evaluating inconsistency

We applied the node-splitting approach to evaluate if direct evidence for a treatment comparison is in agreement with the indirect evidence estimated from the entire network after studies involving this treatment comparison were omitted.¹⁰

Global approaches for evaluating inconsistency

To check the assumption of consistency in the entire network we used the "design-by treatment" model as described by Higgins and colleagues.¹¹ This method accounts for different sources of inconsistency that can occur when studies with different designs (two-arm trials vs. three-arm trials) give different results as well as disagreement between direct and indirect evidence. Using this approach, we inferred the presence of inconsistency from any source in the entire network based on a chi-square test. Inconsistency and heterogeneity are interweaved; to distinguish between these two sources of variability we employed the I² for inconsistency that measures the percentage of variability that cannot be attributed to random error or heterogeneity (within comparison variability).

1.5 Additional information on CINeMA confidence rating

Methods:

A semi-automated assessment of the confidence in the results of the NMA was performed using CINeMA for every possible pairwise comparison of interventions. CINeMA makes judgements about six domains (within-study bias, reporting bias, indirectness, imprecision, heterogeneity, and incoherence) and scores each NMA treatment effect estimate as "no concerns", "some concerns" and "major concerns". Regarding within-study biases and indirectness, we summarized these domains for each network estimate using the average risk of bias and indirectness respectively. For reporting bias we summarized each network estimate as having "major concerns" as there are no established statistical methods to explore that and we did not have other information on whether such biases exist. For imprecision, we considered that relative effect estimates below 0.8 or above 1.25 are clinical important and we followed the CINeMA strategy for exploring whether statistical significance and clinical importance coincide for each outcome. Incoherence (inconsistency) was checked by the node-split method¹⁰ and a global test for inconsistency.¹¹ We additionally checked the net-heat plot.¹² For heterogeneity we followed the standard CINeMA approach. A key characteristic of the CINeMA approach is the use of the percentage contribution matrix that shows how information flows in the network and more specifically, how each study and/or direct comparison informs the effect estimates.

Results:

For the domains 'within-study bias' and 'reporting bias', there were major concerns for all comparisons, resulting in low confidence in the results for every comparison. Major concerns for the domain 'within-study bias' were mainly the result of the lack of blinding of personnel and participants, due to the nature of the fall prevention interventions. For reporting bias we summarized each network estimate as having "major concerns" as there are no established statistical methods to explore that. In order to still maintain distinctiveness, the evaluation of the confidence in the results of the NMA was based on the remaining 4 domains. The results of the assessments and the reasons for downgrading are presented in manuscript Table 3 and 4 for the 23 interventions with statistically significant associations versus usual care. Based on the assessment without consideration of the domains 'within-study bias' and 'reporting bias', for 20 of the 23 comparisons the confidence in the treatment effect was considered high.

References:

1. Nikolakopoulou A, Mavridis D, Salanti G. Demystifying fixed and random effects meta-analysis. Evid Based Ment Health 2014;17:53-57.

2. Rücker G, Schwarzer G. Reduce dimension or reduce weights? Comparing two approaches to multi-arm studies in network meta-analysis. Stat Med 2014;33:4353-4369. doi:10.1002/sim.6236

3. Caldwell D, Welton N. Approaches for synthesising complex mental health interventions in meta-analysis. Evid Based Ment Health 2016;19:16-21. doi:10.1136/eb-2015-102275

4. Rücker G, Petropoulou M, Schwarzer G. Network meta-analysis of multicomponent interventions. Biometrical J 2020;62:808-821. doi:10.1002/bimj.201800167

 Rücker G, Krahn U, König J, Efthimiou O, Schwarzer G. netmeta: Network Meta-Analysis using Frequentist Methods. R package version 1.0-1. Published online 2019. https://cran.r-project.org/package=netmeta
 Rücker G, Schwarzer G. Ranking treatments in frequentist network meta-analysis works without

resampling methods. BMC Med Res Methodol 2015;15:58. doi:10.1186/s12874-015-0060-8

7. Higgins JP, Thompson SG. Controlling the risk of spurious findings from meta-regression. Stat Med 2004;23:1663-1682. doi:10.1002/sim.1752

8. Turner RM, Davey J, Clarke MJ, Thompson SG, Higgins JP. Predicting the extent of heterogeneity in meta-analysis, using empirical data from the Cochrane Database of Systematic Reviews. Int J Epidemiol 2012;41:818-827. doi:10.1093/ije/dys041

9. Salanti G. Indirect and mixed-treatment comparison, network, or multiple-treatments meta-analysis: many names, many benefits, many concerns for the next generation evidence synthesis tool. Res Synth Methods 2012;3:80-97. doi:10.1002/jrsm.1037

10. Dias S, Welton NJ, Caldwell DM, Ades AE. Checking consistency in mixed treatment comparison metaanalysis. Stat Med 2010;29:932-944. doi:10.1002/sim.3767

11. Higgins JPT, Jackson D, Barrett JK, Lu G, Ades AE, White IR. Consistency and inconsistency in network meta-analysis: concepts and models for multi-arm studies. Res Synth Methods 2012;3:98-110. doi:10.1002/jrsm.1044

12. Krahn U, Binder H, König J. A graphical tool for locating inconsistency in network metaanalyses. BMC Med Res Methodol 2013;13:35. doi:10.1186/1471-2288-13-35

Supplementary Appendix S12. eReferences. List of 220 included studies and 3 companion reports

1. Aloia JF, Rubinova R, Fazzari M, Islam S, Mikhail M, Ragolia L. Vitamin D and Falls in Older African American Women: The PODA Randomized Clinical Trial. J Am Geriatr Soc 2019;67:1043-1049. doi:10.1111/jgs.15760

2. Ansai JH, Aurichio TR, Gonçalves R, Rebelatto JR. Effects of two physical exercise protocols on physical performance related to falls in the oldest old: A randomized controlled trial. Geriatr Gerontol Int 2016;16:492-499. doi:10.1111/ggi.12497

3. Arantes PMM, Dias JMD, Fonseca FF et al. Effect of a Program Based on Balance Exercises on Gait, Functional Mobility, Fear of Falling, and Falls in Prefrail Older Women: A Randomized Clinical Trial. Top Geriatr Rehabil 2015;31:113-120. doi:10.1097/TGR.00000000000056

4. Arkkukangas M, Söderlund A, Eriksson S, Johansson AC. Fall Preventive Exercise with or Without Behavior Change Support for Community-Dwelling Older Adults: A Randomized Controlled Trial with Short-Term Follow-up. J Geriatr Phys Ther 2019;42:9-17. doi:10.1519/JPT.00000000000129

5. Ashari A, Hamid TA, Hussain MR, Hill KD. Effectiveness of Individualized Home-Based Exercise on Turning and Balance Performance among Adults Older than 50 yrs: A Randomized Controlled Trial. Am J Phys Med Rehabil 2016;95:355-365. doi:10.1097/PHM.0000000000388

6. Ballard JE, McFarland C, Wallace LS, Holiday DB, Roberson G. The effect of 15 weeks of exercise on balance, leg strength, and reduction in falls in 40 women aged 65 to 89 years. J Am Med Womens Assoc 2004;59:255-261.

