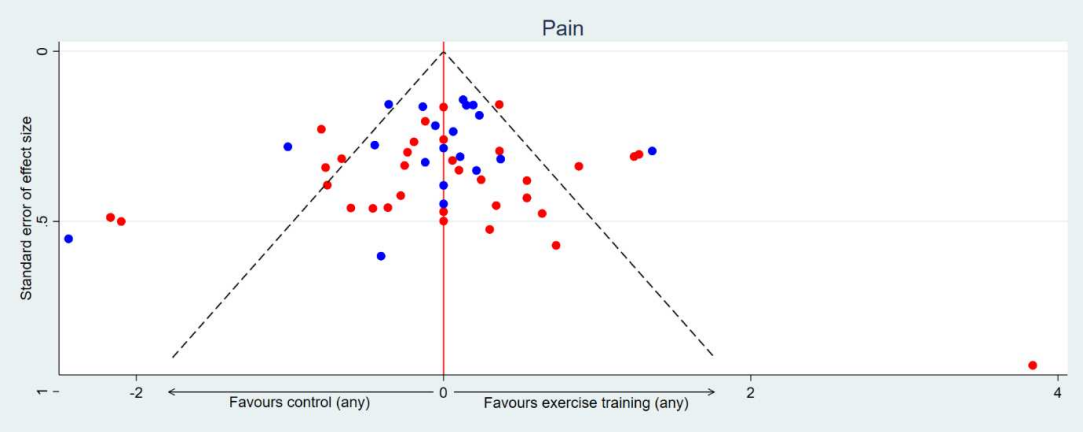
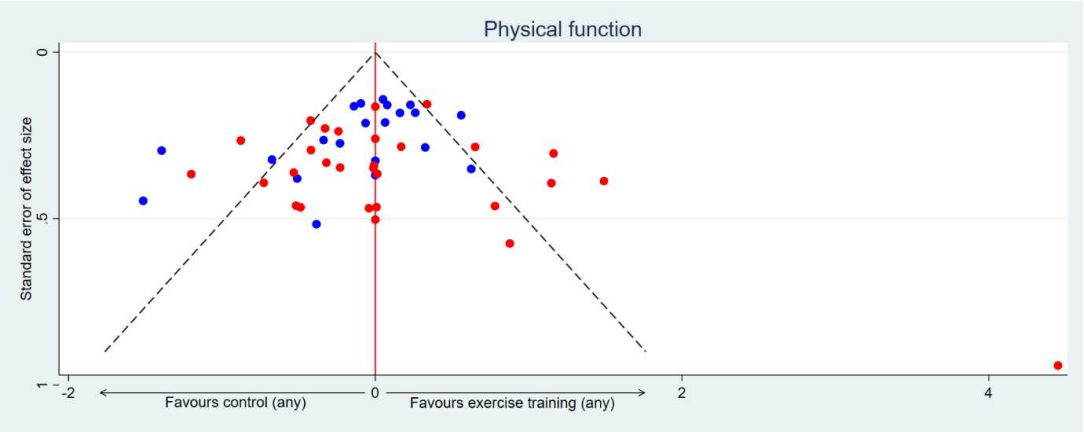
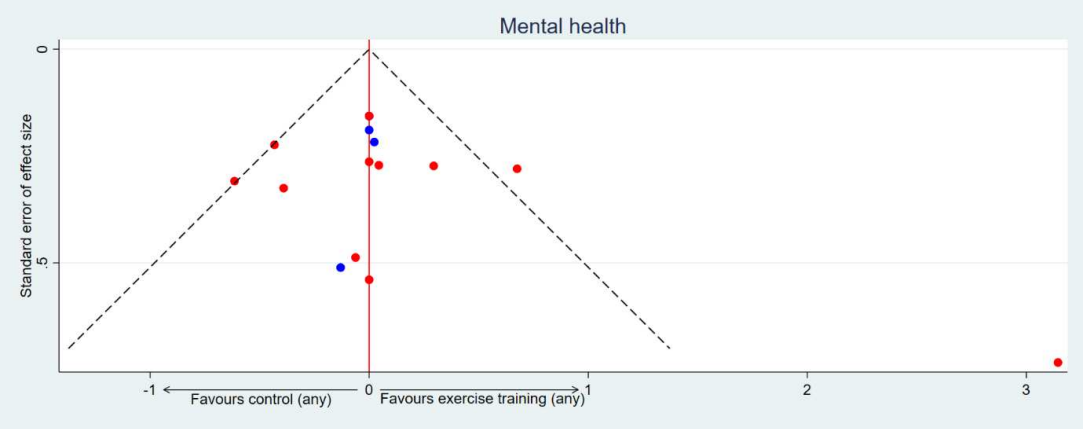
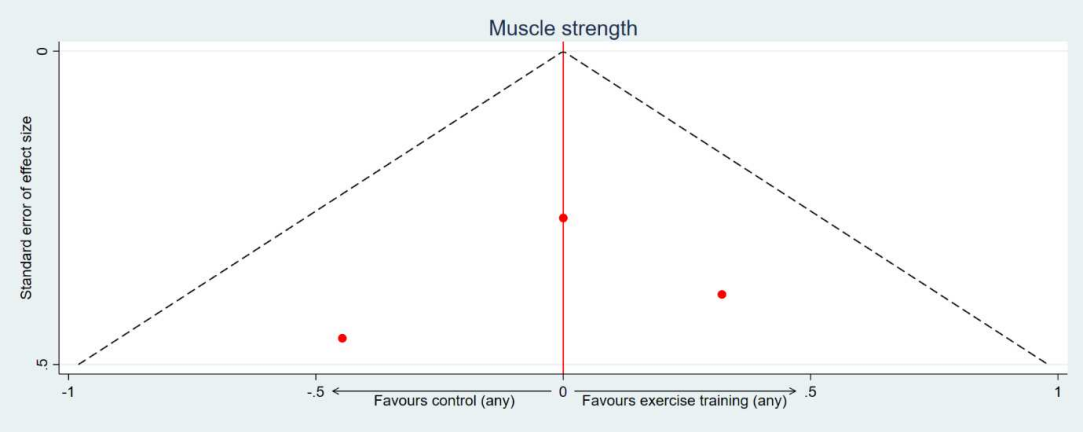
SUPPLEMENTARY FIGURES









Supplementary Figure 1. Network meta-analysis funnel plots for the assessment of publication bias in studies comparing exercise training (any) to true control (red) or hands-on/hands-off control (blue) in patients with non-specific chronic low back pain.

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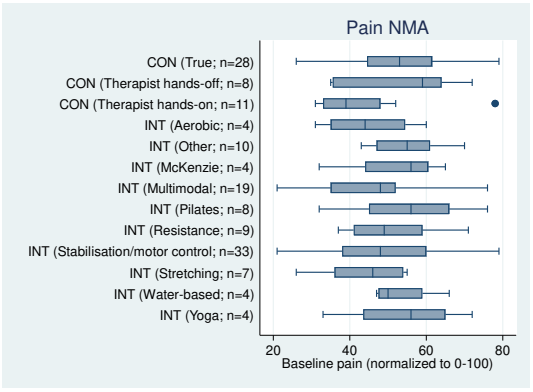