7. Barker AL, Talevski J, Bohensky MA, Brand CA, Cameron PA, Morello RT. Feasibility of Pilates exercise to decrease falls risk: A pilot randomized controlled trial in community-dwelling older people. Clin Rehabil 2016;30:984-996. doi:10.1177/0269215515606197

8. Barnett A, Smith B, Lord SR, Williams M, Baumand A. Community-based group exercise improves balance and reduces falls in at-risk older people: A randomised controlled trial. Age Ageing 2003;32:407-414. doi:10.1093/ageing/32.4.407

9. Barr RJ, Stewart A, Torgerson DJ, Seymour DG, Reid DM. Screening elderly women for risk of future fractures - Participation rates and impact on incidence of falls and fractures. Calcif Tissue Int 2005;76:243-248. doi:10.1007/s00223-004-0101-5

10. Beck BR, Norling TL. The effect of 8 mos of twice-weekly low- or higher intensity whole body vibration on risk factors for postmenopausal hip fracture. Am J Phys Med Rehabil 2010;89:997-1009. doi:10.1097/phm.0b013e3181f71063

11. Beck AM, Christensen AG, Hansen BS, Damsbo-Svendsen S, Kreinfeldt Skovgaard Møller T. Multidisciplinary nutritional support for undernutrition in nursing home and home-care: A cluster randomized controlled trial. Nutrition 2016;32:199-205. doi:10.1016/j.nut.2015.08.009

12. Beling J, Roller M. Multifactorial intervention with balance training as a core component among fall-prone older adults. J Geriatr Phys Ther 2009;32:125-133. doi:10.1519/00139143-200932030-00008

13. Bernardelli G, Roncaglione C, Damanti S, Mari D, Cesari M, Marcucci M. Adapted physical activity to promote active and healthy ageing: the PoliFIT pilot randomized waiting list-controlled trial. Aging Clin Exp Res 2019;31:511-518. doi:10.1007/s40520-018-1002-1

14. Bernocchi P, Giordano A, Pintavalle G et al. Feasibility and Clinical Efficacy of a Multidisciplinary Home-Telehealth Program to Prevent Falls in Older Adults: A Randomized Controlled Trial. J Am Med Dir Assoc 2019;20:340-346. doi:10.1016/j.jamda.2018.09.003

15. Bischoff-Ferrari HA, Orav EJ, Dawson-Hughes B. Effect of cholecalciferol plus calcium on falling in ambulatory older men and women: A 3-year randomized controlled trial. Arch Intern Med 2006;166:424-430. doi:10.1001/.424

16. Blalock SJ, Casteel C, Roth MT, Ferreri S, Demby KB, Shankar V. Impact of enhanced pharmacologic care on the prevention of falls: A randomized controlled trial. Am J Geriatr Pharmacother 2010;8:428-440. doi:10.1016/j.amjopharm.2010.09.002

17. Boongird C, Keesukphan P, Phiphadthakusolkul S, Rattanasiri S, Thakkinstian A. Effects of a simple home-based exercise program on fall prevention in older adults: A 12-month primary care setting, randomized controlled trial. Geriatr Gerontol Int 2017;17:2157-2163. doi:10.1111/ggi.13052

18. Boyé NDA, van der Velde N, de Vries OJ et al. Effectiveness of medication withdrawal in older fallers: Results from the improving medication prescribing to reduce risk of falls (IMPROveFALL) trial. Age Ageing 2016;46:142-146. doi:10.1093/ageing/afw161 19. Brown AI. Functional adaptation to exercise in elderly subjects: Physiotherapy, Curtin University of Technology; 2002.

20. Buchner DM, Cress ME, De Lateur BJ et al. The effect of strength and endurance training on gait, balance, fall risk, and health services use in community-living older adults. Journals Gerontol - Ser A Biol Sci Med Sci 1997;52:218-224. doi:10.1093/gerona/52A.4.M218

21. Bunout D, Barrera G, Avendano M et al. Results of a community-based weight-bearing resistance training programme for healthy Chilean elderly subjects. Age Ageing 2005;34:80-83. doi:10.1093/ageing/afi005

22. Cameron ID, Cumming RG, Kurrle SE et al. A randomised trial of hip protector use by frail older women living in their own homes. Inj Prev 2003;9:138-141. doi:10.1136/ip.9.2.138

23. Cameron ID, Kurrle S, Quine S et al. Increasing adherence with the use of hip protectors for older people living in the community. Osteoporos Int 2011;22:617-626. doi:10.1007/s00198-010-1334-y

24. Carpenter GI, Demopoulos GR. Screening the elderly in the community: Controlled trial of dependency surveillance using a questionnaire administered by volunteers. Br Med J 1990;300:1253-1256. doi:10.1136/bmj.300.6734.1253

25. Chapuy MC, Pamphile R, Paris E et al. Combined calcium and vitamin D3 supplementation in elderly women: Confirmation of reversal of secondary hyperparathyroidism and hip fracture risk: The decalyos II study. Osteoporos Int 2002;13:257-264. doi:10.1007/s001980200023

26. Choi JH, Moon JS, Song R. Effects of Sun-style Tai Chi exercise on physical fitness and fall prevention in fall-prone older adults. J Adv Nurs 2005;51:150-157. doi:10.1111/j.1365-2648.2005.03480.x

27. Chu MML, Fong KNK, Lit ACH et al. An Occupational Therapy Fall Reduction Home Visit Program for Community-Dwelling Older Adults in Hong Kong After an Emergency Department Visit for a Fall. J Am Geriatr Soc 2017;65:364-372. doi:10.1111/jgs.14527

28. Ciaschini PM, Straus SE, Dolovich LR et al. Community-based intervention to optimise falls risk management: A randomised controlled trial. Age Ageing 2009;38:724-730. doi:10.1093/ageing/afp176

29. Clemson L, Cumming RG, Kendig H, Swann M, Heard R, Taylor K. The effectiveness of a communitybased program for reducing the incidence of falls in the elderly: A randomized trial. J Am Geriatr Soc 2004;52:1487-1494. doi:10.1111/j.1532-5415.2004.52411.x

30. Clemson L, Singh MF, Bundy A et al. LiFE Pilot Study: A randomised trial of balance and strength training embedded in daily life activity to reduce falls in older adults. Aust Occup Ther J 2010;57:42-50. doi:10.1111/j.1440-1630.2009.00848.x

31. Clemson L, Fiatarone Singh MA, Bundy A et al. Integration of balance and strength training into daily life activity to reduce rate of falls in older people (the LiFE study): Randomised parallel trial. BMJ 2012;345:e4547. doi:10.1136/bmj.e4547

32. Close J, Ellis M, Hooper R, Glucksman E, Jackson S, Swift C. Prevention of falls in the elderly trial (PROFET): A randomized controlled trial: Commentary. Lancet 1999;353:93-97. doi:10.1111/j.1532-5415.1999.tb02587.x

33. Cohen MA, Miller J, Shi X, Sandhu J, Lipsitz LA. Prevention program lowered the risk of falls and decreased claims for long-term services among elder participants. Health Aff 2015;34:971-977. doi:10.1377/hlthaff.2014.1172

34. Coleman EA, Grothaus LC, Sandhu N, Wagner EH. Chronic Care Clinics: A randomized controlled trial of a new model of primary care for frail older adults. J Am Geriatr Soc 1999;47:775-783. doi:10.1111/j.1532-5415.1999.tb03832.x

35. Conroy S, Kendrick D, Harwood R et al. A multicentre randomised controlled trial of day hospital-based falls prevention programme for a screened population of community-dwelling older people at high risk of falls. Age Ageing 2010;39:704-710. doi:10.1093/ageing/afq096

36. Cornillon E, Blanchon MA, Ramboatsisetraina P et al. Effectiveness of falls prevention strategies for elderly subjects who live in the community with performance assessment of physical activities (before–after). Ann Readapt Med Phys 2002;45:493-504. doi:10.1016/S0168-6054(02)00302-1

37. Cumming RG, Thomas M, Szonyi G et al. Home visits by an occupational therapist for assessment and modification of environmental hazards: a randomized trial of falls prevention. J Am Geriatr Soc 1999;47:1397-1402. doi:10.1111/j.1532-5415.1999.tb01556.x

38. Cumming RG, Ivers R, Clemson L et al. Improving vision to prevent falls in frail older people: A randomized trial. J Am Geriatr Soc 2007;55:175-181. doi:10.1111/j.1532-5415.2007.01046.x

39. Dadgari A, Hamid TA, Hakim MN et al. Randomized control trials on Otago Exercise Program (OEP) to reduce falls among elderly community dwellers in Shahroud, Iran. Iran Red Crescent Med J 2016;18:e26340. doi:10.5812/ircmj.26340

40. Dangour AD, Albala C, Allen E et al. Effect of a nutrition supplement and physical activity program on pneumonia and walking capacity in chilean older people: A factorial cluster randomized trial. PLoS Med 2011;8:e1001023. doi:10.1371/journal.pmed.1001023

41. Dapp U, Anders JAM, Von Renteln-Kruse W et al. A randomized trial of effects of health risk appraisal combined with group sessions or home visits on preventive behaviors in older adults. Journals Gerontol - Ser A Biol Sci Med Sci 2011;66A:591-598. doi:10.1093/gerona/glr021

42. Davison J, Bond J, Dawson P, Steen IN, Kenny RA. Patients with recurrent falls attending Accident & Emergency benefit from multifactorial intervention - A randomised controlled trial. Age Ageing 2005;34:162-168. doi:10.1093/ageing/afi053

43. Day L, Hill KD, Stathakis VZ et al. Impact of Tai-Chi on falls among preclinically disabled older people: A randomized controlled trial. J Am Med Dir Assoc 2015;16:420-426. doi:10.1016/j.jamda.2015.01.089

44. de Vries OJ, Peeters GMEEG, Elders PJM et al. Multifactorial Intervention to Reduce Falls in Older People at High Risk of Recurrent Falls - A Randomized Controlled Trial. Arch Intern Med 2010;170:1110-1117. doi:10.1001/archinternmed.2010.169

45. Dhesi JK, Jackson SHD, Bearne LM et al. Vitamin D supplementation improves neuromuscular function in older people who fall. Age Ageing 2004;33:589-595. doi:10.1093/ageing/afh209

46. Dorresteijn TAC, Zijlstra GAR, Ambergen AW, Delbaere K, Vlaeyen JWS, Kempen GIJM. Effectiveness of a home-based cognitive behavioral program to manage concerns about falls in community-dwelling, frail older people: Results of a randomized controlled trial. BMC Geriatr 2016;16:2. doi:10.1186/s12877-015-0177-y

47. Dukas L, Bischoff HA, Lindpaintner LS et al. Alfacalcidol Reduces the Number of Fallers in a Community-Dwelling Elderly Population with a Minimum Calcium Intake of More Than 500 Mg Daily. J Am Geriatr Soc 2004;52:230-236. doi:10.1111/j.1532-5415.2004.52060.x

48. Dyer CAE, Taylor GJ, Reed M, Dyer CA, Robertson DR, Harrington R. Falls prevention in residential care homes: A randomised controlled trial. Age Ageing 2004;33:596-602. doi:10.1093/ageing/afh204

49. Ebrahim S, Thompson PW, Baskaran V, Evans K. Randomized placebo-controlled trial of brisk walking in the prevention of postmenopausal osteoporosis. Age Ageing 1997;26:253-260. doi:10.1093/ageing/26.4.253

50. El-Khoury F, Cassou B, Latouche A, Aegerter P, Charles M-A, Dargent-Molina P. Effectiveness of two year balance training programme on prevention of fall induced injuries in at risk women aged 75-85 living in community: Ossébo randomised controlled trial. BMJ 2015;351:h3830. doi:10.1136/bmj.h3830

51. Elley CR, Robertson MC, Garrett S et al. Effectiveness of a falls-and-fracture nurse coordinator to reduce falls: A randomized, controlled trial of at-risk older adults. J Am Geriatr Soc 2008;56:1383-1389. doi:10.1111/j.1532-5415.2008.01802.x

52. Fabacher D, Josephson K, Pietruszka F, Linderborn K, Morley JE, Rubenstein LZ. An In- Home Preventive Assessment Program for Independent Older Adults: A Randomized Controlled Trial. J Am Geriatr Soc 1994;42:630-638. doi:10.1111/j.1532-5415.1994.tb06862.x

53. Fairhall N, Sherrington C, Lord SR et al. Effect of a multifactorial, interdisciplinary intervention on risk factors for falls and fall rate in frail older people: A randomised controlled trial. Age Ageing 2014;43:616-622. doi:10.1093/ageing/aft204

54. Ferrer A, Formiga F, Sanz H, de Vries OJ, Badia T, Pujol R. Multifactorial assessment and targeted intervention to reduce falls among the oldest-old: A randomized controlled trial. Clin Interv Aging 2014;9:383-394. doi:10.2147/CIA.S57580

55. Fitzharris MP, Day L, Lord SR, Gordon I, Fildes B. The Whitehorse NoFalls trial: Effects on fall rates and injurious fall rates. Age Ageing 2010;39:728-733. doi:10.1093/ageing/afq109

56. Fox PJ, Vazquez L, Tonner C, Stevens JA, Fineman N, Ross LK. A Randomized Trial of a Multifaceted Intervention to Reduce Falls Among Community-Dwelling Adults. Heal Educ Behav 2010;37:831-848. doi:10.1177/1090198110366003

57. Freiberger E, Häberle L, Spirduso WW, Zijlstra GAR. Long-term effects of three multicomponent exercise interventions on physical performance and fall-related psychological outcomes in community-dwelling older adults: A randomized controlled trial. J Am Geriatr Soc 2012;60:437-446. doi:10.1111/j.1532-5415.2011.03859.x

58. Gallagher JC, Fowler SE, Detter JR, Sherman SS. Combination treatment with estrogen and calcitriol in the prevention of age-related bone loss. J Clin Endocrinol Metab 2001;86:3618-3628. doi:10.1210/jcem.86.8.7703
59. Gawler S, Skelton DA, Dinan-Young S et al. Reducing falls among older people in general practice: The ProAct65+ exercise intervention trial. Arch Gerontol Geriatr 2016;67:46-54. doi:10.1016/j.archger.2016.06.019
60. Giangregorio LM, Gibbs JC, Templeton JA et al. Build better bones with exercise (B3E pilot trial): results

of a feasibility study of a multicenter randomized controlled trial of 12 months of home exercise in older women with vertebral fracture. Osteoporos Int 2018;29:2545-2556. doi:10.1007/s00198-018-4652-0

61. Gianoudis J, Bailey CA, Ebeling PR et al. Effects of a targeted multimodal exercise program incorporating high-speed power training on falls and fracture risk factors in older adults: A community-based randomized controlled trial. J Bone Miner Res 2014;29:182-191. doi:10.1002/jbmr.2014

62. Gill TM, Pahor M, Guralnik JM et al. Effect of structured physical activity on prevention of serious fall injuries in adults aged 70-89: Randomized clinical trial (LIFE study). BMJ 2016;352:i245. doi:10.1136/bmj.i245

63. Giusti A, Giovale M, Ponte M et al. Short-term effect of low-intensity, pulsed, electromagnetic fields on gait characteristics in older adults with low bone mineral density: A pilot randomized-controlled trial. Geriatr Gerontol Int 2013;13:393-397. doi:10.1111/j.1447-0594.2012.00915.x

64. Glendenning P, Zhu K, Inderjeeth C, Howat P, Lewis JR, Prince RL. Effects of three-monthly oral 150,000 IU cholecalciferol supplementation on falls, mobility, and muscle strength in older postmenopausal women: A randomized controlled trial. J Bone Miner Res 2012;27:170-176. doi:10.1002/jbmr.524

65. Grahn Kronhed AC, Hallberg I, Ödkvist L, Möller M. Effect of training on health-related quality of life, pain and falls in osteoporotic women. Adv Physiother 2009;11:154-165. doi:10.1080/14038190902896659

66. Grant AM. Oral vitamin D3 and calcium for secondary prevention of low-trauma fractures in elderly people (Randomised Evaluation of Calcium or vitamin D, RECORD): A randomised placebo-controlled trial. Lancet 2005;365:1621-1628. doi:10.1016/S0140-6736(05)63013-9

67. Gschwind YJ, Eichberg S, Ejupi A et al. ICT-based system to predict and prevent falls (iStoppFalls): Results from an international multicenter randomized controlled trial. Eur Rev Aging Phys Act 2015;12:10. doi:10.1186/s11556-015-0155-6

68. Guse CE, Peterson DJ, Christiansen AL, Mahoney J, Laud P, Layde PM. Translating a fall prevention intervention into practice: A randomized community trial. Am J Public Health 2015;105:1475-1481. doi:10.2105/AJPH.2014.302315

69. Haines TP, Russell T, Brauer SG et al. Effectiveness of a video-based exercise programme to reduce falls and improve health-related quality of life among older adults discharged from hospital: A pilot randomized controlled trial. Clin Rehabil 2009;23:973-985. doi:10.1177/0269215509338998

70. Halvarsson A, Franzén E, Farén E, Olsson E, Oddsson L, Ståhle A. Long-term effects of new progressive group balance training for elderly people with increased risk of falling - A randomized controlled trial. Clin Rehabil 2013;27:450-458. doi:10.1177/0269215512462908

71. Harper KJ, Barton AD, Arendts G, Edwards DG, Petta AC, Celenza A. Controlled clinical trial exploring the impact of a brief intervention for prevention of falls in an emergency department. Emerg Med Australas 2017;29:524-530. doi:10.1111/1742-6723.12804