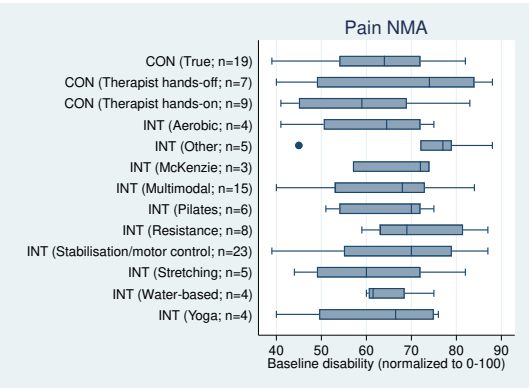

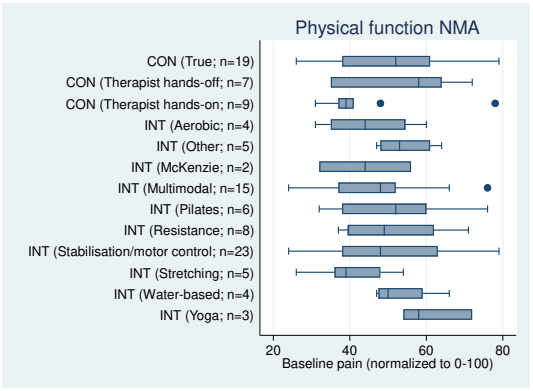

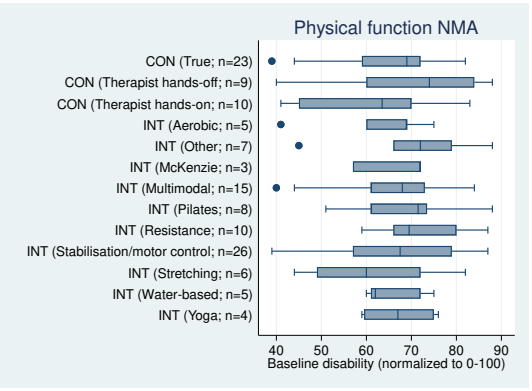

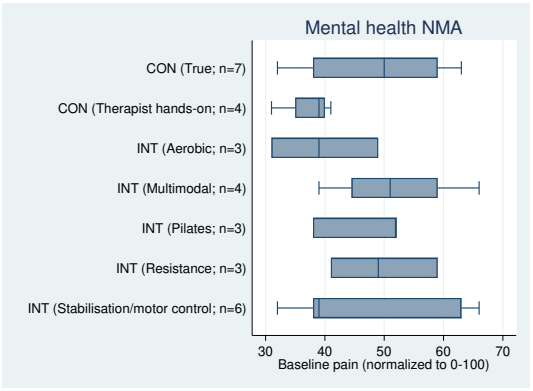

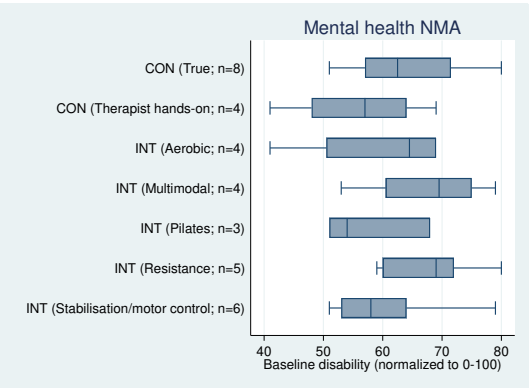

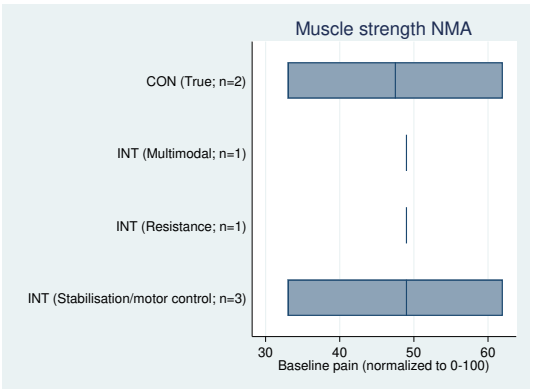

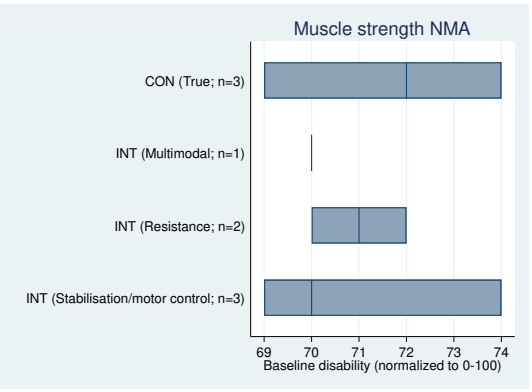

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Supplementary Figure 2. Baseline pain and disability (normalized to 0-100) for each intervention (INT) and control (CON) group within each network meta-analysis (NMA). n: number of studies with reporting of this baseline data in each exercise intervention (INT) or control (CON). Data were re-scaled from the original reported data to 0-100 where 0=no pain/disability and 100=scale maximum for pain/disability. One-way analysis of variance did not present evidence for differences between treatment types on these baseline data (all: $P \geq 0.460$).

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SUPPLEMENTARY TABLES

Supplementary Table 1. Search terms used for electronic searches.

Pain terms combined with 'OR'	Exercise terms combined with 'OR'
Back pain*	Exercise
Lumb* pain	Physical activity
Lumbago	Aerobic
Backache*	Resistance
Back ache*	Strength
	Endurance
	Yoga
	Pilates
	Tai Chi
	Physiotherapy
	Physical therapy
	Kinesiology
	Feldenkrais
	Core stab*
	Motor control
	Hydrotherapy
	Training

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Supplementary Table 2. Search strategy for MEDLINE.

Search	Query	Hits
#1	"back pain*" OR "lumb* pain" OR lumbago OR backache* OR "back ache*"	79565
#2	exercise OR "physical activity" OR aerobic OR resistance OR strength OR endurance OR yoga OR pilates OR "tai chi" OR "physiotherapy" OR "physical therapy" OR kinesiology OR Feldenkrais OR "core stab*" OR "motor control" OR "hydrotherapy" OR training	3136931
#3	#1 AND #2	16655
#4	#3 AND Filter: Randomized controlled trial	1867
#5	#4 AND Filter: Human	1860
#6	#5 AND Filter: Adult	1651

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Supplementary Table 3. Characteristics of studies examining the efficacy of exercise training in patients with non-specific chronic low back pain.

Study	n	Mean age (years)	Sex (males, n)	Mean baseline pain duration (weeks)	Mean baseline pain intensity (/100)	Study duration (weeks)	Exercise training intervention 1 (INT1; type, sample, frequency)	Exercise training intervention 2 (INT2; type, sample, frequency)	Non-exercise training comparator (CON; type, sample, frequency)	End-intervention mean(standard deviation)					
										Pain	Physical function	Muscle strength	Muscle endurance	Analgesic pharmacotherapy	Mental health
Akbari et al. 2008[75]	49	40	NR	45	24	8	Stabilisation/motor control (n=25); 2/wk	Multimodal (n=24); 2/wk	-	INT1=2.5(1.2) INT2=4.0(1.5)	-	-	-	-	-
Ali et al. 2013[76]	30	38	NR	12	56	6	Stabilisation/motor control (n=15); 3/wk	McKenzie (n=15); 3wk	-	INT1=1.5(1.4) INT2=2.7 (1.4)	INT1=12.3(8.9) INT2=22.9(13.5)	-	-	-	-
Arampatzis et al. 2017[78]	40	32	23	12	59	13	Other (n=20); 2/wk	-	True (n=20)	INT1=3.0(1.9) CON=3.9(1.9)	-	-	-	-	-
Areeudomwong et al. 2016[78]	42	36	11	42	59	4	Resistance (n=21); 5/wk	-	True (n=21)	INT1=1.5(1.2) CON=3.1(1.5)	INT1=1.7(0.6) CON=3.9(1.3)	-	-	-	INT1=49.9(5.5) CON=50.0(8.0)
Bae et al. 2018[79]	36	33	20	60	71	4	Stabilisation/motor control (n=18); 3/wk	Resistance (n=18); 3/wk		INT1=2.1(0.9) INT2=1.5(1.3)	INT1=12.0(10.1) INT2=8.0(7.7)	-	-	-	-
Brooks et al. 2012[33]	64	36	24	537	60	8	Pilates (n=32); 3/wk	Aerobic (n=32); 3/wk	-	INT1=2.2(1.7) INT2=3.4(2.4)	INT1=15.8(13.3) INT2=20.3(16.2)	-	-	-	-
Byoung-Hwan et al. 2015[80]	30	46	30	12	33	12	^Stabilisation/motor control (n=20); 5/wk	-	True (n=10)	INT1=4.9(1.2) CON=5.4(0.9)	INT1=12.1(5.4) CON=14.5(4.7)	INT1=97.9(30.4) CON=103.7(27.4)	-	-	-
Cai et al. 2017[81]	84	27	42	65	65	8	^Resistance (n=56); 2/wk	Stabilisation/motor control (n=28); 2/wk	-	INT1=0.6(0.7) INT2=0.7(0.6)	INT1=9.0(0.8) INT2=8.8(0.8)	-	-	-	-
Chae-Woo et al. 2014[82]	40	35	NR	12	21	6	Other (n=20); 4/wk	Stabilisation/motor control (n=20); 4/wk	-	INT1=1.5(0.7) INT2=2.1(0.9)	-	-	-	-	-
Chatzitheodorou et al. 2007[83]	20	42	11	26	31	12	Aerobic (n=10); 3/wk	-	Therapist hands-on (n=10)	INT1=32.3(7.9) CON=53.3(10.0)	INT1=9.6(2.6) CON=14.3(3.6)	-	-	-	INT1=16.2(3.4) CON=21.9(4.5)
Cho et al. 2014[84]	30	37	11	61	60	4	Stabilisation/motor control (n=15); 3/wk	-	Therapist hands-off (n=15)	INT1=21.5(5.7) CON=37.6(10.5)	-	-	-	-	-
Costa et al. 2009[85]	154	54	61	332	33	8	Stabilisation/motor control (n=77); 1.5/wk	-	Therapist hands-on (n=77); 1.5/wk	INT1=4.6(2.8) CON=5.6(2.6)	INT1=9.6(6.5) CON=11.9(5.9)	-	-	-	-
Cruz-Diaz et al. 2017[86]	98	36	35	12	52	12	^Pilates (n=68); 2/wk	-	True (n=30)	INT1=1.9(1.6) CON=5.0(1.3)	INT1=5.6(5.1) CON=10.4(5.6)	-	-	-	INT1=31.9(3.4) CON=34.1(4.0)
Cruz-Diaz et al. 2018[34]	64	37	23	13	NR	12	Pilates (n=32); 2/wk	-	True (n=32)	-	-	-	-	-	-
del Pozo-Cruz et al. 2011[87]	49	59	13	26	61	12	Other (n=25); 2/wk	-	True (n=24)	INT1=29.0(13.0) CON=39.7(14.8)	INT1=20.3(10.9) CON=29.2(15.6)	-	-	-	-