72. Harwood RH, Sahota O, Gaynor K, Masud T, Hosking DJ. A randomised, controlled comparison of different calcium and vitamin D supplementation regimens in elderly women after hip fracture: The Nottingham Neck of Femur (NoNOF) study. Age Ageing 2004;33:45-51. doi:10.1093/ageing/afh002

73. Hendriks MRC, Bleijlevens MHC, Van Haastregt JCM et al. Lack of effectiveness of a multidisciplinary fall-prevention program in elderly people at risk: A randomized, controlled trial. J Am Geriatr Soc 2008;56:1390-1397. doi:10.1111/j.1532-5415.2008.01803.x

74. Hill A-M, Etherton-Beer C, Haines TP. Tailored Education for Older Patients to Facilitate Engagement in Falls Prevention Strategies after Hospital Discharge-A Pilot Randomized Controlled Trial. PLoS One 2013;8:e63450. doi:10.1371/journal.pone.0063450

75. Hill A-M, McPhail SM, Haines TP et al. Falls after Hospital Discharge: A Randomized Clinical Trial of Individualized Multimodal Falls Prevention Education. Journals Gerontol - Ser A Biol Sci Med Sci 2019;74:1511-1517. doi:10.1093/gerona/glz026

76. Hin H, Tomson J, Newman C et al. Optimum dose of vitamin D for disease prevention in older people: BEST-D trial of vitamin D in primary care. Osteoporos Int 2017;28:841-851. doi:10.1007/s00198-016-3833-y

77. Hogan DB, MacDonald FA, Betts J et al. A randomized controlled trial of a community-based consultation service to prevent falls. CMAJ 2001;165:537-543.

78. Holt KR, Haavik H, Lee ACL, Murphy B, Elley CR. Effectiveness of Chiropractic Care to Improve Sensorimotor Function Associated with Falls Risk in Older People: A Randomized Controlled Trial. J Manipulative Physiol Ther 2016;39:267-278. doi:10.1016/j.jmpt.2016.02.003

79. Hornbrook MC, Stevens VJ, Wingfield DJ, Hollis JF, Greenlick MR, Ory MG. Preventing falls among community-dwelling older persons: Results from a randomized trial. Gerontologist 1994;34:16-23. doi:10.1093/geront/34.1.16

80. Houston DK, Tooze JA, Demons JL et al. Delivery of a Vitamin D Intervention in Homebound Elderly Adults Using a Meals-on-Wheels Program: A Pilot Study. J Am Geriatr Soc 2015;63:1861–1867. doi:10.1111/jgs.13610 81. Huang T. Fall-prevention in Taiwanese elderly adults. University of Texas at Austin; 1998.

82. Huang H-C, Liu C-Y, Huang Y-T, Kernohan WG. Community-based interventions to reduce falls among older adults in Taiwan - long time follow-up randomised controlled study. J Clin Nurs 2010;19:959-968. doi:10.1111/j.1365-2702.2009.02834.x

83. Huang T-T, Yang L-H, Liu C-Y. Reducing the fear of falling among community-dwelling elderly adults through cognitive-behavioural strategies and intense Tai Chi exercise: A randomized controlled trial. J Adv Nurs 2011;67:961-971. doi:10.1111/j.1365-2648.2010.05553.x

84. Imhof L, Naef R, Wallhagen MI, Schwarz J, Mahrer-Imhof R. Effects of an advanced practice nurse inhome health consultation program for community-dwelling persons aged 80 and older. J Am Geriatr Soc 2012;60:2223-2231. doi:10.1111/jgs.12026

85. Iwamoto J, Suzuki H, Tanaka K et al. Preventative effect of exercise against falls in the elderly: A randomized controlled trial. Osteoporos Int 2009;20:1233-1240. doi:10.1007/s00198-008-0794-9

86. Kamei T, Kajii F, Yamamoto Y et al. Effectiveness of a home hazard modification program for reducing falls in urban community-dwelling older adults: A randomized controlled trial. Japan J Nurs Sci 2015;12:184-197. doi:10.1111/jjns.12059

87. Kamide N, Shiba Y, Shibata H. Effects on balance, falls, and bone mineral density of a home-based exercise program without home visits in community-dwelling elderly women: A randomized controlled trial. J Physiol Anthropol 2009;28:115-122. doi:10.2114/jpa2.28.115

88. Karinkanta S, Kannus P, Uusi-Rasi K, Heinonen A, Sievänen H. Combined resistance and balance-jumping exercise reduces older women's injurious falls and fractures: 5-year follow-up study. Age Ageing 2015;44:784-789. doi:10.1093/ageing/afv064

89. Kärkkäinen MK, Tuppurainen M, Salovaara K et al. Does daily vitamin D 800 IU and calcium 1000 mg supplementation decrease the risk of falling in ambulatory women aged 65-71 years? A 3-year randomized population-based trial (OSTPRE-FPS). Maturitas 2010;65:359-365. doi:10.1016/j.maturitas.2009.12.018

90. Kemmler W, Von Stengel S, Engelke K, Häberle L, Kalender WA. Exercise effects on bone mineral density, falls, coronary risk factors, and health care costs in older women: The randomized controlled senior fitness and prevention (SEFIP) study. Arch Intern Med 2010;170:179-185. doi:10.1001/archinternmed.2009.499

91. Kerse N, Elley CR, Robinson E, Arroll B. Is physical activity counseling effective for older people? A cluster randomized, controlled trial in primary care. J Am Geriatr Soc 2005;53:1951-1956. doi:10.1111/j.1532-5415.2005.00466.x

92. Kerse N, Peri K, Robinson E et al. Does a functional activity programme improve function, quality of life, and falls for residents in long term care? Cluster randomised controlled trial. BMJ 2008;337:a1445. doi:10.1136/bmj.a1445

93. Khaw KT, Stewart AW, Waayer D et al. Effect of monthly high-dose vitamin D supplementation on falls and non-vertebral fractures: secondary and post-hoc outcomes from the randomised, double-blind, placebo-controlled ViDA trial. Lancet Diabetes Endocrinol 2017;5:438-456. doi:10.1016/S2213-8587(17)30103-1

94. Kim H, Yoshida H, Suzuki T. Falls and fractures in participants and excluded non-participants of a fall prevention exercise program for elderly women with a history of falls: 1-year follow-up study. Geriatr Gerontol Int 2014;14:285-292. doi:10.1111/ggi.12095

95. Kingston P, Jones M, Lally F, Crome P. Older people and falls: A randomized controlled trial of a health visitor (HV) intervention. Rev Clin Gerontol 2001;11:209-214. doi:10.1017/S0959259801011327

96. Korpelainen R, Keinänen-Kiukaanniemi S, Heikkinen J, Väänänen K, Korpelainen J. Effect of impact exercise on bone mineral density in elderly women with low BMD: A population-based randomized controlled 30-month intervention. Osteoporos Int 2006;17:109-118. doi:10.1007/s00198-005-1924-2

97. Kovacs E, Prokai L, Meszaros L, Gondos T. Adapted physical activity is beneficial on balance, functional mobility, quality of life and fall risk in community-dwelling older women: A randomized single-blinded controlled trial. Eur J Phys Rehabil Med 2013;49:301-310.

98. Lamb SE, Mistry D, Alleyne S et al. Aerobic and strength training exercise programme for cognitive impairment in people with mild to moderate dementia: The DAPA RCT. Health Technol Assess (Rockv) 2018;22:1-201. doi:10.3310/hta22280

99. Lee JS, Hurley MJ, Carew D, Fisher R, Kiss A, Drummond N. A Randomized Clinical Trial to Assess the Impact on an Emergency Response System on Anxiety and Health Care Use among Older Emergency Patients after a Fall. Acad Emerg Med 2007;14:301-308. doi:10.1197/j.aem.2006.11.017

100. Lee H-C, Chang K-C, Tsauo J-Y, Hung J-W, Huang Y-C, Lin S-I. Effects of a multifactorial fall prevention program on fall incidence and physical function in community-dwelling older adults with risk of falls. Arch Phys Med Rehabil 2013;94:606-615. doi:10.1016/j.apmr.2012.11.037

101. Lehtola S, Hänninen L, Päätaloi M. The Incidence of Fall During Six-Months Exercise Intervention and Four-Months Follow-Up Among Home-Dwelling Persons Aged 70-75 Years. Liik T 2000;6:41-47.

102. Leung KS, Li CY, Tse YK et al. Effects of 18-month low-magnitude high-frequency vibration on fall rate and fracture risks in 710 community elderly - A cluster-randomized controlled trial. Osteoporos Int 2014;25:1785-1795. doi:10.1007/s00198-014-2693-6

103. Li F, Harmer P, Fisher KJ et al. Tai Chi and fall reductions in older adults: A randomized controlled trial. Journals Gerontol - Ser A Biol Sci Med Sci 2005;60A:187-194. doi:10.1093/gerona/60.2.187

104. Li F, Harmer P, Fitzgerald K et al. Effectiveness of a Therapeutic Tai Ji Quan Intervention vs a Multimodal Exercise Intervention to Prevent Falls among Older Adults at High Risk of Falling: A Randomized Clinical Trial. JAMA Intern Med 2018;178:1301-1310. doi:10.1001/jamainternmed.2018.3915

105. Lightbody E, Watkins C, Leathley M, Sharma A, Lye M. Evaluation of a nurse-led falls prevention programme versus usual care: A randomized controlled trial. Age Ageing 2002;31:203-210. doi:10.1093/ageing/31.3.203

106. Lips P, Graafmans WC, Ooms ME, Bezemer PD, Bouter LM. Vitamin D supplementation and fracture incidence in elderly persons: A randomized, placebo-controlled clinical trial. Ann Intern Med 1996;124:400-406. doi:10.7326/0003-4819-124-4-199602150-00003

107. Liu-Ambrose TYL, Khan KM, Eng JJ, Gillies GL, Lord SR, McKay HA. The beneficial effects of groupbased exercises on fall risk profile and physical activity persist 1 year postintervention in older women with low bone mass: Follow-up after withdrawal of exercise. J Am Geriatr Soc 2005;53:1767-1773. doi:10.1111/j.1532-5415.2005.53525.x

108. Liu-Ambrose T, Donaldson MG, Ahamed Y et al. Otago home-based strength and balance retraining improves executive functioning in older fallers: A randomized controlled trial. J Am Geriatr Soc 2008;56:1821-1830. doi:10.1111/j.1532-5415.2008.01931.x

109. Logan PA, Coupland CAC, Gladman JRF et al. Community falls prevention for people who call an emergency ambulance after a fall: Randomised controlled trial. BMJ 2010;340:c2102. doi:10.1136/bmj.c2102
110. Logghe IHJ, Zeeuwe PEM, Verhagen AP et al. Lack of effect of tai chi chuan in preventing falls in elderly people living at home: A randomized clinical trial. J Am Geriatr Soc 2009;57:70-75. doi:10.1111/j.1532-5415.2008.02064.x

111. Lord SR, Ward JA, Williams P, Strudwick M. The effect of a 12 month exercise trial on balance, strenght and falls in older women: a randomised controlled trial. J Am Geriatr Soc 1995;43:1198-1206. doi:10.1111/j.1532-5415.1995.tb07394.x

112. Lord SR, Castell S, Corcoran J et al. The Effect of Group Exercise on Physical Functioning and Falls in Frail Older People Living in Retirement Villages: A Randomized, Controlled Trial. J Am Geriatr Soc 2003;51:1685-1692. doi:10.1046/j.1532-5415.2003.51551.x

113. Lord SR, Tiedemann A, Chapman K, Munro B, Murray SM, Sherrington C. The effect of an individualized fall prevention program on fall risk and falls in older people: A randomized, controlled trial. J Am Geriatr Soc 2005;53:1296-1304. doi:10.1111/j.1532-5415.2005.53425.x

114. Lurie JD, Zagaria AB, Pidgeon DM, Forman JL, Spratt KF. Pilot comparative effectiveness study of surface perturbation treadmill training to prevent falls in older adults. BMC Geriatr 2013;13:49. doi:10.1186/1471-2318-13-49

115. Luukinen H, Lehtola S, Jokelainen J, Väänänen-Sainio R, Lotvonen S, Koistinen P. Pragmatic exerciseoriented prevention of falls among the elderly: A population-based, randomized, controlled trial. Prev Med (Baltim) 2007;44:265-271. doi:10.1016/j.ypmed.2006.09.011

116. MacRae PG, Feltner ME, Reinsch S. A 1-Year Exercise Program for Older Women: Effects on Falls, Injuries, and Physical Performance. J Aging Phys Act 1994;2:127-142. doi:10.1123/japa.2.2.127

117. Madureira MM, Bonfá E, Takayama L, Pereira RMR. A 12-month randomized controlled trial of balance training in elderly women with osteoporosis: Improvement of quality of life. Maturitas 2010;66:206-211. doi:10.1016/j.maturitas.2010.03.009

118. Mahoney JE, Shea TA, Przybelski R et al. Kenosha County falls prevention study: A randomized, controlled trial of an intermediate-intensity, community-based multifactorial falls intervention. J Am Geriatr Soc 2007;55:489-498. doi:10.1111/j.1532-5415.2007.01144.x

119. Markle-Reid M, Browne G, Gafni A et al. The effects and costs of a multifactorial and interdisciplinary team approach to falls prevention for older home care clients "at risk" for falling: A randomized controlled trial. Can J Aging 2010;29:139-161. doi:10.1017/S0714980809990377

120. Matchar DB, Duncan PW, Lien CT et al. Randomized Controlled Trial of Screening, Risk Modification, and Physical Therapy to Prevent Falls Among the Elderly Recently Discharged From the Emergency Department to

the Community: The Steps to Avoid Falls in the Elderly Study. Arch Phys Med Rehabil 2017;98:1086-1096. doi:10.1016/j.apmr.2017.01.014

McKiernan FE. A simple gait-stabilizing device reduces outdoor falls and nonserious injurious falls in fall-prone older people during the winter. J Am Geriatr Soc 2005;53:943-947. doi:10.1111/j.1532-5415.2005.53302.x
McMurdo MET, Mole PA, Paterson CR. Controlled trial of weight bearing exercise in older women in

relation to bone density and falls. Br Med J 1997;314:569. doi:10.1136/bmj.314.7080.553

123. McMurdo MET, Millar AM, Daly F. A randomized controlled trial of fall prevention strategies in old peoples' homes. Gerontology 2000;46:83-87. doi:10.1159/000022139

124. McMurdo MET, Price RJG, Shields M, Potter J, Stott DJ. Should oral nutritional supplementation be given to undernourished older people upon hospital discharge? A controlled trial. J Am Geriatr Soc 2009;57:2239-2245. doi:10.1111/j.1532-5415.2009.02568.x

125. Means KM, Rodell DE, O'Sullivan PS. Balance, mobility, and falls among community-dwelling elderly persons: Effects of a rehabilitation exercise program. Am J Phys Med Rehabil 2005;84:238-250. doi:10.1097/01.PHM.0000151944.22116.5A

126. Merom D, Mathieu E, Cerin E et al. Social Dancing and Incidence of Falls in Older Adults: A Cluster Randomised Controlled Trial. PLoS Med 2016;13:e1002112. doi:10.1371/journal.pmed.1002112

127. Miko I, Szerb I, Szerb A, Bender T, Poor G. Effect of a balance-training programme on postural balance, aerobic capacity and frequency of falls in women with osteoporosis: A randomized controlled trial. J Rehabil Med 2018;50:542-547. doi:10.2340/16501977-2349

128. Mikolaizak AS, Lord SR, Tiedemann A et al. A multidisciplinary intervention to prevent subsequent falls and health service use following fall-related paramedic care: A randomised controlled trial. Age Ageing 2017;46:200-208. doi:10.1093/ageing/afw190

129. Möller UO, Kristensson J, Midlöv P, Ekdahl C, Jakobsson U. Effects of a one-year home-based case management intervention on falls in older people: A randomized controlled trial. J Aging Phys Act 2014;22:457-464. doi:10.1123/JAPA.2013-0101

130. Morgan RO, Virnig BA, Duque M, Abdel-Moty E, DeVito CA. Low-Intensity Exercise and Reduction of the Risk for Falls Among At-Risk Elders. Journals Gerontol Ser A Biol Sci Med Sci 2004;59A:1062–1067. doi:10.1093/gerona/59.10.m1062

131. Morris DM. An evaluation of yoga for the reduction of fall risk factors in older adults: Department of Educational Psychology and Learning Systems Florida State University; 2008.