Dundar et al. 2009[88]	65	35	34	39	52	4	Water-based (n=32); 5/wk	Multimodal (n=33); 5/wk	-	INT1=1.7(1.1) INT2=1.9(1.3)	INT1=20.8(7.6) INT2=29.9(8.5)	-	-	-	INT1=22.7(5.3) INT2=22.1(3.6)
Ferreira et al. 2007[25]	240	54	75	226	37	8	Multimodal (n=80); 1.5/wk	Stabilisation/motor control (n=80); 1.5/wk	Therapist hands-on (n=80); 1.5/wk	INT1=4.8(2.4) INT2=4.0(2.5) CON=4.1(2.6)	INT1=9.7(6.3) INT2=7.9(5.7) CON=7.9(6.0)	-	-	-	-
Franca et al. 2010[90]	30	42	8	87	38	6	Stabilisation/motor control (n=15); 2/wk	Other (n=15); 2/wk	-	INT1=0.1(0.2) INT2=2.9(1.5)	INT1=1.8(1.3) INT2,8.4(3.1)	-	-	-	-
Franca et al. 2012[89]	30	42	NR	89	39	6	Stabilisation/motor control (n=15); 2/wk	Stretching (n=15); 2/wk	-	INT1=0.1(0.2) INT2=3.2(1.2)	INT1=1.8(1.3) INT2=9.2(4.1)	-	-	-	-
Gak et al. 2015[91]	30	34	17	12	50	6	Stabilisation/motor control (n=15); 3/wk	Multimodal (n=15); 3/wk	-	INT1=1.6(0.6) INT2=2.1(8.9)	-	-	-	-	-
Groessl et al. 2017[35]	150	53	109	26	54	12	Yoga (n=75); 2/wk	-	True (n=75)	INT1=4.1(1.9) CON=4.6(2.2)	INT1=7.3(6.0) CON=8.3(5.8)	-	-	-	-
Gur et al. 2003[92]	50	36	15	65	37	4	Resistance (n=25); 10/wk	-	Therapist hands-on (n=25); 5/wk	INT1=2.9(1.3) CON=1.9(1.4)	INT1=13.6(7.2) CON=16.7(7.6)	-	-	-	-
Harts et al. 2009[93]	65	42	65	168	NR	8	^Resistance (n=44); 1.25/wk	-	True (n=21)	-	INT1=4.7(5.1) CON=5.2(3.9)	INT=224.4(66.9) CON=208.0(62.0)	-	-	INT1=90.6(10.5) CON=81.0(21.0)
Hasanpour-Dehkordi et al. 2017[94]	36	48	36	13	65	12	McKenzie (n=12); 3/wk	Pilates (n=12); 3/wk	True (n=12)	INT1=19.3(7.5) INT2=13.3(6.4) CON=36.0(13.8)	-	-	-	-	-
Heidari et al. 2018[95]	32	35	0	12	NR	8	^Stabilisation/motor control (n=22); 1/wk	-	True (n=10)	-	INT1=15.0(12.9) CON=40.1(11.5)	-	-	-	-
Hosseinifar et al. 2013[97]	30	38	NR	13	56	6	Stabilisation/motor control (n=15); 3/wk	McKenzie (n=15); 3wk	-	INT1=1.5(1.4) INT2=2.7(1.4)	INT1=16.7(8.6) INT2=35.0(20.6)	-	-	-	-
Hosseinifar et al. 2018[96]	20	32	NR	13	48	6	Other (n=10); 4/wk	Stabilisation/motor control (n=10); 4/wk	-	INT1=4.3(2.1) INT2=1.3(0.8)	INT1=22/7(14.5) INT2=5.3(3.9)	-	-	-	-
Igsoo et al. 2015[98]	30	46	9	12	NR	6	Stabilisation/motor control (n=15); 3/wk	-	Therapist hands-on (n=15); 3/wk	-	INT1=18.4(8.3) CON=26.2(11.9)	-	-	-	-
Kankaanpaa et al. 1999[99]	54	40	35	424	48	12	Multimodal (n=30); 2/wk	-	Therapist hands-on (n=24), 0.3/wk	INT1=35.5(26.3) CON=43.8(25.0)	INT1=10.8(11.2) CON=10.9(10.7)	-	-	-	-
Keane 2017[37]	29	46	5	13	48	12	Stretching (n=10); 2/wk	Water-based (n=10); 2/wk	True (n=9)	INT1=3.6(2.0) INT2=2.1(2.3) CON=4.4(3.2)	INT1=26.8(16.4) INT2=29.2(19.3) CON=39.2(19.9)	-	-	-	INT1=31.8(6.8) INT2=31.1(6.5) CON=42.0(8.1)
Kell et al. 2009[100]	27	37	16	120	49	16	Resistance (n=9); 3/wk	Aerobic (n=9); 3/wk	True (n=9)	INT1=3.3(0.5) INT2=4.8(0.8) CON=4.8(0.7)	INT1=24.2(2.0) INT2=35.9(2.5) CON=39.1(3.3)	-	INT1=95.0(38.5) INT2=75.7(14.8) CON=70.9(18.8)	-	INT1=50.6(3.0) INT2=45.8(1.4) CON=41.6(2.3)
Kell et al. 2011[101]	240	43	157	162	41	13	^Resistance (n=180); 3/wk	-	Therapist hands-on (n=60)	INT1=4.7(1.0) CON=5.7(0.9)	INT1=30.2(10.9) CON=39.1(10.1)	-	-	-	INT1=54.5(8.1) CON=46.0(8.2)
Kim et al. 2018[102]	30	40	17	12	35	6	Multimodal (n=15); 5/wk	-	Therapist hands-off	INT1=2.4(0.5) CON=4.6(0.9)	INT1=21.3(3.4) CON=28.9(4.6)	-	-	-	-

								(n=15); 5/wk							
Kim et al. 2019[103]	48	27	NR	347	53	8	Stabilisation/motor control (n=24); 2/wk	Other (n=24); 2/wk	-	INT1=1.6(1.6) INT2=1.3(0.9)	INT1=14.8(9.4) INT2=11.6(9.0)	-	-	-	INT1=11.1(9.1) INT2=8.8(5.9)
Kim Jin et al. 2015[38]	48	NR	48	26	59	6	Multimodal (n=24); 3/wk	Stabilisation/motor control (n=24); 3/wk	-	INT1=3.5(1.1) INT2=3.4(1.3) CON=2.0(0.8)	-	-	-	-	-
Kliziene et al. 2017[27]	54	46	0	13	67	16	Pilates (n=27); 2/wk	-	True (n=27)	INT1=2.0(0.8) CON=3.3(0.8)	-	-	INT1=300.6(112.6) CON=190.9(92.3)	-	-
Ko et al. 2018[104]	29	43	NR	12	47	12	^Stabilisation/motor control (n=20); 3/wk	-	True (n=9)	INT1=3.9(0.8) CON=5.1(1.8)	-	-	-	-	-
Kofotolis et al. 2006[28]	86	40	0	33	79	4	^Stabilisation/motor control (n=56); 5/wk	-	True (n=30)	INT1=1.4(0.5) CON=1.6(0.4)	INT1=12.4(3.1) CON=15.4(3.5)	-	INT1=124.9(15.6) CON=81.3(9.4)	-	-
Kofotolis et al. 2008[106]	67	41	0	34	78	4	Stabilisation/motor control (n=23); 5/wk	-	^Therapist hands-on (n=44); 5/wk	INT1=1.6(0.4) CON=2.1(0.4)	INT1=12.6(3.1) CON=17.1(2.5)	-	INT1=137.0(6.9) CON=77.0(6.5)	-	-
Kofotolis et al. 2016[105]	101	41	0	12	38	8	Stabilisation/motor control (n=36); 3/wk	Pilates (n=37); 3/wk	True (n=28)	INT1=71.3(11.3) INT2=79.1(7.9) CON=41.6(16.1)	INT1=4.9(1.6) INT2=3.3(1.8) CON=10.1(4.6)	-	-	-	INT1=73.3(14.1) INT2=76.7(9.6) CON=54.8(13.9)
Lawand et al. 2015[107]	61	49	14	156	36	12	Stretching (n=31); 1/wk	-	Therapist hands-off (n=30)	INT1=3.1(2.3) CON=6.1(2.2)	INT1=7.2(5.2) CON=10.9(5.5)	-	-	-	INT1=72.7(18.9) CON=58.8(17.5)
Liu et al. 2019[108]	43	59	11	13	43	12	Stabilisation/motor control (n=15); 3/wk	Other (n=15); 3/wk	True (n=13)	INT1=4.3(0.8) INT2=3.5(1.0) CON=5.9(0.8)	-	-	-	-	-
Macedo et al. 2012[109]	172	49	70	380	39	8	Stabilisation/motor control (n=86); 1.5/wk	Multimodal (n=86); 1.5/wk	-	INT1=4.1(2.5) INT2=4.1(2.5)	INT1=7.5(6.4) INT2=8.0(6.5)	-	-	-	INT1=56.0(10.9) INT2=55.8(13.0)
Machado et al. 2007 [32]	33	44	10	297	35	9	Multimodal (n=17); 2/wk	-	Therapist hands-off (n=16); 2/wk	INT1=4.6(4.0) CON=5.6(2.9)	INT1=14.0(6.5) CON=12.0(5.9)	-	-	-	INT1=21.7(19.2) CON=21.7(13.0)
Masharawi et al. 2013[110]	40	53	0	12	60	4	Stabilisation/motor control (n=20); 2/wk	-	True (n=20)	INT1=1.7(0.8) CON=3.9(1.5)	INT1=9.3(5.8) CON=14.4(5.8)	-	-	-	-
Mazloum et al. 2018[111]	47	40	NR	138	32	6	Pilates (n=16); 3/wk	McKenzie (n=15); 3/wk	True (n=16)	INT1=3.4(1.0) INT2=5.3(1.3) CON=6.6(1.3)	INT1=22.7(3.1) INT2=23.2(7.6) CON=26.6(4.9)	-	-	-	-
Mbada et al. 2014[40]	67	52	NR	13	34	8	McKenzie (n=25); 3/wk	^Multimodal (n=42); 3/wk	-	-	-	-	-	-	-
McIlveen et al. 1998[41]	95	58	38	534	66	4	Water-based (n=50); 2/wk	-	True (n=45)	INT1=1.5(0.8) CON=1.6(0.8)	INT1=20.8(12.2) CON=22.0(13.2)	-	-	-	-
Mostagi et al. 2015[23]	22	35	4	12	76	8	Pilates (n=11); 2/wk	Multimodal (n=11); 2/wk	-	INT1=1.3(3.0) INT2=0.9(1.4)	INT1=15.5(10.3) INT2=11.7(9.0)	-	INT1=67.3(18.7) INT2=48.7(37.3)	-	-
Muharram et al. 2011[112]	164	44	91	159	47	12	Other (n=82); 6/wk	-	True (n=82)	INT1=41.2(72.1) CON=53.1(76.7)	INT1=49.1(41.6) CON=45.1(35.1)	-	-	-	INT1=51.4(40.7) CON=48.5(37.9)
Murtezani et al. 2011[113]	101	51	52	13	39	12	Aerobic (n=50); 3/wk	-	Therapist hands-on (n=51); 3/wk	INT1=6.0(2.7) CON=2.0(1.7)	INT1=15.8(12.7) CON=30.6(16.9)	-	-	-	INT1=14.0(6.7) CON=21.2(4.8)

Nambi et al. 2014[114]	60	44	28	13	33	4	Yoga (n=30); 6/wk	Multimodal (n=30); 3/wk	-	INT1=3.8(1.0) INT2=5.3(0.8)	INT1=7.7(2.3) INT2=12.0(2.7)	-	-	-	INT1=8.4(2.1) INT2=10.5(3.0)
Noormohammad-pour et al. 2018[115]	20	42	NR	75	63	8	Stabilisation/motor control (n=10); 1/wk	-	True (n=10)	INT1=4.0(5.4) CON=25.2(17.7)	INT1=1.7(2.4) CON=7.9(3.3)	-	-	-	INT1=80.4(15.7) CON=64.4(11.8)
Oh et al. 2014[116]	37	32	37	29	57	8	^Other (n=28); 5/wk	-	True (n=9)	INT1=1.9(0.6) CON=3.8(0.9)	-	INT1=195.5(16.6) CON=176.2(14.1)	-	-	-
Palekar et al. 2015[43]	52	37	52	13	54	6	Stabilisation/motor control (n=26); 4/wk	Other (n=26); 4/wk	-	-	-	-	-	-	-
Patti et al. 2016[29]	38	42	38	52	NR	14	Pilates (n=19); 3/wk	-	Therapist hands-off (n=9)	-	INT1=6.6(4.0) CON=8.3(7.9)	-	-	-	-
Puppin et al. 2011[117]	55	38	25	12	54	8	Stretching (n=30); 2/wk	-	True (n=25)	INT1=1.5(1.6) CON=3.8(2.4)	INT1=13.6(12.3) CON=25.1(14.2)	-	-	-	-
Saggini et al. 2004[45]	40	44	15	52	NR	7	Water-based (n=20); 3/wk	Multimodal (n=20); 3/wk	-	-	-	-	-	-	-
Saper et al. 2017[46]	191	46	77	12	46	12	Yoga (n=127); 1/wk	-	Therapist hands-off (n=64)	-	-	-	-	-	-
Sang Wk et al. 2015[118]	69	56	69	13	42	6	^Multimodal (n=36); 3/wk	^Stabilisation/motor control (n=37); 3/wk	-	INT1=40.6(8.9) INT2=35.4(10.0)	INT1=18.1(9.3) INT2=19.8(10.9)	-	-	-	-
Schinhan et al. 2016[119]	30	28	30	293	64	8	Other (n=15), 1.25/wk	-	Therapist hands-off (n=15)	INT1=1.2(1.3) CON=2.9(1.8)	INT1=7.6(7.1) CON=10.8(8.4)	-	-	-	-
Sedaghati et al. 2017[120]	68	25	0	12	NR		Water-based (n=17); 3/wk	McKenzie (n=17); 3/wk	*Other (n=17); 3/wk True (n=17)	-	INT1=21.2(3.1) INT2=25.5(3.3) INT3=23.0(3.0) CON=27.5(3.0)	-	INT1=80.5(15.0) INT2=84.1(12.3) INT3=76.5(10.2) CON=58.2(10.7)	-	-
Segal-Snir et al. 2016[158]	35	56	0	12	26	4	Stretching (n=20), 2/wk	-	True (n=15)	INT1=7.0(1.9) CON=7.0(3.0)	INT1=11.0(6.4) CON=14.0(6.3)	-	-	-	-
Se-Hun et al. 2015[122]	30	34	30	13	NR	4	Stabilisation/motor control (n=15); 3/wk	Other (n=15); 3/wk	-	-	INT1=80.7(11.9) INT2=83.2(13.2)	-	-	-	-
Seong Hun et al. 2016[123]	40	70	0	13	31	8	Stabilisation/motor control (n=20); 3/wk	-	Therapist hands-off (n=20); 3/wk	INT1=5.1(0.8) CON=5.0(0.6)	-	-	-	-	-
Seong-Dae et al. 2016[124]	30	40	30	13	NR	4	Stabilisation/motor control (n=15); 5/wk	Multimodal (n=15); 5/wk	-	-	INT1=23.9(7.6) INT2=23.0(6.3)	-	-	-	-
Shahrjerdi et al. 2014[30]	30	38	0	68	44	8	Pilates (n=15); 3/wk	-	Therapist hands-on (n=15)	-	-	-	-	-	-
Shaughnessy et al. 2004[125]	41	45	14	12	32	10	Stabilisation/motor control (n=20); 1/wk	-	True (n=21)	INT1=46.0(12.0) CON=28.0(14.0)	INT1=26.0(14.0) CON=44.0(16.0)	-	-	-	INT1=72.0(13.0) CON=60.0(17.0)
Shen et al. 2009[47]	30	46	30	26	60	4	McKenzie (n=15)	-	Therapist hands-on (n=15)	-	-	-	-	-	-

Sherman et al. 2011[126]	228	48	82	563	NR	12	Yoga (n=92); 1/wk	Stretching (n=91); 1/wk	Therapist hands-off (n=45)	-	INT1=6.5(10.8) INT2=5.2(8.0) CON=7.0(10.6)	-	-	-	-
Shirado et al. 2010[24]	201	42	89	13	64	8	Multimodal (n=103); 7/wk	-	Therapist hands-off (n=98)	INT1=1.6(1.6) CON=2.3(2.2)	INT1=1.0(2.3) CON=1.7(3.0)	-	-	-	-
Shnayderman et al. 2013[127]	52	45	11	13	NR	6	Resistance (n=26); 2/wk	Aerobic (n=26); 2/wk	-	-	INT1=19.1(12.8) INT2=22.6(14.4)	-	INT1=6.7(4.4) INT2=5.6(3.4)	-	INT1=8.0(5.3) INT2=8.8(6.7)
Soares et al. 2016[31]	20	45	20	13	46	5	Other (n=10); 2/wk	-	True (n=10)	INT1=0.6(0.4) CON=4.9(1.2)	-	-	-	-	-
Steele et al. 2013[49]	24	44	24	675	62	12	^Stabilisation/motor control (n=17); 1/wk	-	True (n=7)	INT1=20.1(18.6) CON=33.3(22.5)	INT1=17.5(11.5) CON=25.4(11.2)	INT1=250.0(112.5) CON=189.6(61.8)	-	-	-
Ui-Cheol et al. 2015[50]	40	41	0	12	NR	6	Multimodal (n=20); 3/wk	Stabilisation/motor control (n=20); 3/wk	-	-	-	-	-	-	-
Ulger et al. 2017[128]	113	42	46	12	39	6	Stabilisation/motor control (n=57); 3/wk	-	Therapist hands-on (n=56); 3/wk	INT1=2.1(1.6) CON=2.1(1.2)	INT1=23.5(14.2) CON=18.9(13.4)	-	-	-	INT1=57.1(14.1) CON=61.8(17.8)
Unsgaard-Tondel et al. 2010[129]	109	40	33	364	66	8	^Stabilisation/motor control (n=72); 1/wk	Multimodal (n=37); 1/wk	-	INT1=2.1(1.9) INT2=2.7(2.3)	INT1=14.5(9.4) INT2=17.8(9.6)	-	-	-	INT1=7.1(4.8) INT2=8.6(5.1)
Valenza et al. 2017[51]	54	39	13	63	48	8	Pilates (n=27); 2/wk	-	Therapist hands-off (n=27)	-	-	-	-	-	-
Vincent et al. 2014[130]	49	68	17	26	52	17	Resistance (n=35); 3/wk	-	Therapist hands-on (n=14)	INT1=2.9(2.2) CON=4.6(2.4)	-	-	INT1=172.7(82.5) CON=161.0(63.0)	-	-
Wajswelner et al. 2012[131]	87	49	39	725	52	6	Pilates (n=44); 2/wk	Multimodal (n=43); 2/wk	-	INT1=2.8(1.6) INT2=3.2(2.1)	INT1=74.6(25.0) INT2=77.4(18.1)	-	-	-	INT1=76.3(21.8) INT2=82.6(8.3)
Williams et al. 2005[133]	44	48	14	584	72	16	Yoga (n=20); 6/wk	-	Therapist hands-off (n=24)	INT1=1.0(1.1) CON=2.1(2.3)	INT1=3.3(5.1) CON=12.8(11.9)	-	-	-	-
Williams et al. 2009[132]	90	48	21	274	58	24	Yoga (n=43); 7/wk	-	Therapist hands-off (n=47)	INT1=22.9(17.4) CON=36.9(19.8)	INT1=16.9(10.3) CON=20.8(10.3)	-	-	-	INT1=4.4(4.3) CON=7.8(6.4)
Yi et al. 2008[134]	45	52	9	321	49	8	Stabilisation/motor control (n=14); 3/wk	Resistance (n=17); 2/wk	*Multimodal (n=14); 2/wk	INT1=14.6(14.5) INT2=17.5(16.3) INT3=7.6(7.2)	INT1=14.1(8.9) INT2=16.6(11.7) INT3=12.3(12.8)	INT1=56.6(37.9) INT2=51.9(26.1) INT3=54.8(28.4)	-	-	-
Yoo et al. 2014[135]	47	21	47	39	70	8	Other (n=24); 3/wk	-	True (n=23)	INT1=2.2(2.2) CON=1.0(0.0)	-	INT1=183.5(58.9) CON=176.2(43.4)	-	-	-
Young-Dae et al. 2012[136]	30	20	NR	12	55	4	Stretching (n=15); 3/wk	Stabilisation/motor control (n=15); 3/wk	-	INT1=1.8(0.6) INT2=1.3(0.5)	-	INT1=506.3(88.6) INT2=685.1(350.2)	-	-	-
Yozbatiran et al. 2004[137]	30	39	7	13	47	4	Multimodal (n=15); 3/wk	Water-based (n=15); 3/wk	-	INT1=2.5(1.6) INT2=1.9(1.7)	INT1=21.1(12.7) INT2=20.7(13.5)	-	INT1=80.5(50.5) INT2=82.9(56.2)	-	-
Zadro et al. 2019[138]	60	68	29	13	50	8	Multimodal (n=30); 3/wk	-	True (n=30)	INT1=3.8(2.4) CON=4.4(2.3)	INT1=4.9(4.5) CON=6.4(4.4)	-	-	-	INT1=32.3(7.1) CON=35.9(5.8)
Zeada 2012[159]	20	25	20	73	NR	8	Pilates (n=10); 4/wk	-	True (n=10)	-	INT1=4.7(2.8) CON=6.4(1.3)	-	INT1=52.3(9.6) CON=42.6(4.4)	-	-
Zou et al. 2019[140]	43	59	11	12	43	12	Other (n=15); 3/wk	Stabilisation/motor control (n=15); 3/wk	True (n=13)	INT1=3.5(1.0) INT2=4.3(0.8) CON=5.9(0.8)	-	-	-	-	-

Baseline pain intensity was normalised to a 100-point scale. * third exercise training intervention, rather than non-exercise training control, ^ pooled data. NR: not reported.