132. Mott DA, Martin B, Breslow R et al. Impact of a medication therapy management intervention targeting medications associated with falling: Results of a pilot study. J Am Pharm Assoc 2016;56:22-28. doi:10.1097/CCM.0b013e31823da96d.Hydrogen

133. Newbury JW, Marley JE, Beilby JJ. A randomised controlled trial of the outcome of health assessment of people aged 75 years and over. Med J Aust 2001;175:104-107. doi:10.5694/j.1326-5377.2001.tb143541.x

134. Ng TP, Feng L, Nyunt MSZ et al. Nutritional, Physical, Cognitive, and Combination Interventions and Frailty Reversal among Older Adults: A Randomized Controlled Trial. Am J Med 2015;128:1225-1236. doi:10.1016/j.amjmed.2015.06.017

135. Nikolaus T, Bach M. Preventing falls in community-dwelling frail older people using a home intervention team (HIT): Results from the randomized falls-HIT trial. J Am Geriatr Soc 2003;51:300-305. doi:10.1046/j.1532-5415.2003.51102.x

136. Nowalk MP, Prendergast JM, Bayles CM, D'Amico FJ, Colvin GC. A randomized trial of exercise programs among older individuals living in two long-term care facilities: The fallsFREE program. J Am Geriatr Soc 2001;49:859-865. doi:10.1046/j.1532-5415.2001.49174.x

137. Ohtake M, Morikagi Y, Suzuki I, Kanoya Y, Sato C. Effects of exercise on the prevention of conditions leading to the need for long-term care. Aging Clin Exp Res 2013;25:49-57. doi:10.1007/s40520-013-0016-y

138. Okubo Y, Osuka Y, Jung S et al. Walking can be more effective than balance training in fall prevention among community-dwelling older adults. Geriatr Gerontol Int 2016;16:118-125. doi:10.1111/ggi.12444

139. Oliveira JS, Sherrington C, Paul SS et al. A combined physical activity and fall prevention intervention improved mobility-related goal attainment but not physical activity in older adults: a randomised trial. J Physiother 2019;65:16-22. doi:10.1016/j.jphys.2018.11.005

140. Olsen CF, Bergland A. The effect of exercise and education on fear of falling in elderly women with osteoporosis and a history of vertebral fracture: Results of a randomized controlled trial. Osteoporos Int 2014;25:2017-2025. doi:10.1007/s00198-014-2724-3

141. Pai Y-C, Bhatt T, Yang F, Wang E. Perturbation training can reduce community-dwelling older adults' annual fall risk: A randomized controlled trial. Journals Gerontol - Ser A Biol Sci Med Sci 2014;69:1586-1594.

doi:10.1093/gerona/glu087

142. Palvanen M, Kannus P, Piirtola M, Niemi S, Parkkari J, Järvinen M. Effectiveness of the Chaos Falls Clinic in preventing falls and injuries of home-dwelling older adults: A randomised controlled trial. Injury 2014;45:265-271. doi:10.1016/j.injury.2013.03.010

143. Pardessus V, Puisieux F, Di Pompeo C, Gaudefroy C, Thevenon A, Dewailly P. Benefits of home visits for falls and autonomy in the elderly: A randomized trial study. Am J Phys Med Rehabil 2002;81:247-252. doi:10.1097/00002060-200204000-00002

144. Park H, Kim KJ, Komatsu T, Park SK, Mutoh Y. Effect of combined exercise training on bone, body balance, and gait ability: A randomized controlled study in community-dwelling elderly women. J Bone Miner Metab 2008;26:254-259. doi:10.1007/s00774-007-0819-z

145. Parry SW, Bamford C, Deary V, et al. Cognitive–behavioural therapy-based intervention to reduce fear of falling in older people: Therapy development and randomised controlled trial – the strategies for increasing independence, confidence and energy (STRIDE) study. Health Technol Assess (Rockv) 2016;20:1-206. doi:10.3310/hta20560

146. Patil R, Uusi-Rasi K, Tokola K, Karinkanta S, Kannus P, Sievänen H. Effects of a multimodal exercise program on physical function, falls, and injuries in older women: A 2-year community-based, randomized controlled trial. J Am Geriatr Soc 2015;63:1306-1313. doi:10.1111/jgs.13489

147. Peel N, Steinberg M, Williams G. Home safety assessment in the prevention of falls among older people. Aust N Z J Public Health 2000;24:536-539. doi:10.1111/j.1467-842X.2000.tb00506.x

148. Pekkarinen T, Löyttyniemi E, Välimäki M. Hip fracture prevention with a multifactorial educational program in elderly community-dwelling Finnish women. Osteoporos Int 2013;24:2983-2992. doi:10.1007/s00198-013-2381-y

149. Perry SD, Radtke A, McIlroy WE, Fernie GR, Maki BE. Efficacy and Effectiveness of a Balance-Enhancing Isole. J Gerontol Med Sci 2008;63A:595-602. doi:10.1093/gerona/63.6.595

150. Pérula LA, Varas-Fabra F, Rodríguez V et al. Effectiveness of a multifactorial intervention program to reduce falls incidence among community-living older adults: A randomized controlled trial. Arch Phys Med Rehabil 2012;93:1677-1684. doi:10.1016/j.apmr.2012.03.035

151. Pighills AC, Torgerson DJ, Sheldon TA, Drummond AE, Bland JM. Environmental assessment and modification to prevent falls in older people. J Am Geriatr Soc 2011;59:26-33. doi:10.1111/j.1532-5415.2010.03221.x

152. Pit SW, Byles JE, Henry DA, Holt L, Hansen V, Bowman DA. A Quality Use of Medicines program for general practitioners and older people: A cluster randomised controlled trial. Med J Aust 2007;187:23-30. doi:10.5694/j.1326-5377.2007.tb01110.x

153. Porthouse J, Cockayne S, King C, et al. Randomised controlled trial of calcium and supplementation with cholecalciferol (vitamin D3) for prevention of fractures in primary care. BMJ. 2005;330:1-6.

154. Rantz M, Phillips LJ, Galambos C et al. Randomized Clinical Trial of Technology to Automatically Detect Early Signs of Illness in Senior Housing. J Am Med Dir Assoc 2017;18:860-870.

155. Reinsch S, MacRae P, Lachenbruch PA, Tobis JS. Attempts to Prevent Falls and Injury: A Prospective Community Study. Gerontologist 1992;32:450-456. doi:10.1093/geront/32.4.450

156. Robertson MC, Devlin N, Gardner MM, Campbell AJ. Effectiveness and economic evaluation of a nurse delivered home exercise programme to prevent falls. 1: Randomised controlled trial. Br Med J 2001;322:1-6. doi:10.1136/bmj.322.7288.701

157. Robson E, Edwards J, Gallagher E, Baker D. Steady as you go (SAYGO): A falls-prevention program for seniors living in the community. Can J Aging 2003;22:207-216.

158. Rubenstein LZ, Josephson KR, Trueblood PR, et al. Effects of a group exercise program on strength, mobility, and falls among fall-prone elderly men. Journals Gerontol - Ser A Biol Sci Med Sci 2000;55A:M317-M321. doi:10.1093/gerona/55.6.M317

159. Rubenstein LZ, Alessi CA, Josephson KR, Trinidad Hoyl M, Harker JO, Pietruszka FM. A randomized trial of a screening, case finding, and referral system for older veterans in primary care. J Am Geriatr Soc 2007;55:166-174. doi:10.1111/j.1532-5415.2007.01044.x

160. Russell MA, Hill KD, Day LM et al. A randomized controlled trial of a multifactorial falls prevention intervention for older fallers presenting to emergency departments. J Am Geriatr Soc 2010;58:2265-2274. doi:10.1111/j.1532-5415.2010.03191.x

161. Ryan JW, Spellbring AM. Implementing strategies to decrease risk of falls in older women. J Gerontol Nurs 1996;22:25-31. doi:10.3928/0098-9134-19961201-10

162. Sakamoto K, Endo N, Harada A et al. Why not use your own body weight to prevent falls? A randomized,

controlled trial of balance therapy to prevent falls and fractures for elderly people who can stand on one leg for ≤ 15 s. J Orthop Sci 2013;18:110-120. doi:10.1007/s00776-012-0328-3

163. Sales M, Polman R, Hill KD, Levinger P. A Novel Exercise Initiative for Seniors to Improve Balance and Physical Function. J Aging Health 2017;29:1424-1443. doi:10.1177/0898264316662359

164. Salminen MJ, Vahlberg TJ, Salonoja MT, Aarnio PTT, Kivela S-L. Effect of a risk-based multifactorial fall prevention program on the incidence of falls. J Am Geriatr Soc 2009;57:612-619.

165. Sambrook PN, Cameron ID, Chen JS et al. Does increased sunlight exposure work as a strategy to improve vitamin D status in the elderly: A cluster randomised controlled trial. Osteoporos Int 2012;23:615-624. doi:10.1007/s00198-011-1590-5

166. Sanders KM, Stuart AL, Williamson EJ et al. Annual high-dose oral vitamin D and falls and fractures in older women: A randomized controlled trial. JAMA 2010;303:1815-1822. doi:10.1001/jama.2010.594

167. Sattin RW, Easley KA, Wolf SL, Chen Y, Kutner MH. Reduction in fear of falling through intense tai chi exercise training in older, transitionally frail adults. J Am Geriatr Soc 2005;53:1168-1178. doi:10.1111/j.1532-5415.2005.53375.x

168. Schoene D, Valenzuela T, Toson B et al. Interactive cognitive-motor step training improves cognitive risk factors of falling in older adults - A randomized controlled trial. PLoS One 2015;10:e0145161. doi:10.1371/journal.pone.0145161

169. Schoon Y, Bongers KTJ, Olde Rikkert MGM. Feasibility study by a single-blind randomized controlled trial of self-management of mobility with a gait-speed feedback device by older persons at risk for falling. Assist Technol Published online 2018:1-7. doi:10.1080/10400435.2018.1529004

170. Serra-Prat M, Sist X, Domenich R et al. Effectiveness of an intervention to prevent frailty in pre-frail community-dwelling older people consulting in primary care: A randomised controlled trial. Age Ageing 2017;46:401-407. doi:10.1093/ageing/afw242

171. Sherrington C, Lord SR, Vogler CM et al. A post-hospital home exercise program improved mobility but increased falls in older people: A randomised controlled trial. PLoS One 2014;9:e104412. doi:10.1371/journal.pone.0104412

172. Shigematsu R, Okura T, Nakagaichi M et al. Square-stepping exercise and fall risk factors in older adults: A single-blind, randomized controlled trial. Journals Gerontol - Ser A Biol Sci Med Sci 2008;63A:76-82. doi:10.1093/gerona/63.1.76

173. Shigematsu R, Okura T, Sakai T, Rantanen T. Square-stepping exercise versus strength and balance training for fall risk factors. Aging Clin Exp Res 2008;20:19-24. doi:10.1007/BF03324743

174. Shimada H, Obuchi S, Furuna T, Suzuki T. New intervention program for preventing falls among frail elderly people: The effects of perturbed walking exercise using a bilateral separated treadmill. Am J Phys Med Rehabil 2004;83:493-499. doi:10.1097/01.PHM.0000130025.54168.91

175. Shumway-Cook A, Silver IF, LeMier M, York S, Cummings P, Koepsell TD. Effectiveness of a community-based multifactorial intervention on falls and fall risk factors in community-living older adults: A randomized, controlled trial. Journals Gerontol - Ser A Biol Sci Med Sci 2007;62A:1420-1427. doi:10.1093/gerona/62.12.1420

176. Siegrist M, Freiberger E, Geilhof B et al. Fall Prevention in a Primary Care Setting: The Effects of a Targeted Complex Exercise Intervention in a Cluster Randomized Trial. Dtsch Arztebl Int 2016;113:365-372. doi:10.3238/arztebl.2016.0365

177. Sihvonen S, Sipilä S, Taskinen S, Era P. Fall incidence in frail older women after individualized visual feedback-based balance training. Gerontology 2004;50:411-416. doi:10.1159/000080180

178. Skelton D, Dinan S, Campbell M, Rutherford O. Tailored group exercise (Falls Management Exercise — FaME) reduces falls in community-dwelling older frequent fallers (an RCT). Age Ageing 2005;34:636-636. doi:10.1093/ageing/afi174

179. Smith H, Anderson F, Raphael H, Maslin P, Crozier S, Cooper C. Effect of annual intramuscular vitamin D on fracture risk in elderly men and women - A population-based, randomized, double-blind, placebo-controlled trial. Rheumatology 2007;46:1852-1857. doi:10.1093/rheumatology/kem240

180. Smulders E, Weerdesteyn V, Groen BE et al. Efficacy of a short multidisciplinary falls prevention program for elderly persons with osteoporosis and a fall history: A randomized controlled trial. Arch Phys Med Rehabil 2010;91:1705-1711. doi:10.1016/j.apmr.2010.08.004

181. Spice CL, Morotti W, George S et al. The Winchester falls project: A randomised controlled trial of secondary prevention of falls in older people. Age Ageing 2009;38:33-40. doi:10.1093/ageing/afn192

182. Stam H, Van Der Wouden JC, Hugtenburg JG, Twisk JWR, Van Der Horst HE, Maarsingh OR. Effectiveness of a multifactorial intervention for dizziness in older people in primary care: A cluster randomised

controlled trial. PLoS One 2018;13:e0204876. doi:10.1371/journal.pone.0204876

183. Stanmore EK, Mavroeidi A, De Jong LD et al. The effectiveness and cost-effectiveness of strength and balance Exergames to reduce falls risk for people aged 55 years and older in UK assisted living facilities: A multi-centre, cluster randomised controlled trial. BMC Med 2019;17:1-14. doi:10.1186/s12916-019-1278-9

184. Steadman J, Donaldson N, Kalra L. A randomized controlled trial of an enhanced balance training program to improve mobility and reduce falls in elderly patients. J Am Geriatr Soc 2003;51:847-852. doi:10.1046/j.1365-2389.2003.51268.x

185. Stevens M, Holman CDJ, Bennett N, de Klerk N. Preventing Falls in Older People: Outcome Evaluation of a Randomized Controlled Trial. J Am Geriatr Soc 2001;49:1448–1455. doi:10.1046/j.1532-5415.2001.4911236.x.

186. Suttanon P, Hill KD, Said CM et al. Feasibility, safety and preliminary evidence of the effectiveness of a home-based exercise programme for older people with Alzheimer's disease: A pilot randomized controlled trial. Clin Rehabil 2013;27:427-438. doi:10.1177/0269215512460877

187. Suttanon P, Piriyaprasarth P, Krootnark K, Aranyavalai T. Effectiveness of falls prevention intervention programme in community-dwelling older people in Thailand: Randomized controlled trial. Hong Kong Physiother J 2018;38:1-11. doi:10.1142/S1013702518500014

188. Suzuki T, Kim H, Yoshida H, Ishizaki T. Randomized controlled trial of exercise intervention for the prevention of falls in community-dwelling elderly Japanese women. J Bone Miner Metab 2004;22:602-611. doi:10.1007/s00774-004-0530-2

189. Tan PJ, Khoo EM, Chinna K et al. Individually-tailored multifactorial intervention to reduce falls in the Malaysian Falls Assessment and Intervention Trial (MyFAIT): A randomized controlled trial. PLoS One 2018;13:e0199219. doi:10.1371/journal.pone.0199219

190. Taylor D, Hale L, Schluter P et al. Effectiveness of tai chi as a community-based falls prevention intervention: A randomized controlled trial. J Am Geriatr Soc 2012;60:841-848. doi:10.1111/j.1532-5415.2012.03928.x

191. Tchalla AE, Lachal F, Cardinaud N et al. Preventing and managing indoor falls with home-based technologies in mild and moderate Alzheimer's disease patients: Pilot study in a community dwelling. Dement Geriatr Cogn Disord 2013;36:251-261. doi:10.1159/000351863

192. Thomas KS, Parikh RB, Zullo AR, Dosa D. Home-delivered meals and risk of self-reported falls: Results from a randomized trial. J Appl Gerontol 2018;37:41-57. doi:10.1177/0733464816675421

193. Tinetti ME, Baker DI, McAvay G et al. A multifactorial intervention to reduce the risk of falling among elderly people living in the community. N Engl J Med 1994;331:821-827. doi:10.1056/NEJM199409293311301

194. Tousignant M, Corriveau H, Roy P-M, Desrosiers J, Dubuc N, Hébert R. Efficacy of supervised Tai Chi exercises versus conventional physical therapy exercises in fall prevention for frail older adults: A randomized controlled trial. Disabil Rehabil 2013;35:1429-1435. doi:10.3109/09638288.2012.737084