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Supplementary Table 4. Risk of bias assessment of included studies (n=89) examining the efficacy of exercise training in patients with non-specific chronic low back pain.

Study	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of patients and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective outcome reporting (reporting bias)	Any other bias
Akbari et al. 2008[75]	Low	Unclear	High	Low	High	Low	High
Ali et al. 2013[76]	Unclear	Unclear	High	Low	Unclear	Low	Low
Arampatzis et al. 2017[77]	Low	Unclear	High	Unclear	High	Low	Low
Areeudomwong et al. 2016[78]	Low	Low	High	Low	Low	Low	Low
Bae et al. 2018[79]	Low	Unclear	High	Unclear	High	Low	Low
Brooks et al. 2012[33]	Unclear	Unclear	High	Low	High	Low	Low
Byoung-Hwan et al. 2015[80]	Unclear	Unclear	High	Unclear	Unclear	Low	Low
Cai et al. 2017[81]	Low	Unclear	High	Low	Low	Low	Low
Chae-Woo et al. 2014[82]	Unclear	Unclear	High	Unclear	Unclear	Low	Low
Chatzitheodorou et al. 2007[83]	Low	High	High	Unclear	Unclear	Low	Low
Cho et al. 2014[84]	Unclear	Unclear	High	Unclear	Unclear	Low	Low
Costa et al. 2009[85]	Low	Low	High	Unclear	Low	Low	Low
Cruz-Diaz et al. 2017[86]	Low	Low	High	Low	High	Low	Low
Cruz-Diaz et al. 2018[34]	Low	Unclear	High	Unclear	Low	Low	Low
del Pozo-Cruz et al. 2011[87]	Low	Unclear	High	Low	Low	Low	Low
Dundar et al. 2009[88]	High	High	High	Low	Low	High	Low
Ferreira et al. 2007[25]	Low	Low	High	Low	Low	Low	Low
Franca et al. 2010[90]	Low	Low	High	Low	Unclear	Low	Low
Franca et al. 2012[89]	Low	Low	High	Low	Low	Low	Low
Gak et al. 2015[91]	Unclear	Unclear	High	Unclear	Unclear	Low	Low
Groessl et al. 2017[35]	Low	Unclear	High	Unclear	Low	Low	Low
Gur et al. 2003[92]	Unclear	Unclear	High	Low	Unclear	Low	Low
Harts et al. 2009[93]	Low	Low	High	Low	High	Low	Low
Hasanpour-Dehkordi et al. 2017[94]	Low	Unclear	High	Low	High	Low	Low
Heidari et al. 2018[95]	Low	Unclear	High	Unclear	Unclear	Unclear	Low
Hosseinifar et al. 2013[97]	Low	Unclear	High	Low	High	High	Low
Hosseinifar et al. 2018[96]	High	High	High	Unclear	Unclear	Low	Low
Igsoo et al. 2015[98]	Unclear	Unclear	High	Unclear	Unclear	Low	Low

Kankaanpaa et al. 1999[99]	Unclear	Low	High	Unclear	High	Low	Low
Keane 2017[37]	Unclear	Low	High	Unclear	Low	High	Low
Kell et al. 2009[100]	Unclear	Unclear	High	Unclear	High	Low	Low
Kell et al. 2011[101]	Unclear	Unclear	High	Unclear	High	High	Low
Kim et al. 2018[102]	Low	Unclear	High	Unclear	Unclear	Low	Low
Kim et al. 2019[103]	Low	Unclear	High	Unclear	High	Low	Low
Kim Jin et al. 2015[38]	Unclear	Unclear	High	Unclear	Unclear	Low	Low
Kliziene et al. 2017[27]	Unclear	Unclear	High	Unclear	Unclear	High	Low
Ko et al. 2018[104]	Low	Unclear	High	Unclear	Unclear	Low	Low
Kofotolis et al. 2006[28]	Unclear	Unclear	High	Unclear	High	Low	Low
Kofotolis et al. 2008[106]	High	High	High	Unclear	High	Low	Low
Kofotolis et al. 2016[105]	Low	Low	High	Unclear	High	Low	Low
Lawand et al. 2015[107]	Low	Low	High	Low	Low	Low	Low
Liu et al. 2019[108]	Low	Unclear	High	Low	Low	Low	Low
Macedo et al. 2012[109]	Low	Low	High	Low	Low	Low	Low
Machado et al. 2007 [32]	Low	Low	High	Low	High	High	High
Masharawi et al. 2013[110]	Low	Low	High	Low	Low	Low	Low
Mazloum et al. 2018[111]	Low	Unclear	High	Low	High	Low	Low
Mbada et al. 2014[40]	High	High	High	Low	High	High	Low
McIlveen et al. 1998[41]	Low	Low	High	Unclear	High	High	Low
Mostagi et al. 2015[23]	Low	Low	High	Low	High	Low	Low
Muharram et al. 2011[112]	Unclear	Unclear	High	Unclear	High	Low	Low
Murtezani et al. 2011[113]	Low	Unclear	High	High	Low	Low	Low
Nambi et al. 2014[114]	Low	Unclear	High	Low	Low	Low	Low
Noormohammadpour et al. 2018[115]	Low	Low	High	Unclear	High	Low	Low
Oh et al. 2014[116]	Unclear	Unclear	High	Unclear	High	Low	Low
Palekar et al. 2015[43]	Low	Unclear	High	Unclear	Low	High	Low
Patti et al. 2016[29]	Low	Low	High	Low	Low	Low	High
Puppin et al. 2011[117]	High	High	High	Unclear	High	Low	Low
Saggini et al. 2004[45]	Unclear	Unclear	High	Unclear	Unclear	High	Low
Saper et al. 2017[46]	Low	Unclear	High	Low	High	Low	Low
Sang Wk et al. 2015[118]	Unclear	Unclear	High	Unclear	High	Low	Low
Schinhan et al. 2016[119]	Low	Unclear	High	Low	Unclear	High	Low
Sedaghati et al. 2017[120]	Low	Unclear	High	Unclear	Unclear	Unclear	Low
Segal-Snir et al. 2016[158]	Low	Low	High	Low	High	High	Low
Se-Hun et al. 2015[122]	Unclear	Unclear	High	Unclear	Unclear	High	Low
Seong Hun et al. 2016[123]	Unclear	Unclear	High	Unclear	Unclear	Low	Low

Seong-Dae et al. 2016[124]	Unclear	Unclear	High	Unclear	Unclear	Low	Low
Shahrjerdi et al. 2014[30]	Unclear	Unclear	High	Unclear	High	Low	Low
Shaughnessy et al. 2004[125]	Low	Unclear	High	Unclear	High	Low	Low
Shen et al. 2009[47]	Unclear	Unclear	High	Unclear	Low	High	Low
Sherman et al. 2011[126]	Low	Low	High	Low	Low	Low	Low
Shirado et al. 2010[24]	Low	High	High	Low	High	High	Low
Shnayderman et al. 2013[127]	Low	Low	High	Low	Low	High	Low
Soares et al. 2016[31]	Unclear	Unclear	High	Unclear	Unclear	Low	Low
Steele et al. 2013[49]	Low	Unclear	High	Unclear	Low	High	High
Ui-Cheol et al. 2015[50]	Unclear	Unclear	High	Unclear	Unclear	High	Low
Ulger et al. 2017[128]	Low	Unclear	High	Low	High	Low	Low
Unsgaard-Tondel et al. 2010[129]	Low	Low	High	High	Low	Low	Low
Valenza et al. 2017[51]	Low	Low	High	Low	Low	High	Low
Vincent et al. 2014[130]	Low	Low	High	Unclear	High	Low	Low
Wajswelner et al. 2012[131]	Low	Low	High	Low	Low	Low	Low
Williams et al. 2005[133]	Low	Unclear	High	Low	Low	High	High
Williams et al. 2009[132]	Low	Low	High	Low	High	Low	Low
Yi et al. 2008[134]	Unclear	Unclear	High	Unclear	Unclear	High	Low
Yoo et al. 2014[135]	Unclear	Unclear	High	Unclear	Low	Low	High
Young-Dae et al. 2012[136]	Unclear	Unclear	High	Unclear	Unclear	Low	Low
Yozbatiran et al. 2004[137]	Unclear	Unclear	High	Unclear	Unclear	Low	Low
Zadro et al. 2019[138]	Low	Unclear	High	Unclear	Low	Low	Low
Zeada 2012[159]	Unclear	Unclear	High	Unclear	Low	Low	Low
Zou et al. 2019[140]	Low	Unclear	High	Low	Low	Low	Low

See Figure 2 for summary information. It is not possible to truly blind patients to treatment allocation in exercise training trials; thus, this was not included in the overall risk of bias assessment of each study.

Supplementary Table 5: Side-split analyses from network meta-analysis of studies examining the efficacy of exercise training in patients with non-specific chronic low back pain.