195. Trombetti A, Hars M, Herrmann FR, Kressig RW, Ferrari S, Rizzoli R. Effect of music-based multitask training on gait, balance, and fall risk in elderly people: A randomized controlled trial. Arch Intern Med 2011;171:525-533. doi:10.1001/archinternmed.2010.446

196. Ueda T, Higuchi Y, Imaoka M, Todo E, Kitagawa T, Ando S. Tailored education program using home floor plans for falls prevention in discharged older patients: A pilot randomized controlled trial. Arch Gerontol Geriatr 2017;71:9-13. doi:10.1016/j.archger.2017.02.010

197. Uusi-Rasi K, Patil R, Karinkanta S, et al. Exercise and vitamin D in fall prevention among older women: a randomized clinical trial. JAMA Intern Med 2015;175:703-711. doi:10.1001/jamainternmed.2015.0225

198. Van Der Meer HG, Wouters H, Pont LG, Taxis K. Reducing the anticholinergic and sedative load in older patients on polypharmacy by pharmacist-led medication review: A randomised controlled trial. BMJ Open 2018;8:e019042. doi:10.1136/bmjopen-2017-019042

199. van Haastregt JCM, Diederiks JPM, van Rossu E, de Witte LP, Voorhoeve PM, Crebolder HFJM. Effects of a programme of multifactorial home visits on falls and mobility impairments in elderly people at risk: randomised controlled trial. Br Med J 2000;321:994-998. doi:10.1136/bmj.321.7267.994

200. Verrusio W, Gianturco V, Cacciafesta M, Marigliano V, Troisi G, Ripani M. Fall prevention in the young old using an exoskeleton human body posturizer: a randomized controlled trial. Aging Clin Exp Res 2017;29:207-214. doi:10.1007/s40520-016-0540-7

201. Vetter NJ, Lewis PA, Ford D. Can health visitors prevent fractures in elderly people? Br Med J 1992;304:888-890. doi:10.1136/bmj.304.6831.888

202. Villar MTA, Hill P, Inskip H, Thompson P, Cooper C. Will elderly rest home residents wear hip protectors? Age Ageing 1998;27:195-198. doi:10.1093/ageing/27.2.195

203. Vind AB, Andersen HE, Pedersen KD, Joergensen T, Schwarz P. Effect of a program of multifactorial fall

prevention on health-related quality of life, functional ability, fear of falling and psychological well-being. A randomized controlled trial. Aging Clin Exp Res 2010;22:249-254. doi:10.3275/6628

204. Vogler CM, Sherrington C, Ogle SJ, Lord SR. Reducing Risk of Falling in Older People Discharged From Hospital: A Randomized Controlled Trial Comparing Seated Exercises, Weight-Bearing Exercises, and Social Visits. Arch Phys Med Rehabil 2009;90:1317-1324. doi:10.1016/j.apmr.2009.01.030

205. Von Stengel S, Kemmler W, Engelke K, Kalender WA. Effects of whole body vibration on bone mineral density and falls: Results of the randomized controlled ELVIS study with postmenopausal women. Osteoporos Int 2011;22:317-325. doi:10.1007/s00198-010-1215-4

206. Voukelatos A, Cumming RG, Lord SR, Rissel C. A randomized, controlled trial of tai chi for the prevention of falls: The central sydney tai chi trial. J Am Geriatr Soc 2007;55:1185-1191. doi:10.1111/j.1532-5415.2007.01244.x

207. Voukelatos A, Merom D, Sherrington C, Rissel C, Cumming RG, Lord SR. The impact of a home-based walking programme on falls in older people: The easy steps randomised controlled trial. Age Ageing 2015;44:377-383. doi:10.1093/ageing/afu186

208. Wagner EH, LaCroix AZ, Grothaus L et al. Preventing disability and falls in older adults: A populationbased randomized trial: Commentary. Am J Public Health 1994;84:1800-1806. doi:10.2105/ajph.84.11.1800

209. Weber V, White A, McIlvried R. An electronic medical record (EMR)-based intervention to reduce polypharmacy and falls in an ambulatory rural elderly population. J Gen Intern Med 2008;23:399-404. doi:10.1007/s11606-007-0482-z

210. Weerdesteyn V, Rijken H, Geurts ACH, Smits-Engelsman BCM, Mulder T, Duysens J. A five-week exercise program can reduce falls and improve obstacle avoidance in the elderly. Gerontology 2006;52:131-141. doi:10.1159/000091822

211. Wesson J, Clemson L, Brodaty H et al. A feasibility study and pilot randomised trial of a tailored prevention program to reduce falls in older people with mild dementia. BMC Geriatr 2013;13:89. doi:10.1186/1471-2318-13-89

Whitehead C, Wundke R, Crotty M, Finucane P. Evidence-based clinical practice in falls prevention: a randomised controlled trial of a falls prevention service. Aust Heal Rev 2003;26:88-97. doi:10.1071/AH030088
Whitehead PJ, Walker MF, Parry RH, Latif Z, McGeorge ID, Drummond AER. Occupational Therapy in HomEcare Re-ablement Services (OTHERS): results of a feasibility randomised controlled trial. BMJ Open 2016;6:e011868. doi:10.1136/bmjopen-2016-011868

214. Whitehead PJ, Golding-Day MR, Belshaw S, Dawson T, James M, Walker MF. Bathing adaptations in the homes of older adults (BATH-OUT): Results of a feasibility randomised controlled trial (RCT). BMC Public Health 2018;18:1293. doi:10.1186/s12889-018-6200-4

215. Wolf SL, Sattin RW, Kutner M, O'Grady M, Greenspan AI, Gregor RJ. Intense Tai Chi Exercise Training and Fall Occurrences in Older, Transitionally Frail Adults: A Randomized, Controlled Trial. J Am Geriatr Soc 2003;51:1693-1701. doi:10.1046/j.1532-5415.2003.51552.x

216. Woo J, Hong A, Lau E, Lynn H. A randomised controlled trial of Tai Chi and resistance exercise on bone health, muscle strength and balance in community-living elderly people. Age Ageing 2007;36:262-268. doi:10.1093/ageing/afm005

217. Yokoi K, Yoshimasu K, Takemura S, Fukumoto J, Kurasawa S, Miyashita K. Short stick exercises for fall prevention among older adults: A cluster randomized trial. Disabil Rehabil 2015;37:1268-1276. doi:10.3109/09638288.2014.961660

218. Zieschang T, Schwenk M, Becker C, Uhlmann L, Oster P, Hauer K. Falls and Physical Activity in Persons with Mild to Moderate Dementia Participating in an Intensive Motor Training Randomized Controlled Trial. Alzheimer Dis Assoc Disord 2017;31:307-314. doi:10.1097/WAD.00000000000201

219. Zijlstra GAR, Van Haastregt JCM, Ambergen T et al. Effects of a multicomponent cognitive behavioral group intervention on fear of falling and activity avoidance in community-dwelling older adults: Results of a randomized controlled trial. J Am Geriatr Soc 2009;57:2020-2028. doi:10.1111/j.1532-5415.2009.02489.x

220. Zijlstra GAR, Van Haastregt JCM, Kempen GIJM. Zicht op Evenwicht': Een effectieve interventie om bezorgdheid om te vallen en gerelateerd vermijdingsgedrag bij ouderen te verminderen. Tijdschr Gerontol Geriatr 2012;43:164-175. doi:10.1007/s12439-012-0026-9

Companion reports:

1. Huang T-T, Acton GJ. Effectiveness of home visit falls prevention strategy for Taiwanese communitydwelling elders: Randomized trial. Public Health Nurs 2004;21:247-256. 2. Liu-Ambrose T, Khan KM, Eng JJ, Janssen PA, Lord SR, McKay HA. Both Resistance and Agility Training Reduce Fall Risk in 75–85 Year Old Women with Low Bone Mass: A Six-Month Randomized Controlled. J Am Geriatr Soc 2004;52:657-665. doi:10.1111/j.1532-5415.2004.52200.x

3. Uusi-Rasi K, Patil R, Karinkanta S et al. A 2-Year Follow-Up After a 2-Year RCT with Vitamin D and Exercise: Effects on Falls, Injurious Falls and Physical Functioning Among Older Women. J Gerontol A Biol Sci Med Sci 2017;72:1239-1245. doi:10.1093/gerona/glx044