Comparison		Beta coefficients (standard error)			Significance of difference in estimates (P-value)
		Direct comparison	Indirect comparison via network	Difference in estimates	
Pain					
CON: True control	INT: Pilates	-2.32 (0.42)	-1.01 (0.57)	-1.32 (0.70)	0.061
CON: True control	INT: Resistance	-1.54 (0.70)	-0.99 (0.43)	-0.55 (0.82)	0.503
CON: True control	INT: Stabilisation	-1.31 (0.31)	-1.32 (0.33)	0.01 (0.45)	0.989
CON: True control	INT: Stretching	-1.14 (0.51)	0.11 (0.60)	-1.25 (0.79)	0.113
CON: True control	INT: Yoga	-0.24 (0.89)	-1.36 (0.63)	1.12 (1.09)	0.308
INT: Aerobic	CON: True control	0.00 (0.98)	1.94 (0.60)	-1.94 (1.15)	0.093
INT: Aerobic	CON: Hands on	1.95 (0.66)	-0.62 (0.70)	2.57 (0.96)	0.007
INT: Aerobic	INT: Pilates	-0.57 (0.92)	-0.39 (0.69)	-0.18 (1.15)	0.873
INT: Aerobic	INT: Resistance	-2.17 (1.00)	1.21 (0.61)	-3.38 (1.18)	0.004
INT: Other	CON: True control	1.13 (0.36)	0.91 (0.59)	0.22 (0.69)	0.750
INT: Other	CON: Hands off	1.05 (0.97)	1.19 (0.53)	-0.14 (1.10)	0.902
INT: Other	INT: Stabilisation	0.11 (0.48)	-0.55 (0.44)	0.66 (0.65)	0.313
CON: Hands off	INT: Multimodal	-1.06 (0.55)	-1.11 (0.54)	0.05 (0.77)	0.952
CON: Hands off	INT: Stabilisation	-1.85 (0.99)	-1.32 (0.43)	-0.53 (1.08)	0.622
CON: Hands off	INT: Stretching	-1.32 (0.92)	-0.47 (0.58)	-0.84 (1.09)	0.440
CON: Hands off	INT: Yoga	-0.66 (0.65)	-1.64 (0.76)	0.97 (1.00)	0.331
CON: Hands on	INT: Multimodal	-0.01 (0.65)	-0.44 (0.43)	0.43 (0.77)	0.583
CON: Hands on	INT: Resistance	-0.35 (0.53)	-0.54 (0.50)	0.19 (0.73)	0.792
CON: Hands on	INT: Stabilisation	-0.30 (0.40)	-1.08 (0.48)	0.78 (0.63)	0.214
INT: Water-based	CON: True control	0.47 (0.67)	1.37 (0.69)	-0.90 (0.96)	0.346
INT: Water-based	INT: Multimodal	0.26 (0.66)	-0.46 (0.69)	0.71 (0.96)	0.458
INT: Water-based	INT: Stretching	0.58 (1.00)	0.15 (0.69)	0.43 (1.21)	0.721
INT: McKenzie	CON: True control	1.35 (0.69)	0.33 (0.65)	1.02 (0.95)	0.285
INT: McKenzie	INT: Pilates	-1.06 (0.69)	-1.04 (0.76)	-0.02 (1.03)	0.981
INT: McKenzie	INT: Stabilisation	-0.83 (0.68)	-0.20 (0.64)	-0.63 (0.94)	0.498
INT: Multimodal	CON: True control	0.25 (0.92)	1.07 (0.30)	-0.82 (0.97)	0.396
INT: Multimodal	INT: Pilates	-0.04 (0.65)	-1.27 (0.45)	1.23 (0.79)	0.121
INT: Multimodal	INT: Resistance	0.72 (0.95)	-0.31 (0.42)	1.03 (1.04)	0.323

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INT: Multimodal	INT: Stabilisation	-0.14 (0.31)	-0.62 (0.40)	0.48 (0.50)	0.340
INT: Multimodal	INT: Yoga	-1.63 (0.90)	0.71 (0.59)	-2.34 (1.07)	0.029
INT: Pilates	INT: Stabilisation	0.64 (0.92)	0.53 (0.40)	0.11 (1.00)	0.917
INT: Resistance	INT: Stabilisation	-0.41 (0.48)	0.06 (0.47)	-0.47 (0.67)	0.484
INT: Stabilisation	INT: Stretching	2.03 (0.70)	0.08 (0.47)	1.95 (0.84)	0.021
Function					
CON: True control	INT: Pilates	-1.21 (0.39)	-0.56 (0.43)	-0.65 (0.58)	0.258
CON: True control	INT: Resistance	-1.76 (0.51)	-0.80 (0.37)	-0.96 (0.63)	0.125
CON: True control	INT: Stabilisation	-1.21 (0.28)	-1.05 (0.29)	-0.16 (0.40)	0.694
CON: True control	INT: Stretching	-0.66 (0.46)	-0.42 (0.48)	-0.24 (0.67)	0.718
CON: True control	INT: Yoga	-0.17 (0.71)	-1.20 (0.44)	1.04 (0.84)	0.216
INT: Aerobic	CON: True control	0.67 (0.86)	0.90 (0.45)	-0.23 (0.97)	0.812
INT: Aerobic	CON: Hands on	1.16 (0.55)	-0.33 (0.51)	1.50 (0.75)	0.045
INT: Aerobic	INT: Pilates	-0.30 (0.75)	0.04 (0.52)	-0.34 (0.91)	0.706
INT: Aerobic	INT: Resistance	-1.40 (0.60)	0.60 (0.53)	-1.99 (0.82)	0.015
INT: Other	CON: True control	0.68 (0.44)	0.77 (0.43)	-0.09 (0.62)	0.887
INT: Other	CON: Hands off	0.40 (0.80)	0.42 (0.45)	-0.02 (0.91)	0.979
INT: Other	INT: Water-based	-0.56 (0.78)	-0.16 (0.50)	-0.40 (0.93)	0.666
INT: Other	INT: McKenzie	0.78 (0.79)	0.30 (0.54)	0.48 (0.95)	0.614
INT: Other	INT: Stabilisation	-0.24 (0.47)	-0.54 (0.41)	0.30 (0.62)	0.630
CON: Hands off	INT: Multimodal	-0.53 (0.45)	-0.37 (0.42)	-0.16 (0.61)	0.801
CON: Hands off	INT: Pilates	-0.27 (0.77)	-0.72 (0.42)	0.45 (0.88)	0.609
CON: Hands off	INT: Stretching	-0.43 (0.52)	-0.06 (0.52)	-0.37 (0.73)	0.617
CON: Hands off	INT: Yoga	-0.45 (0.43)	-0.93 (0.61)	0.48 (0.74)	0.515
CON: Hands on	INT: Multimodal	0.15 (0.52)	-0.47 (0.37)	0.62 (0.64)	0.328
CON: Hands on	INT: Resistance	-0.63 (0.52)	-0.66 (0.39)	0.02 (0.65)	0.973
CON: Hands on	INT: Stabilisation	-0.45 (0.33)	-0.95 (0.42)	0.50 (0.53)	0.343
INT: Water-based	CON: True control	0.83 (0.45)	1.23 (0.54)	-0.40 (0.70)	0.568
INT: Water-based	INT: McKenzie	1.35 (0.79)	0.38 (0.59)	0.97 (0.98)	0.323
INT: Water-based	INT: Multimodal	0.60 (0.54)	-0.02 (0.47)	0.62 (0.72)	0.390
INT: Water-based	INT: Stretching	-0.13 (0.83)	0.66 (0.51)	-0.79 (0.98)	0.418
INT: McKenzie	CON: True control	0.62 (0.55)	-0.04 (0.53)	0.66 (0.76)	0.392
INT: McKenzie	INT: Pilates	-0.09 (0.78)	-0.89 (0.52)	0.80 (0.94)	0.397
INT: McKenzie	INT: Stabilisation	-1.01 (0.57)	-0.74 (0.51)	-0.27 (0.76)	0.719
INT: Multimodal	CON: True control	0.33 (0.75)	0.80 (0.26)	-0.47 (0.79)	0.555
INT: Multimodal	INT: Pilates	0.24 (0.54)	-0.36 (0.37)	0.60 (0.66)	0.364
INT: Multimodal	INT: Resistance	0.37 (0.79)	-0.53 (0.35)	0.91 (0.86)	0.292

INT: Multimodal	INT: Stabilisation	-0.06 (0.30)	-0.77 (0.33)	0.71 (0.44)	0.110
INT: Multimodal	INT: Yoga	-1.69 (0.72)	0.32 (0.41)	-2.01 (0.83)	0.015
Mental health					
INT: Multimodal	CON: True control	-1.16 (0.51)	-0.05 (0.80)	-1.11 (0.95)	0.244
INT: Multimodal	INT: Pilates	-1.05 (0.48)	-2.04 (0.92)	1.00 (1.04)	0.338
INT: Multimodal	INT: Resistance	-1.12 (0.43)	-0.18 (0.58)	-0.93 (0.72)	0.195
INT: Aerobic	INT: Multimodal	1.43 (0.92)	1.04 (0.69)	0.39 (1.16)	0.738
INT: Aerobic	INT: Other	1.27 (0.54)	0.13 (0.73)	1.14 (0.91)	0.209
INT: Aerobic	INT: Pilates	-0.79 (0.52)	1.21 (0.69)	-2.00 (0.88)	0.024
INT: Other	INT: Pilates	-1.04 (0.76)	-0.91 (0.66)	-0.13 (1.01)	0.899
INT: Other	INT: Resistance	0.29 (0.58)	-1.40 (0.64)	1.70 (0.86)	0.048
CON: Hands on	INT: Multimodal	0.55 (0.79)	0.87 (0.58)	-0.32 (0.98)	0.745
CON: Hands on	CON: True control	0.38 (0.74)	-0.47 (0.67)	0.84 (1.00)	0.398
CON: Hands on	INT: Resistance	-0.16 (0.54)	0.19 (0.70)	-0.35 (0.88)	0.690
CON: True control	INT: Resistance	0.27 (0.78)	-0.09 (0.66)	0.35 (1.02)	0.730
Strength					
INT: Aerobic	INT: Other	0.25 (0.43)	0.01 (0.63)	0.24 (0.76)	0.755
INT: Aerobic	CON: Hands on	0.15 (0.39)	0.39 (0.66)	-0.24 (0.76)	0.755
INT: Other	CON: Hands on	0.14 (0.50)	-0.09 (0.58)	0.24 (0.76)	0.755

CON: control, INT: exercise training intervention. P-values indicates the significance of the difference in the direct and indirect comparisons and hence possible presence of inconsistency in the network.

Supplementary Table 6. Pain pairwise comparisons of studies examining the efficacy of exercise training in patients with non-specific chronic low back pain.

Group 1	Group 2	Studies	n	SMD (95%CI)	P-value	I^2 (%)	Low ROB (%)	Egger's P	GRADE
CON: All	INT: Aerobic	3	139	-1.33 (-2.62, -0.04)	**0.043**	87	0	0.956	Very low [A,c]
CON: All	INT: All	47	3189	-1.00 (-1.27, -0.73)	**<0.001**	91	6	**<0.001**	Very low [a,c,e]
CON: All	INT: Other	8	423	-1.12 (-1.99, -0.25)	**0.012**	93	0	**<0.001**	Very low [A,c,e]
CON: All	INT: McKenzie	2	55	-	-	-	0	-	-
CON: All	INT: Multimodal	6	538	-0.57 (-1.39, 0.24)	0.168	95	17	**0.003**	Very low [a,c,d,e]
CON: All	INT: Pilates	5	273	-2.26 (-2.79, -1.73)	**<0.001**	62	0	0.536	Very low [A,c]
CON: All	INT: Resistance	5	399	-0.84 (-1.75, 0.07)	0.072	92	0	0.241	Very low [A,c,d]
CON: All	INT: Stabilisation/motor control	16	954	-0.99 (-1.38, -0.60)	**<0.001**	87	13	**0.001**	Very low [a,c,e]
CON: All	INT: Stretching	5	190	-1.35 (-2.78, 0.08)	0.065	95	20	**0.020**	Very low [a,c,d,e]
CON: All	INT: Water-based	2	114	-	-	-	0	-	-
CON: All	INT: Yoga	3	284	-0.49 (-0.83, -0.14)	**0.005**	46	0	0.432	Very low [A,c]
CON: True	INT: Aerobic	1	18	-	-	-	0	-	-
CON: True	INT: All	28	1542	-1.16 (-1.53, -0.79)	**<0.001**	90	4	**<0.001**	Very low [a,c,e]
CON: True	INT: Other	7	393	-1.14 (-2.14, -0.13)	**0.027**	94	0	**0.001**	Very low [A,c,e]
CON: True	INT: McKenzie	2	55	-	-	-	0	-	-
CON: True	INT: Multimodal	1	60	-	-	-	0	-	-
CON: True	INT: Pilates	5	273	-2.26 (-2.79, -1.73)	**<0.001**	62	0	0.536	Very low [A,c]
CON: True	INT: Resistance	2	60	-	-	-	0	-	
CON: True	INT: Stabilisation/motor control	10	390	-1.31 (-1.73, -0.89)	**<0.001**	69	10	0.420	Low [a,c]
CON: True	INT: Stretching	4	129	-1.40 (-3.34, 0.53)	0.156	95	0	**0.013**	Very low [A,c,d,e]

CON: True	INT: Water-based	2	114	-	-	-	0	-	-
CON: True	INT: Yoga	1	150	-	-	-	0	-	-
CON: Treatment hands-off	INT All	8	519	-1.06 (-1.62, -0.51)	**<0.001**	87	13	**0.004**	Very low [a,c,e]
CON: Treatment hands-off	INT: Other	1	30	-	-	-	0	-	
CON: Treatment hands-off	INT: Multimodal	3	264	-1.14 (-2.80, 0.51)	0.177	95	0	0.157	Very low [A,c,d]
CON: Treatment hands-off	INT: Pilates	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Stabilisation/motor control	1	30	-	-	-	0	-	-
CON: Treatment hands-off	INT: Stretching	1	61	-	-	-	100	-	-
CON: Treatment hands-off	INT: Yoga	2	134	-	-	-	0	-	-
CON: Treatment hands-on	INT: Aerobic	2	121	-	-	-	0	-	-
CON: Treatment hands-on	INT: All	11	1128	-0.57 (-1.05, -0.08)	**0.023**	93	9	0.167	Low [a,c]
CON: Treatment hands-on	INT: McKenzie	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: Multimodal	2	214	-	-	-	50	-	-
CON: Treatment hands-on	INT: Pilates	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: Resistance	3	339	-0.35 (-1.40, 0.70)	0.515	93	0	0.602	Very low [A,c,d]
CON: Treatment hands-on	INT: Stabilisation/motor control	5	534	-0.29 (-0.74, 0.16)	0.205	84	20	0.643	Very low [a,c,d]

CON: control, INT: exercise training intervention, ROB: risk of bias (percentage of studies with low), SMD: standardised mean difference. GRADE certainty ratings, very low: the true effect is probably markedly different from the estimated effect, low: the true effect might be markedly different from the estimated effect, moderate: the true effect is probably close to the estimated effect, high: the true effect is similar to the estimated effect. [A]: certainty rated down two grades based on risk of bias, [a]: certainty rated down one grade based on risk of bias, [b]: certainty rated down one grade based on indirectness, [c]: certainty rated down one grade based on inconsistency, [d]: certainty rated down one grade based on indirectness, [e]: certainty rated down one grade based on publication bias (using Egger's P-value).

Supplementary Table 7. Function pairwise comparisons of studies examining the efficacy of exercise training in patients with non-specific chronic low back pain.

Group 1	Group 2	Studies	n	SMD (95%CI)	P-value	I^2 (%)	Low ROB (%)	Egger's P	GRADE
CON: All	INT: Aerobic	3	139	-1.05 (-1.40, -0.69)	**<0.001**	0	0	0.540	Low [A]
CON: All	INT: All	42	3202	-0.72 (-0.93, -0.52)	**<0.001**	86	10	**<0.001**	Very low [a,c,e]
CON: All	INT: Other	4	277	-0.60 (-1.15, -0.04)	**0.040**	75	0	0.050	Very low [A,c]
CON: All	INT: McKenzie	2	65	-	-	-	0	-	-
CON: All	INT: Multimodal	6	538	-0.25 (-0.80, 0.29)	0.370	88	17	0.140	Very low [a,c,d]
CON: All	INT: Pilates	5	253	-0.99 (-1.58, -0.40)	**<0.001**	76	0	0.740	Very low [A,c]
CON: All	INT: Resistance	5	415	-1.58 (-3.20, 0.05)	0.060	97	0	**<0.001**	Very low [A,c,d,e]
CON: All	INT: Stabilisation/motor control	13	861	-0.87 (-1.27, -0.47)	**<0.001**	86	15	**0.010**	Very low [a,c,e]
CON: All	INT: Stretching	5	306	-0.52 (-0.82, -0.22)	**<0.001**	31	40	0.240	Low [a,c]
CON: All	INT: Water-based	3	148	-0.83 (-1.99, 0.32)	0.160	88	0	0.510	Very low [A,c,d]
CON: All	INT: Yoga	4	421	-0.32 (-0.65, 0.00)	0.050	60	25	**0.010**	Very low [a,c,d,e]
CON: True	INT: Aerobic	1	18	-	-	-	0	-	-
CON: True	INT: All	23	1378	-0.92 (-1.22, -0.62)	**<0.001**	84	4	**<0.001**	Very low [a,c,e]
CON: True	INT: Other	3	247	-0.68 (-1.44, 0.08)	0.080	84	0	**<0.001**	Very low [A,c,d,e]
CON: True	INT: McKenzie	2	65	-	-	-	0	-	-
CON: True	INT: Multimodal	1	60	-	-	-	0	-	-
CON: True	INT: Pilates	4	215	-1.18 (-1.77, -0.58)	**<0.001**	71	0	0.700	Very low [A,c]
CON: True	INT: Resistance	3	125	-2.35 (-5.17, 0.46)	0.100	97	0	**<0.001**	Very low [A,c,d,e]
CON: True	INT: Stabilisation/motor control	8	337	-1.16 (-1.51, -0.81)	**<0.001**	48	13	0.390	Low [a,c]
CON: True	INT: Stretching	3	109	-0.69 (-1.08, -0.30)	**<0.001**	0	0	0.660	Low [A]

CON: True	INT: Water-based	3	148	-0.83 (-1.99, 0.32)	0.160	88	0	0.510	Very low [A,c,d]
CON: True	INT: Yoga	1	150	-	-	-	0	-	-
CON: Treatment hands-off	INT All	9	755	-0.46 (-0.78, -0.14)	**0.010**	73	22	0.130	Low [a,c]
CON: Treatment hands-off	INT: Other	1	30	-	-	-	0	-	-
CON: Treatment hands-off	INT: Multimodal	3	264	-0.56 (-1.76, 0.64)	0.360	92	0	0.550	Very low [A,c,d]
CON: Treatment hands-off	INT: Pilates	1	38	-	-	-	0	-	-
CON: Treatment hands-off	INT: Stabilisation/motor control	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Stretching	2	197	-	-	-	100	-	-
CON: Treatment hands-off	INT: Yoga	3	271	-0.42 (-0.92, 0.09)	0.110	73	33	**0.010**	Very low [a,c,d,e]
CON: Treatment hands-on	INT: Aerobic	2	121	-	-	-	0	-	-
CON: Treatment hands-on	INT: All	10	1069	-0.55 (-0.94, -0.15)	**0.010**	88	10	0.090	Low [a,c]
CON: Treatment hands-on	INT: McKenzie	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: Multimodal	2	214	-	-	-	50	-	-
CON: Treatment hands-on	INT: Pilates	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: Resistance	2	290	-	-	-	0	-	-
CON: Treatment hands-on	INT: Stabilisation/motor control	5	524	-0.45 (-1.10, 0.21)	0.180	92	20	0.130	Very low [a,c,d]

CON: control, INT: exercise training intervention, ROB: risk of bias (percentage of studies with low), SMD: standardised mean difference. GRADE certainty ratings, very low: the true effect is probably markedly different from the estimated effect, low: the true effect might be markedly different from the estimated effect, moderate: the true effect is probably close to the estimated effect, high: the true effect is similar to the estimated effect. [A]: certainty rated down two grades based on risk of bias, [a]: certainty rated down one grade based on risk of bias, [b]: certainty rated down one grade based on indirectness, [c]: certainty rated down one grade based on inconsistency, [d]: certainty rated down one grade based on indirectness, [e]: certainty rated down one grade based on publication bias (using Egger's P-value).

Supplementary Table 8. Mental health pairwise comparisons of studies examining the efficacy of exercise training in patients with non-specific chronic low back pain.

Group 1	Group 2	Studies	n	SMD (95%CI)	P-value	I^2 (%)	Low ROB (%)	Egger's P	GRADE
CON: All	INT: Aerobic	3	139	-1.32 (-1.69, -0.96)	**<0.001**	0	0	0.231	Low [A]
CON: All	INT: All	17	1305	-0.77 (-1.08, -0.46)	**<0.001**	84	6	**0.016**	Very low [a,c,e]
CON: All	INT: Other	1	164	-	-	-	0	-	-
CON: All	INT: McKenzie	0	0	-	-	-	-	-	-
CON: All	INT: Multimodal	2	93	-	-	-	0	-	-
CON: All	INT: Pilates	2	163	-	-	-	0	-	-
CON: All	INT: Resistance	4	365	-1.10 (-2.30, 0.10)	0.073	94	0	0.075	Very low [A,c,d]
CON: All	INT: Stabilisation/motor control	4	238	-0.68 (-1.43, 0.07)	0.077	85	0	0.220	Very low [A,c,d]
CON: All	INT: Stretching	2	80	-	-	-	50	-	-
CON: All	INT: Water-based	1	19	-	-	-	0	-	-
CON: All	INT: Yoga	1	90	-	-	-	0	-	-
CON: True	INT: Aerobic	1	18	-	-	-	0	-	-
CON: True	INT: All	10	647	-0.87 (-1.33, -0.42)	**<0.001**	85	0	**0.007**	Very low [A,c,e]
CON: True	INT: Other	1	164	-	-	-	0	-	-
CON: True	INT: McKenzie	0	0	-	-	-	-	-	-
CON: True	INT: Multimodal	1	60	-	-	-	0	-	-
CON: True	INT: Pilates	2	163	-	-	-	0	-	-
CON: True	INT: Resistance	3	125	-1.18 (-3.01, 0.64)	0.205	95	0	**0.006**	Very low [A,c,d,e]
CON: True	INT: Stabilisation/motor control	3	125	-1.08 (-1.47, -0.70)	**<0.001**	1	0	0.821	Very low [A,c]
CON: True	INT: Stretching	1	19	-	-	-	0	-	-

CON: True	INT: Water-based	1	19	-	-	-	0	-	-
CON: True	INT: Yoga	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT All	3	184	-0.53 (-0.88, -0.18)	**0.003**	26	33	0.198	Low [a,c]
CON: Treatment hands-off	INT: Other	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Multimodal	1	33	-	-	-	0	-	-
CON: Treatment hands-off	INT: Pilates	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Stabilisation/motor control	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Stretching	1	61	-	-	-	100	-	-
CON: Treatment hands-off	INT: Yoga	1	90	-	-	-	0	-	-
CON: Treatment hands-on	INT: Aerobic	2	121	-	-	-	0	-	-
CON: Treatment hands-on	INT: All	4	474	-0.79 (-1.56, -0.03)	**0.042**	92	0	0.497	Very low [A,c]
CON: Treatment hands-on	INT: McKenzie	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: Multimodal	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: Pilates	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: Resistance	1	240	-	-	-	0	-	-
CON: Treatment hands-on	INT: Stabilisation/motor control	1	113	-	-	-	0	-	-

CON: control, INT: exercise training intervention, ROB: risk of bias (percentage of studies with low), SMD: standardised mean difference. GRADE certainty ratings, very low: the true effect is probably markedly different from the estimated effect, low: the true effect might be markedly different from the estimated effect, moderate: the true effect is probably close to the estimated effect, high: the true effect is similar to the estimated effect. [A]: certainty rated down two grades based on risk of bias, [a]: certainty rated down one grade based on risk of bias, [b]: certainty rated down one grade based on indirectness, [c]: certainty rated down one grade based on inconsistency, [d]: certainty rated down one grade based on indirectness, [e]: certainty rated down one grade based on publication bias (using Egger's P-value).

Supplementary Table 9. Muscle strength pairwise comparisons of studies examining the efficacy of exercise training in patients with non-specific chronic low back pain.

Group 1	Group 2	Studies	n	SMD (95%CI)	P-value	I^2 (%)	Low ROB (%)	Egger's P	GRADE
CON: All	INT: Aerobic	0	0	-	-	-	-	-	-
CON: All	INT: All	6	252	0.29 (0.00, 0.58)	0.050	14	0	0.289	Very low [A,c]
CON: All	INT: Other	2	84	-	-	-	0	-	-
CON: All	INT: McKenzie	0	0	-	-	-	-	-	-
CON: All	INT: Multimodal	0	0	-	-	-	-	-	-
CON: All	INT: Pilates	0	0	-	-	-	-	-	-
CON: All	INT: Resistance	2	114	-	-	-	0	-	-
CON: All	INT: Stabilisation/motor control	2	54	-	-	-	0	-	-
CON: All	INT: Stretching	0	0	-	-	-	-	-	-
CON: All	INT: Water-based	0	0	-	-	-	-	-	-
CON: All	INT: Yoga	0	0	-	-	-	-	-	-
CON: True	INT: Aerobic	0	0	-	-	-	-	-	-
CON: True	INT: All	5	203	0.34 (-0.05, 0.74)	0.090	40	0	0.403	Very low [A,c,d]
CON: True	INT: Other	2	84	-	-	-	0	-	-
CON: True	INT: McKenzie	0	0	-	-	-	-	-	-
CON: True	INT: Multimodal	0	0	-	-	-	-	-	-
CON: True	INT: Pilates	0	0	-	-	-	-	-	-
CON: True	INT: Resistance	1	65	-	-	-	0	-	-
CON: True	INT: Stabilisation/motor control	2	54	-	-	-	0	-	-
CON: True	INT: Stretching	0	0	-	-	-	-	-	-

CON: True	INT: Water-based	0	0	-	-	-	-	-	-
CON: True	INT: Yoga	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT All	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Other	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Multimodal	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Pilates	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Stabilisation/motor control	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Stretching	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Yoga	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: Aerobic	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: All	1	49	-	-	-	0	-	-
CON: Treatment hands-on	INT: McKenzie	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: Multimodal	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: Pilates	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: Resistance	1	49	-	-	-	0	-	-
CON: Treatment hands-on	INT: Stabilisation/motor control	0	0	-	-	-	-	-	-

CON: control, INT: exercise training intervention, ROB: risk of bias (percentage of studies with low), SMD: standardised mean difference. GRADE certainty ratings, very low: the true effect is probably markedly different from the estimated effect, low: the true effect might be markedly different from the estimated effect, moderate: the true effect is probably close to the estimated effect, high: the true effect is similar to the estimated effect. [A]: certainty rated down two grades based on risk of bias, [a]: certainty rated down one grade based on risk of bias, [b]: certainty rated down one grade based on indirectness, [c]: certainty rated down one grade based on inconsistency, [d]: certainty rated down one grade based on indirectness, [e]: certainty rated down one grade based on publication bias (using Egger's P-value).

Supplementary Table 10. Muscle endurance pairwise comparisons of studies examining the efficacy of exercise training in patients with non-specific chronic low back pain.

Group 1	Group 2	Studies	n	SMD (95%CI)	P-value	I^2 (%)	Low ROB (%)	Egger's P	GRADE
CON: All	INT: Aerobic	1	18	-	-	-	0	-	-
CON: All	INT: All	6	322	2.73 (0.30, 5.16)	**0.028**	98	0	**0.002**	Very low [A,c,e]
CON: All	INT: Other	1	34	-	-	-	0	-	-
CON: All	INT: McKenzie	1	34	-	-	-	0	-	-
CON: All	INT: Multimodal	0	0	-	-	-	-	-	-
CON: All	INT: Pilates	2	74	-	-	-	0	-	-
CON: All	INT: Resistance	1	18	-	-	-	0	-	-
CON: All	INT: Stabilisation/motor control	2	153	-	-	-	0	-	-
CON: All	INT: Stretching	0	0	-	-	-	-	-	-
CON: All	INT: Water-based	1	34	-	-	-	0	-	-
CON: All	INT: Yoga	0	0	-	-	-	-	-	-
CON: True	INT: Aerobic	1	18	-	-	-	0	-	-
CON: True	INT: All	5	255	1.57 (0.69, 2.45)	**<0.001**	87	0	0.509	Very low [A,c]
CON: True	INT: Other	1	34	-	-	-	0	-	-
CON: True	INT: McKenzie	1	34	-	-	-	0	-	-
CON: True	INT: Multimodal	0	0	-	-	-	-	-	-
CON: True	INT: Pilates	2	74	-	-	-	0	-	-
CON: True	INT: Resistance	1	18	-	-	-	0	-	-
CON: True	INT: Stabilisation/motor control	1	86	-	-	-	0	-	-
CON: True	INT: Stretching	0	0	-	-	-	-	-	-

CON: True	INT: Water-based	1	34	-	-	-	0	-	-
CON: True	INT: Yoga	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT All	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Other	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Multimodal	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Pilates	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Stabilisation/motor control	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Stretching	0	0	-	-	-	-	-	-
CON: Treatment hands-off	INT: Yoga	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: Aerobic	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: All	1	67	-	-	-	0	-	-
CON: Treatment hands-on	INT: McKenzie	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: Multimodal	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: Pilates	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: Resistance	0	0	-	-	-	-	-	-
CON: Treatment hands-on	INT: Stabilisation/motor control	1	67	-	-	-	0	-	-

CON: control, INT: exercise training intervention, ROB: risk of bias (percentage of studies with low), SMD: standardised mean difference. GRADE certainty ratings, very low: the true effect is probably markedly different from the estimated effect, low: the true effect might be markedly different from the estimated effect, moderate: the true effect is probably close to the estimated effect, high: the true effect is similar to the estimated effect. [A]: certainty rated down two grades based on risk of bias, [a]: certainty rated down one grade based on risk of bias, [b]: certainty rated down one grade based on indirectness, [c]: certainty rated down one grade based on inconsistency, [d]: certainty rated down one grade based on indirectness, [e]: certainty rated down one grade based on publication bias (using Egger's P-value).

Supplementary Table 11. Calculation of pooled standard deviation (SD) for the Oswestry Disability Index and Roland Morris Disability Questionnaire.

Tool	Pooled SD	Min-Max	N	Groups	Scaled 0-100
Oswestry Disability Index[28, 29, 33, 37, 41, 49, 51, 76, 79, 80, 87-90, 92, 96-98, 100-103, 106, 111, 113, 117-119, 124, 125, 127-129, 132, 134, 137]	12	0-100	1974	87	12
Roland Morris Disability Questionnaire[24, 25, 32, 35, 46, 78, 83, 85, 86, 93, 105, 107, 109, 110, 115, 121, 126, 138, 139]	5	0-24	1931	43	20

Pooled SD at baseline from all studies which used the tool and reported pre-intervention SD. Min-Max: the minimum and maximum values of the tool, N: total number of participants with data, groups: total number of intervention and control groups with data, scaled 0-100: pooled SD scaled to a 100-point scale.